

# **EXHIBIT 1**

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9 Attorneys for Plaintiffs

10 **UNITED STATES DISTRICT COURT**  
11 **DISTRICT OF ARIZONA**

12 IN DEFENSE OF ANIMALS, a non-profit  
13 organization; the ANIMAL WELFARE  
14 INSTITUTE, a non-profit organization; and  
15 the INTERNATIONAL SOCIETY FOR THE  
16 PROTECTION OF MUSTANGS and  
17 BURROS, a non-profit organization;  
18 PATRICIA HAIGHT, an individual;  
19 RICHARD POTTS, an individual,

20 Plaintiffs,

21 vs.

22 UNITED STATES GOVERNMENT,  
23 DEPARTMENT OF AGRICULTURE, ANN  
24 M. VENEMAN as acting UNITED STATES,  
25 SECRETARY OF AGRICULTURE;  
26 UNITED STATES FOREST SERVICE;  
27 ELAINE J. ZIEROTH, as the acting UNITED  
28 STATES FOREST SUPERVISOR,

Defendants.

Case No. \_\_\_\_\_

**VERIFIED COMPLAINT  
SEEKING A TEMPORARY  
RESTRAINING ORDER,  
PRELIMINARY INJUNCTION, and  
WRIT of MANDAMUS**

(Jury Trial Demanded)

Plaintiffs, In Defense of Animals, a non-profit organization, the Animal Welfare Institute, a non-profit organization, the International Society for the Protection of Mustangs and Burros, a non-profit organization, Dr. Patricia Haight, and Richard Potts (collectively "Plaintiffs"), hereby allege as follows:

1 NATURE OF THIS ACTION

2 1. This is an action for declaratory and injunctive relief, as well as seeking  
3 redress for violation of several federal statutes.

4 2. This action arises out of the United States Forest Service’s decision to  
5 round-up and remove approximately 300 to 400 “feral” or wild horses from the Apache-  
6 Sitgreaves National Forests, including a designated protected horse area or sanctuary  
7 known as the Heber Wild Horse Territory. The Forest Service has ordered that all horses  
8 in its forests be rounded-up because they are allegedly “unauthorized livestock” or  
9 “trespass animals.” Thereafter, the horses, per Forest Service order, will be impounded  
10 and transported to a livestock auction house near Holbrook, Arizona. Upon information  
11 and belief, the majority of these horses will be auctioned and purchased for slaughter and  
12 sold for their meat.

13 JURISDICTION AND VENUE

14 3. Jurisdiction is proper in this action pursuant to 28 U.S.C. Section 1331  
15 (federal question), 28 U.S.C. Section 1361 (mandamus), the Declaratory Judgment Act  
16 (28 U.S.C. Sections 2201, 2202), the Administrative Procedure Act (5 U.S.C. Section  
17 701, et seq.)(“APA”), and the National Environmental Policy Act (42 U.S.C. Section  
18 4321, et seq.)(“NEPA”).

19 4. Venue is appropriate in this Court pursuant to 28 U.S.C. Sections 1391(b)  
20 and (e).

21 5. The amount in controversy exceeds the jurisdictional requirements of this  
22 court and is believed to be in excess of \$100,000.00, the estimated minimum cost for the  
23 rounding-up and removal of the wild horses, according to U.S. Forest Service records.

24 THE PARTIES

25 6. Plaintiff, In Defense of Animals (“IDA”), is a non-profit organization  
26 formed for the purpose of promoting animal welfare and protection, including the  
27 protection of wild horses. IDA is incorporated in the state of California and has a local  
28 office at 2121 South Mill Avenue, Suite 107C, Tempe, Arizona. The IDA has

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1 approximately 80,000 members worldwide and of that amount, 1600 members residing in  
2 the state of Arizona. IDA brings this action on its own behalf and on behalf of all of its  
3 members.

4 7. Plaintiff, the Animal Welfare Institute (“AWI”), is a non-profit organization  
5 formed for the purpose of promoting animal welfare and protection, including the  
6 protection of wild horses. Plaintiff, AWI, is incorporated in the state of Delaware. AWI  
7 has approximately 20,000 constituents throughout the United States and of that amount,  
8 242 constituents are in Arizona. AWI brings this action on its behalf and on behalf of all  
9 of its members.

10 8. Plaintiff, the International Society for the Protection of Mustangs and  
11 Burros (“ISPMB”), is a non-profit organization formed for the purpose of promoting  
12 animal welfare and protection, including the protection of wild horses. Plaintiff, ISPMB,  
13 is the oldest wild horse and burro organization in the U.S. Along with its first president,  
14 Wild Horse Annie, ISPMB was instrumental in securing and implementing the 1971  
15 Wild Horse and Burro Act, at issue in this litigation. ISPMB was headquartered in  
16 Arizona from approximately 1993 until the year 2000 when it re-located its headquarters  
17 to Lantry, South Dakota. ISPMB is incorporated in the state of California and is an  
18 affected and interested party in the State of Arizona.

19 9. Plaintiff, Patricia Haight, Ph.D., is the Southwest Regional Director for  
20 IDA and resides in Phoenix, Arizona. She is a concerned citizen who enjoys viewing  
21 these wild horses in their natural habitat.

22 10. Plaintiff, Richard Potts, is also concerned citizen who enjoys viewing the  
23 wild horses in their natural habitat and has done so for many years in the area of  
24 Heber/Overgaard, Arizona. He is currently a resident of Heber/Overgaard, Arizona.

25 11. Defendant, the U.S. Department of Agriculture, is a branch of the United  
26 States government which has been charged with the responsibility of overseeing the  
27 protection and management of wild free-roaming horses.  
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1           19.     The U.S. Forest Service has taken the position that all 300 to 400 of these  
2 horses residing in the public lands of the Apache-Sitgreaves National Forest are “stray,  
3 domestic horses and are not considered wild.” See United States Department of  
4 Agriculture, Forest Service, News Release dated August 31, 2005 entitled “Unauthorized  
5 Horses to be Removed from the National Forest,” a copy of which is attached at Exhibit  
6 B, and incorporated herein by reference.

7           20.     Plaintiffs, IDA, AWI, and ISPMB, have contacted the Defendants U.S.  
8 Forest Service and Secretary of Agriculture, and requested that it reconsider its decision  
9 to capture and remove these horses. The Defendants have refused. See Letter from  
10 Elaine Zieroth dated September 7, 2005, copy attached at Exhibit C and incorporated  
11 herein by reference.

12           21.     On or about July 19, 2005, the U.S. Forest Service issued a Solicitation for  
13 Bid Number AG-8173-S-05-0004, entitled “Trespass Horse Capture and Transport.” A  
14 copy of this solicitation is attached hereto at Exhibit D and incorporated herein by  
15 reference.

16           22.     According to the Solicitation for Bid, the horses are to be captured and  
17 transported out of the Apache-Sitgreaves National Forest in Navajo and Coconino  
18 Counties, Arizona to an auction house near Holbrook, Arizona.

19           23.     Upon information and belief, the estimated cost for removal of these horses  
20 is between \$400 and \$800 per horse or \$160,000 to \$320,000 (assuming the estimated  
21 number of horses is accurate).

22           24.     The Solicitation for Bid provides for a round-up and capture of all horses in  
23 the Apache-Sitgreaves Forest including those in the Heber Wild Horse Territory.

24           25.     The Solicitation for Bid also provides for a round-up of all mares even  
25 those mares with foals.

26           26.     Upon information and belief, the majority if not all of these foals were born  
27 on public lands, in the national forests and are unbranded and unclaimed. As a result, the  
28 foals or any horses born on the public lands, would have the protection of the applicable

1 federal laws such as the Wild Free-Roaming Horses and Burros Act of 1971 and its  
2 corresponding regulations.

3 27. Plaintiff IDA issued a Freedom of Information Act 5 U.S.C. Section 552  
4 (“FOIA”) request upon the U.S. Forest Service seeking information concerning the  
5 decision to capture and remove all horses as trespass horses and unauthorized livestock.  
6 Little information was provided in response to the FOIA request. No census was  
7 produced nor were any inventories produced suggesting that the U.S. Forest Service has  
8 done little over the past few decades to manage or take an accounting of the horses.

9 28. What little information was produced in response to the FOIA request  
10 showed that the U.S. Forest Service admitted that it did not “manage” the horses and  
11 indicated a desire to be rid of the horses in that area.

12 29. Plaintiffs have asked the U.S. Forest Service to withdraw or delay its  
13 Solicitation for Bid and to comply with the applicable federal statutes. Defendants have  
14 refused.

15 **COUNT ONE**

16 **(VIOLATION OF WILD HORSES AND BURROS ACT OF 1971)**

17 30. The above paragraphs, numbered 1 through 29, are incorporated herein by  
18 reference.

19 31. The preamble and statement of policy for the Wild Free-Roaming Horses  
20 and Burros Act of 1971, 16 U.S.C. Section 1331, *et seq.*, states:

21 Congress finds and declares that wild free-roaming horses  
22 and burros are living symbols of the historic and pioneer  
23 spirit of the West; that they contribute to the diversity of life  
24 forms within the Nation and enrich the lives of the American  
25 people; and that these horses and burros are fast disappearing  
26 from the American scene. It is the policy of Congress that  
27 wild free-roaming horses and burros shall be protected from  
28 capture, branding, harassment, or death, and to accomplish  
this they are to be considered in the area where presently  
found, as an integral part of the natural system of the public  
lands.

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32. Under the 1971 Act, the Secretary of Agriculture is “directed to protect and manage wild free-roaming horses as components of the public lands...” 16 U.S.C. Section 1333(a).

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33. The term “wild free-roaming horses and burros” is specifically defined under the 1971 Act to mean “all unbranded and unclaimed horses and burros on public lands of the United States.” (Emphasis added.) 16 U.S.C. Section 1333(a).

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34. The 1971 Act also states that the Secretary “shall manage wild free-roaming horses and burros in a manner that is designated to achieve and maintain a thriving natural ecological balance on the public lands.” 16 U.S.C. Section 1333(a). The Secretary “shall consider the recommendations of qualified scientists in the field of biology and ecology, some of whom shall be independent of both Federal and State agencies and may include members of the Advisory Board established in section 1337 of this title.” 16 U.S.C. Section 1333(a).

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35. Section 1337 of the Act “directs” the Secretary of Agriculture “to appoint a joint advisory board of not more than nine members to advise them on any matter relating to wild free-roaming horses and burros and their management and protection.” Upon information and belief, no such advisory board has ever been appointed to assist with the wild horses in the Apache-Sitgreaves National Forests.

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36. The 1971 Act further provides that the Secretary “shall maintain a current inventory of wild free-roaming horses and burros on given areas of the public lands.” Section 1333(b).

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37. The Code of Federal Register (“CFR”) Section 222.23 entitled “Removal of Other Horses and Burros,” defines the conditions for treating certain horses as “unauthorized livestock” which could then be impounded and properly disposed. Section 222.23 provides special protection for horses that do not fall initially within the protection of the 1971 Act, if they are subsequently introduced into a protected territory

1 “by accident, negligence or willful disregard of private ownership” and which become  
2 intermingled with wild free-roaming horses.

3 38. Only if these newly introduced horses do not intermingle may they be  
4 considered “unauthorized livestock.” Upon information and belief, to the extent there are  
5 any domestic horses now living within the wild herds, they have intermingled and under  
6 the 1971 Act are entitled to protection as well. Similarly any newly born foals into the  
7 wild would be entitled to the protection of the 1971 Act.

8 39. CFR Section 222.25 of the regulations provides protection for the wild free-  
9 roaming horses even if they were to move or migrate off of protected territories onto  
10 lands of other ownership or jurisdiction.

11 40. Section 1338a of the 1971 Act provides that while the Secretary may use or  
12 contract for the use of motor vehicles for the purpose of transporting captured animals,  
13 such use can only be undertaken after a public hearing, among other things. Upon  
14 information and belief, no public hearing was held prior to the decision to capture and  
15 remove these horses and the Solicitation for Bid (which requires the use of motorized  
16 vehicles). See Exhibit D (Solicitation for Bid at § C.1.4.(b)).

17 41. The Defendants, including the U.S. Forest Service, have made an  
18 uninformed and unilateral decision to remove all horses from the Apache-Sitgreaves  
19 National Forests as “strays” or “unauthorized livestock.” This decision is unsupported by  
20 the facts and was made with little to no investigation or inventory of the horses. In so  
21 doing, the Defendants have violated the Wild Horses and Burros Act of 1971, including  
22 but not limited to:

23 (a) making the decision to capture and remove all horses without first  
24 conducting an inventory or accounting of the horses to determine their status as wild or  
25 domestic trespass, branded versus unbranded;

26 (b) making the assumption, without reliable data or investigation to  
27 support it, such as input from scientists and biologists, that none of the horses in the  
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1 Apache-Sitgreaves National Forests and surrounding area are wild free-roaming horses or  
2 offspring of those horses;

3 (c) failing to appoint or consult a joint advisory board concerning this  
4 decision to remove all horses;

5 (d) attempting to remove wild free-roaming horses from the Heber Wild  
6 Horse Territory and the Apache-Sitgreaves Forests, including the removal of foals who  
7 have been born there;

8 (e) failing to manage the wild horses in the area;

9 (f) failing to conduct an inventory or census of the number, types, age,  
10 and condition of the wild free-roaming horses in the Apache-Sitgreaves Forests including  
11 the Heber Wild Horse Territory;

12 (g) failing to hold a public hearing for comment on the decision to use  
13 motor vehicles in the capture and transport of these horses;

14 (h) failing to make an effort to segregate any wild horses from domestic  
15 horses before ordering removal of all horses from the Apache-Sitgreaves National Forests  
16 including the Heber Wild Horse Territory.

17 **COUNT TWO**  
18 **(VIOLATION OF NEPA)**

19 42. The above paragraphs, numbered 1 through 41, are incorporated herein by  
20 reference.

21 43. The U.S. Forest Service and Department of Agriculture must comply with  
22 the National Environmental Policy Act of 1969, 42 U.S.C. Section 4321, *et seq.*  
23 (“NEPA”) before taking any “major federal action.”

24 44. Specifically, Section 4332 of NEPA provides in pertinent part:

25 (2) [A]ll agencies of the Federal Government shall \*\*\*

26 (C) include in every recommendation or report on proposals for  
27 legislation and other major Federal actions significantly  
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1 affecting the quality of the human environment, a detailed  
2 statement by the responsible official on –

- 3 (i) the environmental impact of the proposed action,  
4 (ii) any adverse environmental effects which cannot be  
5 avoided should the proposal be implemented,  
6 (iii) alternatives to the proposed action,  
7 (iv) the relationship between local short-term uses of man's  
8 environment and the maintenance and enhancement of  
9 long-term productivity, and  
10 (v) any irreversible and irretrievable commitments of  
11 resources which would be involved in the proposed  
12 action should it be implemented.

13 Prior to making any detailed statement, the responsible  
14 Federal official shall consult with and obtain the comments of  
15 any Federal agency which has jurisdiction by law or special  
16 expertise with respect to any environmental impact involved.  
17 Copies of such statement and the comments and views of the  
18 appropriate Federal, State, and local agencies, which are  
19 authorized to develop and enforce environmental standards,  
20 shall be made available to the President, the Council on  
21 Environmental Quality and to the public as provided by  
22 section 552 of Title 5, and shall accompany the proposal  
23 through the existing agency review processes.

24 45. The order or decision to capture and remove all 300 to 400 horses from the  
25 Apache-Sitgreaves National Forests constitutes a “major federal action” under NEPA.

26 46. As such, NEPA requires that an environmental assessment or impact study  
27 be conducted as well as a census to determine the precise nature and number of horses are  
28 residing in Apache-Sitgreaves Forests including the Heber Wild Horse Territory.

47. The Defendants must comply with the National Environmental Policy Act  
of 1969, 42 U.S.C. Section 4321, *et seq.* (“NEPA”) before taking any major federal  
action. The removal of all horses from the Apache-Sitgreaves National Forest is a major  
federal action.





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- (1) Preparing an Environmental Impact Statement to determine the impact of the purposed removal on the human and natural environment;
- (2) Determining the number of wild horses located in the Apache-Sitgreaves National Forest including means such as observation for branding or domestic markings, use of genetic testing and/or other means or study;
- (3) Determining the number of branded horses in the Apache-Sitgreaves National Forest that now may qualify for protection under the Wild Horses and Burros Act through intermingling under 36 CFR Section 222.23; and
- (4) Providing the public with notice of any proposed action with regard to horses within the Apache-Sitgreaves National Forest and allowing for public comment on that proposed action and then take into consideration those comments prior to any future action.

Absent the requested relief, Plaintiffs will suffer immediate and irreparable injury.

Furthermore, pursuant to 28 U.S.C. § 1361, Plaintiffs seek a writ of mandamus compelling Defendants to comply with the requirements of the Wild Horse Act in protecting and managing horses within the Apache-Sitgreaves National Forests, including:

- (A) Conducting an inventory or accounting of the horses located within the Apache-Sitgreaves National Forest to determine their status as wild or domestic trespass, branded versus unbranded. See 16 U.S.C. § 1333(b);
- (B) Presenting reliable data or investigative reports to support the assertion, if supportable, that horses in the Apache-Sitgreaves National Forests and surrounding area are “unauthorized livestock,” as opposed to protected “wild free-roaming horses” or offspring of those horses Id.;

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- (C) Protecting any and all wild free-roaming horses in the Apache-Sitgreaves National Forests, including but not limited to foals born there and/or branded horses that have intermingled with the wild horses from capture, branding, harassment and death. See 16 U.S.C. 1331;
- (D) Managing the wild horses in the Apache-Sitgreaves National Forests and surrounding public lands. See 16 U.S.C. § 1333;
- (E) Conducting an inventory or census of the number, types, age, and condition of the wild free-roaming horses in the Apache-Sitgreaves National Forests and surrounding public lands. See 16 U.S.C. § 1338(a);
- (F) Conducting a scientific and independent study to determine the interaction with and relationship of the horses to other wildlife and foliage in the Apache-Sitgreaves National Forests.

For such other relief as the Court deems just and proper.

**JURY TRIAL DEMAND**

Plaintiffs hereby demand a trial by jury .

DATED this 9th day of September, 2005.

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521060/P006716



# **EXHIBIT 2**

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IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF ARIZONA

In Defense of Animals, a non-profit  
organization, et al.,  
  
Plaintiffs,  
  
vs.  
  
United States Government, Department of  
Agriculture, et al.,  
  
Defendants.

No. 05-CV-2754-PHX-FJM  
**ORDER**

I.

On July 19, 2005, defendant United States Forest Service issued a bid solicitation for the removal of horses from the Apache-Sitgreaves National Forest ("ASNF"). Complaint, Exhibit D. On September 9, 2005, plaintiffs filed this action seeking a Temporary Restraining Order ("TRO") and Preliminary Injunction to prevent defendants from removing any horses from the ASNF, or awarding a bid for the capture and removal of any horses from the ASNF, unless defendants have complied with the National Environmental Policy Act ("NEPA"), the Wild Free-Roaming Horses and Burros Act ("Wild Horses Act") and the Administrative Procedures Act ("APA"). We issued a TRO enjoining defendants from rounding up, removing, or awarding a bid for the capture and removal of horses from the ASNF (doc. 5). Subsequently, defendants lost their funding for the bid solicitation, and accordingly, it is no longer viable. Response at 2.

1 We now have before us plaintiffs' application for a preliminary injunction (doc. 1),  
2 defendants' Response (doc. 13), and plaintiffs' Reply (doc. 16). We also have before us  
3 defendants' supplemental filing (doc. 17), plaintiff's supplemental filing (doc. 18), and  
4 plaintiff's motion to strike defendants' supplemental filing (doc. 20), all of which were filed  
5 the day of the preliminary injunction hearing.

## 6 II.

7 Defendants argue that the application for a preliminary injunction is moot because  
8 the July 19, 2005 bid solicitation is no longer viable. Response at 2-4. However, an  
9 action for a preliminary injunction will not become moot "merely because the conduct  
10 complained of was terminated, *if there is a possibility of recurrence*, since otherwise the  
11 defendant's [sic] would be free to return to [their] old ways," Fed. Trade Comm'n v.  
12 Affordable Media, LLC, 179 F.3d 1228, 1237 (9th Cir. 1999) (alteration in original)  
13 (citation omitted). To establish mootness, defendants would need to show that  
14 "subsequent events made it absolutely clear that the allegedly wrongful behavior could  
15 not reasonably be expected to recur." United States v. Concentrated Phosphate Export  
16 Ass'n, 393 U.S. 199, 203, 89 S. Ct. 361, 364 (1968). This action for a preliminary  
17 injunction is not moot because there is a possibility of recurrence; defendants are  
18 contemplating another bid solicitation under the 2006 budget. Response at 2.

19 Defendants also argue that the application for a preliminary injunction is not ripe  
20 because defendants have not issued another bid solicitation. Response at 3. The rationale  
21 of the ripeness doctrine is to "prevent the courts, through avoidance of premature  
22 adjudication, from entangling themselves in abstract disagreements over administrative  
23 policies, and also to protect the agencies from judicial interference until an administrative  
24 decision has been formalized and its effects felt in a concrete way by the challenging  
25 parties." Abbott Laboratories v. Gardner, 387 U.S. 136, 148-49, 87 S. Ct. 1507, 1515  
26 (1967). Defendants' argument fails because plaintiffs' claims are not based upon an  
27 abstract disagreement over policy but the very real concrete dispute over the identity of  
28 the horses, the applicability of multiple statutes and the defendants' conceded intent in

1 soliciting bids. This action is thus ripe for adjudication. See Porter v. Jones, 319 F.3d  
2 483, 490-91 (9th Cir. 2003).

3 **III.**

4 A preliminary injunction should only be granted if the moving party "demonstrates  
5 that it is likely to succeed on the merits and may suffer irreparable injury, or that serious  
6 questions exist on the merits and the balance of hardships tips in its favor." Self-  
7 Realization Fellowship Church v. Ananda Church of Self-Realization, 59 F.3d 902, 913  
8 (9th Cir. 1995). "These two formulations represent two points on a sliding scale in which  
9 the required degree of irreparable harm increases as the probability of success decreases."  
10 Oakland Tribune, Inc. v. Chronicle Pub. Co., Inc., 762 F.2d 1374, 1376 (9th Cir. 1985).  
11 Therefore, "[w]here a party can show a strong chance of success on the merits, he need  
12 show only a possibility of irreparable harm. Where, on the other hand, a party can show  
13 only that serious questions are raised, he must show that the balance of hardships tips  
14 sharply in his favor." Bernard v. Air Line Pilots Ass'n, Int'l, AFL-CIO, 873 F.2d 213, 217  
15 (9th Cir. 1989).

16 **A.**

17 Plaintiffs raise at least serious questions as to the legality of defendants' actions.  
18 Plaintiffs argue that defendants violated NEPA because the removal of wild horses will  
19 significantly affect the human environment, and defendants failed to properly consider the  
20 impact, and failed to issue an Environmental Impact Statement ("EIS") or a statement of  
21 reasons as to why an EIS is unnecessary. Complaint at 9-11. Plaintiffs argue that  
22 defendants violated the Wild Horses Act because they attempted to remove the wild  
23 horses, failed to properly investigate the status of the horses, failed to keep an inventory  
24 of the horses, failed to establish an advisory committee with regard to the horses, and  
25 failed to hold a public hearing prior to the attempt to use motorized vehicles to remove  
26 the horses. Complaint at 6-9. Plaintiffs argue that defendants violated the APA because  
27 they acted arbitrarily and capriciously by failing to conduct a full investigation into the  
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1 effects of the removal of the horses, and failing to comply with NEPA and the Wild  
2 Horses Act. Complaint at 11.

3 In response to all of these allegations, defendants merely argue that the horses at  
4 issues are not "wild horses." The Wild Horses Act defines "wild free-roaming horses and  
5 burros" as "all unbranded and unclaimed horses and burros on public lands of the United  
6 States." 16 U.S.C. § 1332(b). Defendants set forth a summary table showing that  
7 between 1992 and 2004, there were no documented wild horses in the Heber Wild Horse  
8 Territory. Declaration of Debra Bumpus, Exhibit 1. Plaintiffs' motion to strike this  
9 document is denied as moot because the evidentiary value of the table is de  
10 minimis—defendants fail to explain how these figures were derived (doc. 20). Defendants  
11 also argue that the horses at issue are domesticated and "strayed onto the forest after the  
12 Rodeo-Chediski Fire in 2002." Complaint, Exhibit C at 1. However, plaintiffs set forth  
13 six affidavits by residents of the ASNF area, who have seen unbranded "wild horses" in  
14 the ASNF area before and after the Rodeo-Chediski fire. Application for TRO, Exhibits  
15 B-G.

16 Defendants further argue that this evidence is insufficient, because plaintiffs must  
17 also show that the horses are unclaimed. Response at 3. However, defendants fail to  
18 argue that the horses have been claimed, and to the contrary, they state that they "notified  
19 the White Mountain Apache Tribal Chairman and Tribal Attorneys of a Notice of  
20 Impoundment Action and g[ave] tribal members more than 30 days to come gather their  
21 horses [and] [n]o horse owners [came] forward." Complaint, Exhibit C at 1. Moreover,  
22 plaintiffs argue that they are prevented from setting forth more detailed evidence as to  
23 claims because defendants failed to properly inventory the horses pursuant to the  
24 requirements of the Wild Horses Act. Application for TRO at 15; Reply at 7.

25 Defendants' arguments, and defendants' counsel's statements during the  
26 preliminary injunction hearing, evidence defendants' failure to have thoroughly  
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1 considered the status of the horses in the ASNF before soliciting a bid for their removal.<sup>1</sup>  
2 Accordingly, we conclude that plaintiffs have raised serious questions as to the legality of  
3 defendants' actions.

4 **B.**

5 The removal of horses prior to final adjudication would cause plaintiffs  
6 irreparable harm. Defendants state that they are contemplating removing the horses if a  
7 preliminary injunction is not granted, and plaintiffs' argue that once removed, the horses  
8 will become extinct in the ASNF.<sup>2</sup> Application for Temporary Restraining Order at 17.  
9 In contrast, defendants conceded at the preliminary injunction hearing that a preliminary  
10 injunction prohibiting horse removal would not cause the defendants any hardship.  
11 Accordingly, the balance of hardships tips sharply in plaintiffs' favor.

12 **IV.**

13 **IT IS ORDERED GRANTING** plaintiffs' application for a preliminary injunction  
14 and enjoining defendants from awarding a bid for the capture and removal of the  
15 allegedly wild horses from within the Apache-Sitgreaves National Forest, and from  
16 rounding up and removing the allegedly wild horses from within the Apache-Sitgreaves  
17 National Forest. This order is in effect until final judgment is entered by way of motion  
18 for summary judgment or trial (doc. 1).

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22 <sup>1</sup> Defendants argue that pursuant to the Wild Horses Act, they need only census horses  
23 in the Heber Wild Horse Territory, and not the entire ASNF. However, 36 C.F.R. § 222.25  
24 requires the surveillance and protection of wild horses on national forest lands, other public  
lands, and lands of other ownership or jurisdiction.

25 <sup>2</sup> Defendants argue that plaintiffs will not suffer irreparable harm if the preliminary  
26 injunction is denied because defendants have not issued a new bid solicitation, and they will  
27 warn the court and the plaintiffs before issuing a new bid solicitation. We resolved this  
28 matter with regard to the mootness analysis above. Moreover, plaintiffs should not be forced  
to monitor defendants' activity to ensure that they have complied with their promise of pre-  
removal notification.

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**IT IS FURTHER ORDERED DENYING** plaintiffs' motion to strike as moot  
(doc. 20).

DATED this 13<sup>th</sup> day of December, 2005.

*Frederick J. Martone*  
\_\_\_\_\_  
Frederick J. Martone  
United States District Judge

# **EXHIBIT 3**

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2 Anthony W. Merrill, Esq., SBN 022598  
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8 Attorneys for Plaintiffs

9 Paul K. Charlton  
10 United States Attorney  
11 Richard Patrick  
12 Assistant U.S. Attorney  
13 Two Renaissance Square  
14 40 North Central Avenue, Suite 1200  
15 Phoenix, Arizona 85004-4406  
16 (602) 514-7500  
17 Attorneys for Federal Defendants

18 **UNITED STATES DISTRICT COURT**  
19 **DISTRICT OF ARIZONA**

20 IN DEFENSE OF ANIMALS, a non-profit  
21 organization; the ANIMAL WELFARE  
22 INSTITUTE, a non-profit organization; and  
23 the INTERNATIONAL SOCIETY FOR THE  
24 PROTECTION OF MUSTANGS and  
25 BURROS, a non-profit organization;  
26 PATRICIA HAIGHT, an individual;  
27 RICHARD POTTS, an individual,

28 Plaintiffs,

vs.

UNITED STATES GOVERNMENT,  
DEPARTMENT OF AGRICULTURE, MIKE  
JOHANNNS, as acting UNITED STATES  
SECRETARY OF AGRICULTURE;  
UNITED STATES FOREST SERVICE;  
ELAINE J. ZIEROTH, as the acting UNITED  
STATES FOREST SUPERVISOR,

Case No. CV-05-2754- PHX -FJM

**STIPULATION AND JOINT  
MOTION FOR ENTRY OF ORDER  
ADOPTING STIPULATION AND  
DISMISSING CLAIMS**

1  
2  
3 Plaintiffs In Defense of Animals, a non-profit organization, the Animal Welfare  
4 Institute, a non-profit organization, the International Society for the Protection of  
5 Mustangs and Burros, a non-profit organization, Dr. Patricia Haight, and Richard Potts  
6 (collectively "Plaintiffs"), and Defendant United States Government, Department of  
7 Agriculture, Mike Johanns as United States Secretary of Agriculture, United States Forest  
8 Service, Elaine J. Zieroth, as the United States Forest Supervisor (collectively "Forest  
9 Service")<sup>1</sup> hereby STIPULATE and JOINTLY MOVE for entry of an order dismissing  
10 the above-captioned action without prejudice on the terms and conditions set forth in this  
11 Stipulation.

12 Plaintiffs commenced Civil Action 05-2754 PHX-FJM against the Forest Service,  
13 on September 9, 2005, alleging violations of the Wild Free Roaming Horses and Burros  
14 Act of 1971, 16 U.S.C. Section 1331, *et seq.* (the "Act"); the National Environmental  
15 Policy Act, 42 U.S.C. § 4321 *et seq.* ("NEPA"); and the Administrative Procedure Act, 5  
16 U.S.C. § 701, *et seq.* ("APA"), in connection with the issuance of a Solicitation for Bid  
17 for the capture, relocation, and eventual sale of approximately 120 trespass horses, from  
18 an unknown number of horses residing on public lands.

19 IT IS STIPULATED by and between the parties as follows:

20 1. The Parties agree that settlement of the Civil Action on the conditions  
21 stated below is in the public interest and is an appropriate way to resolve the present  
22 dispute between them.

23 2. The undersigned representatives of Plaintiffs and the Forest Service certify  
24 that they are fully authorized by the party or parties whom they represent to enter into this  
25 Stipulation and legally bind the Parties to the terms and conditions contained herein.

26  
27  
28 <sup>1</sup> Mike Johanns is substituted for Ann M. Veneman pursuant to Rule 25(d), Fed. R. Civ. P.

1           3.     The Parties hereby agree that the Heber Wild Horse Territory still exists  
2 and has not been dissolved.

3           4.     The Parties hereby agree that wild horses are by law an integral part and  
4 component of the natural system of the public lands, as expressed by Congress in the  
5 Wild Free-Roaming Horses and Burros Act of 1971 as amended. The Forest Service will  
6 work with the public, including Plaintiffs, in the development of a written Heber Wild  
7 Horse Territory Management Strategy in accordance with the provisions of the Act.

8           5.     The Forest Service agrees to refrain from any gathering or removing of  
9 horses within the Heber Wild Horse Territory, as well as, on the Black Mesa and  
10 Lakeside Ranger Districts (which are considered the Sitgreaves National Forest) until the  
11 Forest Service completes, with public involvement, an analysis and appropriate  
12 environmental document pursuant to NEPA and develops a written Heber Wild Horse  
13 Territory Management Strategy. The Forest Service will involve the public, including the  
14 Plaintiffs, in scoping for this analysis. The Forest Service will provide Plaintiffs with  
15 specific notice of the document and consider Plaintiffs' comments on the same, however,  
16 Plaintiffs' comments are not entitled to any different weight or consideration than any  
17 other member of the public.

18           6.     The Forest Service will continue to coordinate with the White Mountain  
19 Apache Tribe for repair and maintenance of the boundary fence.

20           7.     Plaintiffs reserve the right to object to any provision, term, or condition  
21 contained in the Management Strategy and/or the results of any study, assessment, or  
22 evaluation used to support the Management Strategy. Nothing in this Stipulation shall  
23 bar Plaintiffs from filing a new civil action in the future should there be a dispute  
24 involving this Stipulation, the NEPA process or final NEPA document, and/or the  
25 Management Strategy.

26           8.     Upon approval of this Stipulation and granting of this Joint Motion by the  
27 Court, all counts of Plaintiffs' Complaint in Civil Action 05-2754 PHX-FJM shall be  
28 dismissed without prejudice and parties will agree to vacate the injunction.

1           9.     Upon dismissal of this civil action, the Forest Service will pay the Plaintiffs  
2 a total of \$3,000.00 in full and complete satisfaction of any and all claims for attorneys'  
3 fees and costs of litigation by Plaintiffs for pursuing Civil Action 05-2754 PHX-FJM.

4           10.    Plaintiffs agree that receipt of this payment from the Forest Service shall  
5 operate as a release of any and all claims for attorneys' fees and costs that Plaintiffs may  
6 seek to pursue in Civil Action 05-2754-PHX-FJM.

7           11.    The Parties agree and understand that the Forest Service's obligations under  
8 this Stipulated Settlement Agreement, with exception of those listed in Paragraph 10, are  
9 contingent upon the availability of appropriate funds, and that nothing in this Agreement  
10 shall be construed as a commitment or requirement that the Forest Service obligate or pay  
11 funds in contravention of the Anti-Deficiency Act, 31 U.S.C. § 1341, or other applicable  
12 law.

13          12.    Nothing in this Stipulation and Joint Motion constitutes an admission by  
14 any Party to any fact, claim, or defense at issue in this lawsuit.

15           DATED: this 13th day of March, 2007.

16                           s/ Paul K. Charlton  
17                           PAUL K. CHARLTON  
                              United States Attorney

18                           s/ Richard Patrick  
19                           RICHARD PATRICK  
20                           Assistant U.S. Attorney  
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23                           Attorneys for Federal Defendants

24                           s/ Anthony W. Merrill  
25                           ANTHONY W. MERRILL, ESQ.  
26                           BRYAN CAVE LLP  
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27                           Phoenix, Arizona 85004-4406  
                              (602) 364-7000

28                           Attorney for Plaintiffs

# EXHIBIT 4

**Patrick, Sheri**

---

**From:** azddb\_responses@azd.uscourts.gov

**Sent:** Wednesday, March 21, 2007 3:55 PM

**To:** azddb\_nefs@azd.uscourts.gov

**Subject:** Activity in Case 3:05-cv-02754-FJM In Defense of Animals, et al. vs. US Department of Agriculture, et al. Order Dismissing Case

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**U.S. District Court**

**DISTRICT OF ARIZONA**

**Notice of Electronic Filing**

The following transaction was entered on 3/21/2007 at 3:54 PM MST and filed on 3/21/2007

**Case Name:** In Defense of Animals, et al. vs. US Department of Agriculture, et al.

**Case Number:** 3:05-cv-2754

**Filer:**

**WARNING: CASE CLOSED on 03/21/2007**

**Document Number:** 55

**Docket Text:**

ORDER DISMISSING CASE granting stipulation and joint motion [54]; ORDERED ADJUDGED AND DECREED adopting the terms set forth in the parties' stipulation and joint motion for entry of order; dismissing the above-captioned litigation without prejudice and vacating the preliminary injunction entered on 12/13/05. Signed by Judge Frederick J Martone on 3/21/2007. (LAD, )

**3:05-cv-2754 Notice has been electronically mailed to:**

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**3:05-cv-2754 Notice will be sent by other means to those listed below who are affected by this filing:**

The following document(s) are associated with this transaction: 1

**Document description:**Main Document

3/21/2007

**Original filename:**n/a

**Electronic document Stamp:**

[STAMP dcecfStamp\_ID=1096393563 [Date=3/21/2007] [FileNumber=1651974-0  
] [3da7653ebba1d94394c72abb66990c8001806a352ae27d3a055be17fc1f4ada4300  
786634ea0bb65228a77f41f8decbeb199ff10e20dd486c51b5e80f6d1b6b6]]

# EXHIBIT 5

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PORTLAND  
RENO  
SALT LAKE CITY  
SEATTLE  
TUCSON  
WASHINGTON DC

April 22, 2021

Anthony Madrid  
Acting Forest Supervisor  
United States Forest Service  
HEBER WILD HORSE TERRITORY MANAGEMENT PLAN COMMENTS  
P.O. Box 640,  
Springerville, AZ 85938

**Re: Attention: Heber Wild Horse Territory Management Plan  
Comments**

Dear Mr. Madrid:

### Introduction

The International Society for the Protection of Mustangs and Burros (“ISPMB”), submits the following comments to the Draft Environmental Assessment (the “Draft EA”) and the Draft Territory Management Plan (the “Management Plan”) for the Heber Wild Horse Territory (the “Territory”). ISPMB is a non-profit organization formed to promote animal welfare and protection, including the protection of wild horses. ISPMB is the oldest wild horse and burro organization in the United States. Along with its first president, Wild Horse Annie, ISPMB was instrumental in securing and implementing the Wild Free-Roaming Horses and Burros Act of 1971, 16 U.S.C. §§ 1331, *et seq.* (the “Wild Horse and Burro Act,” or the “Act”). ISPMB was headquartered in Arizona from approximately 1993 until 2000 when it relocated its headquarters to Rapid City, South Dakota. ISPMB still has members who live in Arizona, including in or around Heber, and other members who visit the area frequently.

ISPMB served as a party to the lawsuit filed against the United States Forest Service (“USFS”), among others, in the District Court for the District of Arizona in 2005 (the “2005 Litigation”). ISPMB sought a preliminary injunction and alleged that the USFS had not conducted a census, inventory, or any other type of survey to determine how many of these approximate 300 to 400 horses were “wild free-roaming” horses and thus entitled to protection under the Act. ISPMB also alleged that the USFS issued a solicitation entitled “Trespass Horse Capture and Transport”, by which the horses were to be captured and transported out of the Apache-Sitgreaves National Forests. *See* Exhibit 1. The solicitation provided for the round-up and capture of all horses in the Apache-Sitgreaves Forest including those in the Heber Wild Horse Territory and all mares, even those with foals.

The District Court substantiated ISPMB’s assertions by holding:

Plaintiffs raise at least serious questions as to the legality of the defendants’ actions. Plaintiffs argue that defendants violated NEPA because the removal of wild horses will significantly affect the human environment, and defendants failed to properly consider the impact, and failed to issue an Environmental Impact Statement (“EIS”) or a statement of reasons as to why an EIS is unnecessary. Plaintiffs argue that defendants violated the Wild Horses Act because they attempted to remove the wild horses, failed to properly investigate the status of horses, failed to keep an inventory of the horses, failed to establish an advisory committee with regard to the horses, and failed to hold a public hearing prior to the attempt to use motorized vehicles to remove the horses. Plaintiffs argue that defendants violated the APA because they acted arbitrarily and capriciously by failing to conduct a full investigation into the effects of the removal of the horses and failing to comply with NEPA and the Wild Horses Act.

Exhibit 2. ISPMB successfully obtained the injunction. *See* Order Granting Injunction, dated December 13, 2005, attached hereto as Exhibit 2.

In March 2007, the parties entered into a stipulated settlement agreement (the “Stipulated Settlement Agreement”) and the court issued an order, dated March 21, 2007 (the “Federal Court Order”), which adopted the terms set forth in the Stipulated Settlement Agreement. *See* Stipulated Settlement Agreement, attached hereto as Exhibit 3 and Federal Court Order, attached hereto as Exhibit 4. Pursuant to the Federal Court Order:

- The USFS agreed that the Heber Wild Horse Territory still exists and has not been dissolved.
- The USFS agreed that the wild horses are by law an integral part and component of the natural system of the public lands, as expressed by Congress in the Act.
- The USFS will work with the public, including ISPMB, in the development of a written Heber Wild Horse Territory Management Strategy in accordance with the provisions of the Act.
- The USFS will refrain from any gathering or removing of horses within the Heber Wild Horse Territory, as well as, on the Black Mesa and Lakeside Ranger Districts, considered the Sitgreaves National Forest, until the USFS completes, with public involvement, an analysis and appropriate environmental document pursuant to NEPA and develops a written Heber Wild Horse Territory Management Strategy.
- The USFS will involve the public, including ISPMB, in scoping for the analysis.
- The USFS agreed to provide ISPMB with specific notice of the document and consider its comments on the same.
- The USFS agreed to continue to coordinate with the White Mountain Apache Tribe for repair and maintenance of the boundary fence.

The proposed actions of the USFS, show a practical disregard for the Territory and its wild horses, indicating that the USFS must have disavowed the Federal Court Order it entered into in the 2005 Litigation. This letter and its attachments are a response to the Draft EA for the Management Plan for the Heber Wild Horse Territory (“Territory”). ISPMB submits this letter and

its attachments (exhibits) to be included as a part of the administrative record, and to be considered in finalizing the Draft EA and Management Plan.<sup>1</sup> This letter is broken into six sections.

The first section addresses the shortcomings of the Draft EA under the Administrative Procedure Act (“APA”). More specifically, it raises issues with the Draft EA’s repeated and continued reliance on known false assumptions, its failure to provide any meaningful response to the substantive and voluminous public comment received on March 13, 2020 regarding the use of PZP, effects of restricting the horses to the Territory on their migration, and the unreliability of the Forest Service’s studies, and the biases of the Working Groups’ recommendations, the majority of which the Forest Service appears to have adopted, (among other issues), and its deviation from set agency standards without adequate justification. The second section addresses the need for the Forest Service to fully recognize the Heber horses as “wild free-roaming horses” entitled to all the benefits and protections of the Wild Horse and Burro Act and corresponding sections of the Code of Federal Register (“CFR”). The third section addresses why the Draft EA utterly fails to support a managed reduction, or any reduction, in the wild horse population located on or near the Territory. The fourth section explains why the current Territory alone is insufficient to sustain the wild horse population, as the Forest Service should manage the wild horses where they are currently located within the Heber Wild Horse Territory, as well as on or near the Black Mesa and Lakeside Ranger Districts, as indicated in the March 14, 2007 Stipulation entered into by the Forest Service. See Exhibit 3. The fifth section outlines additional concerns with the Draft EA and

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<sup>1</sup> ISPMB also submitted comments on March 13, 2020, in response to the Scoping Document and thousands of pages of attachments, for inclusion in the record. The USFS should review though comments in addition to those submitted with this letter, as it appears they have been thus far disregarded.

management process more generally. The final section addresses the need for a full and complete environmental impact statement.

**I. The Forest Service's Draft Environmental Assessment Fails to Meet the Requirements of the Administrative Procedure Act**

**a. The Draft EA assumes that runs against the evidence and legislative intent, and is therefore arbitrary and capricious**

The Forest Service's faulty analysis of appropriate management levels is based entirely on the underlying assumption that the wild horses must be restrained exclusively to the Heber Wild Horse Territory and cannot access resources from outside the Territory. This assumption runs against the evidence and legislative intent and is therefore arbitrary and capricious under the APA. Indeed, The U.S. Forest Service has an obligation to manage and protect wild horses residing on any public lands, such as the Apache-Sitgreaves National Forests and not only within the Heber Wild Horse Territory. *See* 36 C.F.R Section 222.25 of the regulations provides protection for the wild free-roaming horses even if they were to move or migrate off of protected territories onto lands of other ownership or jurisdiction.

Judicial review of administrative decisions is made under the APA, which allows a court to set aside agency action that is arbitrary and capricious. 5 U.S.C. § 706(2)(A). Under the APA, an agency action is arbitrary and capricious if the agency relied on factors which Congress did not intend it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise. *Motor Vehicle Mfrs. Assoc. v State Farm*, 463 U.S. 29, 43 (1983).

Under the Wild Horse and Burro Act, the Forest Service has a duty to protect wild horses so as to preserve their “free-roaming behavior,” 16 U.S.C. § 1331, and “[m]anagement activities affecting [wild horses] shall be undertaken with the goal of maintaining free-roaming behavior.” 43 C.F.R. § 4700.0-6(c). The legislative history of the Act indicates that Congress felt strongly about allowing the wild horses to roam freely. The preamble and statement of policy for the Wild Horse and Burro Act states:

Congress finds and declares that wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; that they contribute to the diversity of life forms within the Nation and enrich the lives of the American people; and that these horses and burros are fast disappearing from the American scene. It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death, and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands.

Indeed, the Forest Service has already stipulated in the Federal Court Order that “wild horses are by law an integral part and component of the natural system of the public lands” and located within the Territory and the surrounding Black Mesa and Lakeside Ranger Districts.

Congress forbid the Bureau of Land Management from fencing the wild horses into an allotted territory. *See* 117 Cong. Rec. 22,669–672, 34,771–775 (1971). Similarly, the Senate Report states: “The Committee wishes to emphasize that the management of the wild free-roaming horses and burros be kept to a minimum . . . to deter the possibility of ‘zoolike’ developments.” S.Rep. No. 92-242, 92nd Cong., 1st Sess., *reprinted in* 1971 U.S. Code Cong. & Ad. News 2149, 2151-52. Over the last 50 years, this tenet has been bolstered by our courts. *See, e.g., Fallini v. Hodel*, 783 F.2d 1343, 1346 (9th Cir. 1986) (Landowner could not compel the Bureau of Land

Management to prevent wild horses from straying onto private lands because Congress intended the horses to be free-roaming).

In the Draft EA, the Forest Service erroneously concludes that the Territory may only sustain 104 horses. In making this determination, the Forest Service calculated the amount of forage that grows in the Heber Wild Horse Territory, allocated half of that forage to the horses, then divided that by the amount of forage the average horse consumes per day. This entire faulty analysis is based on the known false assumption that the Heber wild horses cannot and do not leave the Territory and cannot access any resources from outside the Territory. This assumption runs against the language of the Act, which charges the Forest Service with the duty to preserve the “free-roaming behavior” of the wild horses. It also runs against the legislative history of the Act, which indicates that Congress was strongly opposed to restricting wild horses to their allotted territory. This assumption runs against the governing CFRs and case law, which maintains that horses are free to roam neighboring territories, whether they are publicly or privately owned. It also runs counter to the evidence and facts known to the Forest Service since at least its stipulated agreement in March 2007 to protect wild horses on the Black Mesa and Lakeside Ranger Districts, if not for decades. This incomplete and biased analysis seems directed to support a preconceived conclusion to reduce the wild horse population, rather than an unbiased, scientific study meant to properly address the resourced on the forests. The Forest Service must “manage wild free roaming horses and burros in a manner that is designated to achieve and maintain a thriving natural ecological balance on the public lands.” 16 U.S.C. Section 1333(a). This cannot be accomplished by ignoring the plain truth and obvious facts.

Attached are two maps that were prepared by Robert Hutchinson, who has lived in Overgaard, Arizona for over 30 years. These maps outline the territory in which the Heber Wild Horses may roam. *See* Exhibit 5. In fact, the population density of the Heber Wild Horses is likely far higher outside of the Heber Wild Horse Territory than within it. That remains unknown since the Forest Service refuses to actually manage the wild horses, has not conducted a census, inventory, or any other type of survey to determine how many wild horses are present on the Forest and where they are located, and continues to deny its obligation under the Wild Horse and Burro Act in favor of allocating resources to non-federally protected uses. Thus, as the Forest Service's entire analysis is based on a false assumption that runs against the evidence and legislative intent, it is arbitrary and capricious.

**b. The Draft EA fails to provide meaningful response to public comment and is therefore arbitrary and capricious**

The Forest Service fails to provide meaningful responses to public comments on the Proposed Action Document, which violates the arbitrary and capricious standard of review under the APA and the National Environmental Policy Act ("NEPA"). The requirement that agency action cannot be arbitrary and capricious includes a requirement that the agency meaningfully respond to all relevant and significant public comments. *See Forelaws on Board v. Johnson*, 743 F.2d 677, 685 (9th Cir. 1984) (Agency's failure to consider the wealth of public comments on environmental issues violated "arbitrary and capricious" standard of review required by the APA and NEPA).

NEPA imposes procedural requirements to ensure that government agencies take a "hard look" at how their management decisions will affect the environment. *See Oregon Nat. Desert*

*Assn. v. United States Bureau of Land Mgmt.*, 625 F.3d 1092, 1099-1100 (9th Cir. 2010). As part of its procedural duties, the agency is required to “articulate, publicly and in detail, the reasons for and likely effects of those management decisions, and to allow public comment on that articulation.” *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1073 (9th Cir. 2002). Once an agency solicits public comment, it must consider and respond to all substantive comments by one or more of the following means:

- Modify alternatives including the proposed action
- Develop and evaluate alternatives not previously given serious consideration by the agency
- Supplement, improve, or modify its analyses
- Make factual corrections
- Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency’s position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

40 C.F.R. § 1503.4(a) (2012). When an agency submits proposed changes for public comment and then offers no meaningful response to those comments, the agency renders the NEPA procedural requirements meaningless and the environmental assessment an exercise in form over substance. *See id.*; *W. Watersheds Project v. Kraavenbrink*, 632 F.3d 472, 492-93 (9th Cir. 2011) (NEPA requires the agency to assess, consider, and provide meaningful response to relevant comments); *Warm Springs Dam Task Force v. Gribble*, 565 F.2d 549, 554 (9th Cir. 1977) (“The relevant questions under the NEPA are whether such comments are made available to decision-makers, whether the differences of opinion are readily apparent, and whether they receive good faith attention from decision-makers.”).

Here, ISPMB submitted a 38-page letter outlining ISPMB's substantive comments to the Proposed Action Document. These comments included the following

- Problems with the composition of the working group,
- Issues with the ethnographic study,
- The agency's continued use of unreliable data,
- The potential for disruption to the horses' migration patterns,
- The impacts of PZP on the horse family structure and on individual behaviors, and
- The availability of winter forage and warm climates for the horses left in the territory.

In support of its comments, ISPMB submitted 2,275 pages of evidence including, but not limited to, relevant scientific studies, expert reports, peer-reviewed publications, news articles, case law, photographs, deposition testimony, and affidavits.

In response, the Forest Service released its "Summary of Scoping Disposition Process" spreadsheet (the "Spreadsheet"). The Spreadsheet makes broad assertions on how the Forest Service incorporated public comments in creating its Draft EA and Management Plan. For example, in response to ISPMB's letter and 2,275 pages of attachments, the Spreadsheet indicates only that the Forest Service considered "Attachments from Mr. Gillman." It would be impossible to regard this as meaningful response to ISPMB's comments. The Forest Service failed to offer any explanation for its decision not to implement any of ISPMB's comments. The Forest Service failed to offer sources or authorities to negate ISPMB's comments, both of which are required by

40 C.F.R. § 1503.4(a). Thus, the Draft EA is arbitrary and capricious in violation of the APA and NEPA.

**c. The Draft EA deviates from set standards without adequate justification, and is therefore arbitrary and capricious**

The Forest Service deviates from the Bureau of Land Management Handbook without any rational explanation, which renders its findings arbitrary and capricious. The requirement that agency action cannot be arbitrary and capricious includes a requirement that the agency act consistently with agency practice, guidelines, and policies. An “unexplained inconsistency in agency policy is a reason for holding an interpretation to be an arbitrary and capricious change from agency practice.” *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2126 (2016) (quoting *National Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005)). Agency action that is inconsistent with its handbook, without a valid explanation for the deviation, is also “an indication of arbitrary and capricious behavior.” *League of Wilderness Def’rs v. U.S. Forest Service*, Civ. No. 00-464-KI (D. Or. 2005).

When an agency deviates from its own guidelines, the courts will consider the agency’s explanation for the deviation in determining whether the action was in fact arbitrary and capricious. *See Lake Mohave Boat Owners Ass’n v. National Park Service*, 138 F.3d 759, 763 (9th Cir. 1998). Deviations from set standards provide a basis for rejecting an agency’s decision where “the agency provides no explanation at all for a change in policy, or when its explanation is so unclear or contradictory that we are left in doubt as to the reason for the change in direction.” *Morales-Izquierdo v. Gonzales*, 486 F.3d 484, 493 (9th Cir. 2007); *see also, Lands Council v. Martin*, 529 F.3d 484, 493 (9th Cir. 2008) (applying *Morales-Izquierdo* to hold that the Forest Service provided

a “rational explanation” for its change in policy that did not leave the court “in doubt as to the reason for the change in direction.”).

In the Proposed Appropriate Management Level Determination, the Forest Service states that it follows “the multi-tiered analysis process described in the Bureau of Land Management Wild Horses and Burros Management Handbook H-4700-1” (the “BLM Handbook”). The Forest Service goes on to strictly apply the BLM Handbook for most of its analysis. However, the Forest Service chooses to deviate from the BLM Handbook in two areas – arguably the two most pivotal sections of the analysis – where the handbook would not produce the results the Forest Service wants.

**i. Deviation #1: appropriate management level determination**

The first deviation appears in the tier 2 analysis. The BLM Handbook’s tier 2 analysis is designed to calculate the appropriate management level (the number of horses that can live in the area without causing deterioration to the environment). The BLM Handbook states that, if land health standards are being met for the area (as they are here), “the appropriate management level is set by considering the number of horses using the area during the evaluation year.” *See* H-4700-1, Chapter 4 (4.2.1). However, the Forest Service deviates from the BLM Handbook, and instead decides to calculate the appropriate management levels based on “average available forage production.” It concludes that the appropriate management level is 104 horses based on available forage in the Territory, not actual range conditions.

The Forest Service provides no explanation for its deviation from the handbook. Instead, it says without any scientific support of factual basis that its deviation is actually *better* for the

horses. It claims that the appropriate management level under the BLM Handbook would actually be less, 51 horses, because that is the number of wild horses in the Heber Wild Horse Territory. However, as stated in ISPMB's response to the scoping document, there is no accurate count on the number of wild horses in the Territory. The Forest Service cannot simply rely on its inaccurate and unsubstantiated count of 51 horses to justify deviating from the BLM Handbook. Because the Forest Service deviated from its own guidelines and offered no explanation outside of its false assertion that it is doing the wild horses a favor, its determination of appropriate management levels is arbitrary and capricious.

**ii. Deviation #2: genetic diversity requirements**

The second deviation appears in the tier 3 analysis. The BLM Handbook's tier 3 analysis dictates the appropriate herd sizes to maintain genetically diverse horse populations. The BLM Handbook says that there must be a minimum herd size of 150 to 200 horses to maintain genetic diversity and herd fitness, and to avoid inbreeding depression in wild horse populations. *See* H-4700-1, Chapter 4 (4.4.6.3). However, the Forest Service decided to disregard the BLM Handbook and keep the appropriate management level at 104 horses.

The Forest Service provides no explanation for its deviation from the BLM Handbook. Instead, the Forest Service makes vague promises to ensure genetic diversity by implementing some type of management action sometime in the future, without offering any specifics. Because the Forest Service deviated from existing federal guidelines on maintaining genetic diversity and offered no explanation outside of its plan to possibly handle this in the future, its determination of appropriate management levels is arbitrary and capricious.

**II. The Forest Service Must Recognize the Heber Herd’s Status as “Wild Horses.”**

**a. The significance of the horses’ status as “Wild Free-Roaming Horses.”**

The Wild Horse and Burro Act defines “wild free-roaming horses and burros” (referred to herein as “wild horses”) as “all unbranded and unclaimed horses and burros on public lands of the United States.” 16 U.S.C. § 1332. 36 C.F.R. 222.63 provides special protection for horses that did not fall initially within the protection of the Wild Horse and Burro Act if they are subsequently introduced into a protected territory “by accident, negligence or willful disregard of private ownership” and which become intermingled with wild free-roaming horses. “Wild free-roaming horse” is a legal status. *See e.g.* 16 U.S.C. § 1333(d) (section titled “Loss of status as a wild free-roaming horses and burros”). This status is important for at least the following reasons:

- The status gives the federal government jurisdiction over the horses. 16 U.S.C. § 1333.
- Management principles under the Wild Horse Act must be applied. *Id.*
- The horses cannot be removed or sold without proper authorization.
- It is a criminal act to maliciously kill or harass the horses. 16 U.S.C. § 1338
- It is a criminal act to process the hoses into commercial products (such as selling them for meat processing). *Id.*

The Draft EA states, “following a large wildland fire in 2002, horses began to be observed.” However, acknowledged historians for the Territory trace the history of the wild horses directly back to the journeys of the Jesuit Priest, Father Eusebio Kino, in his explorations of the area for new mission sites during the late 17th and early 18th centuries. *See* Jinx Pyle, Narrative of History of Wild Horses on the Mogollon Rim (Aug. 2005), attached hereto as Exhibit 6. Books on the area, including the famous account of the Hashknife Ranch by Stella Hughes, verify the continued

existence of the horses on the Rim and of their great value to the ranchers who often caught a few and made them prized ranch horses. *See* Stella Hughes, Hashknife Cowboy; Recollections of Mack Hughes (1996), attached hereto as Exhibit 7; *see also* Joan Baeza, Horses of Arizona, 2 Arizona Highways 65 (Feb. 1988), attached hereto as Exhibit 8; Bob Thomas, The Astonishing Double Life of Frontier Rancher Cecil Creswell, 11 Arizona Highways 10 (Oct. 1995), attached hereto as Exhibit 9; The Holbrook Argus, Vol. XII No. 26 (Oct. 1, 1907), attached hereto as Exhibit 10; Will C. Barnes, University of Arizona Bulletin, Vol., VI, No. 1, General Bulletin No. 2 Arizona Place Names (Jan. 1, 1935) (excerpt) (“Bronco Mountain”), (“Dry Lake”), (“Wild Horse Lake”), attached hereto as Exhibit 11. Spanish horse experts, who have visited the area, verify the remarkable resemblance of many of the herds to the Andalusian, the Spanish Barb, and the Spanish Colonial horse, ridden by Spanish soldiers who visited the area with Jesuit priests, explorers and settlers. *See* Jinx Pyle, Narrative of History of Wild Horses on the Mogollon Rim (Aug. 2005), Exhibit 6.

The USFS has historically concocted reasons to diminish the existence and importance of the wild horses and the Territory. For one, it has made an (erroneous) assumption that the wild horses present in the Territory before the Rodeo-Chediski Fire originated from the Fort Apache Indian Reservation or were abandoned. This assumption is contradicted by local accounts regarding the wild horses. Local families remember wild horses in the area from the 1930s to the present. *See* Letter to Zieroth, dated August 25, 2005, attached hereto as Exhibit 12; *see also* Affidavits of various Heber area residents (conclusively demonstrating the historic presence of the unbranded, unclaimed (wild) horses on public lands associated with the Apache-Sitgreaves Forests for well over 30 years prior to the Rodeo-Chediski fire), attached hereto as Exhibit 13; *see also*

Photographs of horses in the area taken in the fall of 2006 (conclusively showing the lack of any branding), attached hereto as Exhibit 14.

Additionally, wild horse behavior expert, Mary Ann Simonds, has opined that the horses have inhabited the Mogollon Rim where the Territory is located since at least the early 1900s and most likely since 1699. *See* Mary Ann Simonds, Determination of Whether Horses Inhabiting the USFS Heber Wild Horse Territory are “Wild Free-Roaming Horses”, dated March 5, 2007, at 8, attached hereto as Exhibit 15. Simonds concluded, among other things, that:

- At least two or more distinct bands of wild horses exist in the Territory.
- One group, with a dominant buckskin stallion, numbered from 15-30 horses. Another group, with a dominant black/bay stallion, numbered approximately 15-30 horses.
- Field observations from October 2006 support these findings, as fresh manure and hoof prints were observed throughout the area and especially near water sources.

*Id.* at 2. Simonds recommended that investigations into the behavioral ecology of the wild horses be conducted to develop baseline data and determine the best management practices in order to preserve the wild horses that represent the “living symbols of the historic and pioneer spirit of the West.” *Id.* at 3.

Notwithstanding, the USFS continues to rely on unproven claims regarding the alleged diminishing of wild horses in the Territory. Significantly, when put to the test under the fire of litigation, the USFS was utterly unable to support these rumors. *See* Order Granting Injunction, Exhibit 2. The Plan contains only cursory information regarding the population of wild horses in the Territory. Nor is there any indication therein regarding how the USFS determined the population of wild horses at any time since the United States Congress established the Territory.

There is no scientific study or facts to indicate that only two mares remained in the 1990s or that the stud for the herd was sterile. The USFS has done absolutely nothing to prove these rumors. In 1971, there were at least seven horses occupying the Territory, but likely many more. *See* Forest Service Memo to Regional Forester, attached hereto as Exhibit 16. It is not known how the USFS estimated the population of the horses. *See* Deposition of Bumpus, taken Oct. 13, 2006 (“Bumpus Dep.”) at 36:23-37:25, attached hereto as Exhibit 17; Hughes Deposition, taken Oct. 5, 2006 (“Hughes Dep.”) at 66:4-22, attached hereto as Exhibit 18. This appears to be nothing more than a guess based upon a single fly-by. In 1974, the USFS speculated that “the stud [for the herd] may be sterile as no colts have been seen for several years, and there is no indication of unauthorized removal.” *See* Forest Service Memo to Regional Forester, attached hereto as Exhibit 16. The USFS never took any action to test this unverified assumption. Based on incomplete and marginal surveys, from 1974 to 1978, the population of the herd appeared to decrease from seven to three. In 1980, however, the population increased to eight head which suggests, contrary to the USFS’s suspicion in 1974, that the stud was not sterile. *See* Documented Wild Horse Population Numbers, Heber Wild Horse Territory, Apache-Sitgreaves National Forests, attached hereto as Exhibit 19. The wild horse population reportedly dropped to five head in 1982 but increased to seven head in 1984 before holding steady at five head between 1986 and 1991. *Id.* In 1992 the population was listed as zero. *Id.* However, the USFS indicated as late as 1993, that there were two mares left in the herd. *See* Territory Withdrawal Recommendation, attached hereto as Exhibit 20.

The USFS has consistently disregarded the Act’s requirement to maintain a current inventory of wild horses. *See* 16 U.S.C. § 1333(b). Indeed, a census was never conducted to

accurately estimate the wild horse population in the Territory - let alone the A-S Forest. *See* Wild and Free Roaming Horses and Burros on Public Lands Report (estimating the wild horse population in the Territory to be 5 head, but indicating the estimate was not based on a census), attached hereto as Exhibit 21; *See* also Klein Deposition, taken Oct. 13 ,2006 (“Klein Dep.”) at 19:14-21:17 (indicating that a census was not conducted to determine whether there were only two horses left), attached hereto as Exhibit 22; Zieroth Deposition, taken Sept. 25,2006 (“Zieroth Dep.”) at 28:23-30:21 (indicating that she was unaware of any inventories after 1993), attached hereto as Exhibit 23. In addition, it is not clear whether foals or losses from deaths were always included in the estimates of the number of horses. *See* Forest Service letter to Denver Public Library (noting the population estimate as of December 1973 did not include the 1974 foal crop or death losses), attached hereto as Exhibit 24. USFS employees do not know how the population numbers listed in the historical documents were obtained. Hughes Dep. at 65:13-70:22, Exhibit 18; Bumpus Dep. at 37:10-39:11, 65:22-66:20, Exhibit 17.

Little is known about the “inventory” in 1993 which indicated that there were two horses remaining in the Territory. Klein Dep. at 19:14-21:17, Exhibit 22. The USFS continued to report the wild horse population as zero in 2004 even though it never conducted a recent census. *See* Zieroth Dep. at 28:23-30:21, 49:5-50:10, Exhibit 23; Klein Dep. at 35:2-23, Exhibit 22; Hughes Dep. at 26:4-22, Exhibit 18; Bumpus Dep. at 40:2-42:2, 65:22-66:20, Exhibit 17; *See also* Order Granting Injunction at p.4 (finding the evidentiary value of the of the USFS’s documentation of zero horses to have de minimus value, because USFS failed to explain how the figures were derived), Exhibit 2.

Notably, USFS Black Mesa Ranger District Ranger Kathleen Klein testified that she only came to the realization that the Territory had not been disbanded after the 2005 Litigation was filed. She provided that it was at that time that she actually reviewed the provisions of the Act. Klein Dep. at 46:3-23, Exhibit 22. She also testified that the USFS then recognized that Forest Supervisor Bedell either had not withdrawn the territory or he was not able to do so. *See* Klein Dep. at 51:1-52:24, Exhibit 22, This documentation (along with additional evidence) was provided to the USFS in the 2005 Litigation. Accordingly, the USFS has copies of these documents and knowledge of this information.

Ms. Klein acknowledged that it was USFS practice to discount the existence of the Territory and of the wild horses. Klein Dep. at 52, Exhibit 22. Despite prior court orders and legally binding agreements to the contrary, the Plan continues this alarming practice in violation of the Act. This must be corrected.

The exact source of the current population of horses utilizing the Sitgreaves National Forest is unclear, and they may or may not have any relationship to the original population of seven horses. While the source of the current population of horses is uncertain, the Forest Service has nonetheless decided to manage horses inhabiting the territory or nearby areas as wild under the Act, unless particular horses are branded, claimed, or shown to be introduced onto the National Forest System by accident, negligence, or willful disregard of private ownership”. It is essential that the Forest Service instead designates these horses as “wild free-roaming horses” or else their status is subject to future collateral attack.

**i. Assessing criminal penalties for the ongoing horse killings.**

Someone is shooting the Heber wild horses. Since October 2018, more than 30 horses have been shot and killed in the Apache-Sitgreaves Forest (“A-S Forest”). This is an ongoing issue. Most recently, a foal was killed in early January 2020. *See* Exhibit 25. No one has been apprehended.

Robert Hutchison has reported several horse killings to John Lopez, the Forest Service Investigator. Mr. Hutchison has documented the location of the horse killings on the attached map.

Stacy Sanchez witnessed people feeding wild horses; the following week, he found the horses dead with blood coming from their mouths, noses, and anuses. Mr. Sanchez reported this incident to John Lopez, the Forest Service Investigator, who mentioned that the cause of death could be anthrax. No investigation to identify the individuals who fed the wild horses occurred. Kathie Reidhead is an amateur photographer who witnessed a man shooting at the wild horses in the Heber Territory on May 2, 2019. Her experience in attempting to report the incident is documented in the attached article. Exhibit 26 .

An individual who kills a wild horse or burro “shall be subject to a fine of not more than \$2,000, or imprisonment for not more than one year, or both. Any person so charged with such violation by the Secretary may be tried and sentenced by any United States commissioner or magistrate judge . . . .” 16 U.S.C.A § 1338. Under the Criminal Fine Improvements Act of 1987, the maximum amount of a fine for a misdemeanor offense was increased to \$100,000 for an individual. 18 U.S.C. §§ 3571(b)(5), (c)(5).

Under criminal law, the prosecutor must prove every element of a crime to support a conviction. The status of these horses as “wild free-roaming horses” is one of the elements that the prosecutor will need to prove once the shooter or shooters are caught. The Forest Service’s refusal to acknowledge the horses as “wild free-roaming horses” turns a clear path to a verdict into potential quicksand for any prosecutor. If the Forest Service is serious about prosecuting these individuals who have been shooting horses in the abdomens and leaving them to slowly suffer and die, the agency needs to give prosecutors the right tools by clearly acknowledging that the horses are “wild free-roaming horses” and not just to be managed as such. Without this clear legal designation, the hammer law enforcement holds could turn out to only be an inflatable carnival toy.

**ii. Asserting authority and jurisdiction**

The states have authority over wildlife within their borders; however, the Wild Horse and Burro Act establishes federal jurisdiction over horses located on Federal lands at the time of the act. *See Kleppe v. New Mexico*, 426 U.S. 529 (1976).

Accordingly, if the Forest Service is going to claim jurisdiction over the wild horses for purposes of their management, the agency must also acknowledge their status as wild free-roaming horses. To only “treat” the horses as wild is to only pretend the agency has jurisdiction over them.

Just as the designation is necessary for the Forest Service to establish jurisdiction over the wild horses, the Act imposes certain obligations and directives upon the agency to manage the horses pursuant to certain management directives set forth by congress. This includes that “All management activities shall be at the minimal feasible level and shall be carried out in consultation

with the wildlife agency of the State wherein such lands are located in order to protect the natural ecological balance of all wildlife species which inhabit such lands, particularly endangered wildlife species.”

**b. The horses are properly designated as “Wild Horses”**

**i. Definition**

The Wild Horse and Burro Act defines a wild and free-roaming horse as “all unbranded and unclaimed horses and burros on public lands of the United States.” *See also* 43 CFR § 4700.0-5 (“all unbranded and unclaimed horses and burros that use public lands as all or part of their habitat.”). The horses roaming the A-S Forest are entitled to a presumption that they are wild and free-roaming.

**ii. Existing data**

Wild horses have roamed the forest near Heber since at least the beginning of the 20<sup>th</sup> century. The Library of Congress has newspaper articles, from the late 1800s and early 1900s that reference the existence of wild horses throughout the Heber area. Copies of these articles were included in ISPMB’s response to the scoping document. Other books and articles written in the past century documented the Wild Horses’ existence from that time to the present day. Acknowledged historians for the Heber Wild Horse Territory have written that the horses first arrived in the area with the Jesuit Priest, Father Eusebio Kino, in his explorations of the area for new mission sites during the late 17th and early 18th centuries. *See* Jinx Pyle, *Narrative of History of Wild Horses on the Mogollon Rim* (Aug. 2005). Exhibit 6. Excerpts were also provided in ISPMB’s response to the scoping document, but not considered.

Books on the area, including the famous account of the Hashknife Ranch by Stella Hughes, verify the continued existence of the horses on the Mogollon Rim and of their great value to the ranchers who often caught a few and made them prized ranch horses. Several of these were also attached as exhibits to ISPMB's response to the scoping document. ISPMB also provided a pamphlet that was prepared by a long time Heber resident, Gerri Wager, which summarized the dates from several of the historical references.

As a part of the 2005 litigation, ISPMB entered multiple affidavits into the record from several long-time Heber area residents or frequent visitors. Each attested to the presence of wild horses in the A-S Forest up to 30 years before the Rodeo Chedaskai fire, and in numbers far greater than the Forest Service has acknowledged or documented. However, the Forest Service did have some knowledge of this. A letter (obtained from the Forest Service pursuant to a FOIA request) penned by Doy Reidhead, who was hired by the Forest Service to conduct an illegal gather in the 1980s, to the agency states that the horses he was hired to remove had been in the Black Mesa and Lakeside Districts since at least 1967.

In the 2005 Litigation, ISPMB also submitted an expert report prepared by Mary Ann Simonds, which combined a review of historical records, field observation of the horses and habitat, and social research through conducting interviews to conclude that there was sufficient evidence to conclude that there were at least two or more stable groups of 15-30 wild horses in or near the Heber Wild Horse Territory. Exhibit 15. This document has also repeatedly been submitted to the Forest Service for consideration in the preparation of the Scoping Document, and it has similarly been repeatedly ignored.

In the Draft EA the Forest Service continues to challenge the horses' status as "wild and free-roaming" on the basis of the same bad data that it relied upon in the draft Environmental Assessment Scoping Document and in the early 2000s when the agency was preparing to undertake a gather and fully eradicate the horses from the Forest.

The 1997 study was reviewed in a federal court of law, and the judge held that the agency's evidence was "denied as moot because the evidentiary value of the table is de minimis-defendants fail to explain how these figures were derived." *See* Exhibit 2. Why the Forest Service continues to rely upon that survey, tout it on the Heber Wild Horse page of the agency's website, and pay homage to it in the Draft EA defies logic. Even if the Forest Service felt the need to reference the study, it should also acknowledge the study's utter lack of probative value. Agencies are meant to represent experts in the areas within their purview. The willful regurgitation of this study time and again degrades the agency's credibility and raises serious concerns about whether the agency is actually preparing a plan or blindly going through the motions.

The Forest Service also cites to an ethnographic study, wherein a number of unidentified persons were interviewed concerning the presence of the wild horses in the A-S Forest.

As stated in ISPMB's response to the scoping document, the study has limited scientific value for the following reasons:

- There were only ten interviewees,
- The selection of ten anonymous individuals prevents opportunity for follow-up or cross-examination of the contributors.
- Interview of Subject A is missing several questions, but the answers suggest that the questions may have been leading, and (as acknowledged in the study) varied from the questions asked of the other participants.

- The Forest Service had access to the affidavits (addressed above) and an expert report from the litigation which speak to the historical presence of wild horses in the A-S Forest, but the Ethnographic Study does not appear to utilize any of that information.
- The Forest Service uses this study to make sweeping determinations about wild horse habitation in the Territory.
- The conclusions from the Ethnographic Study entirely discount the value of historical documentation concerning wild horses in the A-S Forest by implying that the horses that are currently in the forest were not always wild.

In 2006, through the litigation between ISPMB and the Forest Service, dozens of signed affidavits were entered into the record. Exhibit 13. These affidavits were from individuals who have lived in the Heber area, some for their entire lives. None of these individuals were questioned or approached by the Forest Service, and the agency did not cite to these affidavits in the Ethnographic Study or the Draft EA. ISPMB provided the Forest Service with copies of the affidavits in its response to the scoping document. The Forest Service has continued to ignore this contrary evidence.

### **III. The Draft EA and related documents do not support a finding that the horse population needs to be reduced.**

The Proposed Appropriate Management Level Determination (Population Proposal) relies on the same Ethnographic Study discussed above. It also references three flyover studies conducted in the 2010s, and wildlife surveys that were conducted by the Arizona Game and Fish Department in the early 2000s. That Arizona Game and Fish data shows that the population levels could have been as high as 253 horses in 2006. The double counting methodology that the Forest Service used in the flyovers provides a wide range of possible population levels. Based on this data, there may have been as many as 258 horses in the 2012 study, and as few as 270 horses in

the 2017 study. This shows a potentially stable population level, which contradicts the Forest Service's assumptions that mass population control measures (administration of PZP, artificial management and control of horse herd age and gender composition, excess declarations followed by removal, etc.) are necessary. Much of the BLM's data is derived from observing heavily managed and disrupted horse herds. The Heber horses have not been managed, and they appear to have potentially reached an equilibrium within the Apache-Sitgreaves Forest. The Forest Service has also acknowledged that the horses are healthy, which does not support a finding of excess. Further, ISPMB has conducted studies on its own herds, which it has maintained through least intensive management principles – i.e. by leaving them alone. The data from ISPMB shows that horse herd reproductive rates decrease, and their populations will reach an equilibrium when they are not heavily managed. This is proven with ISPMB's herd as their growth rate with the best of feed conditions was under 8-9% and BLM touts 20-28%.

Further, the historical data contradicts the Forest Service's assertion in the Draft EA that the wild horse population doubles every four years. Even using the highest population estimates, there was just under 300 horses in the A-S Forest in 2006 based on data from Arizona Game and Fish, and in 2020, ISPMB members have counted fewer than 450 horses (again, these are the upper ranges of the possible populations). If the Forest Service's projections are accurate, and the horse population doubles every 4 years, then by 2010 there would have been 600 wild horses, in 2014 there would have been 1,200 wild horses, and currently in 2021 there should be over 2,400 wild horses. This is not the case.

This herd has largely been untouched since 2006 and would represent a great study group of healthy, functional horses, whose social structures have remained intact for nearly 16 years or longer since they were not removed prior to 2006. *See Exhibit 27.* . In the wild, one would estimate that growth would be less than ISPMB's population who were well nurtured and fed and watered. ISPMB believes the 1980 National Academy of Sciences states growth rate at that time was 4%. However, when the government destroys the makeup of the family, it can create "dysfunctional" behaviors where younger stallions begin breeding younger mares and yes, possible populations will rise.

To remove any of these horses who are living in harmony with their landscape in the Apache-Sitgreaves Forest would be a travesty. This herd deserves to be studied further in the area where the horses now roam. The horses are not impacting their habitat and therefore, they are not in excess which is the only reason to remove wild horses. Although the definition of excess is not detailed in this report, it is defined by the 1971 law that the Agencies must determine who is causing damage to the habitat including livestock or any other animal using the habitat area and only those animals causing damage to the habitat must be removed.

**A. The Value of the Heber Wild Horse Herd and A-S Forest for Scientific Research and Observations from the ISPMB Herds.**

When the 1971 Act passed in Congress without one dissenting vote, ISPMB and our first president, Wild Horse Annie, wanted the management of the animals to fall under the National Park Service whose mission it is to manage for natural and cultural resources. It was felt at that

time, wild horses and burros were not native to this continent and therefore would not fall under the mission of the Park Service.

In ISPMB's analysis of the BLM's program, it became quite evident that management of wild horses and burros was not based on understanding the animals as wildlife species but more an attempt to manage them as if they were domestic livestock.

This is understandable in view of the fact that the BLM was primarily a "livestock" agency prior to the 1971 Wild Horses and Burros Act, managing the land for livestock, mainly cattle.

In fact, when the BLM was known as the Grazing Service in 1939, they had ordered the killing of hundreds of thousands of wild horses and burros during that decade and their exploitation of wild horses and burros continued for nearly thirty years.

The Public Rangelands Improvement Act of 1978 directed in part that the Bureau of Land Management (BLM) and the National Academy of Sciences (NAS) contract for performance of a research study on wild horses and burros. The report was in partial compliance with the Act and represented the final report on Phase I containing current knowledge and recommended research on wild horses and burros. (1980 "Wild and Free Roaming Horses and Burros: Current Knowledge and Recommended Research" published by the U.S. Department of Commerce, National Technical Information Service. ) Phase I recommended 18 research projects, some of which would require 7 to 10 years of study for valid results.

Phase II was published in October 1982 and synthesized the results of completed research on wild horses and burros. With the final report to Congress due on January 1, 1983, the NAS committee identified five of the 18 projects as having priority for immediate study.

Further the NAS final report called for a “long-term equid research program” and an “expanded in-house scientific staff” to provide a solid foundation of scientific data on which to base management decisions. However, the Agencies (Dept. of Agriculture and the Interior Department) felt that no further research would be needed partly due to financial constraints. Quoting the Report to Congress June 1984, “the most pressing question concerning further research for the Agencies is whether the benefits of increased knowledge and efficiency will justify the cost.”

Now in the fiftieth year since the Wild Horses and Burros Act was signed into law (1971), one glaring study of the eighteen proposed has never been completed. This is study number sixteen titled “Conceptual Development of Public Rangeland Management Models.” This study was to be the final study after compilation of the other seventeen studies and was to serve as the “model” in which to manage wild horses and burros.

Had this study been completed, management of wild horses and burros would have been at the “minimal feasible level” as required in the Wild Horses and Burros Act and far fewer animals would be in holding pastures today. Habitat monitoring to determine excess wild horses and burros, as required by the Act, would have created a healthier ecosystem and finally, the actual costs to complete these studies in 1983 would have been millions upon millions of dollars cheaper than the costs incurred through the mismanagement of the program today by the Agencies.

In light of the absence of a “model” management program by the Agencies and the controversies created by such, ISPMB set out to begin our own studies of wild horse herds in 1999. The organization has completed observations on four different herds over eighteen years including

two herds that received the (Environmental Protection Agency) EPA approved pesticide anti-fertility drug known as PZP (Porcine Zona Pellucida Vaccine).

The following report details the information gathered by ISPMB through observations and ISPMB's quest in understanding the true nature of wild horses. ISPMB's goal has been to develop the best "model" for managing wild horse herds on public lands. Please note that the two herds ISPMB used, (Gila Herd and White Sands Herd), that created the baseline for our studies had lived together without being disturbed for up to 50 years and continued through the 17 years that they were in possession of the organization.

ISPMB presents this document today as testimony to advocate for the protection and preservation of the Heber Wild Horses on the Apache-Sitgreaves Forest near Heber, Arizona. There is nowhere left on public lands any herd that has not been disturbed, disrupted, captured, families torn apart with the exception of the Heber Wild horses. Due to litigation and the Forest Service's slow response in developing a Territory Plan as required by litigation, the horses have had at least, if not more than, fifteen years of respite from capture, and removal and allowed to live their lives as the 1971 Wild Horses and Burros Act required with "minimal feasible management."

Recently, the Forest Service did a count of the Heber wild horses stating there were 450 animals that roam on at least 300,000 acres of forest land. The initial count after the Rodeo-Chediski Fire on June 18th, 2002 and its containment on July 7, 2002 there were approximately 300 wild horses according to the Forest Service.

What has come to light since the recent census of the Heber wild horses is the growth rate based on fifteen-years of allowing the horses to self-regulate their numbers. This rate is approximately 3% which is near what the National Academy of Sciences 1980 Report projected (7%).

This new information has extraordinary implications and correlates with ISPMB's studies of its two herds that were untouched for nearly seventeen years with growth rates under 10%. Since BLM states that wild horses double every four years and growth rates are 20% yearly, this herd would represent what happens to herds when they are not disrupted every four years by capture, disruption of family bands, and would create a management plan which would be to the benefit and future preservation of all wild horses in our country. This new management prescription would reduce millions upon millions of tax-payers dollars spent on removals, holding centers where wild horses languish, veterinarian costs, administrative costs etc. and most importantly would create healthy herds with highly evolved social structures.

Section 10 of the Act states, "The Secretaries are authorized and directed to undertake those studies of the habits of wild free-roaming horses and burros that they may deem necessary in order to carry out the provision of the Act"

ISPMB recommends that the Heber Wild Horse herd be studied by a university consisting of the following scientists such as behaviorists, wild horse ecologists, habitat specialists and other recommended scientists selected by the Forest Service and ISPMB. This study would complete one of the most important studies never undertaken by these federal agencies, long overdue, and which was recommended by the National Academy of Sciences in 1980 as noted above.

**ISPMB's Herd Information:**

White Sands Herd:

- ISPMB started with 70 wild horses in 1999.
- In 2016, the final count of wild horses was 273 horses representing 17 years of growth
- Growth rate of 8.33%

Gila Herd:

- ISPMB started with 31 wild horses in 2000
- In 2016 the final count was 137 wild horses representing 16 years of growth
- Growth rate 9.73%

It was noted that these two stable populations of wild horses had family band stallions over the age of ten. These ages correlate with Dr. Denniston's 1974 study of the Red Desert Wild Horses in Wyoming whose youngest band stallion was twelve-years of age.

The maturity of the family bands and the wisdom and education process handed down from generation to generation to band members leads to females foaling for the first-time at ages 4-5 years and stallions commanding family bands at a very mature age often over ten-years.

Several observations of the Gila herd yielded information not seen by universities such as Princeton in their studies of wild equids. The observation was witnessed by two people and relates to the above information:

A young filly in her first estrus as a yearling left her family band galloping up a hill to a band of young bachelor stallions. This piqued the interest of the young bachelors and she could have easily been bred at this age having a foal at two years of age.

An extraordinary event happened when a family band stallion left his band and immediately went over to the filly and reprimanded her and sent her down the hill where she stopped and did not go to her natal band.

Another band stallion at the bottom of the hill again reprimanded this filly and she was pushed into her natal band. This filly never got pregnant until she was four-years of age. This led ISPMB to understand that this particular herd worked together for the good of the entire members of the herd. Another observation cemented this observation:

- This herd was isolated in pasture and subject to coyotes and a rare mountain lion.
- What was noted was their reaction to ISPMB's two dogs that jumped out of the truck to join the observers of this herd.
- These horses were never exposed to any dogs which appear similar to coyote packs.
- What happened was again extraordinary and put the life of these two dogs in jeopardy.
- The entire herd gathered and moved quickly to stampede the dogs.
- The dogs ran out of the pasture but came back again before they could be contained in the truck and the horses again gathered and stampeded with the intent to kill the dogs.

These two instances along with many other observations leads ISPMB to believe that leaving the bands intact with wise band stallions and wise mares leads to a stabilization of growth and maintains highly evolved social structures which can protect wild horses for eons of time.

Other observations of interest are the following:

- Family band stallions and their mares stay together for the lifetime of the stallion. The units are very well bonded and show strong inseparable relationships.
- When young colts show any sexual advances or are non-compliant with the family band stallion, the band stallion will remove them from the family band. Hence, the beginning of bachelor bands. Often, the ages are between two and three years of age. However, some young colts will remain with the family for up to five years if they show no sexual prowess.
- There is tremendous respect of the family bands which is commanded through the education of band members. This comes from the wisdom of the elders.

- This respect is honored by the bachelor bands who live in harmony with the family bands.
- Observed was a bachelor stallion moving into a family band whose band stallion was becoming extremely elderly. There was no fighting between the stallions. When the elder stallion passed, the band was taken over by the bachelor stallion who was already nearly ten years of age. This smooth transition was another extraordinary observation and took place over one-year.

**IV. The draft EA and related documents do not support the proposed plan for the Territory**

**a. The territory should be expanded to include the full historical range of the wild horses at the time the Act was passed.**

There is significant evidence that shows that the wild horses in the Heber area occupied a far greater portion of the Apache Sitgreaves Forest when the Act was passed than just the Territory. Accordingly, the Heber Wild Horse territory should be expanded to encompass the horses' entire historical range at the time the Wild Horse and Burro Act was passed.

The presence of the Heber wild horses on a larger territory is evidenced, in part, by contemporaneous reports of "trespass" horses that were removed from neighboring allotments to the Territory. The attached 1974 Range Inspection Report covered 50 percent of the Buckskin, Gentry, Mud Tank and Heber Allotments. Those allotments/pastures encompassed 134,795 acres. The report identifies that there were several black or buckskin "trespass" horses within the allotments, and Number 11 says they rounded up some of the horses and sold them at public auction. The reports claim these are from the Apache reservation but does not detail how the horses were identified as such (the tribe often will notch livestock ears rather than use brands). Exhibit

Also attached is the 1989 Range Management Plan for the Buckskin, Gentry and Heber-Mud Tank Allotments. Exhibit 29. Page 2, paragraph D states that they have an annual problem with “trespass horses” on the Gentry and Buckskin Allotments (pastures). Only 40.9 percent of the Gentry pasture is inside the Heber Wild Horse Territory (“HWHT”), and the Buckskin allotment in 1974 and 1989 is actually well east of the HWHT (around the area now called Phoenix Park, east of Forest Road 51). Again, the plan does not specify how the horses were identified as “trespass” horses.

This proves that horses were found on other parts of the forest outside the area they designated the HWHT in late 1973/early 1974. They call them “trespass” horses, but they have never shown how they identified them as “trespass” versus protected wild horses. In fact, any horse in one of their cattle pastures was considered a “trespass” horse.

There is also a gentleman who owns property adjacent to the Pierce Ranch that recalls rounding up Buckskin and black horses in the early 1970s.

**b. The Territory is not suitable for sustaining the wild horses on its own.**

Significant portions of the topography of the existing Territory is not suitable for the horses. A significant portion of the territory is located within a canyon with steep walls that would prevent the horses from moving East to West, and cattle grazing allotment fence lines prevent the wild horses from moving North and South within the Territory. Members of ISPMB have hiked the fence lines of each of the allotments in the Territory and noted that the gates of each of the fenced areas are closed, even though the cattle are not currently present. There are also sheer cliffs in the Territory which horses could not climb. Horses have been locked out of the “proposed” territory.

The area was hiked last month, and the gates are still locked, and cattle have not been present since the fall.

The EA references 20 “dependable” water sources within the Territory and claims that they are accessible by the horses. In light of the existing fencing and canyon walls, it is not clear that the horses are able to access each of these water sources. The Forest Service should conduct an in-person study where it physically accesses each of these water sources to determine if the horses can actually access them. ISPMB’s members have done just that and believe there are several water sources that the horses cannot reach.

Further, the EA water chart says that the agency checked for water sources in July 2014 and found ample creeks and streams. Late June/early July is when the monsoon season usually begins, which would bring rainfall and result in the runoff that the Forest Service likely observed. The agency should conduct a review during one of the drier months of the year, such as October – May.

Below is an excerpt from one local who has exhaustively examined the Territory:

I have been hiking and photographing the area for 3 solid days now in the northern half of the Territory, 6 hours each day. There is some very good grazing area, but it’s been completely blocked off from the horses. The Territory is inside a canyon, which prevents the horses from going east/west in much of this deep canyon, lined with sheer rock walls and rocky hills fit for mountain goats, but not horses. I have been following the fence lines both east and west from the cattle guards on Forest Road 86 which runs through the canyon from Heber to the 300 road/forest boundary to see if there are any openings for the horses to travel north/south within the territory. All gates so far are closed, although the last cattle were removed on Sept. 13, 2020. One fence line doesn’t even have a gate on the east side of the road. I will be walking the fence line on the west side today. Where the Gibson Ranch is situated, there is a bottleneck to where I don’t even believe the horses can pass through there to get from the north half of the territory to the south half of the territory. I’m taking photos and video. There is also a very large area

that off-roaders have turned into a “playground”. An area about the size of two football fields, I would say. Off-roaders are tearing up this forest!

Something else I wanted to mention to you that I believe is important is I have never seen a single one of our iconic buckskins on the “Territory”. They are further east. The Plan calls for starting east and moving west with their gather. All of our iconic buckskins would be gone. In the last two years, I have observed and documented these horses for over 3,000 hours. I have over 10,000 videos and thousands of photos. Some are posted on YouTube and on Facebook under “Friends of the Heber Wild Horses”. I know the mare that was the last mare with Old Buck before he was shot and killed. He is the most iconic buckskin of all. The mare was pregnant, and I follow her foal, possibly Old Buck’s last foal. Although not a buckskin, if the mare was impregnated by Old Buck, the foal carries his genes. The mare was named “Hope”. The foal is “Justice”. Our iconic buckskins like Legend, Dirk, Hairdo, Maximus and Cisco would all be removed with their plan. We also have some young buckskin studs that are just coming into their own and are acquiring their own bands. One particular stunning young buckskin is Thor. He is fierce! We have to fight for our buckskins! I saw 3 bands of wild horses on the Territory yesterday and 1 bachelor. There is a draw north of the Gibson Ranch where they can come in from the east into that pasture. They can not go any further west from there due to the terrain. The stallions for the 3 bands are bays, and I can only recall one buckskin mare. I’d have to look back at the video.

**c. The horses should not be restrained to the Territory.**

The wild horses should not be restricted to the Territory. The horses are an established part of the ecosystem in the Black Mesa Ranger district and throughout the Apache-Sitgreaves National Forest. To rigidly restrict them to an area that they currently avoid (and are fenced out of) would be disruptive to the horses, grazing allotment holders, and the surrounding areas. To be clear, even if the livestock allotments predate the territory, the allotments are not property rights (See *Oregon Nat. Desert Ass’n v. Singleton*, 75 F. Supp. 2d 1139, 1152 (D. Or. 1999)), they can and should be revoked or limited within the HWHT as necessary to best protect the Heber Wild Horses and their welfare. Additionally, while the Multiple Use Sustained Yield Act does provide for multiple uses of public property, not every acre of the forest must be used for multiple uses. For example, an

active service mine cannot also be used as a wilderness area. The Wild Horse and Burro Act requires that the Territory is to be *principally* set aside for the wild horses and their welfare. A 50/50 split with cattle grazing and other wildlife is not “principally” used for the horses’ welfare when the Forest Service argues that the wild horse population will be too small to maintain a genetically diverse population.

Further, it is not clear why the Forest Service believes it is appropriate to constrain the wild horses within the Heber Wild Horse Territory. The horses should be permitted to freely ingress and egress from the Territory.

**V. Additional concerns with the Proposed Territory Management Plan.**

A comparison of the references made to riparian areas between the Heber Wild Horse Territory Plan documents and the Heber Allotment Plan documents (cattle grazing) is absolutely astonishing. Domestic livestock (cattle) are clearly prioritized over wild horses, which, according to the 1971 Act and 36 CFR, are to be considered as a natural component of the public lands and are to be managed at a minimally feasible level. The Forest Service clearly views the horses as an invasive species and considers cattle as the natural component of our public lands. It is outrageous and a clear violation of both the letter and the intent of the 1971 Act/law. Cattle are given priority over the very health of the forest.

However, federal regulations give horses priority over cattle. 43 CFR § 4710.5 states that public lands can be closed to grazing in order to support wild horse populations. Pursuant to the Act, the Heber Wild Horse Territory was designated as a “sanctuary” for the protection and preservation of wild horses. 16 U.S.C. § 1333(a). Moreover, even designated ranges managed under

a multiple use concept are to be “devoted principally” to wild horses. 16 U.S.C, § 1332(c). The Forest Service’s failure to analyze the consequences of livestock grazing on the wild horses is particularly glaring. In forest planning, “the suitability and potential capability of National Forest System lands for producing forage for grazing animals and for providing habitat for management indicator species shall be determined.” *See* 1982 Planning Rule 5 § 219.20. Specifically,

Lands suitable for grazing and browsing shall be identified and their condition and trend shall be determined. The present and potential supply of forage for livestock, wild and free-roaming horses and buros [sic], and the capability of these lands to produce suitable food and cover for selected wildlife species shall be estimated. Lands in less than satisfactory condition shall be identified and appropriate action planned for their restoration.

*Id.* at § 219.20(a) The Forest Service must consider, among other things, “possible conflict or beneficial interactions among livestock, wild free-roaming horses and burros and wild animal populations, and [...] direction for rehabilitation of ranges in unsatisfactory condition. . .” *Id.* at § 219.20(b) (emphasis added).

Yet throughout the proposed Heber Wild Horse Territory Plan documents, there is reference to damage caused by wild horses. Any perceived damage where horses are considered *by biased individuals* to be a contributing factor, the horses are to be removed. It’s a Queen of Hearts approach to managing our wild horses, it’s an “Off with their heads” approach. It’s no wonder, since the Forest Service has for decades had the policy of “ridding the range of wild horses.” The current Plan is just an extension of that policy.

Since its inception, the Forest Service has catered to cattle growers. As a matter of fact, the Forest Service and cattle growers are often one and the same. The individual who held the grazing permit to the Black Canyon Allotment worked for the Forest Service for 33 years, including when

the Forest Service delineated what is known today as the Heber Wild Horse Territory and established that the herd size was only 7 horses. No wonder the Territory is so poorly delineated that it is *impossible* that this was the true “territorial habitat limits” of our wild horses in 1973/74. It was a scheme to get rid of our wild horses and subvert the law.

If one looks at the Heber Allotment Plan documents (cattle grazing), they would believe that cattle apparently don’t cause any damage to riparian areas, and, if anything should arise, the action is to “monitor” the situation. There is no reference at all to removing domestic cattle from our public lands.

Further, there is nothing to support a finding of “excess” because the ecosystem is healthy with the horses. “A determination that removal of wild horses is warranted must be based on research and analysis, and on monitoring programs involving studies of grazing utilization, trend in range condition, actual use, and climatic factors. *Animal Protection Institute of America*, 117 IBLA 3, 5 (November 20, 1990) (citing to *Animal Protection Institute of American*, 109 IBLA 112, 120 (1989)) Exhibit 30. Horse manure can help with seed casting, *See* Exhibit 31. And even their foot steps can improve certain soil conditions. *See* Exhibit 32. Further, the draft EA materials repetitiously state that population control of the horses will be necessary to protect the riparian areas. However, the draft EA materials also acknowledge that the riparian areas in the range that the horses currently occupy “are in or are trending toward proper functioning condition.” The cattle, in contrast, are heavy users within riparian areas. *See* Exhibit 33.

**VI. An EIS is necessary.**

The Forest Service continues to mitigate the importance of the Heber Wild Horse Herd (“HWHH”) and the agency’s role in the HWHH’s management because the agency (1) continues to pursue an environmental assessment in spite of substantial evidence that an Environmental Impact Statement (“EIS”) is necessary, and (2) has taken repeated steps that, at a minimum, suggest that the Forest Service has already determined how it will manage the HWHH.

Historically the Forest Service has minimized the significance of the HWHH. Indeed, the Forest Service employees who should have been managing the HWHH District Rangers did not even know that a wild horse territory existed when deposited in 2005. Klein Dep. at 46:3-23, Exhibit 22. The agency has repeatedly relied on incomplete records to make significant decisions, including a decision to eradicate the horses from the forest, purportedly at multiple points in time.<sup>2</sup> Roughly a decade later, in the Apache-Sitgreaves Land Management Plan issued in 2015 (“LMP”), the Forest Service made reference to removing wild horses if their numbers exceeded the population set forth in the still non-existent wild horse management plan, suggesting that the required “no action” option in any NEPA document had already been discarded. The LMP also identified the Heber Wild Horse Territory as “suitable” for every possible use imaginable, including livestock grazing; energy corridor and other energy development; communications sites; timber, production and tree cutting; motorized travel, including new designated motorized areas;

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<sup>2</sup>In a letter dated March 10, 1994 to Steve Bragg from Kate Klein, she provides “[w]e have observed unauthorized horses in the Phoenix Park unit this spring. You will try to capture them, if you can, in hopes to eliminate the few horses that are left this year, which is about eight head.” See Letter from Klein to Bragg, dated Mar. 10, 1994. Exhibit 34.

and mechanized recreation. *See* Land Management Plan at pp. 133-40. In short, the LMP contemplated nearly every use of the Heber Wild Horse Territory *except* as a sanctuary for the protection and preservation of wild horses, as required in the Act. *See* 16 U.S.C. 1333(a). This was only eight years after entering into the Settlement Agreement with my client in 2007, in which the Forest Service stipulated that:

- The Heber Wild Horse Territory still exists and has not been dissolved.
- The wild horses are by law an integral part and component of the natural system of the public lands, as expressed by Congress in the Act.
- The USFS will work with the public, including ISPMB, in the development of a written Heber Wild Horse Territory Management Strategy in accordance with the provisions of the Act.

The gathers were halted, pursuant to injunction and then the Stipulated Settlement Agreement, and the LMP was corrected after ISPMB appealed the final LMP and worked with the Forest Service to amend the plan. However, the Forest Service still has not shown a commitment to backing a decision regarding the HWHH with reliable data or recognizing the significance of the Heber Wild Horse Management Plan.

As raised previously by ISPMB, the scoping document for the Management Plan shows that the Forest Service is still relying on old, impeachable data, an Ethnographic Study and the Working Group's recommendations to support proposals for highly invasive management strategies. In its response to the scoping document, ISPMB underscored why each of these sources were unreliable as a basis for the Heber Wild Horse Management Plan.

**a. NEPA and the Need for an Environmental Impact Statement**

An EIS is required when a proposed action “Is likely to have significant effects and is therefore appropriate for an environmental impact statement.” 40 C.F.R. § 1501.3(a)(3). Further, “[i]n considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources. . .” 40 C.F.R. § 1501.3(b)(a). Significantly, NEPA mandates that the Forest Service take a “hard look” at the direct, indirect, and cumulative impacts on wild horses posed by any proposed project or activity within the Apache-Sitgreaves National Forests.

The Management Plan is highly controversial. The HWHH is a popular subject for the news media in Arizona because of their wide-ranging appeal throughout the region. Community meetings in the Heber area on the wild horses are generally well attended. The A-S Forest land is used for multiple purposes, including for grazing, recreation, a habitat for wildlife, the preservation of wild horses, and now timber production, with the roll out of the Four Forest Restoration Initiative. Each of these uses implicates a different set of needs, and each is represented by vocal advocates. The wild horse management plan will play a significant role in how the Forest Service balances each of these interests. In response to the scoping period, the Forest Service received a voluminous amount of public comments submitted as a part of the scoping process, including over 2,200 pages from ISPMB alone. ISPMB raised issues with several of the management strategies included in the scoping document. The scale of the cull that would be required to put the Management Plan contemplated in the Scoping Document into effect would be staggering and would undoubtedly lead to an outcry from concerned citizens, and potential litigation.

The effects of the management plan presented in the scoping document are highly uncertain. In past correspondences, and in ISPMB's response to the scoping document, ISPMB has laid out the federal requirements for when an EIS is necessary. There are a number of items at issue in the management plan, including whether and how to use population management strategies, whether to restrict the Heber Wild Horses to the Heber Wild Horse Territory, and whether and how many of the horses should be removed from the A-S Forest. The Scoping Document contemplates a series of high impact management strategies. Indeed, the scoping document suggests a herd size that would require that nearly 5 times as many horses would be removed as are left in the A-S Forest. One alternative would restrict the horses to the precise bounds of the Heber Horse territory. This territory is crisscrossed with cattle allotments and associated fencing. Restricting the horses to this area will also increase competition for resources between the cattle and horses. These are just a few examples of the numerous decisions that will be determined as a part of the management plan.

**b. Pursuant to the Forest Service Handbook, an EIS is necessary**

Section 21 of the Forest Service's NEPA handbook, *Factors to Consider*, specifies that the Forest Service do the following when considering a proposed action:

- (a) Determine under its procedures supplementing these regulations (described in § 1507.3) whether the proposal is one which:
  - (1) Normally requires an environmental impact statement, or
  - (2) Normally does not require either an environmental impact statement or an environmental assessment (categorical exclusion).

(b) If the proposed action is not covered by paragraph (a) of this section, prepare an environmental assessment (§ 1508.9). The agency shall involve environmental agencies, applicants, and the public, to the extent practicable, in preparing assessments required by § 1508.9 (a)(1).

A wild horse management plan of this magnitude *does* normally require an EIS. Consider the EIS prepared by the Bureau of Land Management, “Draft RMP Amendment and EIS for Wild Horse Management in the Rock Springs and Rawlins Field Offices, Wyoming, DOI-BLM-WY-D040-2011-0001-RMP-EIS.” That range management plan incorporates numerous wild horse management strategies that have significant impacts on the land usage for the Rock Springs and Rawlins Field Offices. It is analogous to the impact that the Heber Wild Horse Management Plan will have on the Territory and the surrounding areas. Numerous other planning documents, including the LMP will be impacted by the wild hose management plan, and it is appropriate and imperative that the Forest Service fully review the environmental impacts of this decision.

### **Conclusion**

The Draft EA and proposed Actions categorically fail to recognize the role and significance that Congress, among others, has placed upon the wild horses associated the Heber Wild Horse Territory. The Forest Service continues to fail to meet obligations it has under federal acts such as the Wild Free-Roaming Horses and Burros Act and NEPA, including protecting and managing the wild horses and keeping current inventories of the same. The Draft EA makes references to unsubstantiated claims of the number of horses remaining on the Territory although a federal court has held these and similar unsupported claims to be of no evidentiary value.

Simply put, the Forest Service does not know what is in the A-S Forest. The most recent survey is years old. There is no evidence to support a finding of excess, and yet the agency proposes a significant population decrease. There are numerous issues that the Draft EA leaves open for future review and consideration *including why the horses do not use the existing Territory*. The first section addresses the shortcomings of the Draft EA under the Administrative Procedure Act (“APA”). The Draft EA fails to provide meaningful response to public comment and deviates from set agency standards without adequate justification. Proposes to limit the Horses to the Territory without cause and does not even acknowledge that the horses truly are “wild and free roaming, yet the agency asserts jurisdiction over them.

ISPMB urges the Forest Service to rise to the occasion, to take the time to draft an EIS, conduct meaningful studies, using good data, and draft a management plan that is thoughtfully designed to sustain the wild horse population in the A-S Forest. Thus far the Agency appears to completely ignore public comments and cites to studies of other horses in other parts of the country or unqualified studies to support its plan, in violation of the APA, NEPA, and the Act.

Very truly yours,

 for

Snell & Wilmer

Anthony W. Merrill

Attorneys for ISPMB

Exhibits 1-34 Submitted As Separate Comments Due  
to File Size Restraints

# **EXHIBIT 6**

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March 12, 2020

Anthony Madrid  
Acting Forest Supervisor  
United States Forest Service  
Heber Wild Horse Territory Comments  
P.O. Box 640,  
Springerville, AZ 85938

**Re: Attention: Heber Wild Horse Territory Comment**

Dear Mr. Madrid:

**Introduction**

On behalf of my client, the International Society for the Protection of Mustangs and Burros (“ISPMB”), I submit the following comments to the Proposed Action Document regarding the Heber Wild Horse Territory. ISPMB is a non-profit organization formed to promote animal welfare and protection, including the protection of wild horses. ISPMB, is the oldest wild horse and burro organization in the United States. Along with its first president, Wild Horse Annie, ISPMB was instrumental in securing and implementing the Wild Free-Roaming Horses and Burros Act of 1971, 16 U.S.C. §§ 1331, *et seq.* (the “Wild Horse and Burro Act”). ISPMB was headquartered in Arizona from approximately 1993 until 2000 when it relocated its headquarters to Rapid City, South Dakota. ISPMB still has members who live in Arizona, including in or around Heber, and other members who visit the area frequently.

This letter and its attachments are a response to the Proposed Action Document (“Scoping Document”) that began the scoping period for the environmental assessment for the Heber Wild Horse Territory Management Plan (“Management Plan”). ISPMB submits this letter and its attachments to be included as a part of the administrative record, and to be considered in development of the Management Plan. This letter is broken into four sections.

The first section addresses the history of the Management Plan, including ISPMB's involvement in the protection of the Heber Wild Horses and establishing the need for the Management Plan, as well as additional historical and scientific evidence that ISPMB is providing to the Forest Service for consideration. The second section of this document addresses the requirements for compliance with the National Environmental Protection Act ("NEPA"), raises issues with the Scoping Document, and the anticipated Environmental Assessment, and establishes the need for a full Environmental Impact Statement for the development of the Management Plan. The third section provides ISPMB's specific concerns with the contents of the Proposed Action Document.

The fourth section addresses ISPMB's concerns with the Arizona State University collaborative working group ("Working Group") that was formed to aid the United States Forest Service (the "Forest Service" or the "Agency" or the "USFS") in the development of the plan and the recommendations that the working group produced. ISPMB has already written to the United States Department of Agriculture's (the "USDA" or the "Department of Agriculture") attorneys concerning the working group and included multiple documents for the Working Group's consideration when it was preparing its recommendation. The Department of Agriculture informed ISPMB that those concerns should be raised and would be addressed during the NEPA process. Accordingly, ISPMB's concerns are renewed in this letter.

**I. Additional Information to be considered in the Development of the Heber Wild Horse Territory Management Plan ("Management Plan")**

**a. History of the Case**

ISPMB has been actively engaged in the protection of the Heber Wild Horse Herd for many years, including filing suit to enjoin the roundup and capture of all horses in the Apache-Sitgreaves Forest ("A-S Forest") in 2005. The 2005 lawsuit, described in more detail below, resulted in a Stipulated Settlement Agreement ("Stipulated Agreement") between ISPMB and the Forest Service. Under the terms of the Stipulated Agreement, the Forest Service agreed to "refrain from any gathering or removing of horses within the Heber Wild Horse Territory, as well as, on the Black Mesa and Lakeside Ranger Districts (which are considered the Sitgreaves National Forest)

until the Forest Service completes, with public involvement, an analysis and appropriate environmental document pursuant to NEPA and develops a written Heber Wild Horse Territory Management Strategy.”

In 2015, ISPMB filed an appeal of the Land Management Plan for failing to properly account for the effect of the plan on the Heber Wild Horses and failure to properly identify the horses as federally protected, among other reasons. As detailed below, ISPMB withdrew that appeal in 2016, based on the Forest Service’s commitment to make mutually agreed upon changes to the Land Management Plan and accompanying Final Environmental Impact Statement (“FEIS”), and to work collaboratively with ISPMB to meet our mutual goal of managing a sustainable herd in the Heber Wild Horse Territory. *See* Exhibit #1, (correspondence withdrawing appeal).

More recently, ISPMB has reached out to the Forest Service regarding the Working Group, which was formed to help the Forest Service develop the Management Plan.<sup>1</sup> The context of those comments is addressed below, and ISPMBs specific concerns with the Working Group are detailed in Section IV of this letter.

### **i. The 2005 Litigation**

In 2005, ISPMB filed suit against the United States Forest Service, in the District Court for the District of Arizona (the “2005 Litigation”). The 2005 Litigation was styled *In Defense of Animals, et al. v. United States Government, Department of Agriculture, et al.*, Civil Action No. 05-2754 PHX-FJM). *See* Complaint, Exhibit #2, tab A. Without proper analysis, the Forest Service had issued a solicitation entitled “Trespass Horse Capture and Transport,” under which the horses were to be captured and transported out of the Apache-Sitgreaves National Forests. The solicitation provided for the round-up and capture of all horses in the Apache-Sitgreaves Forest including those in the Heber Wild Horse Territory and all mares, even those with foals. The USFS had not conducted a census, inventory, or any other type of survey or study to determine how many of the

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<sup>1</sup> Additionally, in the last year and a half, over 30 wild horses were shot and killed on the A-S Forest, in or around the Wild Horse Territory. Killing a wild horse carries a potential \$100,000 fine, under the sentencing reform act. ISPMB has expressed its concerns with the lack of progress in that investigation to the Forest Service and has most recently addressed those concerns with the Federal Bureau of Investigation.

approximate 300 to 400 horses on the A-S Forest were “wild free-roaming” horses and thus entitled to protection under the Act. *See* Exhibit #2, tab A-S (a compilation of the filings, some of the discovery produced in the 2015 Litigation, and a transcript from the preliminary injunction hearing).

In the 2005 Litigation, ISPMB sought a preliminary injunction, alleging that the USFS had (1) failed to comply with NEPA by not preparing an Environmental Impact Statement (“EIS”) or a statement of reasons as to why an EIS was unnecessary, (2) violated the Wild Horse and Burro Act because they attempted to remove the wild horses, failed to properly investigate the status of horses, failed to keep an inventory of the horses, failed to establish an advisory committee with regard to the horses, and failed to hold a public hearing prior to the attempt to use motorized vehicles to remove the horses; and (3) violated the Administrative Procedures Act by acting arbitrarily and capriciously in failing to conduct a full investigation into the effects of the removal of the horses, and failing to comply with NEPA and the Wild Horses and Burros Act.

As shown in discovery, the Forest Service had apparently tried to dissolve the Heber Wild Horse Territory. *See* Deposition District Ranger Kathleen (“Kate”) Klien, Exhibit #2, pages 35, 46, and 51-52. It is fundamental that the Wild Horse and Burro Act is a shield, not a sword. Congress explicitly gave agencies the authority to set lands aside for the wild horses and charged the agencies with the protection and preservation of these horses. Congress did not authorize these agencies to disassociate the wild horse territories and then wipe the horses from the land.

The court granted ISPMB’s injunction. *See* Order Granting Injunction, Exhibit #2, tab E. Specifically, the United States Federal Court for the District of Arizona enjoined the defendants from “rounding up, removing, or awarding a bid for capture and removal of horses from the ASNF.” *See Id.*

In March 2007, ISPMB and the USFS entered into a stipulated settlement agreement. The court issued an order, dated March 21, 2007 (the “Federal Court Order”), which adopted the terms set forth in the Stipulated Settlement Agreement. *See* Stipulated Settlement Agreement, attached herein as Exhibit #2, tab Q. Pursuant to the Federal Court Order:

# Snell & Wilmer

L.L.P.

Anthony Madrid

March 12, 2020

Page 5

- The USFS agreed that the Heber Wild Horse Territory still exists and has not been dissolved.
- The USFS agreed that the wild horses are by law an *integral part and component* of the natural system of the public lands, as expressed by Congress in the Act.
- The USFS will work with the public, including ISPMB, in the development of a written Heber Wild Horse Territory Management Strategy in accordance with the provisions of the Act.
- The USFS will refrain from any gathering or removing of horses within the Heber Wild Horse Territory, *as well as, on the Black Mesa and Lakeside Ranger Districts*, considered the A-S National Forest, until the USFS completes, with public involvement, an analysis and appropriate environmental document pursuant to NEPA and develops a written Heber Wild Horse Territory Management Strategy.<sup>2</sup>
- The USFS will involve the public, including ISPMB, in scoping for the analysis.
- The USFS agreed to provide ISPMB with specific notice of the document and consider its comments on the same.
- The USFS agreed to continue to coordinate with the White Mountain Apache Tribe for repair and maintenance of the boundary fence.

*Id.*

A complete copy of the record from this litigation is included in this response to the scoping period for consideration. *See Exhibit #2, tabs A-S.*<sup>3</sup> The record from the civil matter gives the Agency a snapshot in time of the probative value of the data the Forest Service had concerning the horses, in the context of judicial review. Therefore, the record from the civil matter should be a baseline concerning the Forest Service's records and the reliability of the records concerning the

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<sup>2</sup> This inherently acknowledges the movement of the horses into larger areas, not just within the Heber Wild Horse Territory. This analysis should include an assessment of the wild horses' actual habitat, their ingress and egress from the Heber Wild Horse Territory into the Black Mesa and Lakeside Ranger Districts, actual reproduction rates, and so on.

<sup>3</sup> The materials provided in these documents were certainly within the Forest Service's possession at the time, and that document should have been considered by the working group and through every step in the process of developing the Management Plan.

wild horses at the time the litigation was brought. Moreover, the litigation is the origin of the scoping analysis, so it is only proper that the case record be a part of the analysis moving forward (and should have been considered prior to this point in the process).

For example, the depositions of the Forest Service's employees show the fundamental lack of awareness of the Forest Service's obligations under the Wild Horse and Burro Act. *See* Exhibit #2, tabs G-L. The affidavits of long-time residents show that, while there may have been a limited number of horses on the Heber Wild Horse Territory itself—which is crisscrossed with private fencing—there have been a multitude of unbranded, unclaimed, and free roaming horses in the A-S Forest since before the Wild Horse and Burro Act was passed and continuing to the present day. *See* Exhibit 3. This is contrary to the “two periods of occupation” that is suggested in the Ethnographic Study summary in the Scoping Document. Additionally, the record from the 2005 Litigation contains an expert report regarding wild horses in the A-S Forest that opines that there are at least two large groups of horses present, and those horses have been in the forest since the Wild Horse and Burro Act was passed, which gives the wild horses congressionally-mandated federal protection. *See* Exhibit #2, tab N.

## **ii. The Apache Sitgreaves (“A-S”) Forests Management Plan**

On July 30, 2015, the USFS signed the *Record of Decision for the Apache-Sitgreaves National Forests Land Management Plan*, (“Land Management Plan”). ISPMB filed an appeal of the Land Management Plan, Appeal No. 16-13-00-0007, arguing that (1) the plan failed to acknowledge the historic and contemporary presence of the wild horses, (2) that the USFS had violated the Stipulated Agreement, NEPA, and the Wild Horse and Burro Act by ignoring its obligations under each; (3) erroneously labeled the horses as feral and invasive without any foundation, and contrary to evidence; and (4) that the USFS had failed to consider or even analyze how the plan, as drafted and signed, would impact the wild horses and the wild horse territory. *See* Exhibit #4, Notice of Appeal.

After extensive negotiations with the Forest Service, ISPMB withdrew its appeal, based on the Agency's commitment to make mutually agreed upon changes to the Land Management Plan and Final Environmental Impact Statement (as outlined in the attached document), as well as to

work collaboratively with ISPMB to meet a mutual goal of managing a sustainable herd, in the Heber Wild Horse Territory in accordance with the Wild Free-Roaming Horses and Burros Act. *See Exhibit #1.*

A copy of several documents from that appeal are attached to this response to the Scoping Document. These documents are relevant because, among other reasons, they address the specious way the Forest Service has managed the Heber Wild Horse Herd in the past, and the substantial evidence that the Forest Service still refuses to consider regarding the legal status of the Heber Wild Horses. It also informs the Agency about its additional obligations under the Land Management Plan, by providing context to the various amendments that resulted from the ISPMB appeal. *See Exhibit #4, and Exhibit #4, tabs A-B (copies of the correspondences regarding the appeal.)*

### **iii. The Responses to the Working Group and Its Report**

The USFS chose to look to the Working Group to provide input and recommendations for the development of a Heber Wild Horse Territory Management Strategy. Initially ISPMB was encouraged by the group's creation, but that soon turned to disappointment and then serious concern. Recall that under the Stipulated Agreement, the Forest Service is obligated to work with the public, including the ISPMB in the development of a written Management Plan. *See Exhibit 2, tab Q.* ISPMB contacted the Agency on multiple occasions concerning this Working Group. First, we wrote to the Forest Service on ISPMB's behalf to request a seat at the table. *See Exhibit # 5.* Then we wrote to inform the Forest Service to express serious concerns about the Working Group's Composition, and the materials that is had been presented with. *See Exhibit #6.* Specifically, the Working Group was not considering (or was not provided with) the materials from the 2005 Litigation and other materials from ISPMB that should have already been a part of the administrative record.

When the Working Group's report was released, ISPMB sent multiple letters raising issues with the composition of the group; concerns with the integrity and completeness of the data that was presented to the Working Group; and informing the USFS that the group was so hostile to wild horse advocates, that a wild horse advocate (and former member of ISPMB) was forced to

leave the group. None of these matters were adequately addressed. Rather the concerns were waived off with an assurance that they would be heard during this Scoping Period.

Accordingly, those concerns are re-raised herein and copy of several of those correspondences are attached to this response to the Scoping Document. Exhibit #5 and Exhibit #6, tabs A-I. These documents are important because they raise serious deficiencies in the Working Group's reliability and call in to question the sufficiency of the data that its report is based on. As referenced later in this letter, the Scoping Document clearly incorporates material from the Working Group's report. Analogous to the fruit of a poison tree, ISPMB has the same concerns with the reasonability of a Scoping Document that relies on a report that used questionable data and was drafted by a group with clear, unchecked bias against the Heber Wild Horses.

## **b. Historical Record**

The Scoping Document heavily relies upon two sources of supposed historical information—the Ethnographic Study (which contains ten, non-contemporaneous interviews) and the Forest Service's annual reports to Congress concerning wild horse management—to the exclusion of other pertinent historical information. Those documents do not contain any information about the methods used to produce the information and offer no explanation as to why the other wild and free roaming horses in the National Forest were not being considered. In this section, the ISPMB recommends additional sources to supplement the historical record. Moreover, these documents are misleading, in part because they mischaracterize the legal status of other wild horses that were within the Black Mesa and Lakeside District.

## **i. Publications Concerning the Wild Horses throughout time**

The Library of Congress has multiple newspaper articles, stretching back to the late 1800s and early 1900s that reference the existence of wild horses throughout the Heber area. *See e.g.* Exhibit #7. In the Ethnographic Study, one interviewee opined that the wild horses were old cavalry horses that were set loose in 1910. ISPMB does not dispute that some of the current horses may be descendants of these cavalry horses, but the publications show that horses in the area predated 1910.

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Additional articles, books, and journals trace the Wild Horses' existence from that time to the present day. Acknowledged historians for the Heber Wild Horse Territory trace the history of the wild horses directly back to the journeys of the Jesuit Priest, Father Eusebio Kino, in his explorations of the area for new mission sites during the late 17<sup>th</sup> and early 18<sup>th</sup> centuries. See Jinx Pyle, *Narrative of History of Wild Horses on the Mogollon Rim* (Aug. 2005), See Exhibit #8. Books on the area, including the famous account of the Hashknife Ranch by Stella Hughes, verify the continued existence of the horses on the Rim and of their great value to the ranchers who often caught a few and made them prized ranch horses. See Stella Hughes, *Hashknife Cowboy: Recollections of Mack Hughes* (1996), See Exhibit #9; see also Joan Baeza, *Horses of Arizona*, 2 Arizona Highways 65 (Feb. 1988), Exhibit #10; Bob Thomas, *The Astonishing Double Life of Frontier Rancher Cecil Creswell*, 71 Arizona Highways 10 (Oct. 1995), attached hereto as See Exhibit #11; *The Holbrook Argus*, Vol. XII No. 26 (Oct. 1, 1907), Refer to Exhibit #7; Will C. Barnes, University of Arizona Bulletin, Vol., VI, No. 1, General Bulletin No. 2 *Arizona Place Names* (Jan. 1, 1935) (excerpt) ("Bronco Mountain"), ("Dry Lake"), ("Wild Horse Lake"), attached hereto as See Exhibit #12. Spanish horse experts, who have visited the area, verify the remarkable resemblance of many of the herds to the Andalusian, the Spanish Barb, and the Spanish Colonial horse, ridden by Spanish soldiers who visited the area with Jesuit priests, explorers and settlers. See Jinx Pyle, *Narrative of History of Wild Horses on the Mogollon Rim* (Aug. 2005), See Exhibit #8.

Also attached is a pamphlet that was prepared by a long time Heber resident, Gerri Wager. See Exhibit #13. This document synthesizes the dates from several of the historical references.

These sources are important, not just for establishing the existence of the wild horses' in the area, but also for underscoring their obvious social impact. The amount of ink spilt on this topic gives context to how people have viewed the wild horses over time, and how the wild horse presence is a tie to early Western American history.

## **ii. Affidavits and photographs submitted in the 2005 litigation**

As a part of the 2005 litigation, ISPMB submitted multiple affidavits into the record of long time Heber area residents, or frequent visitors, who attested to the presence of wild horses in the A-S Forest before the Rodeo-Chedaskai fire. ISPMB has attempted on multiple occasions to resubmit these to the Forest Service for consideration in drafting the Scoping Document, but the

Forest Service has refused to consider this information. Thus, there is no reference to them in the Scoping Document. There is an “ethnographic study” included in the Scoping Document; however, the interviews are anonymous, making it nearly impossible to clarify any of the interviewee’s answers. The affidavits, in contrast, are valuable because they are notarized documents submitted by citizens who are willing to sign their name to a public statement and allow for the opportunity to clarify their responses.

These affidavits of various Heber area residents conclusively demonstrate the historic presence of the unbranded, unclaimed (wild) horses on public lands associated with the Apache-Sitgreaves Forests for well over 30 years prior to the Rodeo-Chediski fire. *See* Exhibit #3; see also Photographs of horses in the area taken in the fall of 2006 (conclusively showing the lack of any branding), attached hereto as *See* Exhibit #14. Indeed, in an interview, Doy Reidhead, who was hired by the Forest Service to conduct an illegal gather in the 1980s, stated that the horses he was hired to remove had been in the Black Mesa and Lakeside Districts since at least 1967. *See* Exhibit #15.

### **c. Studies**

The Wild Horse and Burro Act states that the Agency “shall consider the recommendations of qualified scientists in the field of biology and ecology, some of whom shall be independent of both Federal and State agencies and may include members of the Advisory Board established in section 1337 of this Act.” 16 U.S.C. § 1333(b).

#### **i. Heber Wild Horse Expert Report**

Also, as part of the 2005 Litigation, ISPMB submitted an expert report prepared by Mary Ann Simonds. *See* Exhibit #2, tab N. As a part of her investigation, Ms. Simonds combined a review of historical records, field observation of the horses and habitat, and social research through conducting interviews to conclude that there was sufficient evidence to conclude that there were at least two or more stable groups of 15-30 wild horses in or near the Heber Wild Horse Territory. This document has also repeatedly been submitted to the Forest Service for consideration in the preparation of the Scoping Document, and it has similarly been repeatedly rejected. That study shows that at least two dominant bands have existed in the Territory, two groups in those bands

have 15-30 horses. *Id.* at 2. Simonds recommends that investigations into the behavioral ecology of the wild horses be conducted to develop baseline data and determine the best management practices in order to preserve the wild horses that represent the “living symbols of the historic and pioneer spirit of the West.” *Id.* at 3.

## ii. Studies Relating to PZP

There are a number of studies regarding the effects of PZP on horse populations that the ISPMB has submitted to the Forest Service in the past for consideration, that have also been rejected, including the following:

- Madosky, et. al., The effects of immunocontraception on harem fidelity in feral horse (*Equus caballus*) population, 128 *Applied Animal Behavior Science* 50 (2010). *See* Exhibit #16.
- Nuñez, C. M. V., J. S. Adelman, and D. I. Rubenstein, Immunocontraception in wild horses (*Equus caballus*) extends reproductive cycling beyond the normal breeding season, 5(10) *PLoS ONE*, e13635 (2010). *See* Exhibit #17.
- J.I. Ransom et. al. Contraception can lead to trophic asynchrony between birth pulse and resources, 8(1) *PLOSC ONE* e54972 (2013). *See* Exhibit #18.
- Nuñez, Consequences of porcine zona pellucida immunocontraception to feral horses, 12(1) *Human-Wildlife Interactions*, 131 (Spring 2018). *See* Exhibit #19.
- Craig C. Downer, Will There Be a Healthy Future for America’s Wild Horses and Burros IN THE WILD? PZP or Reserve Design? You Decide! Sept. 24, 2016. *See* Exhibit #20.
- Research Review conducted by Mary Beth Devlin. *See* Exhibit #21.

The Scoping Document does not appear to reference any scientific studies regarding the use of immunocontraceptives, yet the use of PZP and Gonacon are the first population management techniques listed in Appendix D of the Scoping Document. While these studies are instructive, as to the effects of PZP, ISPMB asserts that additional studies should be conducted or considered to understand the effects of these drugs, which will show numerous harmful side effects.

There are a number of assertions regarding the reproductive rate of wild horses in the Scoping Document with little to no scientific basis. As ISPMB has seen in the White Sand Herd and the Gila Herd, which the ISPMB manages, wild horse population rates reduce dramatically when the herd integrity is maintained. *See* Exhibit #22, tab A. As stated therein, if the reproductive rates that the Scoping Document (which are the same rates used by the BLM) were applied to those herds, they would be far larger than the herds exhibited. In contrast, the use of PZP has been shown to disrupt the herds integrity, and actually increases the reproductive rates of the non-sterilized horses.

**iii. Management and Monitoring**

Also attached is a recommendation for planning, monitoring, and inventorying populations and habitat within the Heber Wild Horse Territory. Exhibit #22, tab B. This document was originally submitted by the National Wild Horse and Burro Advisory Board to the Secretary of the Interior and the Secretary of the Department of Agriculture in the early 1990s by a member of the National Wild Horse and Burro Advisory Board. The document expresses the need for monitoring that accounts for use throughout the course of the year so that use allocations can be properly monitored, and conflicts between multiple forage users can be properly identified. Regular monitoring is essential to proper management because it can pinpoint the causes of ecosystem degradation, or other changes to the Heber Wild Horse Territory.

**II. Compliance with the National Environmental Protection Act (“NEPA”)**

Under the Stipulated Agreement, the Forest Service agreed to comply with the Wild Horse and Burro Act and NEPA in developing the Management Plan. Specifically, the Stipulated Agreement states as follows:

4. . . . [W]ild horses are by law an integral part and component of the natural system of the public lands, as expressed by Congress in the Wild Free-Roaming Horses and Burros Act of 1971 as amended. The Forest Service will work with the public, including Plaintiffs, in the development of a written Heber Wild Horse Territory Management Strategy in accordance with the provisions of the Act.

5. The Forest Service agrees to refrain from any gathering or removing of horses within the Heber Wild Horse Territory, as well as, on the Black Mesa and Lakeside Ranger Districts (which are considered the Sitgreaves National Forest) until the Forest Service completes, with public involvement, an analysis and appropriate environmental document pursuant to NEPA and develops a written Heber Wild Horse Territory Management Strategy. The Forest Service will involve the public, including the Plaintiffs, in scoping for this analysis. The Forest Service will provide Plaintiffs with specific notice of the document and consider Plaintiffs' comments on the same, however, Plaintiffs' comments are not entitled to any different weight or consideration than any other member of the public.

See Exhibit #23.

NEPA was enacted to “fulfill the social, economic, and other requirements of present and future Americans.” See 42 U.S.C. § 4331. In doing so, it ensures that federal agencies examine the environmental impacts of their actions before acting and provides a forum for the public to be informed about and comment on those impacts. *Balt. Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 97, 103 S.Ct. 2246 (1983); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349, 109 S.Ct. 1835 (1989).

NEPA provides that before undertaking an action, an agency may prepare a Environmental Assessment to determine whether the action will significantly impact the environment, thus triggering the need for an Environmental Impact Statement (“EIS”), or whether the agency can make a finding of no significant impact, which would allow the agency to proceed without conducting an EIS. *High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 639 (9th Cir. 2004)(stating that NEPA “does not mandate particular results, but simply provides the necessary process to ensure that federal agencies take a hard look at the environmental consequences of their actions.”)(internal citations omitted).

In the Overview of the Scoping Document, it states that after receiving comments, the Agency will prepare an Environmental Assessment (an “EA”). Pursuant to the National Environmental Protection Act, an EA can be used to provide an analysis of whether an

Environmental Impact Statement is necessary. *See Bark v. United States Forest Service*, 393 F.Supp.3d 1043, 1050-51 (D. Or. 2019). In this case, we urge the Forest Service to recognize that an EIS is necessary in the preparation of a wild horse management plan for the Heber wild horse herd.

**a. Requirements for an Environmental Assessment (“EA”)**

An EA is defined as "a concise public document" that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; (2) Aid an agency's compliance with NEPA when no environmental impact statement is necessary; (3) Facilitate preparation of a statement when one is necessary. 40 C.F.R. § 1508.9(a)(1)-(3). The courts have found that "An EA must include brief discussions' of the need for the proposal, of reasonable alternatives, and of the anticipated environmental impacts." *Hapner v. Tidwell*, 621 F.3d 1239, 1244 (9th Cir. 2010) (citing 40 C.F.R. § 1508.9(b)). A federal agency initially "may prepare an Environmental Assessment (EA) to determine whether the environmental impact of the proposed action is significant enough to warrant an EIS." *High Sierra Hikers Ass'n*, 390 F.3d at 639-40 (citing *Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001)). "Even though an EA need not conform to all the requirements of an EIS, it must be sufficient to establish the reasonableness of the decision not to prepare an EIS." *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1215 (9th Cir. 2008).

**b. Requirements for an Environmental Impact Statement (“EIS”)**

To comply with NEPA, federal agencies must prepare an EIS for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). NEPA defines "human environment" as "the natural and physical environment and the relationship of people to that environment." 40 C.F.R. § 1508.14. Agencies should interpret human environment "comprehensively to include the natural and physical environment and the relationship of people with that environment." *Id.*

To determine if an action is significant, the agency must consider the context and intensity. 40 C.F.R. § 1508.27. "Context refers to the setting in which intensity is analyzed and intensity is

defined as the severity of the proposed action's impact, as measured by ten nonexclusive factors." *Bark v. United States Forest Service*, 393 F. Supp. 3d 1043, 1051 (D. Or. 2019). The context is analyzed using factors such as "society as a whole (human, national), the affected region, the affected interests, and the locality." 40 C.F.R. § 1508.27(a). Effect or impact includes "ecological . . . aesthetic, historical, cultural, economic, social, or health effects". *Id.* at § 1508.8. The intensity "refers to the severity of the impact," which is analyzed using a non-exclusive list of ten factors. *Id.* at §1508.27(b)(1)-(10). The following factors from that list are clearly implicated by the Management Plan:

- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
- The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

The Management Plan requires an EIS because the Heber Wild Horse Herd is a historical and cultural resource, with nation-wide reach, and therefore their management is a significant federal action. After all, the Forest Service has acknowledged under the Stipulated Agreement that "wild horses are by law an integral part and component of the natural system of the public lands." *See* Exhibit #2, Sub tab Q, stipulation 4.

**i. The degree to which the action may cause loss or destruction of significant scientific, cultural, or historical resources**

As referenced above, NEPA defines "human environment" as "the natural and physical environment and the relationship of people to that environment." 40 C.F.R. § 1508.14. The United States Congress has plainly stated that

Congress finds and declares that wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; that they contribute to the diversity of life forms within the Nation and enrich the lives of the American people; and that these horses and burros are fast disappearing from the American scene. It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands.

16 U.S.C. §1331.

As such, the removal of wild horses will significantly impact the historical and cultural resource that Congress believes is an integral part of public lands. The management plan will necessarily effect the Heber Wild Horse Herd, either by carefully stewarding the herds' existence for future American generations, as Congress intended; utterly destabilizing the horse herds structure to a degree that eventually wipes their existence from public lands, or something in between.

Even before it was federally protected, the Heber Wild Horse Herd has been a part of the human environment in the A-S forest for hundreds of years. As discussed above there is extensive historical documentation showing the presence of the wild horses in the A-S Forest, and their impact on society, since the 17<sup>th</sup> century. See Jinx Pyle, Narrative of History of Wild Horses on the Mogollon Rim (Aug. 2005), attached hereto as *See Exhibit #8* (referencing the journeys of Father Eusebio Kino in the late 17<sup>th</sup> and early 18<sup>th</sup> centuries); see also Stella Hughes, Hashknife Cowboy: Recollections of Mack Hughes (1996), *See Exhibit #9*; (a famous account of the interactions between wild horses and cowboys through the 20<sup>th</sup> century) see also Joan Baeza, Horses of Arizona, 2 Arizona Highways 65 (Feb. 1988), attached hereto as *See Exhibit #10*; Bob

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Thomas, *The Astonishing Double Life of Frontier Rancher Cecil Creswell*, 71 Arizona Highways 10 (Oct. 1995), *See* Exhibit #11; *The Holbrook Argus*, Vol. XII No. 26 (Oct. 1, 1907), Exhibit #7; Will C. Barnes, *University of Arizona Bulletin*, Vol., VI, No. 1, General Bulletin No. 2 Arizona Place Names (Jan. 1, 1935) (excerpt) (“Bronco Mountain”), (“Dry Lake”), (“Wild Horse Lake”), attached hereto as Exhibit #12.

More recently, the Herd has continued to draw visitors, including campers, horse-backed tourists, and photographers who are eager to see the horses. *Arizona Highways*, a publication that extols the virtues of Arizona’s attractions, interviewed a photographer who lives near Heber about what the herd means to the photographer and other locals. The photographer is quoted, saying,

If you have ever seen the wild horses, whether a horse person or not, the sheer heart of the wild that you will sense is breathtaking. The Heber wild horses are true survivors, through countless brutal winters and long, hot summers. They are the last magnificent symbols of the West. And we will fight to keep them free, wild and unmanaged. . . In the last few years, as word has spread through social media, the Heber wild horses are drawing photographers from all over the world. Families that want to get out to camp and hike are asking where they might sight them. Our retirees can take their quads out on Forest Service roads in search of a sighting, and at times they’ll be spotted along Forest Service roads. Like any wild animal, sighting them is not guaranteed. To ensure the future and freedom of the Heber wild horses, I would encourage everyone to come up and take some photographs of them. They live in one of the most beautiful national forests in Arizona. And go tell others of your experiences. Spread the word that the Heber wild horses are alive and well so far, with no interference from man. They’re an awesome sight to see

*See* Exhibit #24. Accordingly, it is clear that the herd is a significant historical and cultural resource.

The Management Plan, in turn, is a significant federal action because it provides for the management of the wild horses, including the provision of essential resources (food, water, space, and cover) and oversight and protection of their ecosystem. The Management Plan further provides for when they may be declared excess and be removed from the Territory. Under the Scoping

Document, the Management Plan would even govern whether the horses breed and their overall reproductive rate. Moreover, in its current form, the Scoping Document contemplates a herd size of between 50 and 104 horses. *See* Scoping Document at 15. According to the Scoping Document, there may have been as many as 420 wild horses on the A-S Forest in 2017. *Id.* at 8. The Forest Service is therefore currently considering removal of nearly 400 horses from the A-S Forest, that is roughly 7 out of every 8 horses would be declared excess and removed. That is fundamentally significant.

**ii. The degree to which the effects on the quality of the human environment are likely to be highly controversial.**

The Heber wild horse herd is often featured in the Arizona news. Community meetings in the Heber area on the wild horses are generally well attended, and there are strong voices from multiple perspectives on how the wild horses should be managed. This includes the ranchers whose allotments overlap the territory, the retirees that ride their ATV's out to see the horses, the campers that come up from Phoenix to enjoy the woods and see the horses, photographers who seek the horses out for stunning pictures, and of course parties like ISPMB who seek to preserve the horses for future generations.

The scale of the cull that would be required to put the Management Plan contemplated in the Scoping Document into effect would be staggering and would undoubtedly lead to an outcry from concerned citizens, and potential litigation. Without an EIS, the Forest Service leaves itself open to additional attack because as the Scoping Document is written, there is insufficient support for the Forest Service's proposed action. *See Blue Mountain Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1211-1212, 1231 (9th Cir. 1998) ("General statements about possible effects and some risk do not constitute a hard look absent justification regarding why more definite information could be provided."); *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001) (holding that the purpose of an EIS is to obviate the need for speculation by ensuring that available data is gathered and analyzed prior to the implementation of the proposed action). All case law cited herein is provided as Exhibit 23, for the reviewer's convenience.

**c. The Management Plan, as laid out in the Scoping Document, is flawed.**

**i. The proposal is so vague to the point that there is no clear proposed action.**

The Stipulated Agreement from the 2005 litigation obligated the Forest Service to create a management plan for the Heber Wild Horses Territory before it could remove any additional horses from the Heber Wild Horse Territory, Black Mesa Ranger District, or Lakeside Ranger District. *See Exhibit #2, tab Q, stipulation 5.* In contrast, the Scoping Document is vague about what that proposed plan is. For instance, the plan seems to contemplate keeping all of the wild horses on the Heber Wild Horse Territory, but the Territory does not have a physical boundary. There are references that an excess removal plan will need to be developed and implemented, but it is not clear what that plan will look like. There are references to the potential use of PZP and other birth control measures, but it is unclear if, how, or when those measures may be put into place. For instance, as drafted, these measures could be implemented under the proposed Scoping Document only in the eventually that an excess is found, or immediately.

The Proposal does not clarify how or when monitoring of the horses and territory will take place. ISPMB understands that the Agency has hired or will be hiring a Wild Horse Coordinator. That person and what their role entails does not appear to even be mentioned in the Scoping Document. Additionally, there is no guidance on what management funding will be allocated to the Territory, or how those funds will be spent. How the Agency chooses to allocate funding will translate into how it prioritizes its management.

ISPMB acknowledges that all that has been published thus far is a Scoping Document of the Management Plan, but it is impossible to provide substantive comments to a plan that is still so nebulous. Rather than a series of proposed alternatives, the Scoping Document has just relayed a series of concepts without forming them into a true plan.

**ii. The analysis is inadequate.**

There are a multitude of inadequacies in the analysis of the Scoping Document. Many of these are addressed below, but below are some of the analytical deficiencies in the Scoping Document.

- **There is no study of the A-S Forest showing that an active management**

**strategy, including whether immunocontraceptives, relocation, or potential gathers are necessary.** The Scoping Document contemplates a series of high impact management strategies without referencing a single study identifying a need for management action with the A-S Forest. *See* 36 C.F.R. §222.75 (“The Chief, Forest Service, is authorized **and directed** to undertake those studies of the habits and habitat of wild free-roaming horses and burros that he may deem necessary.”)(Emphasis added).

- There has been no reliable census done to determine the composition of large herbivores in the Heber Wild Horse Territory to determine what would be competing with the horses for resources.
- There is no accurate count on the number of wild horses on the A-S Forest. The margin of error on the flyovers is substantial in any circumstance, but particularly in a forested area.
- Containing all of the horses on the Heber Wild Horse Territory will necessarily require the horses to reverse their migration patterns. The effects on the horses are unknown.
- Containing all of the horses on the Heber Wild Horse Territory will require the majority of the wild horses in the A-S Forest to be moved there. The effects on the horses are unknown. The Wild Horse and Burro Act acknowledges that the wild horse territories would only comprise part of the wild horses’ habitat, Forest Service regulations provide for wild horse migration off of the wild horse territories, and the Stipulated Agreement specifically provided for the protection of wild horses within the Black Mesa and Lakeside Districts, not solely within the intangible boundaries of the Heber Wild Horse Territory.
- Implementing PZP as an immunocontraceptive has been shown to negatively impact the horses physiology and behavior. These issues are not addressed.
- The Ethnographics study is insufficient to establish historical numbers for the horses and patterns of use.

- There is no study of the natural habitat of a horse herd, and as such, there is no real review of their impact on their habitat, survival needs, or other attendant factors.

**iii. The Scoping Document does not consider meaningful alternatives.**

The Scoping Document does not consider meaningful alternatives to restricting the horses to the Heber Wild Horse Territory or imposing some form of management upon the herd or the Territory if one of several thresholds are met. If the horses are not the cause of the threshold being triggered, then there should be an alternative that does not disrupt the herd to fix the problem. By not providing alternatives, the Scoping Document dictates the outcome.

**III. Response to the Scoping Document**

**a. Reliance on bad data**

**i. Reliance on old studies of *de minimus* to no value.**

Inexplicably, the USFS continues to rely on unproven claims about the historical population of wild horses in the Territory. Those same claims were presented to the district court judge in the 2005 Litigation, and the judge said the claims were “denied as moot because the evidentiary value of the table is *de minimis*-defendants fail to explain how these figures were derived.” *See* Exhibit #2, tab E, at page 4.

There is no indication regarding how the USFS determined the population of wild horses from 1971 through the early 2000s. There is no scientific study or facts to indicate that only two mares remained in the 1990s or that the stud for the herd was sterile. In 1971, there were at least seven horses occupying the Territory, but likely many more. *See* Forest Service Memo to Regional Forester, attached hereto as *See* Exhibit #25. It is not known how the USFS estimated the population of the horses. *See* Deposition of Bumpus, taken Oct. 13, 2006 (“Bumpus Dep.”) at 36:23-37:25, Exhibit #2, tab J; Hughes Deposition, taken Oct. 5, 2006 (“Hughes Dep.”) at 66:4-22, attached hereto as Exhibit #2, tab H. This appears to be nothing more than a guess based upon a single fly-by, during a time when the A-F Forest was severely overgrown. In 1974, the USFS speculated that “the stud [for the herd] may be sterile as no colts have been seen for several years, and there is no indication of unauthorized removal.” *See* Exhibit #25. The USFS never took any action to test this unverified assumption. Based on incomplete and marginal surveys, from 1974

to 1978, the population of the herd appeared to decrease from seven to three. In 1980, however, the population increased to eight head which suggests, contrary to the USFS's suspicion in 1974, that the stud was not sterile, or not all of the horses were properly accounted for in the earlier surveys. *See* Documented Wild Horse Population Numbers, Heber Wild Horse Territory, A-S National Forests, attached hereto as *See* Exhibit #26. The wild horse population reportedly dropped to five head in 1982 but increased to seven head in 1984 before holding steady at five head between 1986 and 1991. *Id.* In 1992 the population was listed as zero. *Id.* However, the USFS indicated as late as 1993, that there were two mares left in the herd. *See* Territory Withdrawal Recommendation, attached hereto as *See* Exhibit #27. This data is obviously flawed. The USFS has nonetheless disseminated the estimated population from these baseless censuses on the Agency's website and Scoping Document.

The USFS has consistently disregarded the Act's requirement to maintain a current inventory of wild horses. *See* 16 U.S.C. § 1333(b). Indeed, a census was never conducted to accurately estimate the wild horse population in the Territory – let alone the Apache-Sitgreaves National Forests. *See* Wild and Free Roaming Horses and Burros on Public Lands Report (estimating the wild horse population in the Territory to be 5 head, but indicating the estimate was not based on a census), *See* Exhibit #28; *see also* Exhibit #2, tab L Klein Deposition, taken Oct. 13, 2006 (“Klein Dep.”) at 19:14-21:17 (indicating that a census was not conducted to determine whether there were only two horses left); Exhibit #2, tab G Zieroth Deposition, taken Sept. 25, 2006 (“Zieroth Dep.”) at 28:23-30:21 (indicating that she was unaware of any inventories after 1993). In addition, it is not clear whether foals or losses from deaths were always included in the estimates of the number of horses. *See* Forest Service letter to Denver Public Library (noting the population estimate as of December 1973 did not include the 1974 foal crop or death losses). *See* Exhibit #29. USFS employees do not know how the population numbers listed in the historical documents were obtained. *See* Exhibit #2, tab H, Hughes Dep. at 65:13-70:22; *see* Exhibit #2, tab J, Bumpus Dep. at 37:10-39:11, 65:22-66:20,.

Little is known about the “inventory” in 1993 which indicated that there were two horses remaining in the Territory. *See* Exhibit #2, tab L, Klein Dep. at 19:14-21. The USFS continued to

report the wild horse population as zero in 2004 even though it never conducted a recent census. *See* Exhibit #2, tab G, Zieroth Dep. at 28:23-30:21, 49:5-50:10; *See* Exhibit #2, tab L Klein Dep. at 35:2-23; *See* Exhibit #2, Sub part H, Hughes Dep. at 26:4-22; *See* Exhibit #2, Sub part J, Bumpus Dep. at 40:2-42:2, 65:22-66:20; *see also* Exhibit #2, tab E. Order Granting Injunction at p.4 (finding the evidentiary value of the of the USFS's documentation of zero horses to have *de minimus* value, because USFS failed to explain how the figures were derived), Notably, USFS Black Mesa Ranger District Ranger Kathleen Klein testified that she only came to the realization that the Territory had not been disbanded after the 2005 Litigation was filed. She provided that it was at that time that she actually reviewed the provisions of the Act. *See* Exhibit #2, Sub tab L, Klein Dep. at 46:3-23,. She also testified that the USFS then recognized that Forest Supervisor Bedell either had not withdrawn the Territory or he was not able to do so. *Id.* at Klein Dep. at 51:1-52:24. Ms. Klein acknowledged that it was USFS practice to discount the existence of the Territory and of the wild horses. *Id.* at page 52.

This documentation (along with additional evidence) was provided to the USFS in the 2005 Litigation. Accordingly, the USFS has copies of these documents and knowledge of this information. Even more egregious, in what can only be called information laundering, the Working Group relied on these figures when considering how to structure the wild horse management plan and now the USFS is using the findings of the Working Group to support its claims. Appendix D of the Scoping Document is nearly a word-for-for replication from the Working Group Report. The claims lack foundation. The Forest Service cannot build a management plan on top of them. Despite a court order and the Stipulated Agreement, and contrary to logic and reason, the Agency appears to be attempting to do just that by once again citing to these claims in the Scoping Document.

## **ii. Reliance on new studies of questionable probative value**

### **1. Ethnographic Study**

The Scoping Document includes a Historic Research and Ethnographic Study, which incorporates interviews with 10 unnamed participants concerning the wild horses and uses this to further support the aforementioned baseless claims about the herd size. In the 2005 Litigation,

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ISPMB submitted a historical study based on the written documentation and spoken histories of the Heber/Overgaard, Arizona area, including the A-S Forests, which show the continuous presence of wild mustangs since the 17th century. *See* Joan Baéza, *Horses of Arizona*, 2 Arizona Highways 64 (1958) & Stella Hughes, *Hashknife Cowboy: Recollections of Mack Hughes*, (1996), excerpts attached hereto as Exhibit #9. First-hand eyewitness accounts of named, long-time area residents indicate that a herd of wild, unbranded horses of approximately 20 to 30 head have been in the A-S Forests since the 1970s. *See* Affidavit of Diane Dahlin ("Dahlin Affidavit"), dated September 7, 2005, at TT 5-6, attached hereto as Exhibit X; Affidavit of Lee Larson ("Larson Affidavit"), dated September 7, 2005, at ln 6-9, *See* Exhibit #3; Affidavit of Ron Britz ("Britz Affidavit"), dated September 7, 2005, at 4-6, *See* Exhibit #3; Affidavit of Barbara Van Cleve ("Van Cleve Affidavit"), dated September 7, 2005, at 5-6, *See* Exhibit #3; Affidavit of Captain Richard Potts ("Cpt. Potts Affidavit"), dated September 7, 2005, at ln 6-7, *See* Exhibit #3; Affidavit of Cheryl Crandell ("Crandell Affidavit"), dated September 7, 2005, at ln 6-7, *See* Exhibit #3. Indeed, the light buckskin (crème color) and jet black color of the horses and foals observed in the A-S Forests indicate offspring of the original Spanish wild mustangs introduced to the Heber area by Father Eusebio Kino some 300 years ago. *See* Exhibit #3 Crandell Affidavit at 6-7; Affidavit of Patricia Haight, Ph.D ("Haight Affidavit"), dated September 8, 2005, at para 12.

Discussions and interviews with local residents clearly indicate that wild horses have existed in the A-S Forests since 1911 and earlier to present day. *See* Haight Affidavit at ln 13, Exhibit X. Even the man who was awarded a contract to remove the Heber Wild Horses from the A-S Forest stated in an interview that he believed the horses had been on public lands in the A-S Forest since the winter of 1967. *See* Doy Reidhead Interview, Exhibit #15.

Further, retired Air Force Captain Richard Potts worked with the Forest Service for at least six years, serving as a fire lookout in the A-S Forests for part of that time. *See* Exhibit #3 Cpt. Potts Affidavit at ln 5. Since 2000, two years prior to the Rodeo-Chediski fires, he frequently observed a herd of wild horse consisting of 7 to 8 mares and a light buckskin colored stallion. [*Id.* at ln 6]. That particular herd has produced at least 3 wild foals. *Id.* Captain Potts has never observed any kind of branding or other domestic markings on these horses. [*Id.* at ln 7]. Additionally, Lee

Larson saw herds of wild horse in various locations within the A-S Forests since 1977. *See* Exhibit #3 Larson Affidavit at ln 6. Mr. Larson confirmed Captain Potts' testimony that none of the horses he had witnessed ever had any branding or domestic markings. [*Id.* at 8]. In fact, information obtained from the Forest Service confirmed the presence of "feral, wild horses" in the A-S Forests from 1971 until the Forest Service's "census" efforts in 1993. *See* Exhibit #30 United States Department of Agriculture, Forests Service Reply to FOIA Request. In response to a Freedom of Information Act request, the Forest Service failed to produce to Plaintiffs any census or inventory regarding wild horses in the A-S Forests. *See* Exhibit #3 Haight Affidavit at ln 6-8. Accordingly, the Forest Service has no defensible basis for contesting the legal status of the wild horse in the A-S Forest based on these fatally flawed studies. Further, the Agency's continued reliance on this data calls into question the reliability of any proposal that is derived from that misinformation.

The Ethnographic Study and its summary are concerning for many reasons. First, there are very few contributors. Second, the selection of ten anonymous individuals prevents, for lack of a better term, opportunity for cross-examination of the contributors. Third, the Interview of Subject A is missing several questions, but the answers suggest that the questions may have been leading, and (as acknowledged in the study) varied from the questions asked of the other participants. Fourth, the Forest Service had access to the affidavits (addressed above) and an expert report from the litigation which speak to the historical presence of wild horses in the A-S Forest, but the Ethnographic Study does not appear to utilize any of that information. Finally, the Summary of the Ethnographic Study cherry-picks from the interviews to arrive at certain conclusions, and it entirely discounts the value of historical documentation concerning wild horses in the A-S Forest by implying that the horses that are currently in the forest were not always wild.

### **iii. Reliance on Working Group**

As addressed below, the ISPMB has raised several issues about the Working Group ranging from the type of information provided to the bias of its members. Those concerns are addressed in the third section of this response. Those concerns are important for this Scoping Document because it clearly draws from the Working Group's report, and therefore, the conclusions within the Scoping Document are also unreliable.

**b. The Horses are Wild Horses.**

ISPMB does not oppose, and in fact encourages, the Forest Service's decision to manage the wild horses that are on the A-S Forest; however, it is fundamental that these horses are recognized as wild horses. The Act defines "wild free-roaming horses and burros" as "all unbranded and unclaimed horses and burros on public lands of the United States." 16 U.S.C. §1332(b). The Forest Service defines them as "all unbranded and unclaimed horses and burros and their progeny that have used the lands of the National Forest System on or after December 15, 1971, nor do hereafter use these lands as all or part of their habitat but does not include any horse or burro introduced on or after December 15, 1971 by accident, negligence, or willful disregard of private ownership. Unbranded, claimed horses and burros for which the claim is found to be erroneous, are also considered as wild and free-roaming if they meet the criteria above." 36 CFR §222.60(b)(13) (Emphasis added.) This also includes horses that were introduced "onto Wild Horse and Burro Territories or ranges" after December 15, 1971, that then become intermingled with the wild horses. 36 CFR §222.63.

The horses are wild by virtue of their (or their ancestors) presence on all *public lands of the United States*. They are not wild by virtue of their affiliation with a certain piece of land. As acknowledged by the court, "[The Agency] argue that pursuant to the Wild Horse and Burro Act, they need only census horses in the Heber Wild Horse Territory, and not the entire ASNF. However, 36 C.F.R. §222.25 requires the surveillance and protection of wild horses on national forest lands, other public lands, and lands of other ownership or jurisdiction." Attachment 2, at 5. By statute, wild horses are "all unbranded and unclaimed horses and burros on public lands of the United States." 16 U.S.C. 1333(a).

During litigation, the Forest Service claimed that the horses were not wild, and presented a summary table, which purported to show that between 1992 and 2004, there were no documented wild horses in the Heber Wild Horse Territory. *See Exhibit #2, tab C*. This is the same information that the judge in the civil case said had de minimis value, and it is quoted yet again in this Scoping Document. However, from discovery in the 2005 Litigation, it is clear that Forest Service employees who worked for the Agency at the time had no idea what made a wild horse "wild."

In a deposition, a Forest Service district ranger, for the Heber Ranger District (which was consolidated with the Black Mesa Ranger District) stated that she believed that the two wild horse bands that she had witnessed during the course of her post were not federally protected wild horses because they were not on the Wild Horse Territory. In another deposition, Kendell Hughes, a GS11 range management specialist who had worked at the Black Mesa Ranger District since the early 1990's, stated that there was no wild horse herd because he believed the Wild Horse Territory had been dissolved in the early 1990's. *See Exhibit #2, tab H.* However, the horses do not have to remain within the Wild Horse Territory to still be federally protected wild horses. Forest Service regulations provide that the Agency is obligated to protect the wild horses, even though they may migrate away from the designated territory. *See 36 C.F.R. 222.65.* Moreover, even though not explicitly stated in the Stipulation Agreement, the settlement does require the Forest Service to refrain from removing horses from the Heber Wild Horse Territory, the Black Mesa Ranger District, and the Lakeside Ranger District, in recognition of this precept.

Accordingly, the Forest Services needs to take a hard look at its own data, recognize its limited value for determining the historical numbers of wild horses on the A-S Forest, and review additional historical data and studies (such as those referenced above). ISPMB contends that if the Forest Service does so, it will inevitably recognize the designation of these horses as wild based on their ancestor's presence on federal lands.

### **c. Management Based on Herd Size**

In *Dahl v. Clark*, the court held that the BLM should manage the horse population to support ecological balance, not to maintain a specific number. *Dahl v. Clark*, 600 F. Supp. 585, 595 (D. Nev. 1984)(stating "Nowhere in the law or regulations is the BLM required to maintain any specific numbers of animals or to maintain populations in the numbers of animals existing at any particular time."); *see also Animal Protection Institute of America v. Nevada BLM*, 109 IBLS 115 (1989).

Under the Wild Horse and Burro Act, as amended by the Public Rangelands Improvement Act ("PRIA"), the Forest Service, case remove "excess animals" if they "must be removed from an area in order to preserve and maintain a thriving and natural ecological balance and multiple-

use relationship in that area.” 16 U.S.C. §1332(f). To establish that certain horses are excess animals, the Forest Service must (1) create and consider a current inventory of the wild and free roaming horses and burros on the lands within its jurisdiction, consult with state and federal wildlife agencies, consider the advice of qualified scientists or other individuals with scientific expertise or special knowledge of the wild horses and burros; and (2) make a determination that there is an excess based on a special study, or the consideration of the inventory, information in any applicable land use planning, information from a court ordered Environmental Impact Statement, and any additional information presented to the Forest Service. 16 U.S.C. 1333. Even then, the Forest Service must identify and act on the animals that are actually causing the harm, whether they are horses, other wildlife, or livestock. Moreover, the Forest Service cannot do so without any citation to a study, without any NEPA analysis, as required by the Stipulated Agreement.

Apparently to avoid conflict with that ruling, the Scoping Document states that if one of several thresholds are crossed, it would “indicate the need for additional data collection to inform the deciding official on determinations for removal of excess horses.” One of those thresholds is that the “upper level of appropriate management level is exceeded.” In Table 5 of Appendix B, a listed objective is to “maintain healthy horse populations” which is solely indicated by the number of horses and reproductive rates. As written, it can be triggered by the horse population approaching the upper quartile and the possible management tools are population management of gather and removal. In summation, this means that under the proposal in the Scoping Document, if the horse population exceeds 104, this would trigger a review. The review could look solely to whether the horse population “is approaching the upper quartile” of the 50-104 horse range, which would be de facto satisfied because the population exceeded 104. That would in turn trigger the use of a population management tool or gather and removal. [Pouring syrup on a rock does not make it a pancake]. Creating a protocol that requires cross referencing between tables and “tool kits” in multiple appendices does not give the test substance. As it stands, this Management Plan contains at least one misdirection that allows the Forest Service to manage to a number of 104 horses. Managing to a number contradicts the holding of *Dahl v. Clark*.

There should not be a threshold based on the wild horse population exceeding a set number. Rather, the Forest Service should monitor the health of the herd and the health of the ecosystem and use that to make a determination as to whether there is a need to remove horses and how many. Additionally, the Scoping Document asserts population thresholds without sufficient knowledge of whether population control or reduction is currently needed. At this time there is insufficient data concerning the herd size, health of the forest, or health of the horses. Without sufficient information, it is entirely premature to recommend a population range, let alone herd reduction or population control. The horses have been living in an effectively unmanaged state for decades. Unless there is a showing of excess, population management is inappropriate.

**d. How Carrying Capacity Should be Allocated between the Wild Horses and others *The Wild Horse Territory is principally devoted to the wild horses.***

The Scoping Document lays out a plan that would reserve forage for wildlife (but not wild horses) first, and then evenly allocate the remainder to the wild horses and cattle. This flies in the face of the Stipulated Agreement. The Stipulated Agreement states, “[t]he Parties hereby agree that wild horses are by law an integral part and component of the natural system of public lands, as expressed by Congress in the Wild Free-Roaming Horses and Burros Act of 1971 as amended.” See Exhibit #2, tab Q, stipulation 4.

As a part of the natural system of public lands by law, the wild horses should be allocated forage as wildlife, not as a foreign species to be accommodated. The Wild Horse and Burro Act states that

[a]ll management activities shall be at the minimal feasible level and shall be carried out in consultation with the wildlife agency of the State wherein such lands are located in order to protect the natural ecological balance of all wildlife species which inhabit such lands, particularly endangered wildlife species. Any adjustments in forage allocations on any such lands shall take into consideration the needs of other wildlife species which inhabit such lands.

16 U.S.C. 1333(a).

Accordingly, the Forest Service’s one regulation contemplate that the Wild Horses are wildlife.

It is raised in the Scoping Document that the cattle allotments that overlie the Wild Horse Territory pre-date the territory. *See* p. 9. That may call into question the Forest Service's wisdom in choosing to site the Heber Wild Horse Territory there, but not the validity of the Territory. An Act of Congress will govern over a permit issued by an agency. By statute, the "range" for a wild horse herd is "devoted principally but not necessarily exclusively to their welfare in keeping with the multiple-use management concept for public lands of the United States." 16 U.S.C. 1332(c). Under the Taylor Grazing Act, Federal Land Policy and Management Act of 1976 ("FLPMA"), and Public Rangeland Improvement Act ("PRIA"), grazing preferences "shall not create any right, title, interest, or estate in or to the [federal] lands." 43 U.S.C. 315(b). Even though grazing rights are generally stable in the wake of the Taylor Grazing Act, they are not the same as property rights. *See United States v. Fuller*, 409 U.S. 488 (1973). (United States Supreme Court holding that the takings clause does not require the federal government to compensate landowner for value added to property by virtue of a land permit). Moreover, the Department of Interior has provided that "If necessary to provide habitat for wild horses or burros, to implement herd management actions, or to protect wild horses or burros, to implement herd management actions, or to protect wild horses or burros from disease, harassment or injury, the authorized officer may close appropriate areas of the public lands to grazing use by all or a particular kind of livestock." 16 C.F.R. §4710.50(a).

ISPMB is not currently advocating for the removal of cattle from the allotments, but federal law should frame the Agency's considerations regarding allocation of forage. Accordingly, while the Heber Wild Horse Territory is specifically reserved for the wild horses, the use of that same land for cattle grazing permits is only permissible. Not mandatory.

#### **e. Determination of Excess**

The Scoping Document contains a "Management Actions Toolbox." This toolbox is fundamentally incomplete. All of the tools consider either altering the Territory or the horse herds. If a study ever was completed that identified damage to the ecosystem (and Scoping Document makes no reference to any such study) then it should be the source of the degradation that is targeted for remedial action. As currently contemplated in the Scoping Document, any deterioration to the herd or ecosystem will result in changes to the Territory or the herds, even if

the horses are not the cause. The Forest Service should consider other alternative actions. For instance, it should consider if there are invasive species or other wildlife causing the problem. Similarly, perhaps there are unauthorized or excess livestock, or perhaps human traffic has resulted in some degradation. If the wild horses are not the cause of the problem, then the solution should not be to act on the herd and make an excess determination. In its current form, the Scoping Document does not appear to allow for other sources of degradation to be considered, or alternate measure to be taken.

Additionally, there should be safeguards to minimize the impact to the horses and ensure their continued existence when management actions, or actions extraneous to the Management Plan, are implemented. For example, if there were another fire and it consumed the entire Heber Horse Herd Territory, it is not inconceivable that the Forest Service would determine that all horses should be removed from the territory to allow the vegetation to recover.<sup>4</sup> In such a scenario, all of the horse would be declared excess and the wild horses would be extinguished from the A-S Forest. The management toolbox should require protective measures to ensure the viability of the wild horses in the future.

#### **f. Restricting the Horses to the Heber Wild Horse Territory**

The Scoping Document appears to contemplate restricting the wild horses to just the Heber Wild Horse Territory. This is unacceptable, impractical, and contrary to applicable law for numerous reasons, some of which are outlined below, including because restricting the wild horses cuts across the grain of the spirit of the Wild Horse and Burro Act, which protects wild and *free-roaming* horses and burros. Moreover, the Stipulated Agreement, which remains binding on the Forest Service, expressly contemplates a Territory Management Plan that includes not only the Heber Wild Horses Territory, but also the Black Mesa and Lakeside Range or districts.

First, and foremost, Forest Service Regulations expressly provide for the protection of wild horses, even when they migrate from their territorial habitat. 36 C.F.R. 222.65 states as follows:

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<sup>4</sup> We state that it is conceivable, not because ISPMB believes the action is supportable or appropriate, but because that was the determination that the Forest Service made when it contracted to cull the herd, which resulted in the 2005 Litigation.

Individual animals and herds of wild free-roaming horses and burros will be under the protection of the Chief, Forest Service, even though they may thereafter move to lands of other ownership or jurisdiction as a part of their annual territorial habitat pattern or for other reasons. The Chief will exercise surveillance of these animals through the use of cooperative agreements and as otherwise authorized by law and act immediately through appropriate administrative or criminal and civil judicial procedures to provide them the protective measures of the Act at any time he has cause to believe its provisions are being violated.

Attached are two maps that were prepared by Robert Hutchinson, who has lived in Overgaard, Arizona for over 30 years. These maps outline the territory in which the Heber Wild Horses may roam. *See Exhibit #31.* In fact, the population density of the Heber Wild Horses is far higher outside of the Heber Wild Horse Territory than within it. The Wild Horse and Burro Act mandates that “[a]ll management activities shall be at the minimal feasible level and shall be carried out in consultation with the wildlife agency of the State wherein such lands are located in order to protect the natural ecological balance of all wildlife species which inhabit such lands, particularly endangered wildlife species.” 6 U.S.C. §1333(a). As of this time, there does not appear to be any study identifying a need to remove wild horses, or restrict them to the Heber Wild Horse Territory to protect the ecological balance of the area or for any other reason. To restrict them in this manner would therefore be entirely arbitrary.

Second, it is contrary to law. From the Scoping Document it appears that the Forest Service does not appear to believe that the Heber Wild Horse Territory would support a self-sustaining wild horse population. Rather, the Forest Service is contemplating rigidly regulating the number of breeding horses, manipulating the herd age and gender distribution, restricting them within a small area, and periodically introducing new horses from other wild horse territories to maintain genetic diversity. If the Forest Service takes all of these actions, the horses will be wild in name only. These management practices do not comply with the Congressional mandate to for management activities to be at the minimal feasible level. 16 U.S.C. §1333(a).

Third, the plan is fundamentally flawed. The Scoping Document acknowledges that there is insufficient winter forage on the Heber Wild Horse Territory, citing that as a reason for why the wild horses on the A-S Forest do not currently utilize portions of the Territory. There is no plan for supplementing their feed every winter. As contemplated, the horses may not survive the first winter after implementation if they are restricted to the Heber Wild Horse Territory. Or maybe they would. There is an absolute lack of evidence from the Forest Service either way.

Fourth, such a plan contemplates the horses migrating to the Northeast portion of the Heber Wild Horse Territory during the winter and then to the Southwest in the Summer. *See* Management Plan, at 16-17. That is the exact opposite of their current migration pattern which is to travel South in the Winter and North in the Summer. *Id.* at 29. By statute, “All management activities shall be at the minimal feasible level.” 16 U.S.C. § 1333(a). There is no evidence to show the impact of this change of the wild horses. Obviously, they cannot consult a map. Accordingly, it is unclear if they will successfully alter their migration patterns, and if they do, how long it will take to do so, and whether there will be any horses that survive the transition.

Fifth, most of the summer pastures are also utilized for cattle allotments. *See* Management Plan, at 21. The Scoping Document provides methods to allow the horses to access these pastures when cattle are not present (i.e. leaving gates open), but when the pasture is at its peak output, the cattle will be present, and the horses access to the pastures will be inhibited, whether they are restricted within the allotments with the cattle or fenced out.

Sixth, restricting the horses to the Heber Wild Horse Territory would necessitate transfer of the majority of the wild horses because based on the USFS more recent aerial surveillance, the vast majority of wild horses are located outside of the Wild Horse Territory. There is no evidence to show how this would affect or disrupt the wild horse’s band structure, habitat, or health.

**g. Objections to the use of immunocontraceptives, including PZP**

The Scoping Document contemplates immunocontraceptives as the primary source of herd management (where management largely appears to be anonymous with population control throughout the document). ISPMB categorically opposes the use of PZP because it requires

tracking mechanisms, can permanently sterilize the horses, and negatively impacts the herd dynamics.

PZP acts as an endocrine disruptor that can permanently sterilize horses if it is repeatedly administered. The Scoping Document contemplates using electronic trackers, freeze marking or photographing the horses to keep track of which ones are dosed. There is no data concerning whether the electronic trackers, which can move after being injected, or photographs are effective in accurately determining which horses have been dosed. Additionally, freeze markings are brandings. Wild horses are, in part defined by their lack of brandings. While we contend that it would not affect their legal status, ISPMB is concerned that the freeze brandings could create confusion if adequate records are not kept in the future.

The use of PZP negatively impacts the dosed horses, resulting in significant changes in physiology. For example, PZP has extended reproductive cycling beyond the normal breeding season, and breeding cycles becoming desynchronized from environmental factors such as the availability of food and the severity of weather, which the breeding cycles are normally tied to. See Exhibit #17 *See* (Nuñez, C. M. V., J. S. Adelman, and D. I. Rubenstein, Immunocontraception in wild horses (*Equus caballus*) extends reproductive cycling beyond the normal breeding season, 5(10) PLoS ONE, e13635 (2010); J.I. Ransom et. al. Contraception can lead to trophic asynchrony between birth pulse and resources, 8(1) PLoS ONE e54972 (2013). See Exhibit #18

The use of PZP also can lead to behavioral changes. Studies have documented decreases in group fidelity. See Exhibit #16 Madosky, et. al., The effects of immunocontraception on harem fidelity in feral horse (*Equus caballus*) population, 128 Applied Animal Behavior Science 50 (2010). Because horses are extremely social by nature, behavioral changes can have profound impacts on the herd. *See* Nuñez, Consequences of porcine zona pellucida immunocontraception to feral horses, 12(1) Human-Wildlife Interactions, 131 (Spring 2018).

PZP and other immunocontraceptives may not be necessary. When the horses do reach carrying capacity for their environment, their reproductive rates naturally decline substantially. *See* Exhibit #22, tab A. Additionally, the use of PZP or any other birth control drugs decreases the number of breeding animals, and thereby reduces the genetic diversity of the herd over successive

generations. This is a serious concern, particularly when paired with the herd sizes that the Working Group has proposed. Finally, there is no data, let alone sufficient data, to warrant these population control tactics. Even if there were sufficient data to show that such tactics were necessary, there are significant impacts that the use of these drugs would have on the horse herds that the Scoping Document fails to consider.

#### **IV. Response to the Working Group and its Report**

ISPMB raised its concerns with the Working Group members, the information supplied to the Working Group, and its conclusions. In response, ISPMB was instructed to submit those concerns during this scoping process. The correspondences are included as attachments hereto. *See Exhibit #6, tab G.* It is clear that the Scoping Document draws from the Working Group's recommendations, particularly with respect to various thresholds and the appropriate response. Accordingly, ISPMB's concerns with the Working Group are relevant to this Scoping Document as well because raises significant concerns about the Scoping Document's integrity.

##### **a. Reassertion of concerns with the data provided to the Working Group, and the effect on the Scoping Document**

There are numerous affidavits that were presented as evidence in the civil case, which come from people who have lived in the Heber area for many years and have witnessed the wild horses in greater numbers than those reported by the Forest Service during the same timeframe. *See Exhibit #3.* The Working Group did conduct its own interviews but does not appear to have had access to the affidavits, even though the affidavits are certainly available to the Forest Service. Working Group report at 2.

Additionally, the Working Group does not establish a basis for why the horses should be protected solely based on an affinity with the Wild Horse Territory. The Territory was established to be a range for the horses. The horses did not become wild because of their associating with the Territory. The Working Group's logic here suggests that there potentially is a fundamental misunderstanding within the Working Group as to what makes a horse "wild and free roaming" under the statute. 16 U.S.C. 1331. This raised some doubt as to whether the information presented to the Working Group was a full documentation of the record to date, whether the studies were

credible and balanced, and whether there were a mix of speakers that were not affiliated with the government as well as speakers who were.

While Rodeo-Chediski fire did burn several fences, it also burned the majority of the Heber Wild Horse Territory, clearing foliage and tree cover in an area that was severely overgrown (a fact that was said to contribute to the severity of the fire). Frankly, it follows that the horses were more visible in the area than they were before the fire – a factor which the Working Group does not appear to consider.

Finally, as previously raised, during litigation, the Forest Service claimed that the horses were not wild, and presented a summary table, which showed that between 1992 and 2004, there were no documented wild horses in the Heber Wild Horse Territory. See Exhibit #2, tab F (administrative record presented by the Forest Service in the 2005 Litigation). This is the same information that the judge in the civil case said had de minimis value, and it seems to be the information that the Working Group has relied upon. The Working Group has no discussion concerning the reliability of the Forest Service's assertions. Working Group report at 18-19.

None of these concerns with the Working Group's access to information have been waylaid, and yet the Scoping Document Pulls heavily from the Working Group's Final Report.

**b. Reassertion of concerns of the "collaborative" nature of the Working Group**

One woman who was affiliated with a horse advocate organization dropped out of the Working Group because the other members were so hostile to her. Another woman who was also advocating for the horses apparently could not offer input without being met with hostile responses that were so severe that she stopped contributing, even though she continued to attend the meetings. This raises serious concerns regarding the legitimacy of the Working Group's recommendations. If some members were silenced or forced out, their opinions are unlikely to have been reflected in the final report. As those members were both wild horse advocates, it is also likely that the opinions and concerns of ISPMB and other horse advocates were not properly voiced within the working group or reflected in the final report.

In December of 2017, ISPMB raised its concerns with the Working Group in a letter. *See* Exhibit #6, tab F. In July 2019, ISPMB reiterated its concerns. *See* Exhibit #6, tab G. Those concerns still exist, and they now call the integrity of the Scoping Document into question as well.

## **Conclusion**

The Scoping Document fails to properly consider the historical and cultural value of the wild horses but proposes a drastic management plan. There is a substantial need for further study and for meaningful alternatives. Additionally, many of the sources that the Scoping Document does rely on are of minimum probative value, which the Forest Service fails to acknowledge. Moreover, the Forest Service cannot derogate its obligations under the Wild Horse and Burro Act, federal regulations, and the Stipulated Agreement by completing the Management Plan without undertaking the following:

- Create an accurate inventory of the wild horses within the Black Mesa and Lakeside Districts.
- Conduct a survey of the actual composition of the A-S Forest's fauna.
- Make an accurate assessment of bounds of the wild horse herd's habitat – recognizing that it extends well beyond the Heber Wild Horse Territory and onto the Black Mesa and Lakeside Districts.
- Assess the current health of the ecosystem that the wild horses are a part of.
- Identify the impacts of the various co-inhabitants of the wild horse habitat on the ecosystem's health.
- Determine the actual reproductive rate of the herd.
- Assess the impact of other inhabitants of the same Territory.
- Determine the effects of every significant element of the Management Plan on the human environment, in light of the wild horses' status as a legally designated symbol of our Western heritage.
- Consider peer reviewed studies by independent researchers on the effects of the elements of the Management Plan, including but not limited to the use of immunocontraceptives; gathers; actively altering herd size, age, and gender

# Snell & Wilmer

L.L.P.

Anthony Madrid

March 12, 2020

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composition; limiting or reversing herd migration patterns.

- Consider the entire administrative record, including the record from the 2005 litigation that initiated the Management Plan.
- Acknowledge the actual value of the data that the Agency possesses and not arbitrarily cherry pick studies and information to support a predetermined outcome.

Accordingly, we ask that the Agency incorporate this response and the attachments into the administrative record, consider alternatives to the proposal in the Scoping Document, and properly discharge its statutory, regulatory, and contractual duties in creating the Management Plan. Further, ISPMB contends that an EIS is necessary for the creation of the Management Plan and trusts that EA will reflect such a conclusion.

Very truly yours,

Snell & Wilmer



Anthony W. Merrill

AWM:mel

enclosures

cc:

Leigh Sellari *without attachments*

Dawn M. Dickman *without attachments*

# **EXHIBIT 7**

## **DISRUPTION OF THE GILA HERD WITH INITIAL RESULTS- 2025**

Throughout the following discourse, ISPMB will be able to prove the following:

- **WinEquus Program is flawed and should not be used.**
- **WinEquus Program's numbers detail results of massive disruptions of herds from roundups and not healthy herds that have not been rounded up.**
- **The Agencies (Forest Service and Bureau of Land Management) management program for wild horses is flawed because they have never studied wild horses, as recommended by the National Academy of Sciences in 1980 so they could understand these animals as the wildlife species they truly are.**
- **The use of birth control on these animals destroys their natural healthy behaviors precluding wild horses from their ability to limit their populations on their own.**
- **Management of wild horses and burros must change if these animals are to survive into the next century.**
- **The most important change in achieving survival is to make the Heber wild horses a study herd over the next 5-7 years.**

*By Karen A. Sussman, president, ISPMB*

ISPMB'S HISTORY IN COMING TO ABOVE VIEWPOINTS:

Let me begin with ISPMB's acquisition of two complete intact herds in 1999 and 2000 that had not been rounded up until their removal to ISPMB. The White Sands herd had not been rounded up in 25 years while the Gila herd had not been rounded up in 50 years. Each herd demonstrated growth rates under 10% under the best of feed conditions over the 17 and 18 years in ISPMB's care. The under 10% was indicated by two scientists in the NAS study who advocated for this number to be used for wild horses on public lands instead of the 20% number backed by the Agencies. NAS quote, "two authors have projected increase rates with population models that incorporate birth and death rates similar to those published for several herds, and concluded that annual herd increase rates well below 10 percent are probable."

Our understanding of ISPMB's two herds has given us a clear vision of how wild horses should be managed. While ISPMB's herds have been rounded up and disrupted in 2017, ISPMB was fortunate in recognizing one herd left on public lands that can mimic ISPMB's two herds. They are the Heber wild horses located in the Apache-Sitgreaves forest in northern Arizona. This herd has been free of roundups since 2005. Thanks to a 2005 lawsuit in which ISPMB participated and thanks to our attorneys who have persevered through these past twenty years in protecting this herd with ISPMB, we are able to show their low growth rate at approximately 3% because they have been free from roundups in more than twenty years.

This herd must be studied over the next seven to ten years as it is the last untouched herd on public lands

Since 2017, when ISPMB's intact wild Gila herd of 137 was disbanded, ISPMB began its conservation program, again, with 21 remaining Gila horses. There were 17 mares and 4 stallions. Selection was made with genetic diversity as the upper most priority in mind, looking at long-term survival. Consequently, one mare from every band was selected to maintain the gene pool.

When the Gila herd was initially tested for blood typing and diversity by Dr. E. Gus Cothran at the University of Kentucky in 2000, he noted this initial herd of 31 animals were closely related and of pure Spanish origin with the exception of one mare. He stated that this mare still was very closely related to the rest of the herd. He advised ISPMB never to castrate any stallion including bachelor bands to maintain a healthy genetic diversity.

In obtaining the history of this herd, ISPMB did three-months of research interviewing the mustanger's son, museum personnel in Gila Bend and ranchers in surrounding areas from where these horses were captured. The oldest living rancher stated these horses were in this area as early as the beginning of 1900 when he arrived in the area as a little boy. All of these interviews were recorded with permission.

The Gila herd, because of its isolation in southern Arizona, and because it was never recognized under the 1971 Act, lived a very wild free-roaming life for approximately 50 years following the end of roundups in the area by the local mustanger in the 1930s. In 1996, ISPMB requested from the Secretary of the Interior, Bruce Babbitt, that this herd should be recognized as wild and free-roaming under the 1971 Act. Within 24 hours of receiving our months' long research, Secretary Babbitt declared them to be protected under the 1971 Wild Free-Roaming Horses and Burros Act (P.L. 92- 195).

What was not understood at the time by ISPMB and is very evident now, the behaviors of wild horses that are not constantly disrupted by roundups every four years as done on public lands, exhibit very natural and healthy behaviors as did our Gila herd. ISPMB was extremely fortunate to observe those behaviors. *One behavior, extremely important, is the herd working together for the good of the entire herd.* It was a team approach by all the band stallions in protecting young fillies. A noted observation was a yearling filly in her first estrus approaching a band of bachelors atop a hill. The bachelors were very interested in her and were excited. A family band stallion on top of the hill, observing these interactions, immediately left his family to discipline this filly. She galloped down the hill and stopped, not going back to her natal band. At the bottom of the hill another band stallion left his band and chased the filly back to her family band where she stayed. This filly never became pregnant until she was four years old. Consequently, in this herd, the fillies did not foal until they were four and five years of age. Five being a fully physically mature horse. This is no longer seen in public lands horses with fillies becoming pregnant now at one and two-years of age. The wisdom of the elder Gila band stallions protected not only fillies but also protected their mares from any bachelors. Also noted was the extreme respect for the band stallions exhibited by the bachelors.

From a physical standpoint, horses are not fully mature until the age of five. It makes perfect sense that young fillies should not be stressing their young growing bone structures by early pregnancy. This was nature's way.

Fred Wyatt, who was the head of BLM's Palomino facility, the first and largest facility for preparing wild horses for adoption, noted these early age pregnancies in 1992 and brought it to the attention of ISPMB's president, Karen Sussman, and Mary Ann Simonds, both serving on the BLM's National Wild Horse and Burro Advisory Board at that time. He was raising the red flag back then telling us that two-year old fillies were pregnant upon arrival to the facility. This was a relatively new observation he was seeing in wild herds being rounded up and he was extremely disturbed.

There were large numbers of roundups since 1975 which caused massive disruptions of the herds. Selective removal of wild horses began in 1992 which further compromised natural behaviors by implementing birth control. This was accomplished by rounding up the entire herd and separating mares from their band stallions for thirty days in holding pens. The purpose was to give the second shot of birth control at the end of thirty days. The Pryor Mountain herd was one of the first selective removals. It was noted that band stallions were not able to compete with juvenile stallions when released and lost many of their mares to these juveniles. Further revelations were related to Karen Sussman by the BLM contractor who rounded up horses in the Pryor Mountains stating when these animals were released, he witnessed the massive raping of mares by stallions and such chaos that even he was very deeply disturbed. There is no doubt that these roundups, and holding of wild horses, ultimately is changing their once natural healthy behaviors when they were previously untouched by human intervention.

The early studies in the 1980 National Academy of Sciences Report (NAS) related that *only one filly* out of the 6 herds studied throughout the world and the U.S was pregnant and foaled at the age of two. This filly was in the New Forest ponies in Britain observed by Tyler (1972) out of 107 two-year old mares for three years. She was the only one pregnant.

Currently with the massive disruption of the herds every four years by the BLM and the FS, it is not uncommon to now see fillies pregnant at one and two years of age, a time when they should be protected so their bone structures can mature and not be stressed by early pregnancies. In a healthy herd, an older mare models to her offspring how to be an effective and nurturing mother as noted in ISPMB's Gila herd. These fillies were prepared for motherhood by the time they were four and five years of age when they left their natal bands to join a courting bachelor.

Stallions play an extremely important role in band structures. ISPMB's youngest band stallion was eight years of age in our original Gila herd. It should be noted that stallions are usually over the age of ten before becoming band stallions in undisturbed populations. ISPMB contends that mares are emotionally mature by the age of five while stallions emotional maturity comes around the age of ten.

In the Red Desert study by Dr. Denniston in the early seventies, the youngest band stallion was twelve years of age. In disrupted herds, band stallions are often juveniles of the ages of six through nine. This age group is the most likely to evade captures on public lands; thus, allowing them to pick up any mares released or left behind in roundups.

### **DETERMING THE LENGTH OF TIME FOR A WILD HERD TO STABILIZE AFTER ROUNDUPS**

ISPMB is currently working on determining how long it takes for its disrupted Gila herd to develop stability as once experienced by their predecessors noting the following: behaviors, band structures, ages of band stallions, birth rates, death rates, ratio of colts to fillies born yearly, ages of mares or fillies with their first birth, foaling seasons, foaling rates of mares, respectful behaviors by members of the band, ability to work together for the good of the entire herd.

After eight years of data, ISPMB has noted that the growth rate of this disturbed herd is averaged at 14.38% yearly for the past eight years, already lower than the projected 20% by WinEquus. They are no longer doubling in population in four years and we expect this to continue as they recover, free from roundups.

We are also noting that as of 2023, for the first time, several two-year old mares were pregnant delivering foals at age three. This was noted when younger stallions matured and took mares. In 2023, all family bands had band stallions under the age of ten years considered to be juveniles. The ranges of ages for these juvenile stallions were five and six.

Out of the four older original band stallions only one stallion remains with one mare who has never become pregnant. Two of the band stallions were removed as early as the end of 2022 due to their injuries sustained by younger stallions. One older stallion is missing and has never been found in the rugged landscapes they inhabit now.

Colt to filly births range yearly, nearly 50/50.

It has taken six years for mares to stabilize and stop foaling out of season (late March through July is their usual foaling times).

Most importantly is to show with no more disruptions of this herd, that their numbers are no longer doubling every four years as they did in the first four years dispelling WinEquus.

It is obvious that allowing wild herds to stabilize will stabilize growth over time. It is the constant disruption of herds and the inability for herds to recover through stabilization that leads to increased numbers.

**CHART #1**

**ISPMB GROWTH CHART OF DISTURBED GILA HERD**

**YEAR    HERD NUMBER    PERCENTAGE GROWTH**

2017	20	Starting point
2018	24	20%
2019	30	25%
2020	33	10%
2021	39	18.89%
2022	44	12.82%
2023	48	9.09%
2024	51	6.25%
2025	58	13.73%

Average yearly growth rate- 14.38%

**CHART #2**

**ISPMB COMPARISON TO WINEQUUS CHARTS IN DISTURBED HERD GROWTH**

**ACTUAL NUMBER                  WINEQUUS PROPOSED NUMBER DOUBLING EVERY FOUR YEARS**

2017	20	0
2021	39	40
2025	58	80
2029		160
2033		320

If we look at the above charts and note the first four years of growth with ISPMB’s disturbed Gila herd, we could agree with WinEquus that growth rates are 20% and they double every four years. But with allowing the herd to recover without roundups, keeping band structures intact with their first and only move in 2018, we are seeing stabilization happening even with younger stallions at the helm. This confirms our understanding that roundups of healthy wild herds cause destruction of the band structures and the natural healthy behaviors of the herds leading to the increase in numbers.

It should be noted that ISPMB’s original herd was comprised of 31 horses in 2000. In 2016, the final count was 137 wild horses representing 16 years of growth averaging 9.73% yearly. They were an extremely stable herd.

Thus, WinEquus, in looking at herd numbers data post a roundup which occurred four years prior, would and could claim wild horses are doubling every four years with a 20% annual growth rate. The Agencies never give herds a rest and are often rounded up every 4 years because of this false belief. In fact, the Agencies have projected that in 2040 the population of wild horses will be 2.8 million animals reporting in the 2020 "Report to Congress."

Since the passage of the Act in 1971, the Agencies have created chaos on public lands for wild horses and are destroying their very natural behaviors of these protected animals that are so prized by the majority of Americans in our country. All based on not understanding wild horses as the wildlife they really are and managing them as public lands cattle or domestic horses.

With the possibility of permanent infertility after the second shot of GonaCon and permanent infertility in as short as three years with the use of PZP, and the complete mismanagement of wild horses through massive roundups, we know these animals are on the road to extinction unless they can be left alone to recover over time or not disrupted in the first place such as the Heber herd

#### **WHY THE HEBER HERD OF NORTHERN ARIZONA MUST REMAIN INTACT AND A STUDY CONDUCTED TO UNDERSTAND HOW STABLE POPULATIONS LIMIT THEIR OWN GROWTH**

The Heber herd has been free of roundups since 2005 representing twenty years. More than likely, they have not been disrupted years before 2005. However, in 2007 an agreed upon stipulation by the Forest Service and the International Society for the Protection of Mustangs and Burros (ISPMB) stated there would be no removals of wild horses in the areas they were presently found until a Territory plan was completed.

The Heber herd represents a growth rate far under the WinEquus calculations. Using those calculations by year 2024 when they would have doubled again, there should have been 9,600 horses in the forest and by 2025 there would have been 10,782 horses with a 20% increase. Instead, their growth rate is approximately 3%.

The Heber herd completely *destroys the credibility of the WinEquus program due to its stability from roundups over all this time*. Most importantly, the Heber herd shows how healthy, natural behaviors remain intact because *they are free from constant roundups and disruptions of healthy band structures*. The future protection of America's wild horses depends upon this unique Heber herd; otherwise, current management by the Agencies are on a trajectory that could show eventual extermination.

The Agencies (Forest Service and Bureau of Land Management) never studied wild horse herds in 1980 when advised to do so by the National Academy of Sciences (NAS).

While the Agencies, the Department of the Interior (BLM) and the Department of Agriculture (FS) were charged with the management of America's wild horses and burros, the Act, as amended, was specific about the management of these wild animals. The Public Rangelands Improvement Act of 1978 directed in part that the Bureau of Land Management (BLM) and the

National Academy of Sciences (NAS) contract for performance of a research study on wild horses and burros. The report was in partial compliance with the Act and represented the final report on Phase I containing current knowledge and recommended research on wild horses and burros. (1980 "Wild and Free Roaming Horses and Burros: Current Knowledge and Recommended Research" published by the U.S. Department of Commerce, National Technical Information Service.)

Phase I recommended 18 research projects, some of which would require 7 to 10 years of study for valid results. Phase II was published in October 1982 and synthesized the results of completed research on wild horses and burros.

With the final report to Congress due on January 1, 1983, the NAS committee identified five of the 18 projects as having priority for immediate study. Further the NAS final report called for a "long-term equid research program" and an "expanded in-house scientific staff" to provide a solid foundation of scientific data on which to base management decisions. However, the Agencies (Dept. of Agriculture and the Interior Department) felt that no further research would be needed partly due to financial constraints. Quoting the Report to Congress June 1984, *"the most pressing question concerning further research for the Agencies is whether the benefits of increased knowledge and efficiency will justify the cost."*

Actually, this is no surprise as the general attitude of the FS and the BLM was never supportive of wild horses and burros on public lands. At that time in 1981, the attitude was substantiated by an interaction with Mary Ann Simonds with then Director of the Bureau of Land Management, Robert Burford. She was working on several projects for wild horses and wanted to share her ideas with the Director. He said the following, "Don't waste your time little miss, there won't be any wild horses left in ten years." That was the prevailing attitude which has subsisted over time.

Now in the 54th year since the Wild Free-Roaming Horses and Burros Act was signed into law (1971), one glaring study of the eighteen proposed has never been completed. This is study number sixteen titled "Conceptual Development of Public Rangeland Management Models." This study was to be the final study after compilation of the other seventeen studies and was to serve as the "model" in which to manage wild horses and burros. Had this study been completed, management of wild horses and burros would have been at the "minimal feasible level" as required in the Wild Free-Roaming Horses and Burros Act and far fewer animals would be in holding pastures today. Habitat monitoring to determine excess wild horses and burros, as required by the Act, would have created a healthier ecosystem and finally, the actual costs to complete these studies in 1983 would have been millions upon millions of dollars cheaper than the costs incurred through the mismanagement of the program today by the Agencies

Yet, the Heber herd may offer the opportunity to do justice for America's wild horses if studied over the next 5-7 years and could truly transform how the Agencies manage these wildlife species. In the long run, millions and millions of dollars will be saved by the American taxpayers

by reducing roundups, ceasing storing wild horses (that often have been illegally removed from their rightful lands) in holding pastures. But most importantly, the *“true nature of wild horses will finally be preserved for future generations of Americans to enjoy.”*

## **KNOWLEDGE OR LACK THEREOF REGARDING WILD HORSES IN 1980 PER THE NATIONAL ACADEMY OF SCIENCES**

Quotes of interest from NAS:

“Population increase rates calculated from the BLM and the U.S. Forest Service (USFS) census data average 15 to 20 percent annually for western U.S. horse herds, rates similar to those quoted by these agencies and cited in a number of earlier publications. In some cases, these may be magnified by (a) increasing commitment and proficiency at censusing, (b) increasing visibility as herd sizes increase, and (c) change from fixed-wing to helicopter censuses in the 1970s.”

“In contrast, two authors have projected increase rates with population models that incorporate birth and death rates similar to those published for several herds, and concluded that annual herd increase rates well below 10 percent are probable. Similar calculations with life tables in this report indicate that 15 to 20 percent increase rates can only occur in populations with geometric age distributions with (a) very high reproductive rates, and (b) virtually no mortality.”

“The question of increase rates is central to horse management, and the disagreement cannot be resolved with presently available information. **Research is needed to settle the question.**”  
Emphasis added by ISPMB by bolding.

“Preliminary analysis of the BLM and USFS census data showed: (a) a failure to standardize the season of census, which raised the problem of a seasonal change in numbers due to foaling; (b) an abrupt 88 percent mean increase in horse numbers in the years when helicopter census replaced fixed-wing aircraft census; and (c) less variability in the helicopter counts.”

“The ‘Soil Vegetation Inventory Method’ is commonly used in contemporary range-survey work and for a number of other purposes, including compliance with the wild horse and burro mandates of recent legislation. The Committee reviewed 10 BLM and joint BLM/USFS wild horse capture plans with their accompanying environmental analysis reports (EARS.) Eight reductions were proposed because of problems perceived on range conditions. However, few provided much information on range condition and techniques used to determine it, or on which herbivores (horses, cattle, wildlife) caused the problem.”

In speaking of wild horses’ reintroduction to the North American continent perceived at that time of 11,000 years ago, they stated the following: “A long period of coevolution between their evolutionary predecessors and the vegetation was broken for 11,000 years, which is a brief interval in geologic time.” (Current information shows horse remains found showing existence of wild horses 5,000 years ago putting them in our Holocene period.) They continued, “But to

our knowledge, no one has produced any evidence that native plant species have lost adaptations to grazing and /or growing pressures.”

#### **SUMMARY:**

In review, the Agencies must study the Heber herd over the next 5 to 7 years to *understand* how to truly manage wild horses as the wildlife species they truly are. They are the last herd on public lands that hasn't been disrupted in more than twenty years exhibiting all the qualities of a population that can self-regulate when the herd is free from roundups which cause massive destabilization of the animals' social structures. The study must be conducted independently of the Agencies and by a university with high-quality scientific standards.

Not understanding the wild horses as the wildlife species they are and managed accordingly, has led to intrusive management with roundups and the unnecessary use of birth control which leads to permanent infertility in a few consecutive years of use. Both situations which will lead to the eventual extermination of wild horses on public lands.

The WinEquus program instituted by the Agencies in 1996 projects growth of wild horses at a 20% growth rate yearly. They also state that herds double every four years. ISPMB notes that these projections came at a time when there were few if any wild herds left on public lands that were not disrupted from multiple roundups since 1975. Thus 20% may be a feasible number for herds that have consistently been disrupted, never given a chance to recover over time; instead, rounded up nearly every four years or so. The Agencies contend that by year 2040, the population of wild horses will be 2.8 million based on this program. WinEquus only denotes herds that have suffered massive roundups and never given a chance to recover.

However, those figures are ***not accurate*** when attributed to intact wild herds untouched by roundups over years of time such as the Heber herd. They are not accurate in ISPMB's disrupted Gila herd after their recovery process was instituted. The 1971 Wild Free-Roaming Horses and Burros is specific when they indicated in 1971, that “All management activities shall be at the minimal feasible level.” The Agencies have not, if ever, followed this very important section of the Act which is mandated by the word SHALL. Massive roundups and employment of birth control constitute massive and costly unnecessary management activities.

Looking at ISPMB's Gila herd before disruption, it is noted that their annual growth rate, under the best of conditions (unlike public lands wild horses), averaged an annual rate of 9.73% (31 horses in 2000 and 137 horses in 2016). This rate coincides with the two NAS scientists who believed that birth rates would be well under 10%. It also coincides with the Heber herd, located in northern Arizona, whose growth rate is approximately under 3% over nearly twenty years in which they have been free from roundups. ISPMB would expect the growth percentage, noted above, in the Heber herd to be much lower because they are not protected from the elements and not fed during the winter months as ISPMB's herds were.

ISPMB contends that disruption through roundups of wild horses actually increases horse numbers due to the instability of the family bands which leads to fillies impregnated as early as age one and foaling at two and command of the bands by younger juvenile band stallions. Destabilized herd growth rates were at 20% yearly which was noted in ISPMB's disrupted Gila herd in the first four years. However, with stabilization and freedom from disruptions of roundups, the herds can again recover over time and begin to self-limit their populations as is happening with ISPMB's current Gila herd.

Under stable populations, as in ISPMB's Gila original herd, fillies were not pregnant until they were four and five years of age. Stallions were ten years and older and in command of family bands. The horses gained and retained their herd wisdom through learning over time. ISPMB will continue to monitor when ISPMB's destabilized herd will normalize again.

The Heber herd may offer the opportunity to finally do justice for America's wild horses if studied over the next 5-7 years and could truly transform how the Agencies manage these wildlife species. In the long run, millions and millions of dollars will be saved by the American taxpayers by reducing roundups, ceasing storing wild horses (that often have been illegally removed from their rightful lands) in holding pastures. But most importantly, the *"true nature of wild horses will finally be preserved protecting them for future generations of Americans to enjoy."*

# EXHIBIT 8

EDITOR'S PICKS ([HTTPS://CRONKITENEWS.AZPBS.ORG/CATEGORY/EDITORS-PICKS/](https://cronkitenews.azpbs.org/category/editors-picks/)) SUSTAINABILITY  
([HTTPS://CRONKITENEWS.AZPBS.ORG/CATEGORY/SUSTAINABILITY/](https://cronkitenews.azpbs.org/category/sustainability/))

# Horse slaughter in Apache-Sitgreaves forest highlights friction between animal and environmental concerns

 Sydney Wilson (<https://cronkitenews.azpbs.org/people/sydney-wilson/>)/Cronkite News  
(<https://cronkitenews.azpbs.org/people/sydney-wilson/>)

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Authorities are investigating the slaughter of dozens of horses in the Apache-Sitgreaves National Forests in October. The Forest Service makes a distinction between wild horses, which are protected by law, and feral horses, which are not. (File photo by Megan Newsham) (<https://cronkitenews.azpbs.org/people/megan-newsham/>)/Cronkite News)

**SPRINGERVILLE** – At least 30 horses were found shot to death in the Apache-Sitgreaves National Forests in October, highlighting the tensions among scientists, hunters, government agencies and horse advocates.

The Forest Service is helping investigate the deaths, but this isn't the first time feral horses have been slaughtered on federal land.

Wild horses are protected by the Wild Horse and Burro Act of 1971. In the Apache-Sitgreaves forests, the horses in the Heber Wild Horse Territory in the Black Mesa District area on the Sitgreaves side are considered wild and are protected by the act. Horses in the Alpine Ranger District on the Apache side are considered feral or unauthorized, so they're not federally protected. The Apache and Sitgreaves national forests were administratively combined in 1974 and are managed as one from Springerville. The Forest Service uses legal designations laid out by the act to distinguish between wild and feral horses in an area that stretches over 2 million acres.

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Rob Lever, a detailed deputy forest supervisor for Apache-Sitgreave, said the classification has to do with location and timing. Horses present during the passage of the Wild Horse and Burro Act are protected, but those that arrived after that or were born out there are considered unauthorized livestock and aren't protected.

Horses aren't native to North America. Spanish conquistadors brought them to the continent in the late 1400s, and feral populations grew from escaped animals. Although horses were an integral part of pioneer life, they're an invasive species that some scientists consider hazardous to the environment.

The Wild Horse and Burro Act established that "wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; that they contribute to the diversity of life forms within the Nation and enrich the lives of the American people; and that these horses and burros are fast disappearing from the American scene. It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands."

Lever said the horses found dead in October are classified as feral and aren't protected by this act, but may be protected by other laws.

"Wild livestock is somewhat protected by Arizona state statutes, as far as animal cruelty, etc.," he said. "They're not protected as far as living in that landscape by the Apache-Sitgreaves forest because they're not native."

Some groups want free-roaming horses protected at all costs, while others are more concerned with the well-being of the environment. Passion from both sides has the Forest Service caught in the crossfire.

"We understand this is an emotional issue for a lot of people," Lever said. "We take it very seriously. There are Forest Service employees, myself included, that own horses. So it's not something we think is OK as far as the killing of those animals."

The Forest Service doesn't have investigatory jurisdiction over unauthorized livestock, but it is assisting the U.S. Department of Agriculture to find out who's responsible for the most recent slaughter.

To prevent future incidents like this, Lever said the Forest Service is focusing on the removal of feral horses.

"The best thing we can do is round those animals up that don't belong on that landscape and place them in the best homes we can," he said.

Removal may not only prevent further shootings, but it's also a part of the Forest Service's efforts to restore and prevent the damage feral horses may have caused to the environment.

"We're managing the habitat here in the National Forest and we have an unauthorized non-native species out there," Lever said. "It's adversely impacting the habitat."

Lever said the Forest Service has been using gentle methods of removal, such as bait-trapping feral horses in big pens. They're held for five days, then put up for sale in small groups.



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'This is special': GCU ramps up for basketball season with Disney-themed Midnight Madness (https://cronkitenews.com/basketball-season-di-madness/)



With federal watchdogs furloughed during shutdown, Hatch Act complaints over partisan website messages stall (https://cronkitenews.com/watchdogs-furlough-complaints/)



“They also break frozen water like very thick ice on the water sources. They break that so that smaller, weaker animals are able to drink in the wintertime.”

Nixon blamed the environmental damage in the Apache-Sitgreaves on hunters, off-road vehicles, cattle, wildfires and the Forest Service’s failure to clean up litter. Large swaths of land have been damaged by off-road vehicles, she said, and the Forest Service has never tried to stop this. She said the Forest Service has also failed to clean up barbed wire from fences that were damaged by snow or wildfires, which can snare and injure wildlife.

Hunters have also played a big part in the forest damage, Nixon said. Irresponsible target shooting has led to damaged trees and litter from leaving targets and shotgun shells behind that the Forest Service hasn’t cleaned up.

In a comment to the Heber Wild Horse Territory Plan team, Nixon said, “while the Forest Service feigns concern for the health of the forest when it comes to the horses, they show no concern for the forest when it comes to damage and destruction caused by people.”

Nixon said that because of the damage caused by humans, the feral horses don’t need to be removed.

The Salt River Horse Management Group also opposes the removal of these horses. It’s working to purchase the feral horses that were removed and put up for sale in the Apache-Sitgreaves, and it urges those in charge of managing the horses to use humane birth control instead of selling them to potentially harmful owners.

Nixon also said the horses never should’ve been classified as feral or unauthorized, but that’s not the Forest Service’s fault.

“It goes back to 1971, the Forest Service never wanted to manage wild horses and so they failed to do an inventory of those horses over in Alpine,” Nixon said. “I believe that there is adequate evidence that there were wild horses in the area. Horses were a huge part of history in Arizona. ... I don’t think that they ever should have been classified as unauthorized livestock, but that’s already been OKd and the Forest Service has to abide by the laws.”

Nixon submitted a Freedom of Information Act request to see how the Forest Service had set parameters for the Heber Wild Horse Territory and if it had counted the horses as laid out in the Wild Horse and Burro Act. Nixon said she couldn’t locate any documents relating to the boundaries, size and territory locations for wild horses in the Apache-Sitgreaves forest, or proof the Forest Service had taken inventory of the horses. Without an accurate tally of feral horses, the service can’t prove overpopulation, she said.

“Should they be removed? Well, they (Forest Service officials) have to prove that overpopulation and they haven’t done that at this point,” Nixon said. “They’ve never kept an inventory, they’re just now starting to keep an inventory because they have to. They were forced to by a judge.”

In 2005, the Animal Welfare Institute and other animal advocacy groups sued the U.S. Department of Agriculture, the Forest Service and other government agencies for violating the Wild Horse and Burro Act as it relates to the Apache-Sitgreaves forest. The parties involved settled this case by creating more specific guidelines for the Forest Service to follow in rounding up feral horses and forcing officials to take inventory.

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“The Forest Service has a lot of mandates to meet,” Lever said. “There’s always a conflict or can be a conflict between mandates that are given to us by Congress.”

Lever said rounding up feral horses and selling them is the best the Forest Service can do.

“We analyzed our approach to this,” he said. “We analyzed whether these were wild or not. It takes analysis before we do any of that, National Environmental Policy Act analysis. So we’ve done those things and we believe that this is the correct course of action.”

Nixon said all free-roaming horses should be protected under the language of the Wild Horse and Burro Act, adding that the Forest Service is violating the essence of the act.

“The Forest Service failed to follow both the letter and the spirit of the 1971 Wild and Free-Roaming Horses and Burros Act,” Nixon said in a comment to the Heber Wild Horse Territory Management Plan team.

Nixon said the Forest Service has failed the horses and the American people.

“They’re not only an Arizona treasure, but they’re a national treasure and they should be preserved as a national treasure,” she said.

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(<https://cronkitenews.azpbs.org/people/sydnee-wilson/>)

News Reporter, Phoenix

sid-nee  
wil-sun (she/her/hers)

(<https://cronkitenews.azpbs.org/people/sydnee-wilson/>) graduated in May 2023 with a bachelor's degree in journalism and mass communication. Wilson has interned with Phoenix Magazine and written for the Peoria Times and HerCampus ASU.

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# EXHIBIT 9

## 4

## Methods and Effects of Fertility Management

This chapter reviews and assesses current options for controlling fertility of free-ranging horses and burros. Investigation of potential fertility-control options was one of the mandates of the previous National Research Council studies. In the late 1970s and early 1980s, the Committee on Wild and Free-Roaming Horses and Burros reviewed the status of contraception, including sterilization, for population control in free-ranging herds. That committee reported on the feasibility of several techniques, including hormone injections for stallions and hormone treatments, intrauterine devices (IUDs), and surgery for mares. It concluded that endocrine contraception in stallions or mares was the most promising approach because IUDs often dislodged and surgery was impractical in field conditions (NRC, 1980). The 1980 report noted that studies of endocrine contraception in stallions were going on at the time and recommended a study of contraception in mares. In 1991, the Committee on Wild Horse and Burro Research reviewed the proposal for and later the results of a study that examined steroid implants in mares captured from the range and held in pens, steroid implants in free-ranging mares, and vasectomies of free-ranging dominant stallions. That committee found some steroid treatments to be effective in mares. Vasectomies were effective in sterilizing individual animals, but the committee questioned the technique's effectiveness at a population level, given that only dominant stallions were treated (NRC, 1991).

Research on effective methods of fertility control remains important to the Bureau of Land Management (BLM) because fertility control is the major alternative to gathering and removing horses that is generally accepted by the public. In the 20 years since the last National Research Council report was completed, considerable progress has been made in developing and testing fertility control for wild animal populations, both free-ranging and captive. Research with captive animals has been especially valuable in allowing more extensive and careful monitoring and analysis of efficacy and safety of a wide array of products. In particular, pathological conditions associated with some types of contraceptive treatment have been detected and are under systematic investigation, which is difficult to accomplish in free-ranging populations.

Although the committee's report includes information on burros as well as horses, the need for fertility control in horses is considered more pressing because their populations are much larger (BLM, 2003, revised 2005). In addition, many more studies have focused on horses, so considerably more data are available on them than on burros. Nevertheless, given similarities in reproductive physiology, the efficacy and safety of methods could be expected to be generally similar in the two species. Their social structures differ, however, as described in the following sections, and this could influence the effects of fertility-control methods on behavior and social organization.

Reversible contraception and permanent sterilization are achieved by interrupting reproductive processes, and the committee's evaluation of these methods is based in part on understanding their effects on an animal's reproductive physiology and behavior. Accordingly, this chapter starts with two reviews: one on equine social and mating behavior, social relationships, and social structure and a second on reproductive physiology in domestic horses and donkeys, with information on free-ranging horses and burros when available. The brief reviews are intended to serve as background for understanding the potential effects of fertility-control methods on behavior and reproductive processes. The chapter then evaluates available fertility-control treatments for both females and males and summarizes the advantages and disadvantages of the most promising methods.

### **EQUINE SOCIAL BEHAVIOR AND SOCIAL STRUCTURE**

Horses, zebras, and asses (the primogenitors of donkeys and burros) are highly social animals, but their social structures vary. Klingel (1975) was the first to document that equids exhibit two types of social organization. In one, typified by horses and plains and mountain zebras, females and their young live in closed membership groups with one, and occasionally a second, male. In those so-called harem groups, females benefit by receiving material rewards from their males (Rubenstein, 1986). Enhanced male vigilance against potential intruder males not only reduces a male's chances of being cuckolded but reduces harassment experienced by females. Consequently, females can devote more time to feeding and increase the likelihood that their offspring will survive to independence (Rubenstein, 1986). That type of society emerges under more mesic environmental conditions in which food is relatively abundant and distributed near predictable watering points.

In more arid areas, where abundant food is far from water, the second type of society appears, as typified by Grevy's zebras and the wild asses, including the African wild ass that is the ancestor of the donkey. Arid and semiarid conditions make it difficult for females, whether with or without young foals, to remain together in closed-membership groups, meet their different physiological needs, and benefit from the extra foraging time that heightened male vigilance provides. Nonlactating females and mares that have older foals need drink only every 3-5 days (Ginsberg, 1989; Becker and Ginsberg, 1990), whereas ones that have foals 3 months old and younger must drink daily. The latter females stay near water whereas the others wander more widely in search of better pasture. Because both types of females are fertile and males cannot be with both simultaneously, males establish territories. The most dominant hold areas near water, where they have exclusive access to females that have young foals and intercept those coming to water every few days. Aridity thus alters the nature of relationships among both females and males and leads to a more fluid, fission-fusion type of social system (Rubenstein, 1994).

Although the two social systems emerge from differences in individual social relationships and environmental conditions, they share some important characteristics. First, the mother-infant bond is strong in all equids. Second, sons and daughters leave their mothers

when they reach sexual maturity; males join bachelor groups, and females are immediately integrated into adult society. Third, the female reproductive state influences female nutritional needs; meeting these needs sometimes permits long-term stable bonds to form but sometimes does not. Much depends on long-term evolutionary responses to ecological circumstances that lead to the emergence of different social systems. In free-ranging horses, the norm is a stable society in which females can meet their needs while benefiting from limited interruptions. In free-ranging burros, fluidity of social relationships is the norm in that close bonds among females and between males and females are precluded by the disjunctive nature of high-quality feeding and drinking locations.

## REPRODUCTION IN DOMESTIC HORSES AND DONKEYS

This section provides an overview of the various points in the reproductive processes of male and female horses and burros that can be targeted for fertility control (see Asa, 2010, and Asa and Porton, 2010, for further details).

Sexual maturity in free-ranging male and female horses occurs at the age of about 18 months, but onset of reproduction is dependent on social parameters within the population. First reproduction for males is typically delayed for up to several years while they reach social maturity. Sexual maturity in domestic donkeys and free-ranging burros is reported to occur at the age of 1-2 years in females (Fielding, 1988; Pugh, 2002) and 1.5 years in males (Nipken and Wrobel, 1997). The earliest possible age of puberty in males and females of both species is 1 year, so preventing reproduction in those animals would require that treatment begin before that age.

Both species have seasonal breeding patterns, but seasonality is less pronounced in domestic donkeys and free-ranging burros (Ginther et al., 1987). Seasonal reproduction is controlled primarily by photoperiod, but temperature and body condition can also influence reproductive timing (Sharp and Ginther, 1975; Guillaume et al., 2002). Thus, local conditions can affect the length of the breeding season, especially for female horses. Male domestic horses can produce sperm year round, but the quality declines during winter, the mares' nonbreeding season (Pickett et al., 1975).

Most female free-ranging horses give birth in the spring, and this is followed within 5-12 days by postpartum estrus (foal heat), when conception is again possible. Female domestic donkeys also show postpartum estrus (Pugh, 2002). Nonpregnant female domestic donkeys also begin to have reproductive cycles in the spring, and domestic horses and donkeys both continue cycling until conception or the end of the breeding season.

For horses and donkeys, as for many other mammals, the ovarian or estrous cycle is divided into phases. During the follicular or estrous phase (when females will stand for mating), follicle growth is stimulated by gonadotropin-releasing hormone (GnRH) from the hypothalamus and follicle-stimulating hormone (FSH) and luteinizing hormone (LH) from the pituitary. The follicles produce estradiol, which stimulates estrous behavior. The estrous phase in donkeys and horses reportedly lasts about 6-9 days (Ginther, 1979; Vandeplassche et al., 1981).

During estrus, the female is attractive to males and receptive to mating. Courtship behaviors are generally similar in horses and donkeys with some important exceptions. Estrous horses often raise their tails, exposing the genital area, as they approach and follow males (Asa, 1986). Tail raise is not as obvious in female donkeys, but they spend more time in proximity to males and respond to male vocalization by approaching (Henry et al., 1991). Courtship interactions tend to be more vigorous in donkeys and include more elements of aggression, such as kicking and chasing. Female horses urinate more frequently

during estrus, and males assess urine via the flehmen response, which introduces pheromones into the vomeronasal organ for neural processing of the female's reproductive status (Stahlbaum and Houpt, 1989). Vocalization appears to be more important in donkeys, males of which commonly initiate sexual interactions by vocalizing (Henry et al., 1991).

Ovulation occurs toward the end of the estrous phase, but courtship and mating may continue for an additional couple of days in both horses and donkeys. An LH surge triggers ovulation, which is followed by conversion of the follicles to corpora lutea (CL), which produce progesterone. Progesterone domination during the luteal phase, also called diestrus, inhibits further estrous behavior. The total cycle in horses lasts about 3 weeks but in donkeys may last as long as 28 days (Ginther, 1979; Vandeplassche et al., 1981; Fielding, 1988). Estradiol and progesterone prepare the uterus for implantation and nourishing the embryo.

Fertility rates in domestic horses are reported to range from about 80 to 100 percent per breeding season, depending on factors such as breed, age, and reproductive history (reviewed in Ginther, 1979). Fertility rates are lower in older and very young mares (Carnevale and Ginther, 1992; Vanderwall et al., 1993). Rates are also lower in domestic mares that have not previously foaled than in currently lactating mares (reviewed in Ginther, 1979). In one study of pasture breeding of domestic donkeys, all 14 females that were examined were pregnant (Henry et al., 1991).

Gestation length is 11 months in horses and 12-12.5 months in domestic donkeys (Ginther, 1979; Fielding, 1988). However, possible ovulation or spontaneous luteinization, resulting in the formation of secondary CL, around day 40 can confound calculation of gestation length in field studies. Estradiol secreted by the follicles that precede CL formation can stimulate estrous behavior in a small percentage of pregnant females (Tomasgard and Benjaminsen, 1975) and give the appearance of a natural estrous cycle.

With a gestation length of about a year, horses and donkeys can give birth every year. However, that may not occur, especially in nutritionally stressed females. In particular, nursing females, experiencing the energetic drain of lactation in addition to maintenance, may not succeed in sustaining a pregnancy. But lactation itself does not prevent estrous cycles, so conception may occur, although the embryo may be lost if the female is nutritionally stressed. Early embryo loss (defined as up to day 40 of pregnancy) is reported to be 5-15 percent even in well-fed domestic mares but can be 30 percent or higher in mares that are 18 years old or older (Vanderwall, 2008). Pregnancy loss may also be high in yearling mares (Mitchell and Allen, 1975). In a small study of domestic donkeys, three of 14 pregnant females experienced early embryo loss (Henry et al., 1991).

### **POTENTIAL METHODS OF FERTILITY CONTROL IN FREE-RANGING HORSES AND BURROS**

First, it is important to note that, when the committee prepared its report, no fertility-control methods that were highly effective, easily delivered, and affordable were available for use across all BLM Herd Management Areas (HMAs). In addition, there were no fertility-control methods that did not alter the behavior or physiology of free-ranging horses and burros in some way. Any method that prevents reproduction can do so only by affecting some aspect of the reproductive system. Even if the only effect were to prevent births, that would change the age structure of a herd by reducing the number of young and could enhance the health of females by reducing the caloric demands of reproduction. Thus, in evaluating fertility-control methods, it is important to compare them not only for obvious factors—such as efficacy, mode of delivery, and cost—but for the constellation of

their effects on physiology, behavior, and social structure. It is also critical to extend the comparisons to the social-structure changes and behavioral and health effects that are caused by gathers.

The porcine zona pellucida (PZP) vaccine, an immunocontraceptive, is the most extensively tested method in free-ranging horses and may be the most promising option at present. Several other methods that are potentially useful in horse and burro populations will be considered in this chapter, but more research may be required before their application can be recommended. Fertility-control methods range from other types of vaccines to hormone agonists;<sup>1</sup> some methods are more appropriate for treatment of females, and others could be used to control male fertility. Some of the methods are reversible—and allow the possibility of future restoration of fertility—but others are permanent sterilants that have the economic and logistical advantage of making repeated treatment unnecessary. In particular, nonsurgical approaches to sterilization will be evaluated.

Methods that are not considered permanent may not be 100-percent reversible in all animals. Even if a contraceptive, such as an implant, is removed or its effect wears off (in the case of an injectable contraceptive), other factors may slow or even prevent complete restoration of fertility. Many factors affect fertility and time to conception or birth even in females that have never been treated with contraceptives (reviewed in Asa, 2005). Female age is the most obvious factor, but parity (the number of times that a female has given birth), age at production of first offspring, time elapsed since last pregnancy, nutritional status, health, genetics, and other more subtle factors can also influence a female's ability to conceive and maintain a pregnancy to term. Fertility of previously contracepted females can be affected by those factors and by lingering effects of the contraceptive itself. Individual differences are common.

The process of selecting the best method for the species and situation includes an evaluation of many equally important factors, such as delivery route, efficacy, duration of effect or reversibility, physiological side effects, and possible effects on behavior and social structure. It is also important to know whether a method is safe for prepubertal animals and whether females can be treated during pregnancy or lactation. Although methods can be male- or female-directed, more research in control of fertility in free-ranging equids has targeted females, specifically different formulations of the PZP vaccine, than males. The following review includes methods for both males and females and methods that have been tested with other species that could be considered for use in free-ranging equids.

### **ADJUSTMENT OF SEX RATIO TO LIMIT REPRODUCTIVE RATES**

Adjustment of the sex ratio to favor males has been proposed for managing population growth rates of horse and burro populations. Sex ratio typically is somewhat adjusted after a gather in such a way that 60 percent of the horses returned to the range are male. At that ratio, however, population growth would be only slightly reduced: modeling by Bartholow (2004) suggests that birth rates could decline from about 20 percent to 15 percent a year if the proportion of males increased from 0.50 to 0.57. If more aggressive sex-ratio adjustments are initiated by drastically altering the number of females relative to males beyond a 40:60 ratio, care should be taken to assess possible additional consequences. In the Pryor Mountain Wild Horse Range, Singer and Schoeneker (2000) found that increases in the number of males on this HMA lowered the breeding male age but did not alter the birth rate. Because the existing females were distributed among many more small harems,

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<sup>1</sup>A hormone agonist binds to a receptor of a cell and has the same action as the native hormone.

estimates of genetic effective population size increased.<sup>2</sup> In addition, bachelor males will likely continue to seek matings, thus increasing the overall level of male-male aggression (Rubenstein, 1986). Male condition may decline because of the increase in time spent in competing, and the disruption caused by male-male competition may affect female foraging success. Both those outcomes might reduce overall population growth more than would a reduction in the number of breeding females. Because horses and burros have polygynous mating systems (multiple females mate with one male), additional males would not be expected to affect the likelihood of reproduction in individual females. Reduction in reproductive rate would depend on the number of females remaining. Having a larger number of males competing could favor females by enhancing the opportunities for mate choice, could mean that males of higher genetic quality would achieve harem stallion status, or both. Given that the addition of males or the subtraction of females can lead to a similar sex ratio but have different effects on population growth rates, forecasting models tuned with population-specific survival and fecundity levels can be used to determine how to adjust sex ratios to limit population growth in individual populations effectively.

### FEMALE-DIRECTED METHODS OF FERTILITY CONTROL

Potential methods of fertility control directed at female equids include surgical ovariectomy (removal of the ovaries); immunocontraceptives, which trigger the animal's immune system to prevent pregnancy; GnRH agonists; steroid hormones; and intrauterine devices. The mode of action and effects of each method are reviewed below.

#### Surgical Ovariectomy

Surgical ovariectomy and ovariectomy are commonly used in domestic species, such as cats and dogs (including feral cats and dogs), but seldom applied to other free-ranging species. Accessing the female reproductive tract, which lies within the body cavity, in contrast with the reproductive tract of males of most species, which have external testes, carries the risk of dehiscence of sutures or infection. However, an alternative vaginal approach, colpotomy, avoids an external incision and reduces the chances of surgical complications or infection (Rodgers and Loesch, 2011). The mare is sedated and tranquilized while standing but restrained; a local anesthetic is sometimes used as well to reduce movement during surgery. An incision is made through the wall of the vagina and then through the peritoneum to access the ovaries. Although the risks are lower than with transabdominal surgery, episiotomy (suturing to close the vulva) and stall restriction for 2-7 days are recommended to reduce the chance of evisceration. Monitoring for 24-48 hours for signs of hypovolemic shock due to internal bleeding is also recommended. The procedure is not without risk.

#### Duration and Efficacy

Removal of the ovaries is of course permanent and 100-percent effective. Ovariectomy during the first 2-3 months of pregnancy results in abortion because of the loss of progesterone

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<sup>2</sup>Effective population size is the size of an idealized population that would experience the same magnitude of random genetic drift as the population of interest. Populations that have experienced fluctuating sizes between generations, unequal sex ratios, or high variance in reproductive success are likely to have effective population sizes that are lower than the number of animals present. The concept of effective population size is discussed in Chapter 5.

from the corpus luteum (Holtan et al., 1979). Ovariectomy during the period of lactation would not be expected to affect milk production, inasmuch as gonadal hormones (estrogen and progesterone) are important during late pregnancy when mammary glands are developing but not after milk production is established.

### Side Effects

Typical side effects associated with ovariectomy in many species include decreased activity and weight gain. The absence of gonadal hormones could affect sociosexual behavior but perhaps not as profoundly as in most other species. Although the cyclic production of estrogen by the ovaries is required for stimulation of estrus and mating behavior in virtually all species, the horse is an exception. The full repertoire of courtship and mating behavior has been displayed by ovariectomized mares and by anestrus mares during the nonbreeding season (Asa et al., 1980b; Hooper et al., 1993). The behavior was found to be hormonally supported by adrenal sex steroids (Asa et al., 1980a), for example, estrone and dehydroepiandrosterone, a weak estrogen and an androgen, respectively. In contrast with ovarian hormones, adrenal sex steroids are not secreted cyclically, so estrous behavior is displayed sporadically. No comparable study of the sexual behavior of free-ranging, nonpregnant mares has been conducted during the nonbreeding season. However, if free-ranging ovariectomized mares also show estrous behavior and occasionally allow copulation, interest of the stallion would be maintained, and this would foster band cohesion.

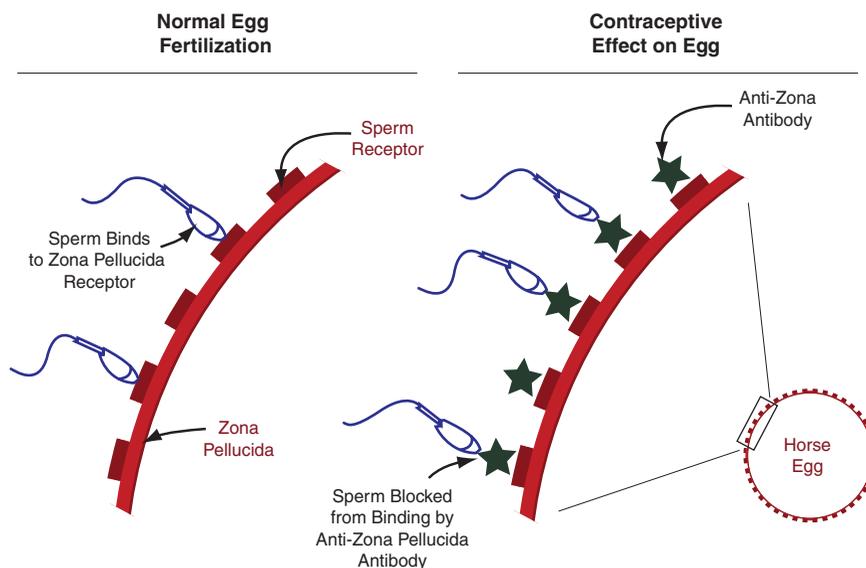
### Immunocontraceptives

No other class of contraceptives has been as extensively researched in domestic and free-ranging equids as immunocontraceptives. Immunocontraception relies on the target species' immune system to produce an immune reaction (usually in the form of antibodies) to some target tissue or biochemical that is required for successful reproduction. The immune response is most often triggered by inoculation of the target species with biochemicals or tissues from other species that are similar in structure to the biochemicals or tissues of the host. The target animal's immune system responds to the foreign compounds injected into the body by producing antibodies that bind to both the injected, foreign compounds and the structurally similar tissues or biochemicals in the target species. The biological effects of the immunocontraceptive, aside from prevention of conception, depend on which biochemicals or tissues are the intended targets, the ability of the immunocontraceptive to induce an immune response (its immunogenicity), the specificity of the immune response to the target biochemicals or tissues, and the duration of the immune response.

In equids, the two most studied immunocontraceptives are vaccines directed against GnRH, a peptide hormone produced by the hypothalamus, and the zona pellucida, the outer membrane layer surrounding the mammalian oocyte (egg). Both are discussed below in further detail with regard to delivery routes, efficacy, duration of effect or reversibility, and side effects. This review focuses on published studies of captive and free-ranging horses, where available; otherwise, results from studies of other ungulates are used to provide an approximation of what might occur after application of the treatment to horses.

#### Porcine Zona Pellucida Vaccine

Sperm must bind to the zona pellucida of the oocyte to initiate the sperm acrosome reaction that is required for fertilization. Anti-zona pellucida vaccines prevent conception



**FIGURE 4-1** Mode of action of porcine zona pellucida vaccine.  
SOURCE: Illustration provided by I.K.M. Liu.

late in the chain of events required for successful fertilization by preventing sperm from fertilizing eggs (Figure 4-1). There are three formulations of the PZP vaccine: a liquid formulation accompanied by a primer that is effective for 1 year (liquid PZP), a time-release pellet formulation that can be effective for up to 22 months (PZP-22), and a formulation in which PZP is encapsulated in liposomes<sup>3</sup> to extend contraception efficacy (SpayVac®; Immunovaccine Technologies, Inc. [IMV], Halifax, Canada).

It is important to note that PZP vaccines are not a homogeneous set of compounds. The term *liquid PZP* used below refers to a PZP vaccine prepared according to the methods originally outlined for the horse by Liu et al. (1989) in which pig ovaries are finely sliced to release oocytes from surrounding tissues. The PZP in SpayVac is different in two ways. First, it is prepared differently: whole ovaries are ground and homogenized to separate oocytes from tissues (Yurewicz et al., 1983). Second, the PZP is encapsulated in liposomes to extend the period of release (Brown et al., 1997). In both procedures, the product passes through a series of filters of decreasing pore size to remove other ovarian debris, but it is possible that the SpayVac preparation contains more non-zona pellucida ovarian proteins than liquid PZP produced with the Liu et al. method. Ovarian proteins cannot reliably be separated from zona pellucida proteins by filtration, and the initial grinding and homogenization of whole ovaries in the Yurewicz et al. method results in more non-zona pellucida debris in the initial suspension. Less pure products (containing more ovarian debris) may be more immunogenic than zona pellucida proteins alone and enhance the immune response. Miller et al. (2009) suggested that the difference in antigen preparation might explain the longer duration of efficacy in their SpayVac-treated deer than in deer treated with liquid PZP, but more work is needed to determine whether antigen preparation methods

<sup>3</sup>A liposome is an artificially prepared vesicle composed of a lipid bilayer that can incorporate drugs for controlled delivery.

result in differences in PZP efficacy. Ovaries were not examined for pathological effects in horses, deer, or other species treated with SpayVac, nor were any long-term studies done on its reversibility. It is possible that SpayVac prevents fertilization by means in addition to or other than sperm blockage. Reversibility also requires further investigation. All published studies that have used SpayVac liposome preparations in free-ranging horses included the adjuvant AdjuVac™ prepared by Miller at the U.S. Department of Agriculture's National Wildlife Research Center (NWRC). However, Miller has shown that liposomes are dissolved by the lipid-based adjuvant AdjuVac, which would be expected to shorten its period of efficacy in that the liposomes were designed to prolong contraceptive effect (L. Miller, NWRC, personal communication).

It is also important to note that over the years liquid PZP has been administered to horses with several treatment protocols for the first inoculation, and the effects of the different protocols and of protocols for administering boosters are still not fully understood. For example, in the first study of liquid PZP in domestic mares, Liu et al. (1989) administered the vaccine in four initial injections at 2-week intervals, whereas much of the later work with PZP by Kirkpatrick, Turner, and colleagues (e.g., Kirkpatrick et al., 1991; Turner et al., 1997) involved two initial injections 4 weeks apart. Much of the more recent work (e.g., Liu et al., 2005; Turner et al., 2007) used single-injection protocols that appear to be more feasible in field settings. It is also unclear whether annual booster vaccinations with liquid PZP (e.g., Kirkpatrick et al., 1991) and timed-release PZP pellets (e.g., Turner et al., 2007) generate the same immunologic dynamics needed to prolong the effect of PZP. For example, the total amount of PZP released from a timed-release pellet during the boost period may differ from the amount of PZP in a liquid booster vaccination, and the duration of exposure may not be equivalent. Furthermore, the immune system may respond to these alternative antigen presentations in different ways. The immunologic dynamics induced in the target species with different treatment and boosting protocols are not yet definitively understood.

*Delivery Route.* Both the liquid and pellet formulations of PZP can be administered by hand to free-ranging equids that have been captured. Liquid PZP can be delivered by dart to animals in the field (Kirkpatrick et al., 1990). Pelleted PZP must be given by hand because darts cannot provide adequate pressure to release pellets into the animal effectively; this was verified in a study of pelleted PZP that was effective for 1 year: the efficacy of the hand-injected PZP was twice that of the dart-injected PZP (Turner et al., 2008). SpayVac (Brown et al., 1997) can be given by hand or dart.

Although the ability to deliver liquid PZP via dart is a useful option, it is not clear how successful attempts would be to dart populations of horses at the desired level of treatment intensity, given the large number of animals needing treatment, variability in the temperament of the horses, and the terrain of HMAs. Two studies of free-ranging horses and one of white-tailed deer have found that over time, with repeated boosters, the difficulty of approaching animals on foot for darting increased (Kirkpatrick and Turner, 2008; Rutberg and Naugle, 2008; Ransom et al., 2011). At the time the report was prepared, the most effective and most reliable method of delivery was hand injection after a gather. However, alternative methods, such as trapping near water holes or blinds, have been used in other areas and could be useful in some HMAs.

*Efficacy.* Liquid PZP, the first formulation produced, has been assessed for efficacy more often than other PZP formulations. The overall mean of published efficacy values in horses is 88.4 percent (median, 89 percent). Kirkpatrick and Turner's (2008) value of 95 percent is

based on cumulative experience on Assateague Island<sup>4</sup> and represents the most up-to-date information available to the committee on that site. Turner et al. (1997) evaluated several adjuvant formulations.<sup>5</sup> If the less effective adjuvants in their study and another study that acknowledged poorly timed boosters in one population (Ransom et al., 2011) are eliminated, the mean efficacy increases to 91.5 percent (median, 90 percent), representing hundreds of animals across several sites. In most of the studies, efficacy was assessed by determining how many treated females had foals in the following foaling season or had pregnancy diagnosed with hormone assays.

Only one study of any PZP formulation has been conducted in burros. Turner et al. (1996) found that liquid PZP significantly reduced fertility for a year after vaccination. A two-shot protocol was more effective (none of 13 females became pregnant) than a one-shot protocol (one of three became pregnant).

Turner et al. (2007) assessed a pelleted form designed to release PZP into the animal's circulatory system at 1, 3, and 12 months in 96 free-ranging mares in Nevada. Fertility rates over 4 years after vaccination were 5.2 percent, 14.9 percent, 31.6 percent, and 46.2 percent, respectively, in treated mares. The mean fertility rate of untreated females during the study was 53.8 percent. The formulation has come to be called PZP-22 because it remains about 85-percent effective after 22 months. Turner et al. (2008) concluded that the optimal time to administer PZP-22 for maximum duration of effect is fall or winter. BLM began using PZP-22 in free-ranging horses in the late 2000s. However, the efficacy has varied as treatment has been extended to additional field sites. Foaling has been reduced by 30-79 percent in the 2 years after a single injection of PZP-22 at various field sites (J.W. Turner, University of Toledo, personal communication, November 2012). The variability is believed to be due to the time of year of injection, whether delivery was by dart or by hand, the location of the injection (the hip is considered ideal, but that is not always possible when delivery is by dart), and possible differences in preparation in the field. In addition, there has been a change in vaccine production during the last few years: heat extrusion versus cold evaporation (J.W. Turner, University of Toledo, personal communication, November 2012).

Only one published study (Killian et al., 2008a) has evaluated SpayVac efficacy in horses. In a study of captive horses in Nevada, 12 mares received a single hand injection in the neck of 400 µg of SpayVac emulsified with AdjuVac adjuvant for a total volume of 1 mL in March 2003. In fall of each year, treated mares were examined for pregnancy via ultrasonography or rectal palpation, and the observations were later verified by whether a foal was born. In a few cases in which a mare's behavior prevented that kind of examination, the birth of a foal (or the absence of a birth) in spring of the following year was used to assess fertility and treatment efficacy. In the 4 years of the study, contraception efficacy in the SpayVac-treated mares was 100 percent in year 1 and 83 percent in years 2-4. Bartell (2011) determined that SpayVac in combination with nonaqueous Freund's modified adjuvant (FMA) induced the strongest immune response in domestic horses as measured by antibody titers and exhibited the strongest suppression of progesterone compared with an aqueous preparation of FMA and non-mycobacterium-based adjuvant, but she did not assess pregnancy or foaling.

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<sup>4</sup>Assateague Island National Seashore is on a barrier island off the coast of Maryland and operated by the U.S. Department of the Interior's National Park Service (NPS). A free-ranging herd lives on the island. NPS is not subject to the Wild Free-Roaming Horses and Burros Act of 1971. Nevertheless, because it is a free-ranging population, results of studies of the use of liquid PZP on this herd can inform management of horses under BLM's jurisdiction.

<sup>5</sup>An adjuvant enhances the immune response by encouraging the production of antibodies.

SpayVac has also been evaluated in deer. Miller et al. (2009) evaluated SpayVac and liquid PZP in combination with different adjuvants in 30 captive white-tailed deer grouped into six treatment groups of five does each. SpayVac was administered in three preparations: with liposomes in AdjuVac emulsion, lyophilized with liposomes in AdjuVac suspension, and with liposomes in an alum adjuvant suspension. PZP was produced with two protocols (labeled IVT and NWRC for the providers of the antigen). The SpayVac/AdjuVac emulsion and the IVT-PZP/AdjuVac emulsion had the longest duration of effect: 80 percent of treated deer were contracepted for at least 5 years. Monitoring of the SpayVac/AdjuVac group ceased at 5 years; the IVT-PZP/AdjuVac continued to be effective for 7 years. The estimated decline in fecundity (fawns produced per female) was greater than 90 percent. All other formulations were inferior in performance. The authors concluded that AdjuVac is critical and should be used in emulsion form rather than suspension. They also suggested that, because of production differences, the IVT-PZP probably contained more porcine ovarian tissue and was thus more effective. Fraker et al. (2002) evaluated the efficacy of SpayVac emulsified with Freund's complete adjuvant (FCA) administered to 41 free-ranging fallow deer. Contraception of treated does was 100 percent over 3 years; however, the samples obtained in the 3 years were from different animals because some animals were culled for analysis. The authors suggested that, on the basis of the antibody titers present after 3 years, the SpayVac vaccination would probably continue to be effective for a longer period. Locke et al. (2007) evaluated SpayVac emulsified with AdjuVac over a 2-year period in wild white-tailed deer (34 treated, 11 controls) and found 100-percent efficacy in both fawning seasons. Killian et al. (2005) cited data from their studies of captive white-tailed deer in Pennsylvania that showed 80-percent efficacy in does for 4 years.

Gray et al. (2010) evaluated a PZP vaccine that was mistakenly referred to as SpayVac (Fraker and Brown, 2011; Gray et al., 2011) in 20 treated and 18 untreated free-ranging mares in Nevada over a 3-year period. The liquid-PZP vaccine was prepared as SpayVac but without liposomes. Efficacy was lower (50-63 percent) than reported by Killian et al. (2008a) for SpayVac. Gray et al. (2010) suggested that the lower efficacy might have been due to their more conservative methods of assessing efficacy in the field; however, in a follow-up published erratum, they acknowledged that the vaccine formulation that they used lacked the liposome compounds included in the SpayVac vaccine (Gray et al., 2011) and suggested that this could explain the differing results. Thus, the studies by Gray et al. (2010) should not be compared to other results for SpayVac specifically, and it is not clear whether these results should be compared to those for liquid PZP. In both the Killian et al. (2008a) and Gray et al. (2010) studies, the AdjuVac adjuvant was combined with the vaccine.

*Reversibility.* Immunocontraception depends on the immune response to the vaccine reaching and staying above threshold concentration (Adams and Adams, 1990; Zeng et al., 2002). Reversibility of the contraceptive effect depends on the reduction of circulating antibody titers. Substantial variability in reversal time is likely and can be due to the vaccine formulation, the adjuvant used, the treatment protocol, genetic factors, and the nutritional status of the individual animal because these factors may affect the initial and continuing immune response to the vaccine (Homsy et al., 1986; Chandra and Amorin, 1992; Turner et al., 1997, 2001, 2007; Liu et al., 2005; Lyda et al., 2005; Bartell, 2011).

In the first study of liquid PZP in equids, Liu et al. (1989) found that, of 10 feral and six domestic mares, most mares had reversed within 8 months of treatment. Kirkpatrick et al. (1990) first demonstrated that three of seven free-ranging mares became fertile in the first year after 1 year of liquid-PZP treatment, although foaling rates of treated mares overall were lower after treatment than in control mares. Turner et al. (1997) found similar results

in horses in Nevada, where 103 mares were treated with various combinations of PZP and adjuvants and 92 mares served as controls. Data from Assateague Island on reversibility continued to accumulate over the years, and Kirkpatrick and Turner (2002) stated that liquid PZP was 100-percent reversible in three mares treated for 4 consecutive years and two mares treated for 5 consecutive years. The time between final treatment and pregnancy ranged from 1 to 8 years. At the time the committee's report was prepared, none of the five mares treated for 7 consecutive years had reversed after 7 years of monitoring. In a study of 16 burros, 46.1 percent of treated females were determined to be pregnant via fecal hormone monitoring during the second year after liquid-PZP treatment (Turner et al., 1996).

Studies of longer-acting PZP formulations, such as PZP-22 (pellets) and SpayVac, have assessed reversibility more in the context of measuring the duration of effect of the vaccine; declining infertility in years after vaccination reflects reversibility. In a study by Turner et al. (2007) of 96 treated mares, 15 percent of mares had reversed after 22 months, 31.6 percent after 3 years, and 46.2 percent after 4 years. In that study, however, not every mare was assessed for reversibility every year. Turner et al. (2008) suggested that more rigorous study of reversibility in PZP-22 treated mares is warranted.

Ransom (2012) studied liquid PZP and PZP-22 in three horse populations in the western United States. Twenty-two mares on the Little Book Cliffs HMA and 38 mares on the Pryor Mountain Wild Horse Range were treated with liquid PZP up to 5 consecutive years. At the McCullough Peaks HMA, 28 mares were treated with PZP-22. Among all the sites, in mares that had foaled previously, the probability of not foaling was 74.4 percent after PZP treatment and 35.9 percent in control mares; this indicates that fertility may be suppressed after the planned period of infertility. At Little Book Cliffs and Pryor Mountains, the time from the last liquid-PZP injection to first parturition ranged from 1.5 to 8.1 years and was strongly affected by the total number of years in which the mares were treated. On average, time to parturition increased by 411 days per consecutive year of treatment. At McCullough Peaks, 64 percent of PZP-22 treated mares did not produce a foal during the post-treatment period (5 years). Return to parturition took 1.4-5.5 years. The results reinforce the notion that return to fertility after immunocontraception can be longer than expected.

SpayVac has not been thoroughly assessed for reversibility in captive or free-ranging horses, although the study by Killian et al. (2008a) demonstrated that two of 12 treated mares became pregnant 2-4 years after vaccination. The studies of SpayVac in deer described above did not systematically address reversibility, nor have they been of sufficient duration to detect decreases in vaccine efficacy (animals were contracepted at the same level of efficacy in all years of the study).

*Side Effects: Physical and Physiological.* Because the antigen target of PZP contraception (liquid, pellet, or SpayVac formula) is highly specific—the egg's zona pellucida—there appear to be relatively few physical side effects. Barber and Fayrer-Hosken (2000) found that PZP antibodies did not bind to other somatic tissues in horses. Liu et al. (1989) found no evidence of pathological conditions in ovaries of mares treated for 1 year; however, this remains the only study of ovarian pathology in relation to liquid-PZP treatment in horses. Bartell (2011) found that the ovaries of SpayVac-treated domestic mares were lighter, had smaller oocytes, and had thinner zona pellucidae than control mares. Killian et al. (2008a) found that SpayVac-treated mares had unexplained higher rates of uterine edema, but they cited literature (Samper, 1997) suggesting that in healthy mares this is a sign of estrus when mares are under the influence of estrogen produced by ovarian follicles. It is not known whether the extent of edema observed in the SpayVac-treated mares was equivalent to that in normal estrous mares or more severe; the latter might be a possible indication of pathology. Because

of the pathological potential, further research on uterine changes during and after treatment with SpayVac is warranted. There are no documented reports of persistent uterine edema after the use of liquid PZP or PZP-22, but comparable data on the effects identified with the use of SpayVac do not exist.

Mares that have been treated with liquid PZP for 3-7 consecutive years have been reported to have decreased ovulation rates in successive years of treatment (Kirkpatrick et al., 1992, 1995); this suggests that PZP may act at sites other than just the zona pellucida. Powell and Monfort (2001) did not find a statistically significant relationship between the likelihood of ovulatory failure and current contraception status (currently versus previously treated with PZP). It is possible that the likelihood of physiological side effects depends on the delivery of PZP as repeated vaccinations (for example, annually in the case of liquid PZP) as opposed to one long-term vaccination (in the case of PZP-22 and SpayVac).

There are many other possible causes of subfertility in horses (McCue and Ferris, 2011), but in none of the analyses described above were the same mares assessed for cyclicity before and after PZP treatment, so other possible factors contributing to subfertility were not assessed. It is estimated that about 20 percent of domestic horse mares are subfertile (I.K.M. Liu, University of California, Davis, personal communication, August 2012). Ovarian senescence has also been documented in some domestic mares over 20 years old, as evidenced by a longer follicular phase, a prolonged interovulatory interval, and later first ovulation of a breeding season (McCue and McKinnon, 2011)—all of which are reported in mares currently or previously treated with PZP (Powell and Monfort, 2001). Thus, assessing reproductive competence after many years of PZP treatment is confounded by the concomitant effects of aging.

There has been much discussion over the years of the effects of different adjuvants used in combination with PZP in relation to reactions at the injection site, which have included stiffness, swelling, nodules, and abscesses. The traditional application of liquid PZP involved an initial primer dose administered with FCA and a follow-up booster 2-4 weeks later with Freund's incomplete adjuvant (FIA). Kirkpatrick et al. (1990) were the first to mention potential concerns with using FCA in wildlife, but in their study only three of 26 treated mares had injection-site abscesses, and all healed within 14 days. One concern with FCA is its ability to produce false positive results in tuberculosis tests; this in part led to the development of FMA, which did not produce such results (Lyda et al., 2005). Chapel and August (1976) also suggested that FCA could be hazardous to people exposed to it when administering injections.

In their study of FCA and FMA use in the primer liquid-PZP dose, Lyda et al. (2005) found only one case of injection-site abscess. The mare was treated with FMA in the primer dose and FIA in the booster. The abscess appeared after the FIA booster dose, and it drained and healed without incident. Antibody titers produced with FMA and FCA did not differ significantly. Neither adjuvant had an effect on the delivery of healthy foals. The authors cited unpublished data suggesting that the incidence of injection-site abscesses was less than 1 percent when injections were given in the hip, but it was higher when injections were given in the neck.

In a large study of free-ranging horses, Roelle and Ransom (2009) found no statistically significant differences in occurrence of dart-site reactions due to adjuvant (FCA or FMA) and suggested that reactions are probably more likely to be due to dart trauma or in some cases a combination of dart trauma and adjuvant. Hand injection led to fewer injection-site reactions than darting. Overall, abscesses in response to darting were rare, in accordance with other studies (Kirkpatrick et al., 1990; Turner and Kirkpatrick, 2002; Lyda et al., 2005). Nodules at the injection site were the most common reaction (25 percent of cases), and these

persisted for up to a year or more but did not appear to affect the animals. Swelling was the second-most common reaction (11 percent and 33 percent at two study sites), and this disappeared within 30 days. Stiffness was the third-most common (1.4 percent and 11 percent at two study sites) and disappeared within 24 hours.

In their studies of both PZP and GonaCon™ (a GnRH vaccine), Gray et al. (2010, 2011) found no cases of abscesses after hand injection of either compound with AdjuVac as an adjuvant. Similar results have been found in deer when AdjuVac has been used (Locke et al., 2007; Miller et al., 2009).

Contracepted females should generally be in better body condition than uncontracepted females because they do not face the energetic demands of pregnancy and lactation. Turner and Kirkpatrick (2002) found that body-condition scores of mares on Assateague Island were significantly higher in 1999 than in 1988 before PZP contraception was widely applied. Body-condition scores of lactating females at those two times were not significantly different, and this suggests that prevention of pregnancy can enhance body condition. Ransom et al. (2010) found no difference in body-condition scores between treated and untreated mares in three western populations of horses on the basis of a similar body-condition scoring index, but mares that had foals had lower body condition than mares that did not. The most likely reason for the absence of significant body-condition differences between treated and untreated mares is that most treated mares were already pregnant when the study began and therefore did have foals at their sides during the study. In addition, some treated mares that did not respond to contraception and produced foals were exposed to the same energetic demands of gestation and lactation as untreated mares (J. Ransom, National Park Service, personal communication, May 3, 2012). In contrast, Fraker et al. (2002) found that fallow deer does treated with SpayVac had lower stores of kidney fat than untreated does; treated does might have expended more energy during the rut because they were engaged in reproductive behavior more often than untreated does.

*Side Effects: Pregnancy, Birth Seasonality, and Survival.* Liquid PZP has been demonstrated to be safe to administer to pregnant mares in a number of studies (e.g., Kirkpatrick et al., 1990, 1991). Turner and Kirkpatrick (2002) found that foal survival to 1 year is equivalent between untreated mares and mares treated with liquid PZP during pregnancy; female foals born to PZP-treated females also successfully bred and reared offspring. Kirkpatrick and Turner (2003) analyzed birth records on Assateague Island and found that most foals born to treated and untreated mares are born in season (April-June): 75.8 percent of births to control mares, 64.9 percent of births to treated mares, and 68.9 percent of births attributed to contraceptive failure. None of those differences was significantly different. The authors did note that out-of-season births had been increasing on Assateague Island since 1984 (the contraception management program began there in 1994) for unknown reasons. Turner and Kirkpatrick (2002) found no difference in survival between in-season and out-of-season foals but stated that it probably depends on the environment (Kirkpatrick and Turner, 2003). On Shackleford Banks,<sup>6</sup> PZP-treated mares foaled over a broader range of months than untreated mares (Nuñez et al., 2010). Mares given PZP in the year before they conceived gave birth 3-4 months later than untreated mares. Mares that had been on PZP at some point before the year in which they conceived gave birth almost a month later than

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<sup>6</sup>Shackleford Banks, part of the Cape Lookout National Seashore, is home to a herd of free-ranging horses managed by the U.S. Department of the Interior's National Park Service. Although they were not treated with PZP for as many years as the Assateague Island horses, the results of behavioral studies of the Shackleford Banks horses can inform management of horses under BLM's jurisdiction.

untreated mares. However, in an investigation of PZP contraception in free-ranging mares in Nevada, Gray et al. (2010) found no differences in foal survival, birth seasonality, or foal sex ratio between treated and untreated mares. Ransom (2012) also studied the effect of liquid and pelleted PZP (PZP-22) on birth seasonality at three sites in the western United States. Overall, mares that gave birth to foals after treatment (liquid and PZP-22 considered together) did so an average of 31.5 days later (range, 17-46) than untreated mares. Ransom stated that that effect varied among sites and PZP formulations, but these factors were confounded because PZP-22 was used exclusively at one site and not at all at the others. In addition, a monsoon rain at one site allowed a second peak in spring vegetation quality. There was no effect of treatment on foal survival; however, foal survival did decrease the later a foal was born after the peak in spring vegetation quality. Ransom indicated that the average delay in birth of a posttreatment foal results in about a 4.2-percent reduction in survival probability and that this is probably why the treatment effect was not statistically significant (J. Ransom, National Park Service, email communication, July 6, 2012). Ransom also noted that posttreatment mares that gave birth “late” in a given year would often not foal in the following year but then would foal in the third year during the normal birthing season for that site; such factors as photoperiod and temperature might be able to “reset” a mare’s reproductive system so that conception and birth occur during the normal birth season in later years.

Studies of liquid-PZP contraception in the Assateague Island horse population have also revealed effects on survival of mares. In the 4 years before 1994, when management-level contraception began, annual adult mortality was greater than 10 percent; in the first 4 years after contraception, adult mortality decreased to less than 4 percent (Turner and Kirkpatrick, 2002). It should be noted, however, that in 1990 and 1992 many deaths were attributable to an equine encephalitis outbreak and severe storms, respectively. Even so, mare mortality in 1991 and 1993 was about 3-4 percent; from 1994 to 1998, mare mortality was less than 2 percent (Turner and Kirkpatrick, 2002). There was also a shift upward in age classes in the entire herd, which indicated increased survival and the attainment of new, older age classes (Turner and Kirkpatrick, 2002). In a later study (Kirkpatrick and Turner, 2007), untreated mares were compared with mares on PZP for less than 3 years and mares on PZP for more than 3 years. Mean age at death was significantly lower in untreated mares (6.47 years) than in treated mares, and mares on PZP for more than 3 years had a higher mean age at death (19.94 years) than mares on PZP for less than 3 years (10.27 years). At the time the committee’s report was prepared, pelleted PZP and SpayVac had not been examined for effects on adult survival or demographic changes.

*Side Effects: Genetic.* Concerns have been raised about possible unintended genetic effects of immunocontraception. In a review of ecological and immunogenetic issues surrounding immunocontraception, Cooper and Larsen (2006) suggested that because immunocontraceptives are rarely 100-percent effective and resistance to vaccines (contraceptive failures) might have a genetic basis, managers may be unintentionally selecting for animals that do not respond to immunocontraceptive techniques. Using Falconer’s (1965) equations, they suggested that if the proportion of nonresponding females is 10 percent, which could be considered a valid estimate for liquid PZP in horses, after one generation of selection via immunocontraception, the percentage of female offspring produced that would themselves be resistant would range from 15 to 23 percent, depending on the degree of heritability of resistance to immunocontraception. The authors also suggested that such selection for non-responders could occur in the major histocompatibility complex or in genes that regulate the immune system, either of which could alter resistance to other pathogens.

However, when the committee's report was prepared, there were no data on resistance to immunocontraception, the heritability of such resistance, or the identity of specific genes that might affect responses to immunocontraceptives. National Park Service staff reported on Assateague Island that there were no indications that resistance was developing or that responses to immunocontraception were changing over time, after 19 years of herd management with PZP. Contraceptive effectiveness continues to be high (A. Turner, Assateague Island National Seashore, email communication, February 24, 2013). The immune response to immunocontraceptives depends on many nongenetic factors, such as nutritional status (Homsy et al., 1986; Chandra and Amarin, 1992; Chandra, 1996; Demas et al., 2003; Houston et al., 2007), and it was not possible for the committee to determine whether resistance to immunocontraception could develop. Similarly, it was not clear whether immunocontraception could inadvertently select for less immune-robust animals because they would not mount a strong response to PZP and would thus remain fertile. Presumably, any genetic background that would predispose animals to being immunocompromised would be under strong selection to be eliminated; even in a small population in which a deleterious mutation that compromised the immune system could become fixed, selection could act against individual animals that have the mutation, although the pressure of selection is smaller in small populations. In addition, Falconer's (1965) equations apply to threshold or "all-or-none" characters whereas lifetime reproductive success—which contraception affects—is a continuous variable that is not subject to some threshold, so it is not clear whether the Falconer model applies, although other models might. Cooper and Larsen (2006) suggested that immunocontraception could be appropriate for management of species that have long generation times, like horses, because genetic changes (if any) due to immunocontraception would take decades to develop. That would also assume that large numbers of individual animals are contracepted indefinitely and never allowed to breed; this does not seem likely if populations are managed for genetic diversity. However, those concerns highlight the importance of monitoring genetic diversity in immunocontracepted populations (see Chapter 5).

At the population level, removing females even temporarily from the breeding pool is likely to reduce the effective population size ( $N_e$ ) and genetic diversity of the population. As will be discussed in Chapter 5, reducing the number of breeders or increasing the variance in family size, which will occur as more females bear no young, will reduce  $N_e$  and increase the loss of genetic variability. (Tables 5-2 and 5-3 show that some populations display low levels of heterozygosity.)

*Side Effects: Behavioral.* There are two important considerations in evaluating the literature on contraceptive effects on particular aspects of behavior, particularly bonds between animals and stability of social groups. First, in no published study of immunocontraception have treatment and control groups been matched or balanced with respect to other variables that might affect behavior (such as age, dominance rank, tenure in the group, group size, social or reproductive history, and characteristics of other group members). Rather, investigators have had no control over those variables and thus only compared treated with untreated (or not currently treated) females. Studies in which those factors could be controlled or specifically have their effects measured would require large samples of animals of known history and would be virtually impossible to conduct in the field or even in captivity. Second, no study has been able to differentiate the behavioral effects of a contraceptive compound administered to an animal and the resulting absence of offspring. Thus, in no case can the committee conclude from the published research that the behavioral differences observed are due to a particular compound rather than to the fact that treated animals

had no offspring during the study. That must be borne in mind particularly in interpreting long-term impacts of contraception (e.g., repeated years of reproductive “failure” due to contraception).

Gray (2009) and Gray et al. (2010, 2011) studied the effects of a liquid-PZP vaccine on behavior of free-ranging horses in Nevada during breeding and nonbreeding seasons. There were no treatment effects on activity budget, rates of sexual behavior, proximity between stallions and mares, attempts to initiate proximity, aggression given or received, or band changing by mares. Powell (1999) found no differences in spatial relationships, dominance rank, or aggression between mares currently on PZP and those not currently on PZP on Assateague Island; however, at the time of Powell’s studies, all mares had been treated with PZP at some point in the past, so true controls were not available. On Shackleford Banks, an island where some mares were never treated with PZP, changes in time budgets were observed. Many factors—such as the presence of a foal, the size of a harem, and features of the male associated with the harem—affected time spent in various activities, but a female’s contraceptive status also affected time budgets. In “best fit” general linear models attempting to identify individual and group characteristics that account for variation in the proportion of time spent in grazing and standing, a female’s contraceptive status and an interaction involving contraceptive status and a harem male’s identity had significant effects, as did total harem size and the interaction of male identity and total harem size. In general, PZP-treated females and females in large harems graze less and stand more than non-PZP-treated females and females in smaller groups, but these effects are related to the particular males with which they interact (Madosky et al., in review).

In a study of liquid and pelleted PZP in three populations of horses in the western United States, Ransom et al. (2010) found no effect of treatment on activity budgets, but they did find that treated females engaged in significantly more reproductive behavior (0.05 behavior per hour in control mares versus 0.11 behavior per hour in treated mares), which could be expected with a contraceptive that causes females to cycle repeatedly during the breeding season. Powell (1999) also found no difference in activity budgets between mares currently on PZP and those not currently on PZP. Nuñez et al. (2009) saw significantly more sexual or courtship behavior in treated mares than in controls outside the breeding season but also cited data on other temperate equids that showed that out-of-season cycling is known to occur. Powell (1999) found a nonsignificant trend for currently treated mares to engage in more social behavior overall; however, when only sexual behavior was considered, there was no effect of current contraception status on behavior (Powell, 2000). Turner et al. (1996) did not discern any differences in reproductive behavior between liquid-PZP-treated burros and untreated burros, but they did not provide quantified behavioral data. No other studies of PZP contraception in burros have been published.

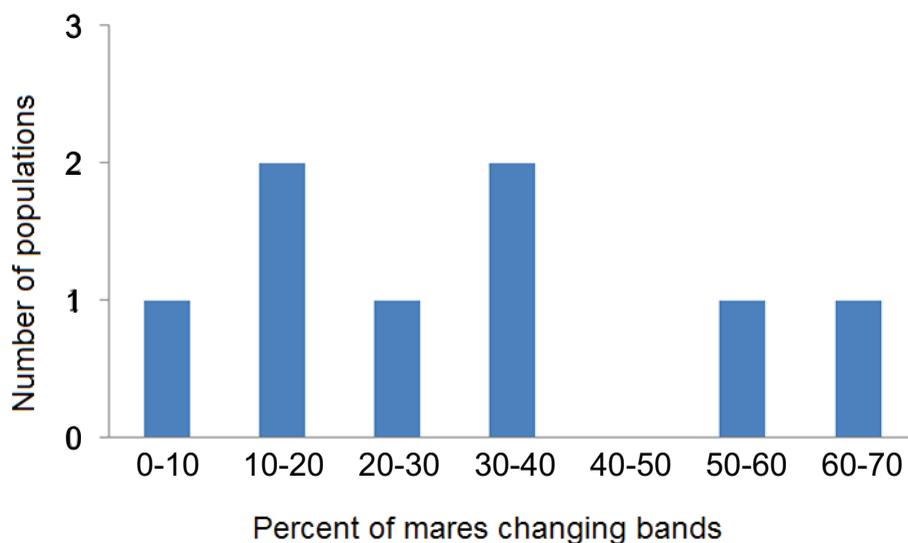
The effects of liquid PZP on harem stability in horses have been studied in Nevada during breeding and nonbreeding seasons by Gray (2009) and on Shackleford Banks during the nonbreeding season by Nuñez et al. (2009) and during the breeding season by Madosky et al. (2010). Stability was also assessed on Assateague Island by National Park Service staff (A. Turner, Assateague Island National Seashore, email communication, December 13, 2011). The studies on Shackleford Banks suggest that PZP is associated with increased harem-changing by mares, whereas the Nevada and Assateague studies found no differences between treated and untreated mares in harem-changing. The studies all differ in methodological approaches, definitions of treated and untreated animals, and ecological and social contexts. No studies have been able to control all the factors that could affect harem stability in the field, which could include age, pregnancy status, characteristics of other mares and stallions in the harem, distribution of resources, stallion turnover rates,

population size and demographics, and more. Finally, harem-changing by mares occurs to varied degrees in horse populations in varied ecological contexts in uncontracepted populations (see, e.g., Feist and McCullough, 1975; Berger, 1977, 1986; Nelson, 1978; Rubenstein, 1981; Stevens, 1990; Goodloe, 1991; Jensen, 2000).

Figure 4-2 shows a frequency distribution of the percentage of mares observed changing bands in population studies before or without contraception (Feist and McCullough, 1975; Nelson, 1978; Rubenstein, 1981; Berger, 1986; Rutberg, 1990; Stevens, 1990). Values range from 8 to 61 percent (mean, 27 percent; median, 25 percent). The study by Madosky et al. (2010) found that 70 percent of PZP-treated mares changed bands; that is significantly higher than the percentage of mares that change bands in uncontracepted populations (Wilcoxon signed-rank test,  $T = -18$ ,  $p = 0.008$ ,  $df = 7$ ). The percentage of control mares changing bands (33.3 percent) did not differ from that of mares in uncontracepted herds (Wilcoxon signed-rank test,  $T = -6$ ,  $p = 0.44$ ,  $df = 7$ ) (analysis provided by D. Rubenstein).

Whether Shackleford Banks is a unique case or not, additional study is needed to understand whether the absence of foaling as a result of contraception has an effect on band stability. Gray (2009) argued that sexual behavior and the ability to form consortships were adequate to maintain band stability in her study in Nevada. The studies on Shackleford Banks (Nuñez et al., 2009; Madosky et al., 2010) suggest that there is an interaction between pregnancy and social cohesion. The importance of harem stability to mare well-being is not clear, but considering the relatively large number of free-ranging mares that have been treated with liquid PZP in a variety of ecological settings, the likelihood of serious adverse effects seems low.

*Side Effects: Demography and Population Processes.* The easiest way to envision the effect of contraception on population processes is to examine its effect on demographic vital rates



**FIGURE 4-2** Percentage of band changes by mares as shown in a review of published literature. DATA SOURCE: Feist and McCullough (1975), Nelson (1978), Rubenstein (1981), Berger (1986), Rutberg (1990), Stevens (1990).

(e.g., birth and death rates) contained in the equation that approximates the intrinsic rate of population increase ( $r$ ). The demographic vital rates are related to  $r$  via the Lotka-Euler equation; a reasonable approximation is

$$r \approx \frac{\ln R_0}{G},$$

where  $R_0 = \sum l_x m_x$  is the net reproductive rate, and  $G = \sum x l_x m_x$  is the generation time, which is proportional to age at first reproduction ( $\alpha$ ) (May and Rubenstein, 1985);  $l_x$  and  $m_x$  are age-specific survival and fecundity rates, respectively (Stearns, 1992; Gotelli, 2001). Intuitively, female fertility control effectively reduces  $r$  by reducing  $m_x$ . The degree to which  $r$  is reduced depends on the effectiveness of the fertility-control method used, the proportion of females of a given age class that are treated, and the age classes that are targeted for treatment.

Female fertility control would also have indirect and unintended consequences, which may include changes in ages at first ( $\alpha$ ) and last reproduction ( $\omega$ ), longevity, and the population's age structure. If young females are targeted, fertility control can potentially increase the average  $\alpha$ . Because treated females no longer have to sustain pregnancies or lactate, their energy needs will be reduced, their body condition will improve (e.g., Kirkpatrick and Turner, 2007), and they can potentially survive better, live longer, and possibly have a longer reproductive life span. Because  $r$  correlates negatively with  $\alpha$  and positively with  $\omega$  (Oli and Dobson, 2003; Stahl and Oli, 2006), these can have contrasting effects. However, elasticity (or proportional sensitivity) patterns in age-structured populations suggest that the elasticity of population growth rate to changes in age-specific vital rates declines with age and that growth rate generally is more strongly affected by changes in  $\alpha$  than in  $\omega$  (Caswell, 2001; Oli and Dobson, 2003; Stahl and Oli, 2006). Thus, targeting younger females for contraception would be the most effective strategy if the goal is to reduce  $r$ .

Evidence suggests that repeated application of PZP can lead to prolonged infertility (beyond the treatment period), so the effects on population growth may be more dramatic in later years and longer lasting than might have been planned at the start of fertility control. Fertility control via PZP may also increase longevity in females (Kirkpatrick and Turner, 2007), and this would have both direct and indirect ecological effects. Females that survive longer will increase the number of animals using the range, and this is likely to affect the setting of appropriate management levels (see Chapter 7). However, females that live longer may or may not contribute to  $r$  via reproduction. In addition, targeting younger age classes for repeated and prolonged fertility control would affect a population's age structure and the likelihood of a given animal's contribution to the gene pool (see Chapters 3 and 5). The impact of those consequences will depend on a population's initial size and structure and should be accounted for when strategies for fertility control are developed.

Many of the behavioral changes associated with fertility control that are discussed in the preceding section are also likely to affect population dynamics. A longer breeding season could affect band stability and would probably extend male sexual activity into months when they normally recover strength and rebuild body condition. Such sexual activity in horses and other equids can involve males herding, pushing, and nudging females (and sometimes even forcing copulations [Berger, 1986]), which lower foraging success and freedom of movement (Rubenstein, 1986, 1994; Linklater et al., 1999; Cameron et al., 2009). Sexual harassment has been seen in many but not all equid populations. Where it

occurs, if levels of harassment remain high year round, both males and females could enter the breeding season in lower condition, and fertility could be compromised. Fecundity ( $m_x$ ) and survival ( $l_x$ ) of nontreated females could be further reduced, again limiting the population growth rate ( $r$ ). Whether that cascade of events will occur in particular horse or burro populations will depend on the magnitude and interaction of three factors: environmental harshness in the nonbreeding season, social instability, and improvement of body condition in treated females due to absence of energetic demands of pregnancy and lactation. It is known from studies on Assateague Island that PZP-treated mares tend to have higher body-condition scores than females that reproduce regularly (Kirkpatrick and Turner, 2007). More recent results from Shackleford Banks show increased longevity in PZP-treated mares, probably because of their increased body condition and general health (Stuska, 2012). However, it is known that social disruption and harsh conditions during stressful periods can lower body condition (Pollock, 1980). What is not known is how those factors may interact when PZP use is extended to populations in harsher habitats or during periods of harsher climatic conditions, such as drought. It is something that will need to be monitored.

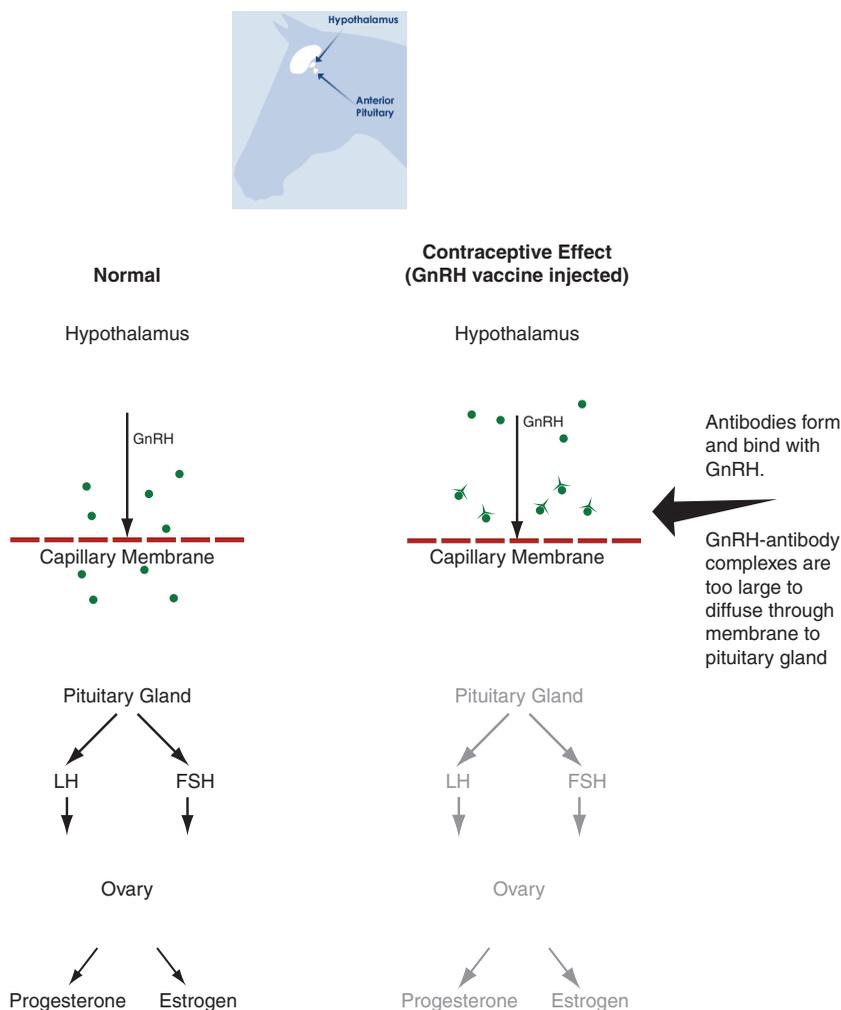
### Gonadotropin-Releasing Hormone Vaccine

GnRH stimulates the pituitary gland to produce follicle-stimulating hormone (FSH) and luteinizing hormone (LH), which then stimulate growth of follicles (which produce estrogen) and ovulation. GnRH vaccines prevent the action of GnRH so that in the absence of FSH and LH the failure of follicle growth and ovulation prevents reproduction (Figure 4-3). Two formulations of the most common GnRH vaccine, GonaCon™, have been reported in the literature. Specifically, the GnRH peptide has been conjugated to a keyhole limpet hemocyanin protein (KLH) or to blue mollusk protein (B). Both formulations appear to work well, but the B formulation may be more effective (Killian et al., 2008a; Miller et al., 2008) and is less expensive to produce than the KLH formulation (K. Fagerstone, NWRC, personal communication, April 18, 2012). GnRH vaccines not identified as GonaCon in the literature will be labeled as experimental vaccines because they are formulated in a variety of ways.

Studies of GonaCon as a contraceptive in horses are rare in the published literature; studies of GonaCon in deer are more numerous. Two additional GnRH vaccines are available in other parts of the world: Equity™ and Improvac® are produced by Pfizer Animal Health, Australia. Results of studies of efficacy, reversibility, and side effects of these vaccines are discussed in this section.

*Delivery Route.* GonaCon™ Equine, developed by NWRC and licensed by the U.S. Environmental Protection Agency (EPA) for use in horses, can be delivered by hand injection or by dart. An experimental version of GonaCon-KLH™ was delivered by dart to white-tailed deer in New York (Curtis et al., 2002).

*Efficacy.* Killian et al. (2008a) studied the efficacy of GonaCon-KLH in 16 penned horses (eight controls) in Nevada and found that efficacy over the 4 years of the study was 94 percent, 60 percent, 60 percent, and 40 percent, respectively. Gray et al. (2010) evaluated the efficacy of GonaCon-B™ in 24 free-ranging horses in Nevada and found efficacy of 61 percent, 58 percent, and 69 percent during each year of the 3-year study, respectively. As mentioned above, Gray et al. (2010) used a conservative method to estimate efficacy compared with most authors who have assessed contraceptive efficacy and suggested this as one



**FIGURE 4-3** Mode of action of gonadotropin-releasing hormone (GnRH) vaccines.

NOTE: Without GnRH to stimulate follicle-stimulating hormone (FSH) and luteinizing hormone (LH), there is no production of ovarian estrogen or progesterone and no ovulation.

SOURCE: Adapted from Asa et al. (1996).

possible explanation for the discrepancy between their results and others' results. A second explanation put forward by the authors was potential differences in body condition between the captive and free-ranging mares used in the two studies. Research suggests that animals that have more energy reserves or are in better body condition have stronger immune systems and thus are able to mount stronger responses to foreign antigens (Chandra, 1996; Demas et al., 2003; Houston et al., 2007). In both studies GonaCon was emulsified with the AdjuVac adjuvant.

Botha et al. (2008) studied Improvac in a large sample ( $n=55$  treated) of mares kept in very large pastures in South Africa. Mares were vaccinated twice (day 0 and day 35) in the middle of the breeding season. By day 35, only 14.5 percent of treated mares showed

evidence of ovarian activity as assessed with ultrasonography; at day 70, no treated mare demonstrated ovarian activity. The authors indicated that the 14.5 percent of treated mares that had evidence of ovarian activity at day 35 received their first vaccination during the luteal phase and suggested that the timing of vaccination in the ovulatory cycle is important. Imboden et al. (2006) also evaluated Improvac in nine mares by vaccinating them twice, 4 weeks apart. Ovarian suppression occurred at 4 weeks and lasted a minimum of 23 weeks, but the authors found significant variability in duration and strength of suppression that did not correlate with antibody titers.

In a study of Equity in Australia, Elhay et al. (2007) vaccinated 24 domestic mares at day 0 and boosted them on day 28. All treated mares showed reduced ovarian activity; by 4 weeks after the booster, ovaries of treated mares resembled those of seasonally anovulatory mares.

The efficacy of GnRH vaccines has also been studied in other species. In an early study with an experimental version of GonaCon-KLH, Miller et al. (2000) reported an 88-percent reduction in fawning in eight white-tailed does. In a series of studies of white-tailed deer in Maryland (n=28, Gionfriddo et al., 2009) and New Jersey (n=32, Gionfriddo et al., 2011a), GonaCon-KLH emulsified with AdjuVac resulted in 67- to 88-percent contraceptive efficacy in year 1 and 43- to 47-percent efficacy in year 2. Those values were lower than the ones reported for captive deer. Miller et al. (2008) found 100-percent efficacy in years 1 and 2 and 80-percent efficacy in years 3-5 for five does treated with GonaCon-B compared with 100 percent in year 1, 60 percent in year 2, 50 percent in years 3 and 4, and 25 percent in year 5 for GonaCon-KLH given as a single injection to five does. A two-injection protocol of GonaCon-KLH was identical in efficacy to GonaCon-B in years 1-2. Gionfriddo et al. (2011a) suggested that their efficacies were lower because their wild deer were in poorer nutritional condition and living in overgrazed habitats. However, Perry et al. (2006) found only 60-percent efficacy over 3 years in 28 captive black-tailed deer, so species differences also seem possible. Curtis et al. (2002) reported an 87-percent efficacy in 32 white-tailed deer over 2 years using an experimental version of GonaCon-KLH administered as a two-shot series in year 1 and a booster at year 2. In years 3 and 4 of their study, efficacy declined to 71 percent and 43 percent, respectively, in the absence of a booster. Fawning rates were significantly lower than those of controls in years 1 and 2.

Killian et al. (2009) evaluated two doses (1,000 or 2,000 µg) of GonaCon-KLH in 22 captive female elk over a 3-year period. Low-dose efficacy was 92 percent, 90 percent, and 100 percent over the 3 years compared with high-dose efficacy of 90 percent, 100 percent, and 100 percent; these differences were not significantly different. Ten captive female Rocky Mountain elk treated with GonaCon-B had significantly reduced pregnancy rates for 3 years (90-percent reduction in year 1, 75-percent in year 2, and 50-percent in year 3) compared with controls (Powers et al., 2011).

Efficacy of GonaCon-KLH was 100 percent in six female bison for 1 year (Miller et al., 2004). In a short-term study (12-14 weeks) of six female wild boar, 100 percent of GonaCon-treated sows became infertile (Massei et al., 2008). In another short-term study (36 weeks) of feral swine treated with two different doses of GonaCon-KLH, Killian et al. (2006) found that none of the nine sows receiving the higher dose was pregnant at the end of the study and only 10 percent gave birth during the study. Of the 11 sows receiving the lower dose, 56 percent gave birth during the study and 11 percent were pregnant by the end of the study. The authors reported 80- to 90-percent efficacy in domestic pigs in previously published studies from their laboratory.

*Reversibility.* Elhay et al. (2007) found that in mares treated with Equity the duration of ovarian quiescence ranged from 4 to 23 weeks in 10 of 16 treated mares. The remaining six

mares did not return to cyclicity during the study (the duration was about 34 weeks for a sample of mares monitored over a longer term). Three mares with short-duration effects (4-8 weeks) were characterized by low antibody titers. The most frequent duration of contraceptive effects was 23 weeks.

Massei et al. (2008) cited their own unpublished data on GonaCon treatment in wild boar sows that suggest that the vaccine works for several years. Miller et al. (2000) stated that their experimental version of GonaCon-KLH appeared to be reversible in white-tailed does and that infertility appeared to last for 2 years without boosting.

*Side Effects: Physical and Physiological.* GonaCon-B-treated free-ranging mares showed no evidence of injection-site reactions to vaccination (Gray et al., 2010). Mares treated with Improvac demonstrated significantly reduced progesterone concentrations that were still at baseline at day 175; in addition, treated mares had reduced ovarian volume (Botha et al., 2008). Injection-site reactions were transient and disappeared by day 6. In the Imboden et al. (2006) study of Improvac, vaccination significantly affected the number, size, and types of ovarian follicles, corpora lutea, and progesterone concentrations but not estradiol. Most mares showed reactions to the injections, including swelling, pain, stiffness, pyrexia, and apathy, but these signs disappeared within 5 days. The difference between these Improvac studies in occurrence and severity of injection-site reactions could be related to injections being given in the neck (Imboden et al., 2006) instead of the hip (Botha et al., 2008). Mares treated with Equity have demonstrated reduced progesterone concentrations, reduction in ovary and follicle size, and absence of corpora lutea (Elhay et al., 2007).

Kirkpatrick et al. (2011) expressed concerns about GnRH vaccines, pointing out that GnRH receptors are found in various body tissues and that GnRH can act as a neurotransmitter. GnRH can affect olfaction in rodents, can depress activity of the cerebral cortex, and is associated with two genetic disorders of the cerebellum. However, many of the results mentioned are from studies that used GnRH agonists that result in supranormal concentrations of GnRH. GnRH vaccines block rather than enhance any effects of GnRH, so the effects of the two methods would be expected to be opposite in some or all tissues that have GnRH receptors (see section below “Gonadotropin-Releasing Hormone Agonists”).

*Side Effects: Pregnancy, Birth Seasonality, and Survival.* In probably the earliest study of a GnRH vaccine, Goodloe (1991) found no differences in birth seasonality between treated and untreated mares on Cumberland Island, a barrier island off the coast of Georgia. She did observe significantly higher mortality in foals born to treated mares in 1 year and a non-significant trend in the same direction in the second year, but other possible effects (such as age, body condition, dominance rank, and habitat quality) were not considered. Gray et al. (2010) found no effects of GonaCon-B on birth seasonality, foal survival, or foal sex ratio in free-ranging horses. In a review of contraceptive vaccines in wildlife, Kirkpatrick et al. (2011) stated that GnRH vaccines should be safe for pregnant horses because pregnancy is maintained by the placenta in this species, but they presented no data. However, pituitary LH, which depends on GnRH, is needed for pregnancy maintenance during about the first 6 weeks of pregnancy, after which equine chorionic gonadotropin (eCG) takes over this role.

In other species, Powers et al. (2011) found that GonaCon-B administered mid-gestation to captive female Rocky Mountain elk did not affect calving or calf survival. Miller et al. (2000) found that fawns born to white-tailed does treated with an experimental version of GonaCon-KLH were normal and healthy. They did find indications that some treated does were able to produce enough LH to conceive, but the progesterone produced by the corpus luteum was not adequate to carry pregnancy to term. In a study of an experimental

GonaCon-KLH, Curtis et al. (2002) found that fawning dates of treated white-tailed does were later than those of control does in the first 2 years of the study when efficacy was high but not significantly different when efficacy was lower (less than 71 percent). Female bison treated with GonaCon-KLH in the final months of pregnancy delivered healthy calves at calving dates comparable with those of controls (Miller et al., 2004); this suggests that it can be used safely in the last trimester of pregnancy in this species.

*Side Effects: Genetic.* Because a GnRH vaccine is an immunocontraceptive, its potential genetic side effects (that is, its selection against a stronger immune response) would be similar to those of PZP mentioned above.

*Side Effects: Behavioral.* Reviews of the effects of GnRH vaccines and independent studies have suggested that GnRH vaccines have a stronger suppressive effect on LH than on FSH, so sexual behavior may not be suppressed completely in females (Thompson, 2000; Stout and Colenbrander, 2004; Imboden et al., 2006; Powers et al., 2011). That is, continued production of FSH, and later of estradiol, may support estrous behavior but without ovulation, which requires LH. An additional or alternative explanation might be continued production of adrenal sex steroids in the absence of ovarian steroids; this has been shown to support estrous behavior in domestic horses during the nonbreeding season or after ovariectomy (Asa et al., 1980b). In Gray's (2009) study of the effects of GonaCon on behavior of free-ranging horses in Nevada during both breeding and nonbreeding seasons, there were no treatment effects on activity budget, rates of sexual behavior, proximity between stallions and mares, attempts to initiate proximity, aggression given or received, or band-changing by mares. In white-tailed does previously treated with GonaCon, the recovery of estrous behavior in years 3, 4, and 5 after vaccination was suppressed when does received an additional vaccination with an anti-follicle-stimulating, hormone-releasing hormone (Killian et al., 2008b), a peptide similar in structure to GnRH.

*Effects of GonaCon in Other Ungulate Species.* Because GonaCon has not been tested extensively in equids, its effects in other ungulate species are reviewed in this section. Killian et al. (2008b) found that 10 white-tailed does treated with either formulation of GonaCon exhibited estrous behavior less frequently in the first 2 years after treatment, but in later years estrous behavior was displayed more often, even though does were still infertile; this suggests that estrous behavior may return before fertility is fully restored. Miller et al. (2000) found that eight does treated with an experimental version of GonaCon-KLH demonstrated the same number of estrous events, defined by bucks sniffing and chasing does, as control does during 30-44 days of observation during the rut. In their study of an experimental GonaCon-KLH, Curtis et al. (2002) found that treated does cycled later in the year during the second year of treatment than in the first year. Perry et al. (2006) found significantly reduced progesterone in female black-tailed deer treated with GonaCon-KLH. Gionfriddo et al. (2006) found no histopathological effects in a variety of tissues in 28 female white-tailed deer treated with GonaCon-KLH; 29 percent of treated does had injection-site reactions, but they were not discernible externally and were not considered serious. Gionfriddo et al. (2011a,b) found that ovaries and uteri of 32 GonaCon-KLH-treated white-tailed does were smaller than those of controls. Major organs, organ systems, and blood-chemistry parameters were normal in most treated deer (Gionfriddo et al., 2011b). When abnormalities were seen, they could not be clearly related to treatment, and treated does had higher body-condition scores than controls.

Captive female Rocky Mountain elk treated with GonaCon-B did not differ from controls in biochemistry or hematology parameters, and there was no effect on female precopulatory behavior (Powers et al., 2011). There was a nonsignificant trend for males to direct more precopulatory behavior toward treated does than at controls. Treated females did have more follicles than controls, but the follicles were smaller and fewer corpora lutea were present. The authors also commented that GonaCon-B used in conjunction with AdjuVac can cause a positive result on Johne's disease antibody testing. Injection-site abscesses occurred in 35 percent of treated does, and some lasted for years, but most treated or sham-treated animals showed some level of reaction.

Adams and Adams (1990) vaccinated 30 heifers with GonaCon-KLH mixed with Freund's complete adjuvant. All treated animals had significantly reduced progesterone, reduced uterine and ovarian tissue mass, and reduced GnRH receptor numbers. GonaCon-KLH-vaccinated female bison demonstrated suppressed progesterone (Miller et al., 2004).

Massei et al. (2008) found no effects of GonaCon on activity budgets, social rank, injection-site reactions, or hematology and biochemistry parameters in a 14-week study of wild boar sows. Treated sows gained more weight, but the gain was considered modest. In a short-term study (36 weeks) of feral swine treated with two different doses of GonaCon-KLH, Killian et al. (2006) found that treated sows had significantly reduced progesterone and numbers of corpora lutea, although females in both treatment groups showed some evidence of follicular activity. There was also evidence of regression of the uterine epithelium.

In studies of GonaCon, injection-site reactions were likely in most species, even if they were not externally visible, but these reactions appeared to be minor and relatively short-lived in most cases. Miller et al. (2008) explained that the water-in-oil emulsion that is often mixed with GonaCon is necessary to induce a long-term immune response, and it is generally accepted that some local reactions (cysts, granulomas, or sterile abscesses) at the injection site are common.

### **Gonadotropin-Releasing Hormone Agonists**

As described above, GnRH, which is produced in the hypothalamus, initiates the cascade of reproductive hormones by causing pituitary release of FSH, which enhances follicle growth, and LH, which triggers ovulation. GnRH agonists (synthetic versions of GnRH that have activity similar to the natural hormone) are commonly used in many domestic species to stimulate follicle growth, estrus, and ovulation. Ovuplant® (deslorelin in a short-acting implant; Peptech Animal Health, Australia, now part of Virbac, France) was developed specifically to induce ovulation in domestic mares. Another GnRH agonist product, Suprelorin® (deslorelin in a slow-release implant matrix; Peptech Animal Health), was developed for use in domestic dogs and is now widely used for contraception in a broad array of captive wildlife species, including female ungulates. GnRH agonists can act as reversible contraceptives when treatment is extended for more than a few days. After the initial stimulation phase, continued administration results in down-regulation of the pituitary cells that synthesize FSH and LH. Without FSH and LH support, the ovaries become quiescent; this condition is sometimes referred to as reversible chemical ovariectomy.

#### **Delivery Route and Efficacy**

Suprelorin implants, similar in size to animal ID microchips, are inserted with a trocar, which requires brief restraint but not anesthesia. Two formulations that are active for a minimum of 6 or 12 months are available, but experience has shown that the duration of

contraception is longer in most animals—an average of 12 and 18 months, respectively.<sup>7</sup> At an adequate dose, GnRH agonists are effective in females of virtually all mammal species, but they have not been tested specifically as contraceptives in horses, burros, or wild equids. Short-term treatment to control ovulation and to investigate their action on pituitary function indicates that GnRH agonists could be effective in suppressing reproduction in mares (Montovan et al., 1990; Fitzgerald et al., 1993). For example, even the short-acting product Ovuplant, designed merely to stimulate but not down-regulate reproduction in mares, has delayed return to cycling in some animals (Johnson et al., 2002). That observation suggests that continued treatment with a long-acting, slow-release implant, such as Suprelorin, would be effective for fertility control, even though the mare appears to be more resistant to pituitary desensitization than other species (Porter and Sharp, 2002).

### Reversibility

GnRH agonists are considered generally reversible, primarily on the basis of studies of domestic dogs (Junaidi et al., 2003; Ludwig et al., 2009), cats (Toydemir et al., 2012), and humans (Plosker and Brogden, 1994). However, the duration of effect is greater in some individual animals, and this confounded documentation of reversal before data collection stopped in a study of domestic cats (Munson et al., 2001). In addition, long-term treatment is associated with a longer time to recovery (Nejat et al., 2000). Other studies have reported what may be permanent effects, for example, during treatment of prostate cancer in men (Murthy et al., 2007).

### Side Effects

GnRH agonists have not been used often during pregnancy, so potential effects have not been systematically investigated. Possible effects can be predicted by examining another role of LH: maintenance of corpora lutea (CL) that produce the progesterone required for pregnancy to become established. However, around day 40, increasing concentrations of eCG produced by specialized cells in the uterine endometrium assume the role of stimulating CL progesterone production. Later, the feto-placental unit takes over progesterone synthesis from the CL for the remainder of gestation. Because LH is needed for support of progesterone secretion only during very early pregnancy, treatment with a GnRH agonist after that time would be unlikely to cause abortion.

Data from captive wild canids (African wild dogs and Mexican wolves) treated with Suprelorin during pregnancy revealed an unexpected consequence of GnRH agonist treatment. Females given Suprelorin implants in early pregnancy gave birth but did not produce sufficient milk to feed their pups; this indicates that some aspect of mammary development and milk production was affected.<sup>8</sup> However, initiation of treatment during lactation after milk production has been established appears to have no effect.

Effects of GnRH agonists on behavior, after the initial stimulation phase when estrous behavior might result, should be similar to those associated with ovariectomy. That is, estrous cycles would be absent, but sporadic expression of estrus supported by adrenal sex steroids might occur.

<sup>7</sup>Database managed by the Association of Zoos and Aquariums Wildlife Contraception Center (St. Louis, MO). Accessed July 20, 2012.

<sup>8</sup>Association of Zoos and Aquariums Wildlife Contraception Center database. Accessed July 20, 2012.

Repeated administration of various formulations of GnRH agonists (e.g., deslorelin acetate) for the induction and enhancement of ovulation and for the initiation of cyclicity in the transitional and anestrus phases of the estrous cycle in domestic mares is a standard and routine procedure used on broodmare farms worldwide (Squires, 2011). No adverse effects of repeated administration of these GnRH agonists have been reported in the literature over the last 2 decades since its acceptance, and they continue to be used in the manipulation of the estrous cycle in domestic mares (I.K.M. Liu, University of California, Davis, personal communication, August 2012). Because of the possibility of species differences in response, the relevance to free-ranging wildlife is unclear and deserves further study.

### **Steroid Hormone Treatments**

Progesterone and estrogen are the hormones that change with estrous cycles and support pregnancy in mammals. However, administration of natural or synthetic forms can prevent pregnancy, usually by negative feedback on the reproductive hormone axis.

#### **Natural and Synthetic Progestagens**

In the luteal or diestrus phase of the ovarian cycle and during pregnancy, high levels of progesterone suppress the final stages of follicle growth and ovulation. Thus, synthetic progestagens are attractive candidates for contraception and in fact are widely used for that purpose in women (e.g., Implanon® implants, etonorgestrel; Depo-Provera®, medroxyprogesterone acetate in a depot vehicle for injection) and in captive wild animals (MGA implants, melengestrol acetate, Wildlife Pharmaceuticals).

*Delivery Route, Efficacy, and Reversibility.* Progesterone or its synthetic equivalents can be administered as implants or as injections that might be delivered remotely by dart. With a sufficient dose, the efficacy rate approaches 100 percent. Silastic implants containing a progestagen can be effective for 2 years or more<sup>9</sup> and generally have a high reversal rate. The likelihood that a female will reproduce after such treatment is subject to other factors that affect fertility, such as age, health, and parity before treatment. Reversal can be hastened by removing the implant.

The vast number of studies on the treatment of mares with progesterone or synthetic progestagens have been for short-term control and timing of ovulation, not for contraception (e.g., Pinto, 2011). However, results of this body of work have shown that only one synthetic progestagen, altrenogest, is consistently effective in suppressing reproductive function in mares. Two others have been effective at very high concentrations in only some studies (Storer et al., 2009; Pinto, 2011). Those results are attributed to the specificity of the progesterone receptor in mares (Nobelius, 1992). At the time this report was prepared, the only progestagen product approved for use in domestic mares was altrenogest (Regu-Mate®). The only studies of progestagen contraception in mares used native progesterone in silastic implants to treat feral mares in holding pens in Nevada. Those placed subcutaneously in the neck area were lost, became infected, or both and so were not effective for limiting reproduction (Plotka et al., 1988). In a later study of the same population of captive feral mares, insertion into the peritoneal cavity prevented loss, and no evidence of infection was reported (Plotka et al., 1992). However, the doses of progesterone used (implants contained either 8 or

<sup>9</sup>Wildlife Pharmaceuticals, Association of Zoos and Aquariums Wildlife Contraception Center database. Accessed July 20, 2012.

24 g of progesterone) suppressed signs of estrous behavior but did not prevent ovulation and conception. That work was suspended also because of the invasive nature of the surgery and the unacceptable stress placed on mares (BLM, 2003, revised 2005). It is possible that treatment with altrenogest would be more successful than progesterone because synthetic steroid hormones typically have substantially higher bioactivity and affinity for the receptor and a lower metabolic clearance rate. The consequence is that smaller doses are needed for increased binding and efficacy. However, at the time of the committee's study, there was no altrenogest product that was active for more than 30 days.

*Side Effects.* Progesterone and synthetic progestagens support pregnancy but interfere with parturition by suppressing contractility of uterine smooth muscle. At doses high enough to be contraceptive, progestagens can block parturition, as documented, for example, in white-tailed deer (Plotka and Seal, 1989). Altrenogest is often used to maintain pregnancy and delay parturition in horses, but a study by Neuhauser et al. (2008) found that it did not prevent parturition, raising the question of its efficacy for maintaining pregnancy. However, there were some differences in health and survival of foals born to altrenogest-treated mares in that study. Although progesterone (as the "progestational" hormone) supports gestation, synthetic progestagens often have affinity for other steroid hormone receptors as well. For example, binding to androgen receptors might masculinize female fetuses, depending on the dose and stage of fetal development. However, fillies born to mares treated with the synthetic progestagen altrenogest during pregnancy (but not around the time of expected parturition) showed normal reproductive development, hormone production, and fertility (Naden et al., 1990). Progestagen treatment during lactation would not be expected to have a deleterious effect on milk production and in fact might enhance it. There are no data specifically on horses, but progestagens are a preferred method of contraception in women (Tankeyoon et al., 1984) and are not contraindicated in other species.

Side effects of progestagens vary taxonomically. Progestagen treatment of carnivores is associated with life-threatening mammary and uterine pathological conditions, whereas several uterine pathological conditions in primates (including women) are reversed by treatment with progestagens. Information on long-term administration of progestagens in equids is lacking, but extrapolation of results in other ungulates suggests that hydrometra (fluid accumulation in the uterus) might be expected.

### Natural and Synthetic Estrogens

Estrogen is instrumental in the sexual characteristics of mammals and in the regulation of the menstrual cycle. Estrogen treatment can reduce concentrations of FSH and LH in the bloodstream and thus decrease the development of viable eggs.

*Delivery Route, Efficacy, and Reversibility.* Both natural estradiol (a specific estrogen) and synthetic ethinyl estradiol, incorporated into silastic implants, have been tested as contraceptives in captive and free-ranging feral horses (Plotka et al., 1988, 1992; Eagle et al., 1992). In the trial with 8-g estradiol implants placed in the neck of 30 feral mares in holding pens (Plotka et al., 1988), loss of many implants compromised results, but most of the mares that retained the implants mated and conceived, probably because the dose was insufficient. In a subsequent trial at the same facility, 1.5-g, 3-g, and 8-g ethinyl estradiol implants were placed intraperitoneally to prevent loss in three groups of 8-10 mares each. Contraceptive efficacy of those implants was 75 percent, 75 percent, and 100 percent, respectively (Plotka et al., 1992). Extrapolation from assays of ethinyl estradiol from blood samples up

through 21 or 30 months suggested contraceptive efficacy from 16 months (1.5-g implants) to 60 months (8-g implants). Efficacy was judged by the number of mares ovulating or pregnant according to cyclic or sustained increases in progesterone, respectively. On the basis of data on duration of efficacy, it appears that all treated mares returned to cycling, and this suggests reversibility. However, follow-up did not extend to production of young. Behavioral data were not collected, and no deleterious effects were reported.

*Side Effects.* Estrogens are more effective in suppressing follicle growth than progestagens, but at contraceptive doses they have been associated with serious side effects. A general action of estrogen is to stimulate cell proliferation, but it also can be mutagenic (Liehr, 2001). At the high doses required to achieve contraception, the result can be abnormal growth (hyperplasia) and even cancer (neoplasia) of organs that have estrogen receptors, such as the uterine endometrium, mammary glands, pituitary, and liver (Gass et al., 1964; Santen, 1998). In mares, estrogen is associated with uterine edema (Pelahach et al., 2002). Therefore, unopposed estrogen treatment is not prescribed; instead, estrogen is typically combined with a progestagen, which tempers its effect on most target tissues. Almost all formulations of human birth-control pills contain synthetic estrogen plus progestagen; one contains only progestagen.

Treatment of mares with estrogen stimulates estrous behavior (Asa et al., 1984), but male-like behavior has been observed with continued treatment (Nishikawa, 1959), suggesting a shift in steroid metabolism to favor conversion to an androgen. Such male-type behavior was observed (C. Asa, unpublished) in free-ranging mares in Nevada treated with ethinyl estradiol (study by Eagle et al., 1992). However, no systematic observations were conducted on expression of social or sexual behavior in the studies by Plotka, Eagle, and colleagues (Plotka et al., 1988, 1992; Eagle et al., 1992).

### Combination Estrogen Plus Progestagen

As mentioned above, all formulations of human birth-control pills except one contain synthetic estrogen plus progestagen. The major contraceptive action of estrogen is to inhibit follicle growth, whereas progestagen prevents ovulation, so the combination is more effective than progestagen-only contraceptive formulations (because of the associated pathological changes, there are no commercially available estrogen-only contraceptives). The addition of a progestagen allows the use of a lower estrogen dose and reduces the probability of side effects. In addition, progestagen counters some estrogen effects, such as inhibition of estrous behavior. In general, the hormonal effect of the combination is most analogous to pregnancy.

A combination of natural progesterone and ethinyl estradiol in silastic implants was tested in captive and free-ranging mares (Plotka et al., 1992; Eagle et al., 1992) and found to be effective in preventing pregnancy or foaling, respectively. Efficacy was 100 percent in captive mares and 84-90 percent in free-ranging mares; the discrepancy was attributed to the less exact methods of assigning foals to mares in the helicopter surveys of the free-ranging herds. The combination implants, inserted intraperitoneally, were effective for 2 or 3 years. As mentioned above in connection with estrogen alone, it appears that all treated mares returned to cycling, but follow-up did not extend to production of young. Although there are no other published reports on estrogen plus progesterone treatment of equids or other ungulates, results of studies of nonhuman primates indicate a high rate of reversal (Porton and DeMatteo, 2005). No behavioral data were collected, so effects on behavior or social organization are not available.

### **Intrauterine Devices**

Intrauterine devices were first used in domestic animals (such as camels) perhaps thousands of years ago. IUDs were a nonhormonal alternative for women in the 1960s and early 1970s that fell out of favor in the late 1970s, mostly because of problems with the Dalkon Shield (Sivin, 1993). Later analyses of IUD use in women have shown the method to be both highly effective and safe (Chi, 1993; Sivin, 1993; Rivera and Best, 2002). The precise mechanism of action of IUDs is not well described but is thought to be low-grade inflammation of the uterine endometrium provoked by the presence of the foreign object. Thus, IUDs may more appropriately be considered antigestational devices in that endometrial inflammation is not conducive to embryo implantation. Although there have been few studies of IUD use in nonhuman animals, some species may be well suited to this method.

#### **Delivery Route, Efficacy, and Reversibility**

Two studies have evaluated IUDs in domestic and captive feral horses. The first (Daels and Hughes, 1995) used a flexible, silastic O-ring, fabricated specially for the study, in six domestic mares; when compressed, it could be easily inserted into the cervix and later removed in the same way. During the breeding season after the IUDs were in place, none of the mares conceived, but all conceived after IUD removal during the next 2 years. Uterine health was monitored with palpation, ultrasonography, and vaginoscopy when samples were taken for uterine cytology and culture. Cytology and culture results were consistent with inflammation, which reversed within a week of IUD removal. It was concluded that the inflammatory response was sufficient to interfere with fertility. Mares that had IUDs in place continued to exhibit estrous cycles with the same frequency as control mares.

The second study (Killian et al., 2004), of 15 feral mares in a holding facility, used a commercially available copper-containing IUD, which is considered more effective because of the spermicidal action of copper ions (O'Brien et al., 2008). In a pilot study, the authors tested three types of copper-containing products on four mares and selected the copper T for the larger study of 15 mares. After 60 days with a stallion, 20 percent of the IUD-treated mares were pregnant compared with 75 percent of the control mares. After the second and third years, 71 and 86 percent were pregnant, respectively (Killian et al., 2006). The authors believed the pregnancies of the IUD-treated mares were due to loss of the relatively small IUDs, not to failure of efficacy, because no IUDs were found on ultrasound examination of the pregnant treated mares.

### **MALE-DIRECTED METHODS OF FERTILITY CONTROL**

Potential methods of fertility control directed at male equids include castration, vasectomy (chemical or surgical), and immunocontraceptives. The mode of action and effects of each method are reviewed below.

#### **Surgical or Chemical Sterilization**

Sterilization of male equids can be accomplished through removal of the testes, permanent disruption of spermatogenesis, or blockage of the vas deferens to prevent the passage of sperm.

## Castration

Castration, also referred to as gelding in equids, eliminates the organs that produce sperm, thereby making the male infertile. Surgical castration has been common husbandry practice for domestic equids for over 2,000 years.

*Delivery, Efficacy, and Reversibility.* Castration (gelding) is a routine operation for domestic male horses and is much less invasive or risky than the comparable surgery in mares. However, complications can occur at a rate of about 10 percent, including hemorrhage from the spermatic artery if not properly crushed; inadequate postoperative drainage that results in swelling, infection, or hydrocele (fluid accumulation); or even evisceration in rare cases (Blodgett, 2011). Surgical castration is, of course, permanent and is 100-percent effective in eliminating the source of sperm.

An agent for chemical castration (formerly Neutersol®, now Esterilsol™, Ark Sciences, New York City) developed for and extensively tested in domestic dogs might also be effective in stallions. A solution of zinc gluconate with L-arginine is injected into each testicle, where it causes permanent disruption of the seminiferous tubules, where spermatogenesis occurs. However, given the much larger volume of stallion testes, the technique might need modification and would require testing under controlled conditions before application in the field could be considered.

Efficacy of Esterilsol is not well established, even in dogs, in that the product is relatively new. Available data indicate that efficacy depends primarily on proper injection of the solution so that it is distributed adequately throughout the testis. It is claimed to be virtually painless (ACC&D, 2012).

*Side Effects.* Because castration removes the primary source of androgen production, male-type aggressive and sexual behaviors are usually reduced. Adrenal androgens (such as dehydroepiandrosterone) are still produced, but they are weaker and have much less effect on behavior than testosterone. Some geldings show less alteration in behavior after castration, potentially because of the adrenal androgen action but more probably because of individual differences in temperament, prior experience, or both and because of development of behavior patterns that are slow to disappear. Males that do not retain sufficient sex drive and aggressive competitiveness to acquire and maintain a harem could be outcompeted or supplanted by intact, fertile males.

The effects of chemical castration on testosterone production are not clear. The mechanism of action (spermicidal action of zinc gluconate) is supposed to spare the Leydig cells, which produce testosterone. However, the generalized scarring that occurs, and that is necessary for the permanent changes in testicular architecture to prevent further sperm production or release, could also affect Leydig cell structure and compromise hormone synthesis and release. The extent of the effect on testosterone production would determine the possible effects on male-type behavior.

Individual males vary in their behavioral response to castration—for example, in the loss of male-type behavior, such as aggression and sexual interest, depending on the age and sexual experience of the male. However, some or total loss of sex drive would be likely in castrated stallions, and this is counter to the often-stated public interest in maintaining natural behaviors in free-ranging horses. The effect that gelding a portion of the males in a herd would have on reproduction and behavior could not be predicted at the time this report was prepared. Aside from variability in how much male-type behavior is lost in gelded animals, the effects of gelding on reproduction and behavior in the population will also

depend on the roles that the males selected for gelding (whether harem males or bachelors) hold in the population, their reproductive and social history, and possibly their age. Keeping a portion of the male population nonreproducing by gelding could increase aggression and competition in herds or decrease it. Similarly, reproductive success may be reduced or increased. With respect to effects at the population level, it is not clear how castration of males would be better than vasectomy, which does not affect testosterone or male-type behaviors. Ultimately, the growth rate of any population that includes reproductive horses of both sexes will be commensurate with the number of fertile females in the population.

### Vasectomy

Vasectomy, whether surgical or chemical, does not affect the production of sperm but does prevent ejaculation of sperm by blocking the epididymis (where sperm leave the testis) or the vas deferens (the duct that carries sperm to the urethra for ejaculation).

*Delivery and Efficacy.* A potential disadvantage of both surgical and chemical castration is loss of testosterone and consequent reduction in or complete loss of male-type behaviors necessary for maintenance of social organization, band integrity, and expression of a natural behavior repertoire. Vasectomy blocks passage of sperm without affecting testosterone synthesis or secretion, sparing androgen-supported natural behaviors. The most widely used vasectomy method is surgical, although there are several variations that are meant to increase efficacy, reduce production of sperm granulomas, or facilitate microsurgical vasectomy reversal (Esho and Cass, 1978; Frenette et al., 1986; Silber, 1989; Moss, 1992). After either chemical or surgical vasectomy, the average delay to passage of all remaining sperm from the vas deferens is about 6 weeks, so treatment should occur well in advance of the mares' breeding season to ensure infertility.

Surgical vasectomy in dominant stallions has been used successfully to control fertility in bands of free-ranging horses (Eagle et al., 1993; Asa, 1999). The vasectomy procedure was 100-percent effective in preventing foal production in stable bands that had no subordinate stallions, but some of the bands that had intact subordinate stallions contained foals. The stability of bands did not differ between treated and untreated groups. However, limiting treatment to dominant stallions leaves subordinate band stallions and bachelors fertile and thus reduces overall efficacy. In particular, bands that had subordinate stallions were vulnerable (Asa, 1999). The probability that subordinate stallions will mate is higher in bands that have a vasectomized dominant stallion because the females continue to have estrous cycles throughout the entire breeding season, whereas females with intact, fertile stallions are likely to conceive in the first month or so of the breeding season. Thus, females with vasectomized dominant stallions present many more opportunities for mating with a subordinate. For population control, a more effective approach would be to vasectomize a larger proportion of males, regardless of age or social status. The target number or proportion of males treated could be adjusted to achieve the level of population control recommended for each HMA.

Chemical vasectomy is a simpler, less invasive alternative to a surgical approach, but both require anesthesia. Several chemical agents have been assessed in domestic dogs and cats (Pineda et al., 1977; Pineda and Dooley, 1984). There are no published reports on chemical vasectomy in horses, but the procedure should not be difficult to adapt.

*Reversibility.* Both surgical vasectomy and chemical vasectomy should be considered permanent if properly done. Vasectomy reversal has been successful in humans in some cases

(Silber, 1989), but it requires microsurgery by a highly skilled surgeon, so it would not be practical for field application. Spontaneous reversal has been reported after some surgical approaches—resulting from recanalization of the vas deferens (Esho and Cass, 1978)—so the choice of technique is critically important.

*Side Effects.* There are no reported side effects of vasectomy, a procedure that is considered safe and effective even in humans, in whom it has become commonplace. However, in free-ranging horse herds that have vasectomized males, females that do not conceive continue to undergo estrous cycles until the end of the breeding season and continue to attract and mate with males (Asa, 1999). Thus, the number of months that males compete for and defend females is increased, and this increases the risk of injury to males and diverts time from foraging that, in some environments, could compromise a male's body condition going into winter. Those problems did not occur in the single study of vasectomy for fertility control (Asa, 1999) but might be more likely under some conditions for some males.

Winter survival of males that do lose condition may be reduced. That is likely to have a number of consequences for a population's dynamics. A lost stallion would probably be replaced quickly by a bachelor male or the mares would be taken in by dominant stallions of other bands. However, the stability of the harems taken over by younger, less experienced males would be more likely to decline (Rubenstein, 1994), and this could reduce female fecundity via increased levels of male harassment. Turnover might enhance the genetic diversity of populations, in that more males would be contributing to the gene pool and thus enhancing effective population size.<sup>10</sup>

### **Steroid Hormone Treatments**

High doses of androgen can suppress endogenous production of testosterone via negative feedback and have a suppressive effect on spermatogenesis. Turner and Kirkpatrick (1982) treated 10 free-ranging stallions with microencapsulated testosterone propionate. Only 28.4 percent of bands that had treated stallions had foals compared with 87.5 percent of the untreated bands. Although increased concentrations of androgen could be expected to cause increased aggression, it was not reported. However, only territorial marking and sexual behaviors were analyzed. All stallions showed evidence of reversal in about 8 months. No side effects were noted.

### **GnRH Vaccines**

As described in the section on the use of GnRH vaccines in females, treatment with GnRH vaccines interferes with the production of LH and FSH from the pituitary; in males, that results in failure of stimulation of testosterone, which is necessary for stimulation of spermatogenesis and expression of sexual behavior. However, the use of GonaCon or other experimental GnRH vaccines has not completely eliminated sperm production (Malmgren et al., 2001; Turkstra et al., 2005). Stout and Colenbrander (2004) reported that mature stallions treated with GnRH vaccines continued to produce sufficient semen to impregnate a mare.

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<sup>10</sup>Genetic diversity and effective population size are discussed further in Chapter 5.

### Delivery Route, Efficacy, and Physical Side Effects

In possibly the first study of GnRH immunization in domestic stallions, Malmgren et al. (2001) evaluated an experimental GnRH vaccine used with the adjuvant Equimune® in four domestic stallions (one control, three treated) during the nonbreeding season. The vaccination protocol involved five shots at intervals of 2-4 weeks. All stallions showed a response, but one male had a significantly lower antibody response than the other two. Two of the treated stallions demonstrated decreases in testosterone and more pronounced decreases in testis size and semen quality as well as changes in testicular histology, but these effects did not appear until 7-9 weeks after initial vaccination. There was no clear change in ejaculate volume.

Turkstra et al. (2005) evaluated two different adjuvants (Carbopol® and CoVaccine™ HT) with an experimental GnRH vaccine in previously hemicastrated stallions. Four animals were treated with Carbopol, and four animals were treated with CoVaccine HT. Stallions were treated during the breeding season with an initial vaccination, boosted at 6 weeks, and monitored for a total of 14 weeks after the initial vaccination. There were no injection-site reactions and no changes in body weight. The CoVaccine HT treatment was superior; treated stallions had undetectable testosterone from 2 weeks after the booster until the end of the study. Those stallions also had reduced sperm motility, but there were no adjuvant-related differences in semen volume, sperm concentration, or sperm count. Both adjuvants appeared to reduce testis size and alter testis histology in ways that would reduce fertility. The authors suggested that, aside from superior performance, CoVaccine HT is also desirable because time to effect was better defined.

Janett et al. (2009) evaluated the effects of Equity, given to five domestic stallions as three injections at intervals of 4-8 weeks, on testosterone concentrations, sexual behavior, and semen characteristics. Two stallions exhibited minor injection-site reactions that resolved in 2-3 days. Adverse effects on sperm quality were observed in four stallions, although there was individual variation in the strength and type of effect (lower sperm numbers, lower motility, and increased sperm defects), and one stallion had a weak immune response. Overall, those inhibitory effects lasted from 24 weeks to under 46 weeks.

Although not tested in stallions, GonaCon-KLH has been evaluated in a number of studies of male deer. Typical results include reduced testosterone concentrations and testis size (Killian et al., 2005; Miller et al., 2000, but see Gionfriddo et al., 2011a). Killian et al. (2005) found inactive Leydig cells and regressed seminiferous tubules that did not contain mature sperm in eight treated bucks. Gionfriddo et al. (2011b) found that 10 GonaCon-KLH-treated bucks had higher body-condition scores than untreated bucks.

One interesting finding in the Killian et al. (2005) study was that there was a high prevalence of pulmonary disease, the leading cause of mortality, in bucks in their Pennsylvania study site. The incidence of the disease was higher in treated bucks, but the authors reported that the microorganisms that cause the disease are endemic in captive deer herds in Pennsylvania. They speculated that vaccination with GonaCon could have lowered resistance to the disease.

### Reversibility

In four stallions treated with Equity, testosterone remained suppressed for 24, 36, 45, and 46 weeks (excluding one low-responding stallion) (Janett et al., 2009). In a study of eight deer bucks that received different treatment protocols, Killian et al. (2005) reported that suppressive effects of GonaCon-KLH on male reproductive physiology appear to last

for 3 years, with testicular function beginning to recover in year 4; however, the authors suggested that a low level of sperm production might have persisted.

### Behavioral Side Effects

Malmgren et al. (2001) found that four stallions vaccinated with an experimental GnRH vaccine first began to demonstrate reduced sexual interest and behavior 4 weeks after the initial vaccination, and the reduction appeared to persist for about 13 weeks. Libido was reduced in four stallions treated with Equity, including one that did not respond with high vaccine titers. The fifth stallion had a strong immune response and significantly reduced testosterone concentrations but maintained very strong, sustained sexual behavior (Janett et al., 2009). Kirkpatrick et al. (2011) expressed concern about the application of GnRH vaccines in stallions because testosterone-supported behaviors, which are necessary for keeping bands together, are suppressed; however, no data or citations are provided for this claim. It appears from the available data that sexual behaviors may be suppressed to various degrees by individual animal, but the effect of the suppression on other behaviors has not been assessed.

In other species, Killian et al. (2005) reported that eight GonaCon-KLH-treated white-tailed bucks had reduced libido and interest in estrous does; bucks might mount does but not completely. Miller et al. (2000) found similar effects with an experimental version of GonaCon-KLH in four white-tailed bucks and remarked that the rutting season was not extended in treated bucks. The inability of GnRH vaccines to suppress FSH completely, although central to maintenance of sexual behavior in treated females, is not likely to affect males. The possible effects on male behavior are probably limited to suppression of LH, inasmuch as LH alone is needed to support testosterone production. Thus, an adequate vaccine dose that suppressed LH should be accompanied by elimination of testosterone, a situation similar to castration. Whether male-type behavior would continue without testosterone support depends on the temperament and prior experience of the male.

### Gonadotropin-Releasing Hormone Agonists

As discussed in the section on their use in females, GnRH agonists first stimulate then suppress production of pituitary and gonadal hormones involved in reproductive function. The pituitary hormones, LH and FSH, are the same as in females, but in males the gonadal hormone affected is testosterone; without testosterone, spermatogenesis is not supported. The outcome can be likened to a potentially reversible chemical castration (Junaidi et al., 2009). Although effective in males of some species, GnRH agonist treatment has had mixed results in male ungulates. In domestic stallions given various GnRH agonist formulations, some studies reported transient stimulation followed by return to baseline or lower concentrations of LH and testosterone (Montovan et al., 1990; Boyle et al., 1991), whereas others showed enhanced LH secretion or sexual behavior (Roser and Hughes, 1991; Sieme et al., 2004). No suppressive effects of what were considered high doses were detected by Brinsko et al. (1998); this led them to conclude that stallions are remarkably resistant to reproductive suppression by GnRH agonist treatment. Nevertheless, the ability of some agonists at some doses to achieve even slight suppression suggests that more potent analogues or higher doses might be effective. Newer, more potent agonists have not yet been tested adequately in stallions.

### Delivery Route and Duration of Efficacy

Recent formulations, such as Suprelorin, in slow-release implants are more practical for contraceptive treatment than osmotic pumps or injections. As described in the section “Female-Directed Methods of Fertility Control,” Suprelorin is produced in 6-month and 12-month formulations. Those durations of efficacy represent minimums, and suppression continues for about twice as long in most species.

### Reversibility

Suprelorin reversal rates have not been established for equids, but in male dogs the rate nears 100 percent. However, the rate has been lower in some other species,<sup>11</sup> so caution is recommended in treating a species for the first time.

### Side Effects

The side effects of GnRH agonists are similar to those of castration, inasmuch as the treatment can be considered chemical gonadectomy. Because inhibition of spermatogenesis requires suppression of testosterone, any testosterone-supported secondary sex characteristics and behavior would be affected. However, as explained in the section on side effects of surgical castration, males with prior sexual experience may continue to show interest in estrous females but would probably not be able to compete successfully with untreated, intact males.

## **ADDITIONAL FACTORS IN EVALUATING METHODS OF FERTILITY CONTROL**

The sections above included the information most relevant to understanding and choosing a method for fertility control: delivery route, efficacy, duration of effect, and possible side effects. There are, however, some additional effects that should be considered in evaluating the methods. For example, data on the effects of some contraceptive approaches on general health and longevity are accumulating. The energetic costs of pregnancy and lactation are high, and this burden is much greater on free-ranging females that must subsist on lower-quality forage than on domestic animals that have calorie- and nutrient-rich diets. Mares on Assateague Island treated with PZP that did not regularly produce foals were in better body condition and lived longer than females that were not contracepted and continued to reproduce (Turner and Kirkpatrick, 2002).

Several methods (such as vasectomy, PZP vaccines, and GnRH vaccines) are likely to be associated with a prolonged breeding season. That is, mares that are not pregnant continue to undergo estrous cycles until late summer or fall, when day length is decreasing and no longer stimulates cycling (Sharp and Ginther, 1975). Although nonpregnant females that continue to cycle expend time and energy in courtship and mating, the expenditure is considerably lower than the energetic demands of pregnancy and lactation. Thus, any effect on health and well-being of females should be negligible. In contrast, the burden on males could be greater in that the length of the breeding season, and thus the time in which males compete for and defend estrous females, is prolonged. Time spent in defending and courting females also diverts males from grazing, and this could affect health and

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<sup>11</sup>Association of Zoos and Aquariums Wildlife Contraception Center database. Accessed July 20, 2012.

body condition under some conditions. However, no study has focused specifically on that issue, and it warrants further investigation.

Early studies of fertility control focused on steroid hormone treatments, mirroring approaches to contraception in humans (such as birth-control pills that contain synthetic estrogen and progestagen). However, serious concerns arose regarding the tissue accumulation of synthetic steroids (testosterone in males, estrogen and progestagen in females) because they become concentrated in fat and muscle (Lauderdale et al., 1977; Hageleit et al., 2000). The potential for those compounds to enter the food chain argues against their use in free-ranging wildlife.

### **IDENTIFYING THE MOST PROMISING FERTILITY-CONTROL METHODS**

The fertility-control methods discussed in this chapter vary considerably. The criteria most important in selecting promising fertility-control methods for free-ranging horses and burros are delivery method, availability, efficacy, duration of effect, and potential physiological and behavioral side effects. The relative importance of those criteria will probably vary with characteristics of the site (the HMA or HMA complex) and population characteristics of the equids at the site. The importance of a given criterion may also change.

The first criterion is delivery method. As they exist now, fertility-control methods can be distinguished by whether it is necessary to have an animal in hand for administration. In most cases, treatments must be delivered when animals are gathered. There are HMAs in which remote delivery (e.g., darting) is possible, but these seem to be exceptions, and investigators have reported increasing difficulty in darting animals repeatedly, as would be necessary with vaccines that require periodic boosters. In addition, some data suggest that hand injection of some contraceptives is more reliable than delivery by dart even if darting is possible for the method in question. Thus, given the current fertility-control options, remote delivery appears not to be a practical characteristic of an effective population-management tool, but it could be useful in some scenarios. However, alternative methods to gathering, such as trapping near water sources, should be considered. At the time the committee's report was prepared, no product for oral delivery was available that would be species-specific and gender-specific. Although altrenogest, an oral progestagen product, has been used successfully in domestic mares to control estrus, it requires daily dosing during the breeding season. There is no mechanism to assure delivery to mares only, so consumption by stallions, nontargeted wildlife, and domestic grazing livestock could have deleterious effects.

The second criterion, availability of the fertility-control product, includes not only the ability to obtain the product but skilled personnel to administer or conduct it correctly. The methods discussed above range from experimental products to well-established surgical procedures. Two contraceptive vaccines (liquid PZP and GonaCon) are registered with EPA for use in horses; other immunocontraceptives are available only for research application (see Box 4-1). An ideal population-management tool for horses and burros would be readily available in sufficient quantities to achieve population-level effects with little regulatory and administrative burden.

The third criterion, efficacy, is important for calculating the number or percentage of animals that must be treated to reach the target population for an HMA. Efficacy also depends on the ability to administer the treatment to a sufficient percentage of animals to achieve population-management objectives. Fertility-control methods that are highly effective (such as vasectomy) in preventing fertility may have no effect on population growth if a sufficient number of animals cannot be treated. Thus, efficacy involves both the efficacy of

**BOX 4-1**  
**Regulatory Considerations Regarding Immunocontraceptives**

Licensing and registration of contraceptive products are necessary to ensure that safe and efficacious agents are used as tools for managing free-ranging horse and burro herds. In the United States, before 2006, the Food and Drug Administration Center for Veterinary Medicine was responsible for registration and licensing of such products, but the U.S. Environmental Protection Agency (EPA) has since assumed that responsibility (Eisemann et al., 2006). Extensive data are necessary for successful registration, including safety and efficacy for target species, effects on nontarget species, effects of environmental residue, and human safety. Registration is a long and expensive enterprise that discourages licensing of products that have low expected sales. Government agencies and industry have largely discontinued pursuing registration for important products that are useful to a small consumer base because of the quantity of data required and the associated expense (Fagerstone et al., 1990). Because such products are not widely used and therefore have low profit margins, they cannot generate enough profit to finance the studies required or the annual registration maintenance fees (Fagerstone et al., 1990). The cost for registration of GonaCon™ has been estimated to be \$200,000-\$500,000 (K. Fagerstone, NWRC, personal communication, 2012). Unregistered products can be used in field studies, although permits for experimental field trials are required. At the time this report was prepared, liquid PZP and GonaCon were licensed. Application to EPA for licensing pelleted PZP-22 for free-ranging horses was being prepared.

the treatment at the level of the individual animal and the efficacy at the population level, determined by the ability to administer the treatment successfully. For example, studies have found that a substantial percentage of a population (more than 50 percent) must be effectively treated to achieve reductions in population size (e.g., Garrott and Siniff, 1992; Pech et al., 1997; Hobbs et al., 2000; Kirkpatrick and Turner, 2008). It is critical that information on efficacy be integrated with population modeling to determine how many individuals in a population must be treated to achieve population goals.

Duration of fertility inhibition has major practical importance. Shorter-acting methods require substantially more effort and financial resources to implement even if the cost of the contraceptive itself is low. Longer-acting methods are preferable to minimize requirements for personnel and financial resources and to decrease the frequency of animal handling. Longer-acting methods should be used more judiciously because they remove animals from the gene pool for a longer period, perhaps permanently.

Several types of side effects were covered in the sections on the different methods in this review. Potential pain associated with administration is one consideration, although the use of anesthetics, analgesics, or both during administration may address this problem (e.g., during vasectomy). The discomfort of injections and darting is transitory and is not generally considered unacceptable. The potential of a method to cause disease or debilitation is not acceptable. That IUDs may provoke undue uterine inflammation warrants caution and would require further testing before application in the field could be considered. In addition, evidence concerning loss rates of IUDs, especially during copulation, would be needed. The possibility that ovariectomy may be followed by prolonged bleeding or peritoneal infection makes it inadvisable for field application. Potential effects of GnRH vaccines and agonists on other tissues than the pituitary gonadotrophs have not been well studied or documented and warrant caution until further research has been conducted.

Any of the methods described may also affect behavior. Because all methods affect sexual function in some way, changes in expression of sexual and social behavior should be

considered. The ideal method would not eliminate sexual behavior or change social structure substantially. Castration, ovariectomy, and the GnRH products (vaccines and agonists) eliminate or substantially reduce steroid hormone production and so have a potentially profound effect on the expression of sexual behavior. In contrast, vasectomy and the PZP vaccines result in a prolonged breeding season, with increased sexual interaction, because females continue to undergo estrous cycles but fail to conceive. That is not ideal because a prolonged breeding season can result in more fighting among males over access to females. However, the many studies of PZP vaccines and the single study of vasectomized stallions have not reported problems with increased aggression (e.g., more injuries or deaths among stallions).

Considering the above criteria, the methods judged most promising for application to free-ranging horses or burros are PZP vaccines, GonaCon vaccine, and chemical vasectomy. The advantages and disadvantages of each of these methods and their effects on behavior are shown in Tables 4-1 and 4-2, respectively. PZP vaccines are female-directed, chemical vasectomy is male-directed, and GnRH vaccines can be used to treat either males or females. Of the PZP vaccines, PZP-22 and SpayVac seem most appropriate and practical because of their longer duration of effect (especially PZP-22). They could be applied to herds immediately in a research framework, which is required because the products are not yet licensed. Research should address efficacy, duration, and side effects at the population and individual levels where possible. At the time the committee's report was prepared, there was no evidence to suggest that PZP-22 or SpayVac would have different effects from liquid PZP apart from reports of uterine edema in SpayVac-treated animals. Although GonaCon can be used and has been tested in males, the effects are similar to those of chemical castration. To achieve the suppression of spermatogenesis needed to ensure infertility, testosterone must be suppressed to at or near zero. As with surgical castration, although sexually experienced males may continue to express learned behavioral patterns, they would probably not be successful in competing with intact males. Because preserving natural behaviors is an important criterion, GonaCon seems more appropriate for use in females. Although vaccines against GnRH interfere with its action on the pituitary (stimulating FSH and LH), FSH secretion is partially independent of GnRH (Padmanabhan and McNeilly, 2001). FSH is not required for stimulation of testosterone; LH is sufficient. In females, however, FSH is important for stimulating growth of follicles, which secrete estradiol, the hormone that supports estrous behavior. The role of LH is in the final stages of follicle growth and in inducing ovulation, so blockage of LH is sufficient to prevent conception. Investigations of GonaCon treatment of mares have reported continued estrous behavior and secretion of estradiol consistent with at least partial FSH independence from GnRH control. Thus, to the extent that GonaCon preserves natural behavior patterns while effectively preventing reproduction, it is a promising candidate as a female-directed fertility-control method. However, further studies of its behavioral effects are needed. Chemical vasectomy is promising as an alternative to or in combination with treating females. However, as stated above, vasectomizing more than dominant males would be practical in application at the population level. The effects of surgical vasectomy, and presumably of chemical vasectomy, on sexual behavior closely parallel those of the PZP vaccines and possibly GonaCon.

Although all three methods extend the breeding season, the implications of this effect after vasectomy are more serious because the likelihood of late-season mating and late births would be greater. Foals born later have less time to grow and accumulate fat stores for winter, and this jeopardizes their survival. The more intact males there are in a population, the more likely late-season birth would be because mares would have a greater chance of encountering and mating with a fertile male as the season progressed. Thus, vasectomy

**TABLE 4-1** Advantages and Disadvantages of the Most Promising Fertility-Control Methods

Method	Advantages	Disadvantages
PZP-22 and SpayVac®	Research and application in both captive and free-ranging horses	Capture needed for hand injection of PZP-22
	Allows estrous cycles to continue so natural behaviors are maintained	Extended breeding season requires males to defend females longer
	High efficacy	With repeated use, return to fertility becomes less predictable
	Can be administered during pregnancy or lactation	Out-of-season births are possible
Chemical Vasectomy	Simpler than surgical vasectomy	Requires handling and light anesthesia
	Permanent	Permanent
	No side effects expected	Only surgical vasectomy has been studied in horses, so side effects of the chemical agent are unknown
	Normal male behaviors maintained	Extended breeding season requires males to defend females longer and may result in late-season foals if remaining fertile males mate
GonaCon™ for Females	Should have high efficacy	Only surgical vasectomy has been studied in horses, so efficacy rate is unknown
	Effective for multiple years	Capture may be needed for hand injection of initial vaccine and any boosters
	Sexual behavior exhibited	Lower efficacy than PZP-vaccine products, especially after first year
	Social behaviors not affected in the single field study	Sexual behavior may not be cyclic, inasmuch as ovulation appears to be blocked
		Should not be administered during early pregnancy because abortion could occur
		Few data on horses

<sup>a</sup>PZP-22 and SpayVac® are formulated for longer efficacy and require further documentation of continued efficacy and of rate of unexpected effects.

SOURCE: Asa et al. (1980b), Kirkpatrick et al. (1990), Thompson (2000), Kirkpatrick and Turner (2002, 2003, 2008), Stout and Colenbrander (2004), Imboden et al. (2006), Turner et al. (2007), Killian et al. (2008a), Gray (2009), Nuñez et al. (2009, 2010), Gray et al. (2010, 2011), Powers et al. (2011), Ransom (2012).

might be more appropriate in populations in which a relatively large percentage of males could be treated. The strategy of treating only dominant stallions should be avoided.

Late-season births could occur in mares treated with one of the vaccine products if reversal occurred during the breeding season, but because most free-ranging mares give birth every other year rather than yearly, conceptions and births should become re-established in spring or early summer. For mares that are able to maintain a pregnancy and give birth annually, reversal late in the season could have long-term consequences for all her future foals in that the 11-month gestation and the one or two ovulatory cycles needed to conceive can result in an about 12-month repeating cycle (see Garrott and Siniff, 1992).

**TABLE 4-2** Behavioral Effects of Fertility-Control Methods

Behavior	PZP <sup>a,b</sup>	GonaCon™ for Females	Vasectomy
Male sexual	Increase or no change reported	No change reported	Longer breeding season
Female sexual	Increase or no change reported	Decrease or no change reported	Longer breeding season
Social structure	Possible decrease in band stability	No change reported	No change reported
Activity budget	Females may graze less	No change reported	No change reported
Aggression	Males may defend females longer	No change reported	Males defend females longer
Spatial relationships	Females may spend more time near male	No change reported	No change reported

<sup>a</sup>Includes results of studies of both liquid and pelleted (PZP-22) formulations; not all studies reported results in all the behavioral categories, and not all studies detected changes.

<sup>b</sup>There are no published reports on behavioral effects of SpayVac®.

SOURCE: Rubenstein (1994), Turner et al. (1996), Asa (1999), Powell (1999, 2000), Thompson (2000), Stout and Colenbrander (2004), Imboden et al. (2006), Killian et al. (2008b), Gray (2009), Nuñez et al. (2009), Gray et al. (2010, 2011), Madosky et al. (2010, in review), Ransom et al. (2010), Powers et al. (2011).

Given that chemical vasectomy appears to be an effective means of reducing male reproduction with side effects that are likely to be minimal and not socially different from controlling female fertility, strategies that simultaneously control male and female fertility are likely to be most biologically and economically cost-effective. Because of the polygynous nature of horse and burro societies, the effect of chemically vasectomizing any one dominant harem-holding or territorial stallion will have a greater effect than contracepting any one fertile female. Moreover, because eventual male turnover is ensured, any long-term problems associated with chemical reproductive interventions are likely to be more reliably self-correcting in males than in females. When that safety factor is added to the problem of procuring large supplies of PZP vaccine in the short term, strategies of dual control allow large-scale and aggressive interventions that modeling (see Chapter 6) suggests will be necessary for regulating population growth in humane and ecologically sound ways.

Most of the PZP-vaccine research in horses (as reviewed in this chapter) has used the older, shorter-acting formulation that requires two initial injections and annual boosters. That formulation was the one licensed for use in horses at the time of the committee's study. The longer-acting formulations (PZP-22 and SpayVac) were not licensed in the United States, so they were restricted to use for research purposes and not available for widespread application for management purposes. Similarly, GonaCon was registered with EPA for use in free-ranging horses in January 2013. Many state veterinary licensing agencies require that a vasectomy be performed by a licensed veterinarian, although the surgery is straightforward, but the simpler chemical vasectomy has not been systematically evaluated in horses, so testing in captive horses would be needed before widespread application in the field.

## CONCLUSIONS

On the basis of the peer-reviewed literature and direct communication with scientists who are studying fertility control in horses and burros, the committee considers the three

most promising methods of fertility control to be PZP vaccines (in the forms of PZP-22 and SpayVac), GonaCon, and chemical vasectomy. Chemical vasectomy requires capture and handling, which could be straightforward in areas where BLM regularly gathers horses. It is more problematic in areas where it could be difficult or impossible to capture a sufficient number of animals for treatment to achieve a population effect. In addition, the efficacy of the two vaccines is higher if they are hand-injected rather than delivered by dart. Even in the case of liquid formulations of the vaccines that can in principle be delivered by dart, adequate delivery cannot be ensured. In addition, darting typically entails following animals by helicopter, which could be as stressful as gathering. Alternative methods for gaining closer access to animals for delivering injections should be sought for areas where gathering is not practical or possible.

The vaccines can be effective for multiple years, but chemical vasectomy should be considered permanent. In cases in which reversibility is important and repeated treatment is practical, one of the vaccines would be preferable, with the caution that treatment for more than a few years may prolong recovery of fertility. A single treatment that induces lifetime infertility could be preferable in other situations.

Even if a large fraction of a population's males are chemically vasectomized and the sterility is permanent, the effects of such an extensive intervention on the dynamics of the population will be self-correcting. If gathers are an average of 5 years apart, younger males rising through the ranks as bachelors or adopting alternative routes to adulthood (Rubenstein and Nuñez, 2009) will be adding new genes to the pool at an increasing rate. Given that virtually all burro and some horse populations exhibit low levels of genetic heterozygosity, virtual elimination of local male fertility for short periods to allow translocations of males that have desired genetic characteristics into the population may be warranted. Such large-scale local chemical vasectomies would allow managers to enhance genetic diversity and reduce inbreeding of populations at risk. Moreover, it would be a self-correcting process as younger males that have the original genetic constitution mature and compete for reproductive opportunities with translocated males. Managing genetic diversity through translocation is discussed more thoroughly in the next chapter.

All three methods should preserve the basic social unit and expression of sexual behavior, although there have been conflicting reports on various effects of the vaccines on social interactions and on the cyclicity of estrous behavior. The major effect of the methods is that the typical breeding season would be extended for females that do not conceive (the implications are discussed at length above). No method has yet been developed that does not have some effect on physiology or behavior. However, the effects of not intervening to control or manage population numbers are potentially harsher than contraception; in the absence of natural predators, population numbers are likely to be limited by starvation (see Chapter 3 for discussion of the effect of density-dependent factors). Even if there were a method that had no effect other than preventing the production of young, the absence of young would alter the age structure of the population and could thereby affect harem dynamics. The most appropriate comparison that should be made in assessing the effects of any method of fertility control is with the current approach, gathering and removal. That is, to what extent does the prospective method affect health, herd structure, and the expression of natural behaviors relative to the effects of gathering? Three methods (PZP-22 and SpayVac, GonaCon, and chemical vasectomy) are considered the most promising for managing fertility in free-ranging horses and burros because they have the fewest and least serious effects on those parameters. In addition, although their application requires handling the animals—gathering—that process is no more disruptive than the current method for controlling numbers, and it lacks the further disruption of removal

and relocation to long-term holding facilities. Considering all the current options, the three methods, either alone or in combination, offer the most acceptable alternative for managing population numbers. However, further research is needed before they are ready for widespread deployment for horse population management.

The current major gaps in knowledge about PZP-22, SpayVac, and GonaCon include a thorough understanding for each vaccine of percentage and duration of efficacy and the extent of its reversibility. GonaCon should be examined to evaluate the extent to which treated females continue to exhibit sexual behavior, which is important for maintaining natural social interactions. A study is needed to assess the efficacy and safety of potential agents for chemical vasectomy before it is used in free-ranging stallions during gathers.

In light of the extensive research that has been conducted with liquid PZP, the likelihood that PZP-22 or SpayVac will produce new or unexpected effects, other than an extended duration of action, is small, and this should reduce the scope of research that would be needed. Furthermore, given the decades of research on the earlier liquid formulation of PZP and its successful application in numerous free-ranging horse herds, liquid PZP can be used in many herd areas now. It might be applied not only in herds that are amenable to darting but during gathers for horses that are turned back onto the range. Even without a booster in the months just after a gather, any later inoculation will serve as a booster and initiate a period of infertility (J.W. Turner, University of Toledo, personal communication, August 2012). Thus, liquid PZP could serve as an interim fertility-control method until one of the other longer-acting methods is available.

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# **EXHIBIT 10**

# My Name is Ina Ohitika

BY KAREN SUSSMAN  
ISPMB PRESIDENT

This is a true story  
written from the  
perspective of a  
wild mare crying  
out for help.



INA OHITIKA PICTURED WITH SCARLET, THE FOAL SHE STOLE. INA BECAME PERMANENTLY INFERTILE AFTER FIVE STRAIGHT YEARS OF PZP USE.

*My name is Ina (e-na) Ohitika, (O-he- ta-ka), Lakota for "courageous mother." I have earned that title ever since the birth of my first foal many years ago. When you finish reading my story you will truly understand the honor in which I carry this name.*

*The essence of my being, that who I am, will never again exist because I have received a drug, PZP, against my will that has prevented me from ever having a foal again.*

Let me start my story from those wonderful days with my family band where, almost yearly, I had a foal to nurture and love, becoming the wonderful "mother mentor" that I am, or should say, was. I was free to make the most important decision in my life, and that was when I wanted to become pregnant again. After all, I followed generations upon generations of mothers before me that knew how important it was to keep our species safe so we could continue our years on earth. My mother told me those past years were beyond my comprehension as we evolved from the times of the Saber-Toothed Tigers and the Woolly Mammoths, long before these two-legged creatures appeared on earth. With this ancient knowledge, my mother assured me that we were designed to continue to survive over eons of time. Part of that survival is having foals, knowing that they will carry on our species. You know, we don't live as long as elephants or the two-leggeds. Actually, our lives are very short on this earth, but we live a wonderful life of freedom and we, ourselves, limit our numbers when we are left alone and our families remain intact.

I've been told that giving us this drug will allow us to grow older and with much more weight than if we were carrying our children into our elderly age. To begin with, my mother would be first to tell you that many mares often don't have foals in their older age. Unless you walked this earth in my "hoof" steps, you would never know how I really feel. Today I am going to share my story. It is a very important story that needs to be told and understood.

I loved spring because the weather was warming and the days were longer. It was a beautiful time too as we mares were preparing to have our foals. We always managed to have our foals in the warmer weather so they could have the best chance at survival. Our stallions protected us from harm and were respectful as

to when we wanted to be bred. My mother told me of the days when there was no one chasing us to capture us and destroy our family structures. She said under those conditions our population increased at 4 percent. She also cautioned me to stay with her until I was five years old and then I could venture out in the world. By that time, I had enough knowledge from my father and mother which made me a brilliant young mare. When I would go out in the world, I would again begin the most important part of my life, procreation, so that our species would survive over eons of time.

*I remember my last foal. She was energetic and kept me moving constantly for the next two weeks while she gained her balance and strength. Although I was tired from childbirth, I have learned over time that these would be the most exhilarating and tiring two weeks of my life.*

You see, I have been taught to never let my foals out of my sight. These were dangerous times for foals, when they are so vulnerable to predators and are so new to the learning process of survival. Thank goodness that my foal also slept a lot during those times, as all newborn foals do, but I never took my eyes off of her. When she was up frolicking about I was always within feet of her. If anyone tried to approach her, I laid my ears back and let them know to stay away. She loved this game of "follow the leader" that she thought she made up. She would soon learn that this was no game but an important part of survival.

After two weeks, she would blend into our band and begin playing with other foals. This is when the "game" of chase would slow down and I could concentrate on grazing more, allowing her to explore on her own but always with my watchful eye. The older she became, the more she would explore with the members of our herd but always returned to our family. Under the best of conditions, she would remain with our family until she turned five years of age. I, being the good mother, will nurse her for 11 months or longer, depending when I foaled again. Being my last foal, which I did not realize would be my destiny, she nursed from me for nearly four years.

*I could not understand why I couldn't get pregnant again but I was told I received the drug, PZP, which made me permanently infertile after five straight years of use. My friends have told me it took them just four years of use and they no longer could foal. Some mothers, after injected for four years, told me that their foals died on the first day of birth for no apparent reason.*



**SCARLET, A FEW WEEKS AFTER LOVING CARE. HAD SHE BEEN BORN ON PUBLIC LANDS, SHE WOULD NOT HAVE SURVIVED.**



SCARLET STANDS FAITHFULLY NEXT TO INA OHITAKA. ONE WOULD THINK IT IS HER MOTHER.

*Still not understanding this concept of not becoming pregnant, I now had to take things into my own "hooves" or as the two-leggeds say, "hands." All the young mares, including my daughter, were having foals. I watched with such envy as those little beings came into the world. I was frustrated that I couldn't have a foal.*

Then early one spring morning, I plotted to take a foal from a young first-time mother. The young mare knew her role but would not defend herself against me because I had stature and was an older mare and commanded respect from her. I swooped in and took the foal with little fight from the unsuspecting mare. Her foal loped off to the tree line where I kept him. He tried to nurse off of me and I encouraged him by nuzzling my nose into his rear and pushing him to my teats. That feeling of having a foal at my side was so exhilarating again. I did my best to have him nurse but I had no milk. For moments, I was in my glory and feeling sublime. Yes, at last, I had a foal again. My life was fulfilled once more.

Then out of nowhere came the two-legged who watched over all of us whom we call Wild Horse Medicine Woman. She knew this was not my foal and we were in a chase together for the next hour. I dodged behind the trees, keeping the foal on the opposite side of me, away from her. I tried to defend myself by kicking out at her and even charging her, but the two-legged was not afraid, she just kept coming after me. The foal finally tired out. It was at this time that the two-legged came in and swooped up the foal, while he was lying on the ground, and herded him back to his real mother.

In fact, she stood there until I finally stopped watching and moved away with my family. Although what the two-legged didn't know was that I would someday do this again. My heart was breaking in that I did not have a foal at my side. Didn't the two-legged know that? I guess I made my mark because, after that, every day a two-legged would come and watch me.



MARES AND FOALS FROM THE GILA HERD.

*About two weeks later, it happened again. I had a brilliant opportunity to take another foal from an unsuspecting young mare. I was good at stealing now and I made sure that no one was there to see me. Again, I was so nurturing and loving to this foal. I nuzzled her behind and pushed her to nurse from me. Even though I didn't have milk, it felt good.*

By early afternoon, the two-legged came out to monitor our herd. When she spied me with another foal, she knew it wasn't mine. She didn't come right away to take the foal but walked around the herd to determine who was without a foal. The foal's real mother was not too far away and easy to detect with milk dripping from her teats.

We did another dance again. I was pushing the foal away and trying to escape once again. I would run one way and then quickly turn and go in the opposite direction. There seemed to be no maneuver that I could use to evade the two-legged. I tried fighting again but the two-legged told me that if I kept the foal, that the foal would die. It was imperative that I give this foal up. The opportunity came and the two-legged grabbed the foal and pushed it back to its real mother. Again I slinked back into the tree line and watched at a distance. My fighting spirit shrank and my sadness overcame me. I was depressed. I decided to be by myself all day long.

As we moved into the early summer month of June, I decided to take my chances again. I couldn't tolerate seeing all the beautiful foals and their mothers, knowing I was barren.

This time it was early, early morning just before the sun came up. Again, I was successful on my mission. There I was strutting about with a newborn foal at my side. My tail was flying high in the breeze of the morning and the sunlight was creating a sparkle on my coat. I was overcome with the feeling of elation. My life was complete now. The foal was nursing from me or least trying to nurse even though there was no milk. As the sun rose out of the East, I was grazing but watching carefully so this foal did not stray from me. Yes, I exhibited my greatest mothering techniques only to be dashed once again by this two-legged. This time I did not try to kick or fight as much but I did move away so she couldn't catch "my" foal. It wasn't long before help arrived and a pen was built to put the real mother and foal together to keep them from me. Even with my best skills exhibited trying to keep this foal, the two-legged always seemed to win.



**INA OHITIKA (RT) WATCHES AS WILD HORSE MEDICINE WOMAN TAKES AWAY THE FOAL OHITIKA STOLE FROM ITS REAL MOTHER.**



**ON HER WAY TO INTENSIVE CARE IN THE RANCH HOUSE, SCARLET RESTS IN THE FRONT SEAT OF THE TRUCK—TOO TIRED AND WEAK TO MOVE.**

By July, I decided to take a different tact. I took another foal but his mother stayed right by my side and the foal became confused and began to nurse from both of us. I kept this position for a good part of the day. Yes, there she was again! She noted that there were two of us with one foal. She walked up to me and again tried to explain that this behavior could not continue or there would be plenty of foal deaths which to account for. Her demeanor was that of "understanding" my plight but also being firm. After all, this was foal number four this year. She remained until she was sure the foal's mother would keep her. Of course, I moved away from the foal during this time and pretended to mind my own business. My head hung low and I just stood far away. I think she thought that I would finally give up.



MARES AND FOALS FROM THE GILA HERD.

Not so, it was a very hot early September day. The climate was changing and September now had days that were in the high 90s unlike the frosty days of years past. It seemed the two-legged was not doing her daily visits like before. She probably thought foaling season was over! It was still a great day to have a foal and this new mother did just that. There was a beautiful sorrel filly with a bald face. Of course, she didn't look anything like me because I was solid colored and much darker. Yet, I spied this little foal and took her for most of the day. I was the greatest Mom to her. I loved her, nuzzled her, and pushed her to find milk. By the end of the day, this little filly was down and became too weak to stand. I nudged her withers with my hoof but she wouldn't stand. She could barely lift her head. All day without milk at these temperatures was just too much for this foal.

Then the two-legged appeared and quickly left again only to bring in the farm truck. She walked right up to me with her hands on her hips and for the first time, I didn't fight. I stood there watching with more sadness than anyone could ever know – not only the sadness of losing another foal but knowing that this foal may never get up. I watched as the two-leggeds lifted the foal into the truck and carried her away. This filly would not be reunited with her mother but ended up in the living room of the ranch house where she received intensive care.

*When the two-legged came out again to see me many weeks later, she sat with me and poured her heart out to me. She wanted me to know that the little filly survived and was named Scarlet. The two-legged began to cry as she told me this story. Scarlet will never know what a horse family will be like except for those other orphaned foals that she grew up with. She will never experience having a foal or understand how important survival of the species is. She would never have that mentoring by powerful mares, like me, that was so important for her continuing existence and important for species protection for the next eons of years. She admired my wisdom and my strength and fortitude. She wished things could be different for me. She said that my glorious wisdom learned from ages past, destroyed by this drug, will never again be passed onto future generations. She said that humans could not, in any way, make sound decisions on who should and should not breed like my herd did. She acknowledged that my wisdom, honed over the ages, was the perfect acumen in making those determinations.*

*As her tears were flowing down her face, she promised me that this would never happen again to another mare. That my story will be told and changes will come before it is too late. She told me that she has witnessed what my mother told me in my early years about population growth; when we are left alone and our families are kept intact, our population is stable and grows at a rate in the single percentage digits, not the 20 percent that the BLM touts.*

She said there is no overpopulation of wild horses. She said long before I was born, in 1974, there were nearly 60,000 wild horses and burros on public lands. These counts were visual counts and could be underestimated by 50 percent. She alluded to the fact that there could really have been far more than 60,000 wild horses and burros at that time. She reiterated the importance of the 1971 law which said "wild horses and burros were fast disappearing from the American scene." After all, at the turn of the 20th century, there were at least 2 million wild horses roaming in 17 states west of the Mississippi.

She said, why would two-leggeds want to limit our population when our gene pool almost disappeared? Especially when there were 60,000 wild horses and burros which were considered threatened and endangered at that time in 1971. She told me that the domestic horse industry does not have the beautiful genetic diversity that we in the wild have. She said this is because the two-leggeds are in charge of breeding. She was adamant that using this drug decreases the genetic diversity of the wild horses and requires horses from other areas to be transplanted into these areas. This disrupts and changes the beautiful horse cultures of the different herd areas. She said, only we should make the decision who breeds and who does not...

*As she wiped her tears dry, she made a promise to me that the TRUTH will be told! She assured me that changes will come from speaking this TRUTH.*

## THE TRUTH MUST WIN OVER REPEATED LIES AND MISINFORMATION



SCARLET, NOW VIBRANT, WITH AUNTIE CLARE,  
WHO HELPED IN HER RESCUE ONE YEAR AGO

# **EXHIBIT 11**

## **OVERVIEW**

This report will show how the Bureau of Land Management and the Forest Service (the Agencies) have systematically created an atmosphere of denigration of the wild horse with the eventual plan to eliminate these animals from public lands in spite of the law to protect them. It will further establish that the Agencies' own lack of knowledge in the management of these wildlife species (wild horses) and their complete disregard for the 1971 law is leading to their final extinction. This is propelled by the many organizations that believe the myth that wild horses double every four-years and grow at a 20% yearly rate and need birth control when they really need to be left alone.

### ***Heber Wild Horses in the Apache-Sitgreaves Forest***



# DENIGRATION, PLAN TO ELIMINATE, VIOLATIONS OF THE ACT

## NATIVE VS. FERAL IN 1971

The stigma of the term “feral” haunted wild horses from the very beginning. The term was used over and over again by the Agencies to disparage wild horses. It could be found in the Agencies Planning Documents as far into the current years of 2015-2016.<sup>1</sup>

Much of the rhetoric describes wild horses as domestic ranch horses let loose during the depression which further belittles the real significance of our reintroduced native wild horses existing from the 1500s onward in our country.

Wild horses evolved on the North American continent nearly 60 million years ago. They did not die out at the end of the Pleistocene period as thought earlier but actually lived through the mid-Holocene period, the period we live in now.<sup>2</sup>

According to Ross MacPhee of the American Museum of Natural History and co-author of the referenced paper, “The horse that lived in the Yukon 5,000 years ago is directly related to the horse species we have today, *Equus Caballus*. Biologically, this makes the horse a native North American mammal, and it should be treated as such.”

## REFUSAL BY THE AGENCIES TO STUDY WILD HORSES

The Public Rangelands Improvement Act of 1978 known as PRIA required the Agencies to understand the population dynamics of wild horses.<sup>3</sup> There were 18 research projects, some of which would require 7 to 10 years of study. Project #6 would have been extremely vital in understanding these newly protected wild horses and burros as the wildlife species that they

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<sup>1</sup> Land Management Plan for the Apache-Sitgreaves National Forests Appeal No. 16-13-00-007 by the International Society for the Protection of Mustangs and Burros

<sup>2</sup> A recent paper published by the journal, Nature Communications, researchers from McMaster University, the University of Alberta, the American Museum of Natural History, and the Yukon government presented 30,000-year DNA record of past environments drawn from cored permafrost sediments extracted from the Klondike region of central Yukon.

<sup>3</sup> *“For the purpose of furthering knowledge of wild horse and burro population dynamics and their interrelationship with wildlife, forage and water resources, and assisting him in making his determination in what constitutes excess animals with such individuals independent of Federal and State government as may be recommended by the National Academy of Sciences for having scientific expertise and special knowledge of wild horse and burro protection, wildlife management and animal husbandry as related to rangeland management. The terms and outline of such research study shall be determined by a research design panel to be appointed by the President of the National Academy of Sciences. Such study shall be completed and submitted by the Secretary to the Senate and House of Representatives on or before January 1, 1983.”*

are. It was understanding “Social Structure, Feeding Ecology, and Population Dynamics of Wild and Free-Roaming Horses and Burros.”

One just has to understand that wolves cannot be managed like domestic dogs nor can wild horses be managed as domestic livestock. The Agencies chose the latter and managed them like cattle on public lands in complete disregard for their social structures and behaviors which evolved over the millennia.<sup>4</sup>

The Agencies reported to Congress in 1983 and concluded in their Report to Congress 1984 the following: *The NAS final report called for a “long-term” equid research program and an “expanded in-house scientific staff” to provide a solid foundation of scientific data on which to base management decisions.* The Agencies decided the following: *The most pressing question concerning further research for the Agencies is whether the benefits of increased knowledge and efficiency will justify the cost.* “No further research is planned at this time.” said the Agencies.<sup>5</sup>

ISPMB recommends to Congress that the Heber wild horses in the Apache-Sitgreaves Forest in northern Arizona be studied over the next 7-10 years. We also recommend that Congress gives an appropriation for this study which could transform how the Agencies manage wild horses. This is the last herd of wild horses whose families are stable and not disrupted from roundups over the past 15 years, thanks to a lawsuit by ISPMB that stopped their removal in 2005 until a Territory Plan was completed.

This herd shows a growth rate of 1.5% to 3%. If one were to use the agencies data of doubling every four years and or a growth rate of 20% yearly, there would be 4,800 horses in the forest. The current census of 2021 counted 414 wild horses.

The census in 2005 showed 300-400 wild horses in the Sitgreaves Forest, specifically the Lakeside and Black Mesa Ranger Districts.

If this herd is not studied by an outside independent group of scientists, equine ecologists and behaviorists, the Agencies will have no reason to change their current devastating management practices perpetrated on America’s wild horses and burros.

## **THE CULTURE OF THE BLM SUPPORTS DOMESTIC LIVESTOCK GRAZING - NOT WILD HORSES**

The Taylor Grazing Act (TGA) of 1934 helped powerful ranchers with the express intent of eliminating nomadic herding and stopping indiscriminate settlement and grazing, stabilizing the grazing industry, restoring damaged lands, and other goals.<sup>6</sup>

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<sup>4</sup> Model for Managing America’s Wild Horses – ISPMB – pages 18-21

<sup>5</sup> Administration of the Wild Free-Roaming Horse and Burro Act 5<sup>th</sup> Report to Congress. June 1985. Page 10

<sup>6</sup> BLM 1976

The TGA created the Division of Grazing under the Department of the Interior thus creating grazing allotments, charging nominal fees for grazing. Leases were issued to the privileged few, generally the most powerful and wealthy cattlemen, especially those who helped create the TGA. “In a classic example of western control of federal land, the TGA retained elite stock raisers’ dominance using a permit system, a small fee, and a weak agency to manage the program.”<sup>7</sup>

The TGA established grazing boards. These grazing boards assured powerful stockmen continued dominance. The 1935 report by the Grazing Director referred to the grazing boards as follows, “the local governing agency as to all matters of a range of regulatory nature.”

In 1939 this Division of Grazing became the Grazing Service, the forerunner of the BLM.

During the 1930s, this agency ordered the extermination of thousands of wild horses. The unregulated exploitation of the wild herds constituted the Grazing Service’s policy for nearly thirty years.

In 1946, the Grazing Service and the General Land Office combined to form the Bureau of Land Management (BLM). Soon this Agency would be placed in charge of protecting and preserving wild horses and burros in 1971 that they so successfully exterminated in the 1930s.

“Carrying capacity was determined in 1964 by calculating the production level (how many acres to produce an AUM [animal unit month] using dry weight measure formula) multiplying by the number of acres in the allotment. It takes, on an average, 12-16 acres to produce one AUM.” “The carrying capacity formula was the basis of forage allocation made on the 1964 ten-year permits. It was carried over in 1974 to be adjusted for the implementation of the National Environmental Policy Act (NEPA) which requires reserving a portion of the annual growth to protect watershed, habitat, soils, and plant renewal and also forage for wild horses. When ‘suitability criteria’ was applied in 1979 to determine the number of AUMS actually available to livestock, BLM discovered the 1964 allocations needed to be reduced some 60-70 and, in some cases, up to 90 percent. There was no way the permittees would allow BLM to make those kinds of reductions. So, this ‘initial adjustment period’ (between 1979 survey results and the issuance of new ten-year permits in 1984) included initial adjustments to wild horse numbers – **there was no statutory authority for this.** The reason permittees could not accept reductions of the AUMS on their permits was because they used AUMS as private property to secure loans from farm credit banks. This violated Taylor Grazing’s prohibiting turning the grazing privilege into property rights or estate.” Despite this violation and the Agencies’ acceptance of such violation, the permittees interpret AUMS ascribed on the permits issued in 1964 as being permanently attached to their base property. The ranchers called the allocation ‘preference.’<sup>8</sup>

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<sup>7</sup> Shanks 1984

<sup>8</sup> August 1996 letter to Tom Zwettler, Office of Inspector General, Central Region by Animal Protection Institute

“The Taylor Grazing Act refers to preference in a completely different manner. It is criteria for granting the privilege to graze. The privilege is attached to the base property as long as the permit holder uses the grazing permit. The privilege and the permit are two separate things even though they go together. The privilege says who and the permit says how. The Federal Land Policy Management Act (FLPMA) adds to the Secretaries’ duty by also controlling the type of livestock in addition to number and seasons of use. This is “permitted use” – it is NOT preference.”<sup>9</sup>

Although in 1964, there were too many AUMS allocated for the actual amount of land, the Agencies just simply divided the allocations as “active” and “inactive” giving the ranchers the ability to hold on to these AUMS that never existed to benefit their base property financial standing. These AUMS that never existed were called “inactive.”

In essence the wild horses were given the “inactive” AUMs to eat (land that does not exist) which would allow the ranchers more AUMS by keeping the horses at token numbers. This allows the ranchers illegal monetary use of AUMS. Please note the following rule change which illegally removed 40,000 wild horses in 1984.

Most importantly, the above shows the Agencies complete disregard for the 1971 Act and their complete support and collaboration with the livestock industry which continues throughout history and today. This has led and continues to lead to habitat destruction caused by livestock grazing on public lands that the Agencies so fervently blamed on wild horses and burros.

## **AGENCIES DISREGARD THE 1971 ACT**

In supporting the ranching interests and allowing them to hold on to inactive AUMS, which is illegal as noted above, there was a push to remove as many wild horses as possible with the rule changes noted in the next paragraph. Inactive AUMS as part of a permit so as to add value to a permittee’s ranch is a violation of the TGA. This illegal use also was addressed in NEPA, and FLPMA but to no avail as the Agencies continue to allow the ranchers to hold on to their definition of “preference = active and inactive AUMs.” If the AUMS don’t exist on the land, they shouldn’t exist on paper. And the term preference is misused over and over again.

The BLM proposed regulation changes in 1984 to circumvent PRIA by removing large numbers of wild horses. They illegally removed 40,000 wild horses over 16 months at which time the rule was dropped.

Also in 1984, another regulation allowed the BLM to sell wild horses on “fee-waiver” or a mass adoption program. An estimated 20,000 wild horses were taken by ranchers who ultimately sold them for slaughter. A lawsuit brought by the Animal Protection Institute (API) halted these

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<sup>9</sup> August 1996 letter to Tom Zwettler, Office of Inspector General, Central Region by Animal Protection Institute

mass adoptions and forced the Agency to develop alternatives such as the prison training programs and sanctuaries.

1981- 1982 – Senator McClure (R- ID) introduced a bill to repeal the 1971 Act which died in Congress

1983-84 – Senator McClure reintroduced his amendment which would have changed the definition of excess and allowed the Agencies to manage by AML and then sell the animals to slaughter. (The Agencies have resorted to managing by AML in spite of the fact that it is illegal.) The Agencies supported these amendments.

1985 - BLM continued to try to get the support of Congress to give them the ability to sell wild horses for slaughter called “sale authority.” The Range Omnibus bill that year included such language but never made it to the floor of Congress.

1989 - The Animal Protection Institute successfully challenged BLM’s arbitrary and capricious decisions for removal of wild horses and burros from public lands (setting AMLs in stone without monitoring). This ruling in the Interior Board of Land Appeals (IBLA) stopped the Agencies from removing wild horses and burros from public rangelands for three years.

The reason is that the Agencies’ must monitor and inventory the habitat to determine “excess” wild horses and burros. If the animals are not causing damage to the land, then they cannot be termed “excess” and cannot be removed. Because API could not afford to go to federal court at that time, the Agencies reverted back to business as usual. That was, determining appropriate management levels (AML) not based on monitoring the conditions of the lands but carving out a number in stone which the courts had claimed earlier was arbitrary and capricious and *illegal*. (API shut down all wild horse and burro removals for three years through IBLA.)

This practice of arbitrarily setting AML continues to be practiced throughout the Agencies which continues to be an illegal and a blatant violation of the 1971 Act.

1990 – The Government Accountability Office (GAO) reported that unless livestock were removed at the same percentage rate that wild horses and burros were removed, the rangelands would not improve. At that time, there were approximately 100 cows to 1 horse/burro. If ten horses were removed, then 1,000 cattle should be removed. This was never done.

1992 - BLM rewrote its mission statement, it glaringly omitted wild horses and burros as a resource on public lands while naming other resources. ISPMB’s president, Karen Sussman, and a colleague were working in the office of the Interior at the time of these revisions. In spite of our protesting that wild horses and burros were not included in the mission statement to the Director of the BLM, Cy Jamison, the BLM proceeded with the exclusion.

1994 - BLM again violated the 1971 Act by not preparing a biennial Report to Congress. They were in violation again through the years of 1998 through 2015.

1994 - BLM Director Mike Dombeck, listed ten visions for public lands. Wild horses and burros were not mentioned.

1994 - A Del Rio Grand Jury convened to determine allegations of BLM corruption in the Wild Horse and Burro program. The grand jury was shut down without ever hearing one shred of evidence.<sup>10</sup> This case of corruption was brought by six of BLM's own law enforcement agents.

1997 - AP reporter, Martha Mendoza, exposed corruption within the Agencies' program. Seven major front-page articles ran in newspapers across the United States beginning 1/11/97. This resulted in the call up of the National Wild Horse and Burro Advisory Board which continues through today. This board is a complete waste of the taxpayers' dollars and was used initially as a shield to save the Agencies after Ms. Mendoza's eye-opening investigative reporting showed the corruption against wild horses and burros by the Agencies. However, now, the Agencies use this board to continue their mantra that there are too many wild horses and burros and "sale authority" should be entertained.

2004 - A clandestine amendment to the 1971 Act, known as the "Burns" amendment, allowed for a modified "sale for slaughter" that BLM coveted over these nearly twenty years. The only way the Act could be changed was through this secret amendment of which only three Senators were aware. Congress was already out for the holiday and this assured passage of the Appropriations Act in which this covert amendment was housed.<sup>11</sup>

Ford Motor Company was called in by ISPMB, the first Fortune 500 company to come to the aid of wild horses and burros under the Burn's amendment. They committed two years of their time to stop wild horses from being sold to slaughter by initiating funding and programs to assist in adopting wild horses.

In 2012 - \$40 million was given to the BLM to study ecological trends – however, livestock grazing was removed from their study. At this time, livestock grazing was permitted on 2/3 of all the BLM lands with 21, 000 grazing allotments covering 157 million acres. According to a PEER (Public Employees for Environmental Responsibility) report, a participating scientist in BLM's workshop said, "We will be laughed out of the room if we don't use grazing. If you have the other range disturbances, you have to include grazing." BLM managers informed the committee that grazing would not be analyzed due to the anxiety from "stakeholders" and fear of litigation.

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<sup>10</sup> The PEER White Paper – Horses to Slaughter - Anatomy of a Cover Up within the Wild Horse and Burro Program of the Bureau of Land Management – April 1997

<sup>11</sup> Report by the International Society for the Protection of Mustangs and Burros page 3

2013 - Tom Davis, a personal friend of Secretary of the Interior, Ken Salazar, received truckloads of wild horses and burros numbering 1700 animals. These truckloads began two weeks after Mr. Salazar became the Interior Secretary.<sup>12</sup> No charges were ever filed against Tom Davis.

2014 - The BLM planned to ship, by boat, 100 of America's wild burros to Guatemala, where they would spend the rest of their lives as "beasts of burden" unprotected by any humane laws or regulations. Another violation of the 1971 Act. This was not carried out.

2016 - Two horses and one mule, left unattended for four weeks, under the care of the FS, were found dead in the Apache-Sitgreaves Forest in Arizona. All three died from dehydration in late June. They were moved from their corrals to Rattlesnake pasture which had not been occupied by a horse for more than a decade because there was no reliable water there. According to federal court records, an attempt to criminally prosecute the FS employees for acts of cruelty to animals resulting in their deaths was dropped. This was a violation of the FS policy to check on animals every two-weeks.

The corruption of the Adoption program is ongoing and has continued over many, many years by the Agencies' weak policy of monitoring and protecting wild horses and burros in the program. BLM's adoption policy changed in 2019. The Agencies would give \$1,000 to anyone who adopted a wild horse. The Agencies' flagrant lack of oversight made national news again in 2021 when an Arkansas farmer and his family made at least \$20,000 adopting wild horses and then turned around and made even more money by selling them to slaughter.<sup>13</sup>

## **ELIMINATION OF WILD HORSES AND BURROS FROM THEIR LANDS**

Prior to 1971 and the enactment of PL 92-195, there was a rush to eliminate as many wild horses and burros as possible by ranchers whose permitted lands were shared by these animals.<sup>14</sup>

Since 1971, wild horses and burros have been permanently removed from nearly half of their rightful ranges (42%).<sup>15</sup>

Sec 2. (C) defines "*range*" as *the amount of land necessary to sustain an existing herd or herds of wild free-roaming horses and burros, which does not exceed their known territorial limits, and which is devoted principally but not necessarily exclusively to their welfare in keeping with multiple-use management concept for public lands:* Currently BLM manages 244.4 million acres. FS manages 192.9 million acres. **Wild horses and burros currently occupy only 19% of BLM lands and only 1% of FS lands.**

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<sup>12</sup> All the Missing Horses: What Happened to the Wild Horses Tom Davis Bought by Dave Philipps 9/28/2012 *ProPublica*.

<sup>13</sup> Wild Horses Adopted Under a Federal Program are going to Slaughter by Dave Philipps, 5.16.2021 *New York Times*.

<sup>14</sup> *America's Last Wild Horses:* by Hope Ryden

<sup>15</sup> ISPMB – Report to Congress – Bureau of Land Management – Statistics on Wild Horses and Burros

Nowhere in the 1971 Act do the terms, Herd Area (HA), Herd Management Area (HMA), or Territory exist. These terms were designed by the Agencies to denote where “they” will manage wild horses and burros. According to the law, they **do not** have that discretion. The Agencies further decreased the habitat acreage by declaring they will only manage animals in the HMAs, which are a limited area within the Herd Areas (HA).

One of the biggest violations came early on in censusing where wild horses and burros were located in 1974 to determine their “ranges.” In the majority of the areas, the Agencies did not include migration patterns of the four seasons. Sometimes, ranchers told the Agencies where the animals roamed and the Agencies accepted their input which eliminated the animals from the ranchers’ allotments, when it was obvious that this wasn’t so. In some areas, wild horses and burros were excluded from inclusion even though they met all the conditions to be declared wild and free-roaming.<sup>16</sup>

The first counts were visual or fixed-wing counts, which according to the review by National Academy of Sciences (NAS), “the earlier counts underestimated the actual numbers to a considerable degree.”<sup>17</sup>

Census data: Taken from BLM’s Report to Congress: (note these are estimates)

BLM	FS
• 1974 – 57,040 wild horses and burros	– 2,823
• 1976 – 60,100	– 3,336
• 1978 – 63,190	– 3,562
• 1980 – 64,555	– 3,151
• 1982 – 56,700	– 3,310
• 1984 – 60,356	– 1,670
• 1986 – 50,421	– 1,875
• 1988 – 43,296	– 1,621
• 1990 – 46,549	– 2,842
• 1992 – 50,697	– 2,519
• 1994 – 46,462	– 1,662

Continued census data of wild horses and burros: estimates

BLM	FS
• 1996 – 43,593	– 1,950
• 2019 – 88,000 (this last number is an estimate of animals within 177 HMAs)	
• <b>False allegations in the 2020 Report to Congress – by 2040 population will be 2.8 million</b>	

<sup>16</sup> 1996 – Secretary Babbitt ordered the Gila herd to be recognized as wild and free-roaming under the Act - Report by the International Society for the Protection of Mustangs and Burros, page 10.

<sup>17</sup> Page 200 – Wild and Free Roaming Horses and Burros: Current Knowledge and Recommended Research (1980)

- **AML for population should be 26,715. Arbitrary and capricious and not in compliance with the IBLA decision 16 USC 1333 (b) (2) 1982 IBLA**

Elimination of wild horses and burros continued by zeroing out HA's and Territories as noted below. These figures were taken from the Reports to Congress by the Agencies.

BLM	FS
• 1982 – 303 HAs (estimated original number)	– 51 Territories
• 1983 – 303	– 47
• 1985 – 257	– 45
• 1986 – 199	– 43
• 1990 – 195	
• 1991 – 196	– 36
• 1995 – 186	– 36
• 2019 – 177	

1992 - API appealed the roundups in Wyoming in IBLA. However, a BLM informant told API that they would no longer win any more cases. The Wyoming case was identical to their previous cases, showing that the Agencies did not have monitoring data to determine “excess” population of animals. Nancy Whitaker represented API in filing these cases with IBLA. She was informed by her *BLM informant* that she would no longer win any more cases because all removals were shut down for the past three years.<sup>18</sup> The Agency would no longer tolerate not being able to remove wild horses. The next step would be to go to federal court and API declined because of the costs involved.

Since 1992, the Agencies have operated by setting Appropriate Management Levels (AML) without monitoring the land and determining who is impacting the habitat – wild horses/burros, other wildlife, or livestock. The Agencies continue to defy the law by setting arbitrary and capricious numbers for wild horses and burros without determining excess. AML is the outcome of monitoring, not a set range of numbers carved in stone.<sup>19</sup>

ISPMB contends that the majority of wild horses and burros removed since 1992 have been removed illegally and not in accordance with the 1971 Act.

Elimination of suitability criteria in monitoring created a much greater advantage for cattle grazing and reduced wild horse forage allocations. The reason this critical monitoring information was eliminated was because the forage allocation of permits for grazing would have had to be reduced by 60%-70% and in some cases up to 90%. The reason is that cattle

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<sup>18</sup> Private phone conversation between Karen Sussman, ISPMB and Nancy Whitaker, API in 1992.

<sup>19</sup> Report by the International Society for the Protection of Mustangs and Burros, pages 28-29.

tend to camp in one place while horses and burros graze further from water, on steeper slopes, and higher elevations, and on more rugged terrain than pregnant or lactating cows.<sup>20</sup>

Many wild horses and burros have been removed due to emergency drought conditions which is not in compliance with the 1971 Act. The Agencies have CFR 4710.5 which requires the Agencies to remove livestock in lieu of wild horses and burros if there should be any emergency. The number of times that this CFR has been employed can be counted by less than the fingers on two hands since 1971.

The following URL is from Public Employees for Environmental Responsibility (PEER) who has just completed a map of BLM's permittees. It must be noted the condition of the rangelands due to cattle grazing is deteriorating. They further show that this is not from wild horses and burros.

[BLM Rangeland Health Status \(2020\) - The Significance of Livestock Grazing on Public Lands - Interactive Web Map \(mangomap.com\)](#)

- BLM administers 245 million acres of land.
- Of that land, 155 million acres is leased grazing allotments in 13 western states.
- More than 50% of BLM acres assessed fail the Agency's own land health standards with livestock grazing as a significant cause.
- This equates to 54 million acres, roughly the size of Wisconsin, which fail to meet BLM's minimum standards for soil and water quality, vegetation, and functional wildlife habitat due to overgrazing.
- Much of the land identified as priority habitat for the threatened and endangered Sage Grouse lies in ecoregions where more than 40% of assessed lands fail to achieve land health standards due to livestock grazing.
- BLM has yet to assess 27% of leased grazing allotments, or nearly 41 million acres, an area the size of Arizona, and many of these unassessed areas are surrounded by allotments not meeting land health standards due to overgrazing.

Finally, PEER states, "In short, BLM's own data document that it is presiding over an unfolding ecological disaster – massive deterioration of the increasingly arid Sagebrush West. This management breakdown belies the BLM mission to 'sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.'"

PEER sent to Secretary of the Interior Deb Haaland showing that the majority of lands where the Agency identified wild horses as the causal factor in habitat decline actually shows livestock grazing as the significant cause of degradation – not wild horses.

Yet, the BLM has removed thousands of horses, unnecessarily and illegally, in the effort to appease those protecting the Sage Grouse.

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<sup>20</sup> Report by the International Society for the Protection of Mustangs and Burros, page 46.

PEER further found that the U.S. Geological Survey (USGS) study released in September 2021 stated that wild horses were adversely affecting Sage Grouse habitat. This false reporting is what the BLM uses to remove wild horses. USGS stated: “Our analysis did not explicitly model livestock (e.g., cattle) .... Primarily because of challenges associated with compiling quality spatial data.” The USGS had access to PEER’s mapping since 2011.

PEER Special Project Manager, Kirsten Stade stated, “USGS and BLM have put on scientific blinders when it comes to public lands grazing, noting that cows outnumber wild horses on BLM lands by a ratio of 30 to 1.”

“PEER, which has obtained the BLM’s rangeland health data via the Freedom of Information Act, charges that BLM’s deliberate obfuscation of livestock eco-impacts is a function of political pressure from the ranching industry; and that

- While the Agency scapegoats wild horses for habitat degradation, its data reveal that most of the allotments within Wild Horse Management Areas (HMAs) that fail its standards for rangeland health – approximately 11.5 million acres of the 21.5 million acres of allotments within HMAs assessed by BLM to date – identify livestock as a significant cause of that failure; Livestock are by far the most frequently identified cause of allotment failure to meet standards for quality of water, vegetation, and soils, as well as the ability to support wildlife nationwide, including for allotments within HMAs.”

## **THE AGENCIES’ MYTH OF 20% YEARLY INCREASE AND HERDS DOUBLING EVERY 4 YEARS CREATED INACCURATE MODELING DATA**

The 1980 National Academy of Sciences (NAS) Research on Current Knowledge of Wild Horses states the following:<sup>21</sup>

“Population rates of increase calculated from the BLM and U.S. Forest Service (USFS) census data average 15-20 percent annually for western U. S. horse herds, rates similar to those quoted by these agencies and cited in a number of earlier publications. In some cases, these may be magnified by (a) increasing commitment to and proficiency at censusing, (b) increasing visibility as herd sizes increase, and (c) change from fixed-wing to helicopter censuses in the 1970s. But in others, the experience of observers, low-stature vegetation, and moderate topography, and fencing which prevents ingress and egress would seem to preclude these biases.

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<sup>21</sup> Wild and Free Roaming Horses and Burros: Current Knowledge and Recommended Research (1980) -Page 3.

In contrast, two authors have projected increase rates with population models that incorporate birth and death rates similar to those published for several herds, and concluded that annual herd increase rates well below 10 percent are probable. Similar calculations with life tables in this report indicate that 15 to 20 percent increase rates can only occur in populations with geometric age distributions with (a) very high reproductive rates, and (b) virtually no mortality. Such demographic conservatism is produced in populations with half their numbers in pre-breeding or low-breeding (3-year) age classes, only about two-thirds of older mares foaling each year on the average, and some mortality.

The question of increase rates is central to horse management and the disagreement cannot be resolved with presently available information. Research is needed to settle that question.”

The above information is germane as to how the Agencies manage wild horses and burros and how they do not take into account death rates. But more importantly, there is a definite lack of understanding wild horses and burros as wildlife species. When left alone, as with the Heber wild horses in northern Arizona, to manage themselves, wild horses have the ability to limit their populations based on the fact that they have strong and wise family social-bonding structures with behavioral characteristics that have been strengthened and carried over eons of time, thus allowing for their survival. When the Agencies go in and disrupt these herds every four years with unnecessary roundups, they are destroying the very fabric of these beautiful behaviors.

The disruptions of these herds by roundups every four years have devastating effects on the family band structures. What was not seen prior to these massive removals in the 1980s and 1990s were 2-year-old fillies having foals. Now this is common place. Please note the following from 1980 NAS studies:

“In all published material we examined, we found only one instance of conception at 1 year of age and foaling at 2 in wild horses. This was reported by Tyler (1972) who, in a study of New Forest ponies in Britain, observed one such case in 107 2-year-old mares over a 3-year period. Elsewhere, no 2-year foaling was observed in the following studies:”<sup>22</sup> (There were 5 studies of which 4 were conducted in the U.S. between 1975-1980)

ISPMB managed four wild herds over the course of 17 years. Two herds received PZP and two herds were left alone with the exception to feed them. The average growth rate for our two undisturbed herds was 8% and 9%. This would correlate with the above NAS prediction of under 10% growth rate. These figures do not correlate with untouched wild herds on public lands such as the Heber herd in northern Arizona. (3%). The reason that ISPMB’s rate was higher was because, even in the most adverse of weather conditions, the herds were fed 40%

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<sup>22</sup> Wild and Free Roaming Horses and Burros: Current Knowledge and Recommended Research (1980), Page 34.

alfalfa and 60% grass hay. Rarely did ISPMB ever encounter a winter kill. Essentially, they were protected from adverse conditions which public lands horses are not.

ISPMB's 2 herds were stable herds, free from roundups for 25 -50 years before they were received by ISPMB. They were ideal herds to study because their behaviors were pristine.<sup>23</sup>

ISPMB noted behaviors of their most rare Spanish Gila herd that other researchers have not noted. That was that the entire herd works together for the good of the whole herd. Band stallions prevented a young filly in her first estrus from becoming pregnant at one year of age. She never became pregnant until she was four years of age.<sup>24</sup>

The Heber wild horses of northern Arizona must be studied because of their stability and low growth of their population. In 2005, there were between 300-400 wild horses. In a census in 2021, there were 414 wild horses. The growth rate is between 1.5% to 3% depending on the figures used in the original count. These animals, other than the illegal shooting of nearly 38 horses, have not been disrupted through roundups which are most devastating to the stability of the bands and integrity of the herd. This herd exemplifies how management of the herds should be; thereby, a much-needed transformation in management of America's wild horses.

### **“LEAVE WILD HORSES ALONE” NO NEED FOR BIRTH CONTROL OF ANY KIND**

ISPMB observed deleterious effects of PZP (Porcine zona pellucida) in two of its herds that were administered birth control. . According to the registration of PZP with the EPA, permanent sterility was not to commence until seven years of repeated use. However, our mares in our Catnip herd were infertile after just five years of use. Therefore, we immediately stopped the use of PZP on our Virginia Range herd at four years.

It took an additional four years for nine mares out of approximately 36 mares to cycle again and have foals. Out of the nine Virginia Range mares, seven lost their foals. The six foals died within the first day of birth while the seventh foal died at age six months. He appeared to be a “failure to thrive” foal; thin, retaining a heavy thick coat in the heat of the summer, and suffered from malaise.

We also witnessed an accidental darting of a filly, who was observed over the next several years. She never became pregnant, while her cohorts that were not given PZP were able to get pregnant. All the conditions were the same regarding hay, water, and space. The only exception was her inoculation with PZP.

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<sup>23</sup> Report by the International Society for the Protection of Mustangs and Burros, pages 18-21.

<sup>24</sup> Report by the International Society for the Protection of Mustangs and Burros, page 18.

We also noted repeated breeding of one of our mares multiple times during the day. Because she did not get pregnant, she was ostracized from her band. When she was able to get pregnant after only one year of PZP, she lost her foal within the first day of birth.

One stallion was killed when all of his mares were contracepted causing him to fight off other stallions as the mares were continually have their estrus and were trying to be bred by outside stallions.

One of the most devastating effects of permanent infertility from PZP were the mares, that for many years previously had foals, began stealing foals from first-time mothers. The desire to have foals was so great that one mare stole five foals in one year.

Stealing foals happened consistently with at least six mares from both herds. There is no doubt that this happens on public lands but there is no one there who monitors herds like ISPMB has been able to do on a daily basis. Foals are unable to live without the first 24 hours of their mother's milk known as colostrum which contains antibodies that protect the foals from developing sepsis which is lethal.

In 2015, Marybeth Devlin compiled a list of reports showing the adverse effects of PZP. They are too numerous to list here but can be found in ISPMB's report, pages 30-41.<sup>25</sup>

Out of the 18 studies recommended by the NAS in 1980, only #18 was fully implemented – "Contraception Studies." One must ask why so many other studies were never done or completed but it appears obvious that the Agencies wanted to control the animals' numbers.

ISPMB contends that there is no overpopulation of wild horses. The stability of a population that has not been disrupted in over 15-years is noted in the Heber wild horses in northern Arizona on page three. The Agencies lack of understanding the wild horse as a wildlife species is leading to their very extinction on public lands.

ISPMB notes that giving birth control to wild horses is not in accordance with the 1971 Act. The law is explicit about managing these wildlife species with "minimal feasible level." What is defining about this is the word SHALL before minimal feasible level. "Shall be at the minimal feasible level." The law does not say may. Shall is an *order*.

Secondly, giving wild horses and burros birth control no longer makes them wild and free-roaming. They become pasture horses. They can no longer make decisions who breeds and who does not breed. They have survived for millennia without human intervention. This is why they survived! One has to just look at the domestic horse breeding programs and understand why human decisions should not determining breeding protocol. The Quarter Horse industry is

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<sup>25</sup> Report by the International Society for the Protection of Mustangs and Burros, pages 30-41.

a prime example of horses being bred with very small legs to hold up over 1,000 pounds of horseflesh. According to a Board member of AQHA, the average age of soundness is only 7 years when the horse is actually starting the prime of its life. The animals are no longer sound and end up being sold for slaughter.

Giving birth control to wild horses requires that they be captured, separated from their stallion and maintained for up to a month in captivity. Regardless of what “state of the art” birth control is used, animals will be separated from their families, thus causing the same disruption of the family bands which creates instability within their social structures. This disruption contributes to increases in population. This disruption is what is destroying these wild animals.

When animals are not disrupted every three to four years, their family structures stabilize and they themselves limit their population growth over time.

Bottom line, there is no overpopulation. There is a mismanagement problem with the Agencies because they never undertook the studies necessary to understand these wild animals as wildlife species. It is unimaginable that an animal under the Endangered Species Act would not be truly understood by those who manage these animals. Why is it that these Agencies have managed wild horses and burros as livestock? They have been wild for over 500+ years and yet these Agencies do not understand their wild behaviors and social organizations. If they did, they would not be disrupting them every four years.

ISPMB has asked that the EPA (Environmental Protection Agency) not renew PZP in the current re-registration process ending on June 27, 2022.<sup>26</sup>

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<sup>26</sup> Response to Case Number 7870102 for registration of PZP by International Society for the Protection of Mustangs and Burros – 6/20/2022

# **EXHIBIT 12**

# Planning, Monitoring and Inventorying Populations and Habitat

(This document was written by Karen Sussman and approved by the National Wild Horse and Burro Advisory Board upon which she served in 1990. This was submitted to the Secretaries of Agriculture and Interior.)

## BACKGROUND

The Board reviewed current program guidance and procedures to determine if they are effective for the implementing program policy. In order for the program to succeed, a focus must be placed on management on the range that includes a monitoring and inventorying of both the populations and habitat

## RECOMMENDATION

We recommend to the Secretaries of Agriculture and Interior that the BLM and Forest Service implement consistent inventorying and monitoring procedures that will provide information to determine wild horse and burro populations and herbivore impacts to achieve habitat objectives and desired plant communities as described in the following guidelines.

### Planning and Monitoring Populations

That wild horses and burros are an integral part of public lands and must be managed under the principal of multiple-use with integrated, coordinated decision making.

That multiple-use, sustained yield management objective must be stated in Resource Management Plans (RMPs) and focus on achieving, maintaining or restoring a thriving range condition that contributes to species diversity.

Objectives must be based on public input, existing resource conditions and issues, and must be measurable, attainable, and realistic.

That population and habitat are so intertwined that planning and monitoring must include the following:

- a. Behavioral observation of wild horses, burros and other herbivores.
- b. Map spatial overlap information for the purpose of showing where competition occurs in juxtaposition to damaged areas; map 1 to include seasonal movement

and distribution of wild horses and burros; map 2 to include distribution of livestock; map 3 to include the use pattern map of vegetation; map 4 to include seasonal movements and distribution of major wildlife species.

- c. Collection of consistent census data on a regular basis using the most appropriate wildlife censusing method for the habitat and situation.
- d. Determination of minimum population levels to serve as a threshold (based on viable gene pools, herd integrity, and population dynamics information) below which the population in a given area cannot be removed.
- e. Age structure and sex ratio information which would assist in making determinations for population adjustments. The information should not only determine what to take off but, more importantly, what should be left behind.
- f. Update land-use plans as needed based on current monitoring data.

#### Monitoring and Inventorying Habitat

That the purpose of monitoring is to measure the impacts of wild horses and burros and other grazers on rangelands in order to provide information that allows sound management decisions.

That habitat must be managed as an ecosystem which takes into account all components, and the vegetation is to be managed not only for its forage value but its values as watershed protection and fish-and-wildlife habitat.

That BLM field manuals and program guidance's be reviewed for compliance with actions set forth by the Interior Board of Land Appeals.

That habitat monitoring must include the following:

- a. Assess utilization by each herbivore species in terms of area of use and seasons of use.
- b. Collect quantifiable data which will determine where and when competition occurs.

- c. Collect technical data which will identify range conflicts and areas of actual competition and initiate a coordinated, integrated management approach.
- d. Establish timeframes for evaluating monitoring data that results in multiple-use decision making, planning, and management.
- e. Categorize objectives, moving from broad objectives (goals) to quantifiable objectives. Monitoring requires sound objectives and management constraints, which must be expressed in the Range Management Plan (RMP), quantified objectives in the Allotment Management Plan (AMP), and all management practices in the field manual.
- f. Develop species-specific habitat evaluation standards and practices handbook agency-wide.

#### RATIONALE

We recognize that the Bureau of Land Management and the Forest Service can manage the range ecosystem with all its unique and diverse forms of plants, animals, terrain, and climate, given proper methodology and adequate qualified staff. With that recognition comes the need for improved and formative management of wild horses and burros and its resulting contribution to the animal diversity of the public lands within the established Wild Horse and Burro Management Areas.

Proper management plans for a given area require a strong information base. Monitoring should focus on the overall impact of grazing pressures on the many components of the watershed. The utilization levels obtained should be used as one of the tools to achieve established goals and objectives in the agencies' desired plant community. There is a need for the Bureau of Land Management and the Forest Service to apply established methods with a consistency that can be recognized, understood, and defended.

It is assumed that the increased expenditure for on-the-ground data and information will reduce the verbal and legal conflicts.

# **EXHIBIT 13**

## Oral History Interview with Doy Reidhead [transcript], April 3, 2006

Northern Arizona University Cline Library

Ecological Oral Histories Collection

Collection number: NAU.OH.2005.111.16

Available at, <https://archive.library.nau.edu/digital/collection/cpa/id/21163/>

[BEGIN TAPE 2005.111.16A]

Lowe: My name is Norman Lowe. I'm doing an interview for the Ecological Oral History Project with NAU's Cline Library. Here today is Doy Reidhead, who's a long-time rancher. We're at his home just southwest of Holbrook, Arizona, and it's April 3, 2006, nine in the morning.

Mr. Reidhead, I'd like you to answer a few questions here this morning with us. Can you tell us a little bit about your family's history with the ranch and this region? When did your family originally come to this region?

Reidhead: Oh, they come to this region in 1879. My great-grandfather was commissioned by Brigham Young to help Charlie Shumway drive his herd of cattle from Utah to Arizona. And then he went back home, he went back to Utah, married my great-grandmother, which her name was Goosindy [phonetic], and then he.... His dad was already down here. His dad had been called by Brigham Young.

Lowe: What was his name?

Reidhead: John. He lived at Woodruff, over here on the [Little] Colorado [River], Silver Creek. But my great-grandfather come on the cattle drive with Charlie Shumway, then he went back and sold what he had, got him a good team and wagon, and married my great-grandmother, and come to Holbrook--or come to Navajo County. They settled what they called--today it'd be Lone Pine Dam, below Show Low on Show Low Creek. That was the first settlement. Then he moved from there to the [Hopen?] Ranch, which would be south of Linden. Then from there, he moved to Show Low. And that was all in the area.

Mrs. Reidhead?: They named Hopen Ranch, Reidhead.

Reidhead: They had a town named Reidhead.

Lowe: Oh! And that was located where?

Reidhead: Up south of Linden. And then later on they changed it to.... When the postal service come into being, the postal service changed it to Linden.

Lowe: I see.

Reidhead: That's no big deal. They was the first settlers here. My grandfather was the first white child born in that area.

Lowe: And his name was?

Reidhead: His name was Charles Oscar [phonetic]. He was born in 1880. But he created--I remember the story--he created a dairy, and moved down there north of Whiteriver. And his job was to produce milk and cheeses and what not for the soldiers that was stationed at Ft. Apache. And he started a little cow herd--him and a guy by the name of Charlie Thought [phonetic], I believe. I'm not sure of the name. Anyway, they got a pretty good cow herd that developed on the Apache Indian Reservation, along with that dairy they had. And when the fort closed down, he moved out of there and brought his cow herd and come back to Show Low.

My dad was born in 1900, and he fell into the horses and cows. In them days, that's all we knew. Horses was transportation, cows was livelihood. I remember Dad was a good cowboy. We always had horses and ranches all my life growin' up. And that's about as far as I can take you . Lots of Reidheads in the country, most of 'em were sawmillers.

Lowe: Okay. But there's several of 'em doin' ranching too?

Reidhead: Several of 'em was ranchers. But they was a big family--Reidhead--two or three different families. That's kind of a history [unclear] of it's own [unclear] in part. When I come into the picture, I can remember horses and cows.

Lowe: Okay. And you were born in Show Low?

Reidhead: Yeah, in Show Low, in 1933.

Lowe: Okay, and where was your family then--they were on a ranch?

Reidhead: I was born in the big Reidhead home, which is still a historical site--tryin' to get to be one--it's still standin' in Show Low, the oldest building there. And they're tryin' to get it in the historical society. My son's workin' on it right now.

Lowe: At that time, Show Low was a small town.

Reidhead: That town, there's about fifty people there, maybe. When I married her, she was from Linden, which was a ranch out west of Show Low. We moved into Show Low to try to make a livin', and worked at the sawmills, and worked at various jobs. Then I took a job cowboyin' for Borden Ranch, which is Bill Borden, which is an old--started his ranches here in the 1930s. In fact, he bought one of my dad's permits. My dad was runnin' horses, and shipped the horses to Los Angeles for four cents a pound, rode the train to Los Angeles with 'em, 600 head. Got back, he had barely enough money to get back home.

Lowe: Six hundred head! That's a lot of horses.

Reidhead: That was in the Great Depression. I was born in the Great Depression, see. My first job was a \$1.10 an hour, after I was married. [Hm, I think perhaps he meant to say \$1.10 a day, or maybe even week. (Tr.)] That was 1951. We was married when we was seventeen, and you had to.... There wasn't nothin' to make a livin' with except your two hands: work at the sawmill or work on the county roads. Jobs was scarce and hard to come by, and pay wasn't very big, but it didn't cost you much to live, either. And I fooled around and got in the truckin' business, buyin' and sellin' lumber, haulin' it to Phoenix. Then I went in the loggin' business, I worked for Southwest Forest Industries for twenty years, haulin' logs--loggin' contractor, do it all. But I always had this cow deal in the back of my head, and there it was, I wanted to go ranchin'. And so the Forest Service was gettin' [so] hard to work for in them days in the timber, that I decided I'd sell out. So I sold my loggin' outfit in 1974, and I bought a little ranch over here on the Milky [phonetic] Wash in 1968. That's between here and St. Johns. I had a chance to come and buy this ranch then. This was the old Kooney Jeffers [phonetic] Ranch, which was started--he come here in 1941, from New Mexico. And the other ranch belonged to Everett Hinkston [phonetic]. He come here in about 1941, and they was both runnin' ranches here. Kooney Jeffers was an old-time cowboy, and a good one. And then he sold out. This realtor, the guy sellin' the ranches, put the two ranches together, sold 'em to a guy by the name of Rulen Goodman [phonetic]. There was 150 sections in the Jeffers Ranch and 120 sections in the Hayston [phonetic] Ranch. And then in 1974, I sold my ranch on the Milky and gathered up enough money to come down here and made a down payment on these ranches.

Lowe: So how big was the outfit?

Reidhead: It was 270 sections.

Lowe: What kind of labor did you have--you had some help with that?

Reidhead: Well, yeah, mostly my family--mostly my boys--and hired some help. Some Indian boys worked for us. We started out runnin' cattle. We bought 2,300 cows with the ranch.

Lowe: What was the ranch's name?

Mrs. Reidhead?: Doy Reidhead.

Lowe: Just the Doy Reidhead Ranch, okay.

Reidhead: That's what we called the ranch, is the Doy Reidhead Ranch. It was two ranches sewed together, the Jeffers Ranch and the Hankston Ranch.

Lowe: And your brand was what?

Reidhead: VP on the left ribs.

Lowe: And then what was the next change? Did you run that for a while that way?

Reidhead: Well, we stayed with it. The place up here on Silver Creek, [unclear] [Little] Colorado

[River] and Silver Creek had a good well on it, so we built a nice farm up there, about a 250-acre farm, me and my sons.

Lowe: What were you growing on the farm?

Reidhead: Alfalfa and corn. We put a feed lot up there, and we fed our own cattle. I put my calves in there in the fall, and it'd work good one year, and the next year it'd reverse itself.

Lowe: Just 'cause of weather changes, huh?

Reidhead: No, due to the market change. You know, you gotta live with the market. One year I could get sixty cents for my calves, loaded on the truck, off the cows. And I'd take 'em to the feed lot and feed 'em, put corn and grain in 'em. The next spring when I had 'em weighin' 700 pounds, they was worth fifty cents. So I didn't make a dollar--I lost money. Feedin' cattle, when the market changes, calves can jump--in them days, ten cents was big. But it would usually drop ten cents one way or the other. Well, ten cents is the difference in success and failure.

Lowe: Yeah, that's the real stock market, isn't it? ups and downs.

Reidhead: We operated this ranch that way for eleven years. It was doin' good, keepin' the bills paid, doin' great. And then we decided.... We heard rumors that that ranch would be took away from me over there, with this relocation deal. So me and Michael Hoff, Sr., [phonetic], which is passed on now, and a fellah by the name of Merlin Maxwell [phonetic], and a boy that works for the Cattle Growers, by the name of John Olson [phonetic], I believe is his name--John something--a good guy, smart kid. We flew to Washington, D.C. and met with Barry Goldwater, and that was somethin', us ol' cowboys in Washington, D.C. I was scared to death of the airplane. I got there, I was like a hog on ice. But anyway, we finally got--this John set us up with these appointments with Barry Goldwater. I think there was one other congressman out of Arizona, maybe.

Lowe: Like Udall?

Reidhead: Maybe. Might have been Udall. But Barry Goldwater told us just what we wanted to hear, and we come home with a relaxed state of mind, that the Indians had plenty of land without worryin' about some of my land--lease land. But my hands was tied because I didn't own that land, it was lease land, New Mexico and Arizona Land Company, which was developed--that company come by when the government give all this land to the railroads to put the railroad through here. Part of it went to an outfit that was called Aztec Land and Cattle Company, which is the old Hashknife Ranch, which this is the old Hash Knife Ranch. This is [twelve livin'?).

Lowe: That was a really big ranch.

Reidhead: Yeah, it was part of the old Hashknife. Well, part of it went to, the [Dow Fifty?] called it New Mexico and Arizona. Well, that was a hundred sections of New Mexico and Arizona land out there.

Lowe: So a lot of your land was checkerboarded with private and state land?

Reidhead: State and some private. That over there was a hundred sections of New Mexico and Arizona land. Sixteen sections of state, and four sections of deeded. Well anyway, they wanted 25,000 acres. The Indians come there to look at my ranch, a tribe, a busload of Indians, and I showed 'em the ranch. And I've always liked Indians, some of my favorite people, been around 'em all my life. Anyway, I told this old boss of the outfit that if he wanted to buy a good ranch, go out there and buy that Spurlock [phonetic] Ranch. It was a better ranch than this ever thought of bein'. [unclear] Mr. Spurlock was a great rancher. He started in Young, Arizona, and he knew all the country, and that's where he settled. I said, "He needs cows." Ran [phonetic] Spurlock was his name. Sure enough, the old guy took my word for it, and went to buy the Spurlock Ranch, which they did. But then they decided they needed a little more, and a fellah by the name of Fitzgerald, Raymond Fitzgerald [phonetic], owned 25,000 acres of deeded land next to the Spurlock Ranch. So there was a four-way trade, New Mexico and Arizona would get rid of me, and trade with Raymond Fitzgerald this ranch, deeded, a hundred sections deeded, and the state [unclear] transfer, and the deeded he'd get. And he'd trade it for that 25,000 acres out there. So they bought me out, and traded the old Hankston Ranch for the 25,000 acres. And then they took six sections down there at Tucson, by the mission, wherever the mission was, the old San Xavier Mission.

Lowe: San Xavier Mission, yeah, south of Tucson.

Reidhead: That's what they got for their land, and Fitzgerald got my place, and the tribe got the Spurlock Ranches and the Fitzgerald Ranches. That was supposed to finish the Navajo-Hopi land dispute, which it ain't settled today. It never will be settled, I guess. But anyway, they misplaced me in the deal. [unclear] I decided I'd buy the Gibson permit up there, and the ranch, which was half--he had a winter ranch off on Aztec land, deeded, and a great forest permit, took him plumb to the Mogollon Rim, all across there, where the big fire was. All that was burned. Well, I had that permit, I bought it.

In the meantime, I was goin' big time. I had lots of cows and lots of cowboys and was runnin' a good ranch. About that time, the old forest rangers I'd always worked with, retired. And they run in some new management, and we was havin' some drought years, and the Forest Service had been busy raisin' jack pines and piñon and junipers. (

Mrs. Reidhead?: Elk.)

Reidhead: So they clogged our country plumb up. And then the Game and Fish is busy raisin' these elk. They both started about the same time. They shipped these elk in here out of Wyomin', hauled 'em out to the [Dessen?] Ranch on wagons and teams, and turned 'em loose in the early 1930s. And then they started raisin' these elk. Well, about the time I got in the ranchin' business--or in the Forest Service business--the trees choked out, and some dry years to boot, and then some new Forest Service personnel changes, environmentalists.... Everybody was tryin' to run the Forest Service. Maybe you've been around enough to know what was goin' on. It was one guy bangin' here, and one guy bangin' there. Anyway, in three years, me runnin' the ranch to the best of my ability according to their speculations and expectations, keepin' my cattle clean,

keepin' my fences up, keepin' the tanks clean, keepin' the work done, I thought I was doin' all I could do. Well, anyway, they decided the permit needed cut in half. So they cut it in half. Well, then my financiers that financed the whole thing, they got nervous. Here we buy a million-dollar forest permit, and now it's worth a half million dollars. So I had to compensate to that. And then, you know, just one thing led to another. After that, I decided to sell the damned place, try to pay the debts. Well, I sold the place, and lacked a million dollars of payin' the debt. But that's all right, I was a pretty big operator. I took a million less than I give for the outfit, you see what I mean?

Lowe: Wow. Uh-huh.

Reidhead: But I'd made pretty good money up there and I thought that'd offset maybe half of it.

Lowe: About what year did you sell that in?

Reidhead: In 1988. I bought it in 1983. But they cut the permit in half, then it lost a lot of its value, you see what I mean.

Lowe: So that was a pretty big ranch, huh, the Gibson Ranch?

Reidhead: Well, Old Man Gibson started that way back in the thirties, you know.

Lowe: I had a question, do you remember the sheep industry?

Reidhead: Yeah.

Lowe: Was it very big in this country?

Reidhead: Well, it used to be. Yeah, it was big.

Lowe: Did any of your family get involved in sheep operations?

Reidhead: Yeah! Big time! My dad always said he'd rather have a sheep than he would a cow. They loved 'em--moneymakers.

Lowe: Moneymakers--until after the war, I guess, and then the market [unclear].

Reidhead: Yeah, well.... And then the price of wool went down, and they quit eatin' sheep. And sheep [unclear]. But I [unclear] sheep. When I went to the Gibson Ranch and bought that, there was [unclear] big sheep permit on Wildcat, Wildcat and Sheldon [phonetic]. And all that whole mountain was sheep country: the Shivarias [phonetic] the [unclear] the ol' Hacos [phonetic], that was all sheep country.

Lowe: I see. So they actually ran sheep on the same ranch where you were running cattle?

Reidhead: Yeah, twenty years earlier. And the Forest Service didn't like sheep, so they converted

everything. In fact, after I sold this ranch to a fellow by the name of Steve Bragg [phonetic] out of California, the Gibson Ranch--I kept the old Jeffers Ranch--and then I went and bought Frank Eramuzdi's [phonetic] permit out there. They just changed him from sheep to cattle, and he had a place, all new fences and a beautiful permit. [unclear]

Lowe: Now, you like horses, I understand.

Reidhead: Yeah, I've raised a lot of horses.

Lowe: Do you use horses a lot in the operations?

Reidhead: Well, we had about fifty head of saddle horses at one time, to keep everybody mounted here. You get together on that Gibson Ranch, or that Eramuzdi permit, you had to put in some long hours--big permits.

Lowe: Yeah, to get the cows through the trees.

Reidhead: We had lots of trees and canyons, and that Gibson Ranch was about twenty-five miles across the south boundary. And then you neighbored the Ft. Apache Indian Reservation. Fences was always in bad shape, run more wild horses up there that come over the fence than you did cows. But that's some of the political politics we was into, see. I didn't know all this when I bought the permit. I thought.... Nigel [phonetic] got up there, and he counted 180-200 wild horses there.

Lowe: Oh, wow.

Reidhead: It had a big snowstorm in 1967, and just smashed the fences down, and them horses come up over there, got on the Forest Service, off the reservation. Nobody was cowboy enough to drive 'em back. They fixed the fence good, but left the horses on this side. So the old ranger that was up there, a great old guy, he just wanted the horses gone. And I'll tell you why he wanted 'em gone. This might be a.... He was afraid they'd make a wild horse refuge. Now here we're already gettin' into some stink. You see what I mean? He said, "If these horses don't get moved, we're gonna have trouble with this. They'll take this and make a wild horse refuge out of it." So he said, "I'll build the traps, and we'll [salt?] catch these horses." "All right, that's fine." "You take 'em to sale and sell 'em, and whatever you get is yours."

Lowe: So they were unbranded?

Reidhead: Yeah. But they'd give me a bill of sale to 'em. They was unbranded, and on Forest Service land. So we built them traps and [salted?]. We caught 187 horses. I'd unload 'em out of the traps and load 'em in a trailer and haul 'em to sale. A hundred dollars was a big price on 'em. The time was.... We had double the time we was gettin' paid for the horses, but it took a lot of time.

Lowe: Oh, yeah, these were wild horses.

Reidhead: Yeah, plus the traps they built. But we pretty well cleaned it up. And then today--they had the big fire, three years ago, or four, the fire took out the fence, and now the horses, they got the same problem again.

Meanwhile, this Steve Bragg, he had enough of the ranchin' business, so he sold this thing to John Seibert [phonetic], a big contractor out of Phoenix, he owns Wheeler Construction Company--a good guy, and really a good operator. And he bought the.... He [unclear] a little bigger country, so I was seventy years old, and I decided.... He wanted this piece of land I had out here at West Camp, a block of about sixty sections, and I sold that to him three or four years ago. And I kept about 20,000 acres here, and I had a section of deeded land here, with this house on it. My brother built my fireplace, and I didn't want to leave my fireplace. We was too old to go anywhere else, so we decided to raise a few horses and a few cows and settle down so we could make a livin'. That's where we are today.

Lowe: Still raisin' a few cows and some horses.

Reidhead: Yeah, and we've pretty well kept the debt paid on the whole place. We've been here thirty-one years. We've been big time, and now we're little time. But at my age, I'm about where I want to be.

Lowe: Yeah.

Reidhead: My son [unclear] the old farm, and a good portion of the ranch--my sons and grandsons have it. But they bought it after I'd sold it to this Steve Bragg. They took that sale to Steve Bragg, took all it, brought off that little lost on the price of what the ranch is worth today, and what it was worth when I bought it--you see what I mean? I just got into a position where the elk is takin' what grass is growin' up there, and the bulk of their country was down a little lower, there'd be jack pines--the Forest Service name for it is P.J., which is piñon-junipers, and they just [unclear] forced all the grass out, there's no grass. You had a five-mile strip in a national forest that was reduced to zero.

Lowe: Wow. Right. Well, that's what I want to ask you a few questions about, is some of the ecological changes you've seen. And definitely the piñon and juniper have really come in strong, huh?

Reidhead: You couldn't even ride a horse through it! You'd have to build trails through it, to just ride through it, to go out on the flats where the cows get a little higher up in the pines--see what I mean?

Lowe: Uh-huh.

Reidhead: And then the big flats where the grass grewed.

Lowe: That was one of the reasons for reducing the cattle capacity, I suppose, is because the grass was goin' away.

Reidhead: You look back on it now, had no choice. The trees just--they wouldn't cut a tree here--it's an unpardonable sin to cut a cedar tree.

Lowe: Right. They wouldn't let the fire burn to get rid of the trees.

Reidhead: They wouldn't let the fire burn. And the elk just kept a-growin' bigger and bigger. And the elk found out they couldn't make a livin' in the piñon and juniper, so they learned to come down where the forest ended and these ranches begin--like the Gibson winter ranch and all this country, this twenty-mile strip between the [Little] Colorado River, you might say, and the pine trees for thirty miles.

Lowe: Right. And this is more grassy country out here.

Lowe: Big flats, and some cedar pushin' has been done, a lot of it. A lot of eradication on it.

Mrs. Reidhead?: (inaudible)

Lowe: Okay, we did.

Reidhead: I pushed thousands of acres of cedars. I could see it comin', and got with Aztec and pushed 'em--[unclear] CS over here.

Lowe: Did you see a good response, did the grass come back?

Reidhead: Oh, great! Doubled your capacity. But, you know, one man can only do so much. I pushed thousands of acres of cedars on this ranch, on the Gibson Ranch--I kept a cat workin' all the time.

Lowe: Did you do some chaining or cabling also? Or just individual trees?

Reidhead: Pushed and burned. Cables will just kill half of 'em and leave half of 'em roots in the ground. Tried that route. A lot of these [unclear] no higher than that chair, and you couldn't cable 'em. You could cable the mature trees, you couldn't cable.... But where they was more more [unclear] fifty little saplings. In other words, all at once, in about a ten-year cycle, it just closed the country off with piñon and juniper. And this ain't changed a bit. I can take you up there and show you two-thirds of it, you can't even get through it a-horseback.

Lowe: Yeah. Yeah, really thick. Now, when you were young, did ranchers use fire to help burn off trees? Or not even then?

Reidhead: Well, in the old days there was no fightin' fires. Didn't have nothin' to fight fires with. My dad tells the story they used to run more wild horses in this country than they do everything put together now. And the wild horses wasn't hurtin' nothin'.

Lowe: That's 'cause there's a lot of grass that was here.

Reidhead: If you look at the old pictures, you'll see big purdy pines and lots of open space. You see what I mean? That was the history, when the pioneers come to [unclear] this forest, that's what it looked like. If you don't believe me, dig up some of the old pictures.

Lowe: I've seen 'em.

Reidhead: All right, the Forest Service come in there and just took over this.... Put out all the fires, and did no thinning of any kind--just protect the trees. And they had the ways and means and could hire enough men to put the fires out, see. So it stopped the lightning fires. That's what happened then. Then we get into this period where we got all these people comin' to Arizona. All of 'em want to go to the pine trees and cool off. Ninety percent of the people live in the valley, the lowlands. And the big kick, everybody come to the mountains. Well, the Forest Service owned the whole danged [unclear]. The Forest Service is tryin' to please the ranchers, and the Forest Service is tryin' to please the tourists.

Lowe: And then you start gettin' enough second homes built out there, that nobody wants fire to burn.

Reidhead: And this just went crazy from there, you know. It's just a combination of a lot of things [unclear]. [unclear] big-time ranchin' business is all this people movement was comin', see.

Lowe: Right. I'd like to ask you about some things you've seen about the watershed and hydrology changes. Over the years you've probably had a lot of springs on some of your ranches.

Reidhead: Well, they all dried up.

Lowe: Do you think it was because of the trees, or what?

Reidhead: Oh, it's a combination of things. When I was a kid, I can remember lots of big snowstorms, you know.

Lowe: Yeah, more snow in the winter then, and it would recharge the water table.

Reidhead: I remember as a kid growin' up I rode horses all my life. I'd ride east--I lived at Taylor--ride west to Taylor on what they called Cottonwood Wash, and Dobson [phonetic] Wash, which started at the Mogollon Rim. Twice a year, them streams would run. There'd be enough snow water, and then in the fall we'd always get big rains. Seemed like they always run, but it's just a combination of we just took a dryin' trend here.

Lowe: Yes, definitely the last seven, eight years it's been pretty dry. So many of the springs you remember have gone dry.

Reidhead: Well, hell, they went dry right in front of your face--a bunch of 'em. I'd think, "Well, next spring it'll come back." Well, next spring, they didn't. I had a permit up here on Sheldon, I bought from Frank Aramooshti [phonetic], and there's one big pasture there they call the Waters

Pasture. And the first Forest Service camp was set up, up there on a spring, a big spring-- DeWaters [phonetic] Spring, they called it. Well, I'd had that permit about two years, and it went dry, and it was still dry when I left there three years ago. It never did come back. And that was a big spring. Run into less shovelin'.

Mrs. Reidhead?: There was always a stream in Hart Canyon, too.

Reidhead: Then Hart Canyon, that was always runnin'--it went dry. You know, just in the ten years that I was on this permit up there--eleven years.

Lowe: So they had some cottonwoods or sycamore and willow along those?

Reidhead: Well, them trees took a lot of water. You can't blame anybody but the weather-maker. Just one of them deals.

Lowe: Yeah. Some of those trees dyin' too? Are some of the cottonwoods or sycamores dying?

Reidhead: Ah, hell, you can see more dead trees up around Heber you could haul off if you had a big loggin' outfit. They protected a lot of them trees, and now they're all.... That's another thing, they quit cuttin' the timber.

Lowe: So you've seen changes in the little lakes and dirt tanks [unclear] too, I guess, they've dried up.

Reidhead: Oh, yes. Yeah. You might build a tank, I'll build some tanks that ain't caught water since I built 'em. It just don't seem like it rains like it used to.

Lowe: Not as much.

Reidhead: That's part of it.

Lowe: Have you noticed much about erosion over the years?

Reidhead: Ah, no, that seems to be....

Lowe: I remember Pat Spurlock talkin' to be about how this Puerco River has really cut down in his lifetime, since [unclear].

Reidhead: Well, it blows in and blows out. I don't see a lot of change.

Lowe: Okay, so you're not seein' a lot of change--just with the weather cycles, huh?

Reidhead: I don't see.... I've been in Arizona on the Puerco River thirty-one years, and I can't see a lot of difference. Maybe one big flood will change it, and then five years later it'll revert back to where it was. You might only have one big flood in five years here. I don't see much.

Lowe: Some places, like at Navajo, I guess it used to flood out onto the flood plain.

Reidhead: Well, yeah.

Lowe: And some places it doesn't anymore--it just goes down the channel.

Reidhead: We got other things that's happened here. We got APS dug these deep wells to furnish this power plant with water. All this between here and Holbrook, right down here, that was always artesian water when I come to the country.

Lowe: Oh, you had artesian water here?

Reidhead: Yeah! From here to Winslow! And now they're havin' a cow the other day, in that artesian, what they call the Meadows. And now that artesian just dried up, you can see where it runs occasionally. You can see salt--salt water in this country. You can see where the salt water's run. It's colored the ground, but no more water.

Lowe: So the wells are drawin' the water table down?

Reidhead: Yeah, the wells have dropped down.

Lowe: How good is the water under here?

Reidhead: Well, right here is the best water in the world.

Lowe: Pretty sweet?

Reidhead: You cross the river, and you need whiskey to chase it with. (laughter)

Mrs. Reidhead?: [unclear] right here when you turn to come up [unclear].

Reidhead: You got a big fault here somewhere.

Lowe: Oh, okay.

Reidhead: You cross the river, and you can't drink it. Right here is pure water.

Lowe: Great. Good for you.

Reidhead: That's why I settled here.

Lowe: About how deep is it here?

Reidhead: A hundred and twenty feet, the best water you ever seen.

Lowe: Pretty good. Okay, good deal.

Reidhead: I've done that, lowered my bowl at times [unclear]. I've been here twenty years without ever.... I've had to drop my bowls twice.

Lowe: Okay, so it's gone down maybe twenty feet or something?

Reidhead: It's gone down ten feet, which is quite a bit.

Lowe: You don't do irrigation here now, do you ?

Reidhead: No, not here. Just down the hill, they are. There's some pumps went in down there before APS used their political clout. You can't drill an irrigation well here now in this area. Took away from us.

Lowe: On another topic, what have you seen about the weeds, like salt cedar and that coming in?

Reidhead: Well, between these tamaracks that pretty well took over, and this camel [tar?], and they claim the old Hashknife cows brought that in, and the thistles. We've got as many undesirables growin' here now as we do desirables--maybe more.

Lowe: So you have seen a big increase?

Reidhead: Yeah. But I think these tamaracks--if we didn't have these tamaracks.... When I was a kid, there used to be big cottonwoods all up and down the creek, a beautiful place. Hell, I can take you up here, and I owned twenty-five miles of that country at one time, them rivers.

Lowe: Along the river?

Reidhead: Yeah, along the Puerco, ten miles up the [Little] Colorado [River]. I can show you old deadwood layin' around, cottonwoods two to three foot [in diameter] that died and blowed over. But the tamaracks has choked out all the cottonwoods, which cottonwoods ain't no good either, but they're purdy to look at.

Lowe: Yeah, they're pretty to look at, some shade.

Reidhead: But you go down there and try to find a cow in them tamaracks and if you're the best Mormon in the world, you'll be cussin' before you get out of there. It's just teared that river over. It's kind a like the piñons and junipers up there, but piñon-juniper will grow on nothin'. These tamaracks have to have a lot of water.

Lowe: Right. Did you see tamarack over on your Gibson Ranch, too?

Reidhead: No. Not away from this river. You can find a tamarack anywhere on this ranch that I got left. You can find lots of thistles. In fact, the thistles has got so bad, they blow your fences over. We've had three years of bad drought here, and the only thing that's growed is thistles. They get as tall as that chair.

Lowe: Yeah, the tumbleweeds.

Reidhead: Tumble up over your fence, and then the wind will.... Then we get one of these 65-mile-an-hour winds, and there goes a mile of fence, just flat. Gotta go burn thistles or scrape 'em off, and put up the fence. That's [a hazard?]. We all had a bad loco deal in this country.

Lowe: Is it bad here, the loco weed?

Reidhead: Yeah. Comes and goes.

Lowe: So it affects your horses sometimes?

Reidhead: Yeah, moisture affects what loco does.

Mrs. Reidhead?: [unclear] dry after it's been green is almost worse than the rain.

Reidhead: But all-in-all, it's a pretty tough life. If you want to sum it all up, it's pretty hard to make it all work.

Lowe: Yeah. I want to ask you a little bit about wildlife, what you've seen out here. What do you know about the antelope populations? Have they come up and down?

Reidhead: I have plenty of 'em. They survive.

Lowe: They survive? You still have antelope out here?

Reidhead: I can show you 200 head today.

Lowe: Two hundred! Oh, so not so bad here, then. They've left a lot of places in the north country here, like on the rez [i.e., reservation] and what not, but you still have 'em here.

Reidhead: Game and Fish called me about ten years ago and wanted to know if it'd be all right if they could dump a load of antelope on my ranch. I said, "Hell, I don't know how I can get along without 'em." I don't want 'em dumped on my ranch, but I think they either got dumped or come here. I've always had a lot of antelope here.

Lowe: You've always had 'em, okay. And on your other ranches, did you have antelope on those others?

Reidhead: Well, on the lower end, plumb to the timber. Antelope run plumb through the piñon-juniper. They kinda quit at the pine trees.

Lowe: You mentioned that big storm back in 1967 and '68. That killed a bunch of antelope up by Flagstaff and what not. Did it really hurt 'em here too?

Reidhead: Yeah. It killed a lot of everything.

Lowe: Oh yeah, your cattle too.

Reidhead: Just put 'em in jail and kept 'em there 'til they starved to death. That snow was seven foot deep, and they just tromped themselves a place to stand while it stormed, and their bodies melted what snow hit 'em, I guess. When the storm was over, they was in a snow fence, six foot, seven foot high. Nobody could get 'em out. These ranchers, I was busy helpin' my brother-in-law plow to them cows with caterpillars or big four-wheel-drive loaders, and built a trail and drove 'em out. They'd come out if you opened that trail.

Lowe: Uh-huh. So the big snow drifts were causing like corrals, like you say.

Reidhead: Yeah. But you get in around the cedars, up a little higher, where I was workin' and helpin' him, they'd get under the cedars for protection, and they just tromped their way around that cedar. And then when the storm's over, it's six, seven foot high--a snow fence, they couldn't get out. So you had to go find 'em on a Ski-do, and then plow to 'em. If you'd open a trail, they'd come a-walkin'. We opened a trail, they'd be fifteen miles the next morning, just walkin'. We'd put a bale of hay about every half-mile, and they'd just follow one bale of hay to the next, and just kept comin'.

Lowe: Okay, you were trying to lead them out of that [unclear].

Reidhead: We led 'em outta there with hay. He had 150 head, and we put 'em all on his headquarter ranch in Linden in twenty-four hours. Didn't put a horse down there. Just plowed the road out and let 'em walk. That was 1967.

Lowe: My goodness. Yeah, how about coyotes and other predators? [unclear]

Reidhead: Oh, we've always had coyotes, and always will, I guess. Here around Holbrook the biggest predators is dogs.

Lowe: Really?

Reidhead: We've had, in my day here, we've had several bunches, killer packs, you know. I had twelve cows killed right here, south of us here about two miles, in two weeks.

Lowe: Twelve cows in two weeks! That's a lot of coyotes then.

Reidhead: It wasn't coyotes--these town dogs.

Lowe: Oh, dog packs, feral dogs.

Reidhead: Kill for pleasure, just like wolves. We got a guy here, an old buddy of mine, trapped them dogs. So we got rid of that problem. There's always somethin' here that interferes with your business, so to say.

Lowe: Okay. Tell me a little bit more about the elk situation. You said elk were reintroduced in this country back in the 1930s, and the numbers didn't change too much for a while, and then when did the elk really explode?

Reidhead: Well, one of the reasons they exploded--and they won't tell you this--they hauled the elk in here all the time.

Lowe: Oh, they kept haulin'. Okay.

Reidhead: They'd get elk out of these other states, see, that would become available. They dumped elk right up here by Woodruff, right where there wasn't even elk habitat. They dumped a load of elk in there.

Lowe: Do these elk migrate much, or do they pretty much stay in the same....

Reidhead: These elk go where the feed's at.

Lowe: That's a complaint that I've heard: cattle you can rotate and whatnot.

Reidhead: You don't rotate elk.

Lowe: They stay where they want to stay.

Reidhead: They go where they wanna go.

Lowe: Yeah. So you've seen some overgrazing from elk, huh?

Reidhead: Everywhere you look. They'll take a browse country or a brush country that you use to winter on, and instead of just taking the leaves, they'll take the bark. Over there in that Cliff Rose [phonetic], that country, and that mahogany--they just love to strip that mahogany to nothin'. It grows in these rock canyons, all this heavy sandstone rock canyon--beautiful place to winter cattle, you know. But the elk's pretty well ripped it. Some of the things we've faced through, it don't hurt to be a millionaire to ranch, but it sure helps. I doubt seriously that... I think there might be only one ranch left in this country that was here when I come to this country.

Lowe: One ranch that stayed in the same family, huh?

Reidhead: Yeah.

Lowe: Which ranch would that be?

Reidhead: That'd be part of the Jeffers Ranch that Bill Jeffers, the young Bill, has got.

Lowe: Located where?

Reidhead: Young Bill Jeffer's has got a ranch north of town that runs to the reservation line. And it's deeded land--they deeded it--and that's the only ranch here that's the same. I could show you probably 15,000 head of cattle runnin' here when I come here thirty-one years ago. There was probably 15,000-20,000 head of cattle. And I don't believe you can go count 2,000 today. That's what a drastic change we've had. Can you believe that?

Lowe: That's pretty amazing, yeah. And the land hasn't necessarily bounced back, just from rest or anything.

Reidhead: It just got too hard to survive on.

Lowe: Right. Weather changes, and like you say water hasn't come back.

Reidhead: And what guys that's tryin' it now is guys that had money to spend, they needed to spend. You might know a little about that. And that's the ones that just--the romance of the cattle business is what it amounted to. The romance has about gone out of it for me. (laughter) But there was a dozen good ranches in this end of Navajo County when I come here. The Jeffers Ranch is the only one that's still in one piece, and it ain't a very big ranch--like a hundred sections. The Oaxaca Ranch, a lot of it's been sold off, and the boys are still runnin' some of it. And then the Gibson Ranch and part of this ranch, was acquired by John Seibert [phonetic], and he's still.... But he's only runnin' 700 cows. The fire burnt the mountain off, he can't go up there. I got it cut in half, and since he bought it, it's cut 100 percent. So that's.... And the last I heard, I haven't talked to Mr. Seibert in a while, I heard he was movin' to Kansas where he could run cows.

Lowe: Yes, several cows per acre, instead of a hundred acres per cow.

Reidhead: Yeah. Flakes used to run lots of cattle. They're down to just a trickle. This Milky Ranch run a lot of cattle, and that's been acquired by land investors, and just pretty well took off the map.

Lowe: So you were president of Cattle Growers, you said like in the late seventies.

Reidhead: Yeah.

Lowe: So their numbers are dwindling, I guess, in the county.

Reidhead: Well, most of the ol' boys who had ranches are dead, and their kids either didn't have it in their system--you gotta love it to do it--or else have some money siphoned in to you from somewhere. You know what I mean?

Here's another thing: I went along, I was in the cow business thirty-five years, and we used to deal in, oh, the cattle buyers come and offer you twenty-five cents, and if you could get him up to twenty-five and a quarter, you was a pretty good promoter--or he could get you down to twenty-four--six bits--he was a pretty good trader. Just dealt nickels and dimes, you see, kind of

off a base price. And then come up, and it'd jump a little bit in the seventies, eighties--sixty cents was a good fair calf price. An old cow was worth twenty-five. And then about three years ago, this thing just doubled, see. So everybody's got a chance to get quite a bit of money out of a cow now, except there ain't nobody raisin' any cows to speak of.

Lowe: Yeah, that's the challenge all right. Okay, one last question area I had was about recreation.

Reidhead: About recreation, well, there never has been a hell of a lot here on this ranch--just hard work. But up on that permit, I think that's probably one of the biggest things wrong with the permit, if that's what you want to know.

[END TAPE 2005.111.16A, BEGIN TAPE 2005.111.16B]

Lowe: This is Tape B for the oral history interview project. I'm Norman Lowe doing the interviewing, and Doy Reidhead here is answering a few questions for us. So my next question was about your observations about changes in recreation over the years and what not. Were there any dude ranches around here where people from the valley would come up?

Reidhead: When I was a kid, there were a lot of dude ranches, but then they just disappeared--nobody willin' to put up with the dudes, I guess. I'm talkin' about people comin' from New York so green they could hide in the grass. But that's disappeared.

Lowe: That's kind of disappeared and what not?

Reidhead: About the fifties.

Lowe: But then the recreation started in [unclear].

Reidhead: Oh! the recreation started with the campers and hunters, and just people gettin' out of the valley, and reunions, and everybody wanted to go to a purdy place.

Lowe: Has that created problems with land management [unclear] ecological?

Reidhead: To a certain extent.

Lowe: They haven't really trashed the place too bad, huh?

Reidhead: Well, where they can get to, yeah! But they're limited as to what they can get to. But you take a beautiful campground, like Hart Canyon, and thousands of 'em on the forest, but the Forest Service keeps 'em cleaned up, and do pretty good. I'd say they're pretty much overused, but the Forest Service has done more to help on that end of it, than any other end.

Lowe: That's true. So you've seen a big change in the Forest Service's focus [from] when back in the forties they were focused on production and helping the producers.

Reidhead: Yeah, markin' timber.

Lowe: And very little of that now.

Lowe: Seein' about developin' water, interested in timber and cattle.

Mrs. Reidhead?: Well, the spotted owl is actually....

Reidhead: What the Apache-Sitgreaves produced--that's all they had to offer. That was the sole means of everybody's financial opportunities in this part of the state of Arizona, was the timber and the ranching. There wasn't no jobs, there wasn't no little bitty towns. And then people would raise gardens and milk cows--you know, just existed. We're talkin' about the complete turnover. And what turned this over is all this population explosion, and then the money change picture. Anybody can finance a car, everybody can get a credit card. Well, you can't pay the damned credit cards off, you never get the car paid for, but you paid it off before it gets [unclear] get another-un, and pay it off on the credit card to get another-un. I don't know how it works, but it works.

Lowe: Yes.

Reidhead: A great influence of people in that.... Let's take the town like Show Low. [It] was the poorest town that I ever seen. And now it's the richest town you ever seen, property values 300 percent higher, or 1,000 percent higher, and everybody can find a job. All kinda jobs. They got all these big schools to run. They got all the big-city jobs. Take the Holbrook area: get into [unclear] inside [unclear]. You don't want to hear this, but Holbrook's prit near a 100 percent government town. We've got the government of the state, we've got all these Indian deals here, we've got the college here. The State Highway [Department] got a big headquarters here. The county's got the sheriff's office, all the county offices. I mean, 90 percent of the people around here work for the government.

Lowe: Right. Originally, it was based on some production, agriculture and that, and it's really changed.

Reidhead: So that's how Holbrook's changed. Show Low and them, where the pine trees are, the old people that had the property--anybody that had the property has more money than they can spend now. It's a different world. I don't think the Forest Service is interested in sellin' any grass, or sellin' any timber. I think them days has come and gone. They've pretty well proved it.

Lowe: Do you think the Game and Fish is getting a handle on the elk situation?

Reidhead: They don't want a handle on the elk situation. They ain't never gonna have it.

Lowe: People love to come up here and hunt the elk?

Reidhead: I was readin' a little piece in the paper yesterday. Some guy that went around.... And that's a pretty exciting business. Some guys went around the Ft. Apache Indian Reservation, took

pictures of lakes--prettiest place in the world, you know. As far as I'm concerned, the Ft. Apache Indian Reservation, they took God's best country and made the Ft. Apache Indian Reservation. But anyway, he made a little about the elk, a prize bull elk on the Apache Reservation is worth \$40,000.

Lowe: Wow. I'd heard from \$5,000 to \$10,000.

Reidhead: In that little write-up you can pay \$40,000, they'll give you two weeks and a guide, or two guides, and furnish everything. You bring your gun and yourself. They want \$40,000 for a trophy bull. That's what the write-up said. I've heard this [unclear]. That's how big the elk business is.

Lowe: Yeah, but they can market a product like that. But here you're not allowed to.

Reidhead: They're not allowed to, they're kind of goin' through the back door to do this. I've seen now they've come out with a lottery deal. You apply for a permit and buy a lottery ticket too. And then this lottery ticket gives you a chance to draw you an elk permit--another way to get some more money. They're underfinanced, I guess. But anyway....

Lowe: Yeah, a lot of demand for that. But it's a different set of rules on the reservation [unclear].

Reidhead: They're doin' their own deal--timber, everything. They pretty well took and made it completely tribal owned and controlled. In other words, there ain't no more brain trust down there that's not members of the tribe. Which is probably good. I think they're doin' a better job than we are.

Lowe: Yeah, very different situation. They're focusing, at least, on some of the resources, because they can harvest [unclear] people in it.

Reidhead: They've learned they might be cuttin' too much timber, and they might be growin' too many trees. They want some tourist dollars.

Lowe: You ever been involved much with the reservation? Have you gone over there, taken tours, or worked with any of those people?

Reidhead: No, I just know the people, know the country, logged a lot on it, yeah.

Lowe: Oh, you have done logging there?

Reidhead: Yeah, a lot of logging when they was in the timber-sellin' business, and then they put the big mill in at Whiteriver, Cibicue. See, my uncles and relatives all had to sawmill at Carrizo and Cibicue. My Uncle Ed, him and Old Man Cardon [phonetic] bought the first timber sale at Carlsdale [phonetic], and that was reservation timber, and built sawmills in Show Low, which is just five miles from the boundary. But then they had to guarantee to work 80 percent Apache people, see. That's the way it started.

Lowe: Okay. So your family's had heavy involvement in the timber and cow business.

Reidhead: Yeah. Due to me in the timber and workin' so many Apaches, I knew 'em and loved 'em, they're good people. Hard workers. You know, the time has completely changed where they don't--nobody needs to work anymore, I guess.

Lowe: Right, they've shifted away from agriculture too. I mean, the children and....

Reidhead: They found out that their scenery is worth more than their timber.

Lowe: Yeah, good point.

Reidhead: Everything you do down on that reservation, you pay. You buy a permit to camp, you buy a permit to fish. Everything pays. The forest is a little cheaper--this side is a little cheaper to have recreation in.

Lowe: Okay. Well, I've asked you the questions I had. Any final [unclear].

Reidhead: That do it?

Lowe: I think that'll do it for me.

Reidhead: Well, I've--closin' this thing out--I've rode horse probably as far as anybody could probably ride a horse, in the last thirty years--spent my life a-horseback, and I've enjoyed every minute of it. The only bright spot I got, I got a grandson that's just as crazy about the cow business as I was. He's a carbon copy. I can look back and I try to advise him to don't get too involved in this cow business, it'll break your heart.

Lowe: Yeah.

Reidhead: But through the years I've enjoyed it, it's been a good way of life. And I'm still satisfied with where I'm at today. I don't guess you could want any more, you know. I'm not able to look after big ranches no more--don't want to. Like I say, the romance is gone out of it.

Lowe: But you still have family involved. Well, that's good. All right, well, thank you for your time, and I guess that'll end the interview.

Reidhead: Well, I hope it don't completely flunk.

Lowe: No. No, it's good perspective. They have a form they'd like you to sign, [giving] your consent that we can tape this. And they have someone that transcribes it, writes out the words. And then there's a monologue or a book being done, of little short stories. So we'll take some information out of here, and then a photograph or so that you'll do, and it will be part of a chapter. And it may be like two pages or something per ranch. If that's all right, to do that in this book with other ranchers.... And people can also go on the Internet, on the Web, and they can pull up these interviews if they want to hear your voice and hear a little bit about what you're

talking about, as well as the other twenty ranchers, and that NAU has the right to share this with the public, essentially, because it's a library.

Reidhead: Well, don't get me in a damned.... You can get in serious trouble, you know, with some of your words--especially these elk hunters.

Lowe: I don't think you've said anything that I haven't heard....

Mrs. Reidhead?: He didn't say anything about the spotted owl.

Lowe: Oh, yeah.

[END OF INTERVIEW]

# **EXHIBIT 14**

## Singh, Sukhmani

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**From:** Karen Sussman <ispmb@ispmb.org>  
**Sent:** Wednesday, June 18, 2025 6:50 AM  
**To:** Weaver, Amanda Z.; Merrill, Anthony W.; Singh, Sukhmani  
**Subject:** [REDACTED]

[EXTERNAL] [ispmb@ispmb.org](mailto:ispmb@ispmb.org)

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More from Betty. Just FYI. We can only live without water for four full days. We can live without food much longer, somewhere about 28 days. Same with animals.

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**From:** Betty Nixon <bnixon1224@gmail.com>  
**Sent:** Wednesday, June 11, 2025 11:09 AM  
**To:** Karen Sussman <ispmb@ispmb.org>  
**Subject:** Even John Koleszar Who Hates These Horses Has More Compassion for them than So-called "Advocates"!

Hi, Karen;

This is what the horses look like over on Forest Road 51. I could produce 100 photos of horses just like these! The Forest Service is intentionally doing this to our federally protected wild horses! Stacy Sanchez can say they're not thin all he wants. He's delusional! They're very THIN! Michele Anderson can put on her blinders and her happy little dance all she wants. These horses are being intentionally deprived of the green grasses in other areas of the forest that have green forage up to 10-12 inches tall, but there's NO water! Even the stallions are thin in the area of Forest Road 51!

Forest Roads 146, 124 and 107 have good forage, but NO water! The horses naturally roam there, and there's good food there, but NO water! I guess the forage is being saved for the cattle! Now, the Forest Service is allowing Phelps Tank to the east to go dry, which leaves only Logger Tank on the east side. One dirt water tank for all the horses that moved to the east to congregate around!

Why do I think foals are being found dead this year, which is unprecedented in prior years...I believe their moms gave everything they had until there was nothing more to give! The 51 has always been the worst area when it comes to forage. Now add the extreme drought conditions. Most of the forage dried up and withered away long ago! Minimal monsoon rains last year and very little snow this past winter meant very little in the way of spring grasses we'd normally see. Now the Forest Service is INTENTIONALLY congregating large numbers of horses in areas to create hardship and STARVE them and hoping they'll damage the range. This is all intentional on the part of the Forest Service and is completely avoidable!

Why do people claiming to be "advocates" not stand up for these horses? How much longer do they need to suffer while every other animal in the forest is delivered an abundance of water? How many more will needlessly die? Every person I know who goes to the 51 is appalled at how thin these horses are. Funny that everyone around them sees their suffering except the "advocates" who profess to love them the most! It sickens me!



