

## ALASKA RAINFOREST DEFENDERS

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Oct. 1, 2020

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Submitted electronically at:

<https://cara.ecoystem-management.org/Public//CommentInput?Project=59576>

Hello Ms. Case:

I submit these comments on behalf of Alaska Rainforest Defenders (“Defenders”) regarding the proposed Wrangell-Petersburg Invasive Plant Management project which would spray herbicides, including the carcinogen glyphosate, anywhere in the project area with no annual treatment limit. Defenders’ members use the Tongass National Forest, including numerous areas in the Petersburg and Wrangell Ranger Districts, for recreation, commercial fisheries, subsistence, wildlife viewing, scientific research, and other activities. Our members would not use areas treated with glyphosate as proposed in this project.

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## ***I. Introduction***

The proposed Wrangell-Petersburg Invasive Plant Management project would authorize spraying herbicides over an estimated 5,811 gross acres of designated Wilderness and non-Wilderness lands and federal and non-federal lands.<sup>1</sup> The draft EA does not identify specific treatment locations within the 3.7 million acre project area and indicates that the Forest Service neither knows nor intends to disclose the locations of treatment sites or treatment methods until after finalizing a decision on this project. Forest workers would spray herbicides around campgrounds, roads and trails, in riparian areas, estuaries, on waterbodies including anadromous fish streams, and within 1,000 feet of areas that provide public water supply, exposing the environment to harmful chemicals and themselves to significant cancer risks. Treatments could include including a combination of manual, mechanical and herbicide treatments.<sup>2</sup> Herbicides include aquatic formulations of glyphosate, imazapyr and aminopyralid, applied by broadcast spray, spot spray and other methods.<sup>3</sup> Spraying would occur directly over water.<sup>4</sup>

Our scoping comments requested that you prepare an EIS. There are substantial questions about the environmental impacts associated with glyphosate. In 2015, the International Agency for Research on Cancer identified glyphosate as a human carcinogen and likely cause of non-Hodgkins lymphoma. The International Agency for Research on Cancer's monograph also identified carcinogenic impacts on animals and other adverse effects to fish. Other recent studies have identified effects to insects and amphibians. Also, glyphosate is a non-selective herbicide and kills native plants that may not be able to recolonize habitat once eradicated due to competitive disadvantages relative to other plant species. The EA/FONSI relies on flawed assumptions about the mobility and persistence of glyphosate formulations in the environment and ignores numerous recent studies demonstrating toxicity and other adverse effects at concentration levels well below those deemed safe by the Forest Service. An EIS is necessary to address the numerous ways that glyphosate formulations may poison humans, fish and wildlife and their environment.

Further NEPA analysis should also disclose proposed treatment sites. The EA proposes to prepare a post-decisional annual treatment plan rather than disclose locations, target invasive species and specific herbicide choice and application methods. There would be no limits on the acreage affected.<sup>5</sup> This approach violates NEPA's requirement that environmental analyses provide sufficient specificity to insure informed decisionmaking and meaningful public participation.<sup>6</sup> The EA also failed to include a reasonable range of alternatives, including alternatives that rely on

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<sup>1</sup> U.S. Forest Service. 2021. Wrangell-Petersburg Invasive Plant Management Environmental Assessment and Finding of No Significant Impact. R10-MB-876a. Tongass National Forest, Petersburg and Wrangell Ranger Districts, August 2021. *Hereinafter* EA/FONSI.

<sup>2</sup> *Id.* at 7.

<sup>3</sup> *Id.*

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> This approach resembles recent "Landscape Level Analysis" strategies for timber projects. Alaska District Court federal Judge Gleason rejected this approach in March 2020 in *SEACC et al. v. U.S. Forest Service* as a violation of NEPA.

mechanical or hand treatment methods and reduce broadcast spraying of glyphosate.

## **II. The Forest Service should re-scope this project and prepare an EIS**

We reiterate our request that you prepare an EIS. The proposed action allows for unlimited herbicide application throughout two ranger districts. The use of an EA to analyze herbicide spraying over a large area is unusual.<sup>7</sup> NEPA requires federal agencies to analyze the foreseeable environmental impacts, including direct, indirect, and cumulative impacts, of “major Federal actions.”<sup>8</sup> If the action *may* cause degradation of some human environmental factor, the agency must prepare an EIS.<sup>9</sup> In other words, the threshold issue for determining whether or not to prepare an EIS is not whether significant effects will in fact occur. Instead, the trigger is if there are substantial questions about whether a project will have a significant effect on the environment.<sup>10</sup>

NEPA also requires that “public information be of ‘high quality’ because ‘[a]ccurate scientific analysis, expert agency comments, and *public scrutiny* are essential to implementing NEPA.’”<sup>11</sup> Even if the Forest Service prepares an EA, the analysis must still take a hard look at impacts and “explain the differences between the Forest Service’s view of likely impacts and the view of others in the scientific community.”<sup>12</sup> Specifically, the NEPA analysis must disclose that leading international cancer researchers and multiple independent studies conducted over the last decade disagree with the agency’s belief that glyphosate is harmless to humans, animals and fish unless directly ingested in large quantities.

### **A. The use of glyphosate is a controversial and presents unknown and uncertain risks to human health and safety**

The determination of a significant effect on the environment requires consideration of “context and intensity.”<sup>13</sup> The context is the scope of the agency’s action, including affected interests.<sup>14</sup> Intensity is the degree to which the agency action affects the locale and interests identified in the context part of the inquiry.<sup>15</sup> Intensity requires evaluation of various factors, including “[t]he degree to which the proposed action affects public health or safety[,]” ... “[t]he degree to which the effects on the quality of the human environment are likely to be highly controversial[,]” and

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<sup>7</sup> *Northwest Coalition for Alternatives to Pesticides (NCAP) et al. v. Lyng*, 844 F.2d 588 (9<sup>th</sup> Cir. 1988); *Blue Mountains Biodiversity Project v. U.S. Forest Service*, 229 F.Supp.2d 1140 (2002).

<sup>8</sup> 42 U.S.C. § 4332(2)(C).

<sup>9</sup> *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149 (9<sup>th</sup> Cir. 1998).

*Foundation for N. Am. Wild Sheep v. United States Dep’t of Agric.*, 681 F.2d 1172, 1178-79 (9<sup>th</sup> Cir. 1982)(emphasis added); see also *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9<sup>th</sup> Cir. 1998)(the “substantial question standard does not require a showing ‘that significant effects will in fact occur’”).

<sup>10</sup> *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150 (9<sup>th</sup> Cir. 1998).

<sup>11</sup> *Id.* at 1151 (citation omitted; emphasis in original).

<sup>12</sup> See, e.g. *League of Wilderness Defenders v. Forsgren*, 184 F.Supp.2d 1058, 1066 (D. Or. 2002).

<sup>13</sup> 40 C.F.R. § 1508.27.

<sup>14</sup> *National Parks & Conservation Ass’n v. Babbitt*, 241 F.3d 222, 731 (9<sup>th</sup> Cir. 2001).

<sup>15</sup> *Id.*

“[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks ....”<sup>16</sup> Statements in the Forest Service’s own herbicide resource report identify “a high degree of uncertainty” about chemical interactions with humans and the environment.<sup>17</sup>

The carcinogenic characteristics of at least one chemical as well as other environmental risks further implicate significant public health and safety and environmental issues that are sufficiently controversial to trigger an EIS. “Agencies must prepare environmental impact statements whenever a federal action is “controversial,” meaning that there is a substantial question as to whether a project “may cause significant degradation of some human environmental factor” or there is a “substantial dispute [about] the size, nature, or effect” of the action.”<sup>18</sup>

The EA/FONSI recognizes that glyphosate causes carcinogenic concerns.<sup>19</sup> But the Forest Service strongly disagrees, repeatedly characterizing the chosen herbicides as “low risk chemicals” with “low or negligible toxicity levels” that pose “minimal” health risks throughout the analysis of the NEPA intensity factors.<sup>20</sup> In particular, the Forest Service claims that glyphosate “is not likely to be carcinogenic to humans” - the worst that could happen would be accidental acute exposure

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<sup>16</sup> 40 C.F.R. § 1508.27(b). The Forest Service also needs to reconsider whether the action establishes a precedent by authorizing large scale herbicide treatments under an EA with no site-specific analysis and whether the action threatens cultural resources because herbicides enter the food chain, affecting subsistence.

<sup>17</sup> Krosse, P.C. 2019. North Tongass Invasive Plant Management Project Human Health and Herbicide Use Report at 7-9, explaining that:

*Risk assessments have a high degree of uncertainty* in interpretation and extrapolation of data. Uncertainty may result from a study design, questions asked (and questions avoided), data collection, data interpretation, and extreme variability associated with aggregate effects of natural and synthesized chemicals on organisms, including humans, and with ecological relationships.

Further:

Any project involving herbicide use in a natural setting will contain many sources of uncertainty. The range of invasive plant species to be managed is large and compounded by the number of non-target species and diversity of ecological conditions in areas where treatment may occur. Data on herbicide toxicity and environmental fate is limited to those conditions and species tested for registration purposes and investigated by independent researchers. Available data on surfactants, inert ingredients, and dyes is even more limited. It is not possible to obtain all the data necessary to substantially reduce this information gap.

<sup>18</sup> *National Parks & Conservation Ass’n*, 241 F.3d at 736; 40 C.F.R. §1508.27(b)(4).

<sup>19</sup> EA/FONSI at 13, 39.

<sup>20</sup> EA at 14 (stating that there is little risk of the public being directly or indirectly poisoned by water, fish, fruit or vegetation treated with glyphosate); 16-18 (repeating the Forest Service’s belief that the proposed herbicides has “low” toxicity levels so that “the inherent level of public health and safety risk is minimal for the types of herbicides proposed”), 39-40 (concluding that there are no highly uncertain or unknown effects and that the herbicide treatments are unlikely to be controversial based on the analysis, small areas and small scale of treatments, short-term exposures and dispersed nature of weed infestations); *see also* Forest Service. 2021. Wrangell-Petersburg Invasive Plant Management EA Response to Scoping Comments. Tongass National Forest, Wrangell and Petersburg Ranger Districts. August 2021 (claiming that “the associated risks of glyphosate are low”).

accompanied by temporary eye or skin irritation or gastrointestinal distress.<sup>21</sup> These conclusions rely on outdated toxicity risk assessments from Syracuse Environmental Research Associates (SERA) and Environmental Protection Agency (EPA) findings that reflect chemical company studies and/or are otherwise based on limited testing and controversial findings.<sup>22</sup>

In 2015, the International Agency for Research on Cancer, the cancer research arm of the World Health Organization, and “gold standard” in the field of cancer research, completed a review of all published, peer-reviewed data regarding glyphosate.<sup>23</sup> The International Agency for Research on Cancer (IARC) declared glyphosate as a probable human carcinogen and identified a positive association for non-Hodgkin lymphoma. The California Environmental Protection Agency’s Office of Health Hazard Assessment has also concluded that glyphosate is a carcinogen.<sup>24</sup>

Because of these findings, a growing number of countries, as well as dozens of cities in the United States, have restricted or outright banned products containing glyphosate.<sup>25</sup> Thousands of Americans have contracted non-Hodgkin’s lymphoma because of exposure to glyphosate.<sup>26</sup> Most of the studies of occupational exposure to glyphosate include agricultural workers involved in farming or forestry such as potential victims of this proposal. Exposure of the general population occurs mainly through diet which is a significant concern in Southeast Alaska due to the significant proportion of wild food harvests by community residents. Courts have disagreed with the Forest Service’s characterization of glyphosate as safe and instead agreed with International Agency for Research on Cancer’s findings and required Monsanto to pay out millions of dollars in damages to victims of exposure to glyphosate.<sup>27</sup>

The Forest Service’s reliance on regulatory agency registrations and chemical company conclusions ignores the massive body of scientific literature, including numerous recent studies, that have identified numerous risks to human health and safety, substantial disputes about the effect of glyphosate, and uncertainties and unknown risks. For example, in 2016, a number of scientists and medical experts produced a “Statement of Concern” in response to advances in scientific understanding of hazards caused by glyphosate based herbicides (GBH).<sup>28</sup> Their Statement of Concern:

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<sup>21</sup> EA/FONSI at 16.

<sup>22</sup> EA/FONSI at 9.

<sup>23</sup> International Agency for Research on Cancer (IARC), World Health Organization. 2017. IARC Monographs on the evaluation of carcinogenic risks to humans. Some organophosphate insecticides and herbicides Volume 112. Lyon, France. Available at: <https://publications.iarc.fr/549>

<sup>24</sup> Brown, V. & E. Grossman. 2017. How Monsanto captured the EPA (and twisted science) to keep glyphosate on the market. In: InTheseTimes. November 1, 2017. Available at: [https://inthesetimes.com/features/monsanto\\_epa\\_glyphosate\\_roundup\\_investigation.html](https://inthesetimes.com/features/monsanto_epa_glyphosate_roundup_investigation.html)

<sup>25</sup> Carlson Law Firm. 2021. [Which Countries and U.S. States are Banning Roundup?](#)

<sup>26</sup> Baum Hedlund Law Firm. Monsanto Roundup Lawsuit. (Downloaded Sept. 2021). <https://www.baumhedlundlaw.com/toxic-tort-law/monsanto-roundup-lawsuit/>

<sup>27</sup> *Id.*

<sup>28</sup> Myers, J.P. et al. 2016. Concerns over use of glyphosate-based herbicides and risks associated with exposures: a consensus statement. In: *Environmental Health* volume 15, Article number: 19 (2016). Available at: <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-016-0117-0>



considers current published literature describing GBH uses, mechanisms of action, toxicity in laboratory animals, and epidemiological studies. It also examines the derivation of current human safety standards. We conclude that: (1) GBHs are the most heavily applied herbicide in the world and usage continues to rise; (2) Worldwide, GBHs often contaminate drinking water sources, precipitation, and air, especially in agricultural regions; (3) The half-life of glyphosate in water and soil is longer than previously recognized; (4) Glyphosate and its metabolites are widely present in the global soybean supply; (5) Human exposures to GBHs are rising; (6) *Glyphosate is now authoritatively classified as a probable human carcinogen*; (7) *Regulatory estimates of tolerable daily intakes for glyphosate in the United States and European Union are based on outdated science*.<sup>29</sup>

Then, in 2018 another group of expert plant pathologists and medical professionals reiterated the concerns of environmental health scientists and doctors about glyphosate:

Due to the large-scale and intensive use of glyphosate and its accumulation in the environment and edible products, several major concerns have arisen in recent years about harmful side effects of glyphosate and AMPA for soil and water quality, and plant, animal and human health. Based on recent reports on potential chronic side effects of glyphosate ... the World Health Organization reclassified the herbicide glyphosate as probably carcinogenic to humans in 2015 .... Since then, many (about 1000) scientific research papers have been published on glyphosate, especially its potential side effects, in the last two years, but a comprehensive review is still missing.<sup>30</sup>

The Forest Service ignored these numerous new concerns and limited its reference list to a very small number of outdated risk assessments and chemical company conclusions submitted to and approved by the EPA, and, with one exception, there is no indication that the Forest Service reviewed any independent scientific studies nor any material discussing glyphosate risks produced since 2011.<sup>31</sup> Further NEPA analysis needs to confront the scientific findings that conflict with the Forest Service's belief that glyphosate-based herbicides are "safe" and

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<sup>29</sup> *Id.*; See EA/FONSI at 16 (referencing only one document among these thousands of published studies evaluating glyphosate impacts – a 2019 study by a team environmental health scientists, epidemiologists and statisticians. The study reviewed cases involving high exposure workers and linked glyphosate to possible myeloma and non-Hodgkin lymphoma. Petersburg and Wrangell Ranger District staff – none of them doctors – disagreed with the methodology used in the peer-reviewed analysis and noted that the paper “was criticized” but failed to identify whether the critics were peer review scientists or other agency/chemical company employees. After briefly describing and disagreeing with this single document, the Forest Service concluded that the “[b]est available science indicates that glyphosate, as proposed for use in both alternatives, is not likely to cause cancer”).

<sup>30</sup> van Bruggen, A.H.C. et al. 2018. Environmental and health effects of the herbicide glyphosate at 256. *Science of the Total Environment* 616-6-7 (2018) 255-268. Available at: <https://www.global2000.at/sites/global/files/Literatur-Geissen-2.pdf>

<sup>31</sup> Krosse, P.C. 2019. *Supra*. See Section 5, References.

further evaluate additional adverse impacts to human health and safety, controversial disputes about the effect of the herbicides, and additional unknown risks and uncertainties such as endocrine disruptions and non-linear effects.

### **1. The EA fails consider flaws with the EPA and industry studies**

The 9<sup>th</sup> Circuit explains that “[a] project is ‘highly controversial’ if there is a substantial dispute [about] the size, nature or effect of the major Federal action.”<sup>32</sup> “A substantial dispute exists when evidence ... casts serious doubt upon the reasonableness of the agency’s conclusions.”<sup>33</sup> Our scoping comments pointed the Forest Service to expert scientific opinion explaining that glyphosate poses much more serious risks than the agency assumes, but the draft EA fails to evaluate this information, violating NEPA.<sup>34</sup> The controversy generated under this factor alone raises “substantial questions” and requires the agency to prepare an EIS.<sup>35</sup>

The maker of glyphosate herbicide formulations, Monsanto, has known about its carcinogenic properties for decades but withheld evidence from the public.<sup>36</sup> NEPA does not permit the Forest Service to blindly rely on other agency analyses identifying glyphosate as safe, particularly findings influenced by Monsanto. An agency cannot rely on outside conclusions about the safety of a herbicide, including EPA registration processes, and instead must independently research the effects in its NEPA analyses.<sup>37</sup>

The EA should disclose that chemical industry studies endorsed by the Forest Service and other regulatory agencies generally conclude that glyphosate is safe while independent studies such as those reviewed by the IARC disagree.<sup>38</sup> Many independent scientists are highly critical of the Forest Service’s belief that glyphosate is neither carcinogenic nor genotoxic<sup>39</sup> and note that the agency’s belief ignores “substantial laboratory and some epidemiological evidence that continues to accumulate and points to the opposite conclusion.”<sup>40</sup> For example, most industry studies assert that glyphosate is not genotoxic (damaging to DNA) while the majority of independent studies, including the IARC, reach the opposite conclusion.<sup>41</sup> Indeed, there have been “a number of scientific publications about the genotoxic effects of

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<sup>32</sup> *Bark v. U.S. Forest Service*, 958 F.3d 865, 870 (9<sup>th</sup> Cir. 2020)(citations omitted).

<sup>33</sup> *In Def. of Animals v. U.S. Dept. of Interior*, 751 F.3d 1054, 1064 (9<sup>th</sup> Cir. 2014).

<sup>34</sup> *Bark*, 958 F.3d at 871-72 (explaining that the Forest Service’s effects analyses “did not engage with the considerable contrary scientific and expert opinion” and instead “drew general conclusions”); see also *Blue Mountains Biodiversity Project*, 161 F.3d at 1213.

<sup>35</sup> *Ocean Advocates v. U.S. Army Corps of Eng’rs*, 402 F.3d 846, 865 (9<sup>th</sup> Cir. 2005).

<sup>36</sup> Baum Hedlund Law Firm. Webpage. *Supra*.

<sup>37</sup> See *Southern Oregon Citizens Against Toxic Sprays v. Clark*, 720 F.2d 1475, 1480 (9<sup>th</sup> Cir. 1993).

<sup>38</sup> Burtscher Schaden, H., P Clausen & C. Robinson. 2017. Glyphosate and cancer: buying science. How industry strategized (and regulators colluded) in an attempt to save the world’s most widely used herbicide from a ban. Available at: [Glyphosate\\_buying\\_science-EN.pdf \(pan-germany.org\)](https://www.pan-germany.org/Glyphosate_buying_science-EN.pdf).

<sup>39</sup> The EA casually dismisses the genotoxicity of glyphosate. It should, at a minimum, acknowledge and disclose to the public what it means for a chemical to be genotoxic.

<sup>40</sup> Pesticide Action Network. 2016. Monograph: Glyphosate. At 3. Available at: [Glyphosate-monograph.pdf \(pan-international.org\)](https://www.pan-international.org/Glyphosate-monograph.pdf).

<sup>41</sup> Burtscher Schaden, H., P Clausen & C. Robinson. 2017. *Supra*.

glyphosate” showing genotoxicity in human cells.<sup>42</sup>

A primary difference between the EPA studies relied on by the Forest Service and the IARC’s monograph identifying glyphosate as a carcinogen is that the IARC relied primarily on a large body of published and peer-reviewed research.<sup>43</sup> The IARC thorough review led to the conclusion that “[t]here is strong evidence that exposures to glyphosate or glyphosate-based formulations is genotoxic based on studies in humans *in vitro* and studies in experimental animals.”<sup>44</sup> It is unreasonable for the Forest Service to simply dismiss the IARC, an arm of the World Health Organization, which based its conclusion on “sufficient evidence” of carcinogenicity in animals and limited evidence in humans.<sup>45</sup>

In contrast, the EPA registration process relies on industry studies withheld from both the public and the scientific community to support assumptions about glyphosate’s safety.<sup>46</sup> The EPA’s recent “Glyphosate Issue Paper” even admits that the agency has not commissioned or conducted any of its own studies to examine glyphosate’s potential health effects.<sup>47</sup> There is a long history of various companies hiding the carcinogenic properties of their products.<sup>48</sup> There have been a number of “questionable interactions” between Monsanto and regulators, particularly the U.S. EPA.<sup>49</sup> The EPA encouraged European regulators to dismiss studies linking glyphosate to cancer and instead adopt Monsanto studies declaring glyphosate in their own reports.<sup>50</sup> Surveys of EPA employees verify persistent chemical company interference with scientific findings that altered regulatory outcomes, including stifling agency employees who recognized glyphosate’s carcinogenicity.<sup>51</sup> There are also questions about whether the EPA ignored proper scientific guidelines for how to assess research about glyphosate health impacts.<sup>52</sup>

For example, a new analysis by researchers from the Institute of Cancer Research in Austria is the first to review the underlying studies that support the Forest Service’s belief that glyphosate is safe. Chemical companies prepared the reports and the EPA and other regulators withheld those studies from the public

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<sup>42</sup> Pesticide Action Network. 2016. *Supra*, at 26.

<sup>43</sup> Gillam, Carey. 2021. Corporate studies asserting herbicide safety show many flaws, new analysis finds. The Guardian, 2 July 2021. Available at: [Corporate studies asserting herbicide safety show many flaws, new analysis finds | Monsanto | The Guardian](#)

<sup>44</sup> Pesticide Action Network. 2016. *Supra*, at 26.

<sup>45</sup> Burtscher Schaden, H., P Clausing & C. Robinson. 2017. *Supra*.

<sup>46</sup> Brown, V. & E. Grossman. 2017. *Supra*. See also Burtscher Schaden, H., P Clausing & C. Robinson. 2017. *Supra*.

<sup>47</sup> Brown, V. & E. Grossman. 2017. *Supra*.

<sup>48</sup> [1] CBS News. 2011. [Big tobacco kept cancer risk in cigarettes secret: Study - CBS News](#); [2] Wikipedia. (Downloaded Sept. 2021). [Erin Brockovich \(film\) - Wikipedia](#) (regulators concealed the use of a carcinogen that causes Hodgkins lymphoma, hexavalent chromium, when other forms were available).

<sup>49</sup> Gillam, Carey. 2021. *Supra*.

<sup>50</sup> *Id.*

<sup>51</sup> Burtscher Schaden, H., P Clausing & C. Robinson. 2017. *Supra*.

<sup>52</sup> Gillam, Carey. 2021. *Supra*.



until recently required to release them by European courts.<sup>53</sup> The new analysis indicates that most of the studies relied on by the EPA and the Forest Service are of poor quality and unreliable for assessing cancer risks.<sup>54</sup> In particular, Monsanto's genotoxicity studies failed to use modern methods for detecting carcinogens, meaning that their tests detect only fifty to sixty percent of the carcinogens.<sup>55</sup>

In sum, the Forest Service cannot rely on Monsanto or EPA findings to avoid preparing an EIS. As explained by Natural Resources Defense Council senior scientist Jennifer Sass in comments submitted to the FIFRA Scientific Advisory Panel on Nov. 3, 2016:

The EPA's regulatory record on glyphosate is compromised by missing, incomplete, hidden, redacted, lost and otherwise faulty information. The EPA relies on data, most of which is unpublished, that is supplied by the manufacturer, interpreted by the industry and not publicly available. Consequently, a decisive and transparent assessment of glyphosate's toxicity is impossible. The EPA has never wavered from its decision to dismiss and minimize the 1983 mouse study, which appears to be valid. The agency has never attempted to replicate the study in order to clarify its results—perhaps because it feared that such evidence would demonstrate that glyphosate was indeed a carcinogen. Furthermore, it's a pattern the agency continues to follow, discounting later studies using similar arguments and research supplied by industry that have not undergone independent analysis.<sup>56</sup>

**2. The Forest Service's belief that glyphosate is safe ignores the need to consider actual herbicide formulations and their effects on the public**

The EA considered only direct and indirect effects from pure glyphosate and its sales and arbitrarily excluded any impacts caused by adjuvants, surfactants or other additives from the analysis.<sup>57</sup> The resource report acknowledges that glyphosate mixtures include performance enhancing additives but explains that there is no testing, registration requirements and that the chemical companies have withheld their limited research.<sup>58</sup> Thus, "limited information on surfactants, adjuvants and inert ingredients is available" – there is no information about the toxicity and effects of additive chemicals in the older SERA risk assessments relied on by the Forest Service and "updated information" found in a 2006 Forest Service Region 6 FEIS."<sup>59</sup>

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<sup>53</sup> *Id.*

<sup>54</sup> *Id.*; See also Myers, J.P. et al. 2016. *Supra*.

<sup>55</sup> Gillam, Carey. 2021. *Supra*.

<sup>56</sup> NRDC. 2016. Comments on EPA-HQ-OPP-2016-0385. Nov. 2016. Available at: [NRDC: letter-glyphosate-sap-20161103.pdf](#). The 1983 mouse study referred to in the NRDC letter led the EPA to classify glyphosate as a carcinogen in 1985. The EPA changed its mind based on reinterpretations of the study developed by Monsanto.

<sup>57</sup> EA/FONSI at 15.

<sup>58</sup> Krosse, P.C. 2019. *Supra*, at 18.

<sup>59</sup> *Id.* at 8.

The failure to evaluate additive-specific risks in terms of actual formulations is a major oversight - some surfactants may be five times as toxic as glyphosate itself.<sup>60</sup> There are a number of studies showing that “[e]ven where acute toxic effects of glyphosate on fish and mammals are low, the formulated products often are more toxic than glyphosate itself, and concerns have emerged about chronic effects of the formulated products on human and animal diseases, in particular various forms of cancer and mental disorders” (Fortes et al., 2016, Mesnage et al., 2015a, 2015b; Swanson et al. 2014).<sup>61</sup> Many of the added chemicals are known to be harmful, but are chemical company trade secrets so it is unknown to what degree the substances contribute to adverse health and environmental effects.<sup>62</sup> Other recent studies have found that “[g]lyphosate and the surfactants ... can have negative impacts on the health of variety of animals in the aquatic food web, including protozoa, mussels, crustaceans, frogs and fish.”<sup>63</sup> These impacts include the aquatic food web and occur even at low levels of glyphosate concentrations.<sup>64</sup>

### **3. The EA needs to reconsider how much is too much and consider non-linear responses**

The EA relies extensively on the belief that small and dispersed herbicide treatments in accordance with application recommendations will reduce risks to human health and other resource values. However, research conducted in 2015, 2016 and 2017 has shown significant intake of glyphosate by humans and animals, including the general public, even when daily exposures are lower than tolerable doses established by regulatory agencies.<sup>65</sup> The expanded human exposure data is causing scientists to challenge previously established tolerance levels and safety standards.<sup>66</sup> These findings indicate human health risks, controversy and highly uncertain effects under the NEPA intensity factors because many studies indicate more severe and various adverse health effects occurring at glyphosate concentrations perceived as low and deemed safe by the Forest Service. Van Bruggen et al.’s 2018 review of recent findings explains that:

Due to the almost exponential increase in glyphosate use and the slow decomposition of glyphosate and its breakdown product AMPA [(aminomethyl phosphoric acid)]<sup>67</sup> in soil, water and sediment, the accumulation of glyphosate in the environment, plant products and animal organs has become quite worrisome (Myers et al 2015; Shehata et al., 2014). In particular, the high proportion of people and farm animals with glyphosate in their urine is concerning, even though the

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<sup>60</sup> Pesticide Action Network. 2016. *Supra*, at 3.

<sup>61</sup> Van Bruggen, A.H.C. et al. 2018. *Supra*, at 256.

<sup>62</sup> Pesticide Action Network. 2016. *Supra*, at 3.

<sup>63</sup> van Bruggen, A.H.C. et al. 2018. *Supra*, at 260.

<sup>64</sup> *Id.*

<sup>65</sup> *Id.*

<sup>66</sup> *Id.*

<sup>67</sup> Further NEPA analysis should discuss what this chemical is and how it impacts the environment.

concentrations are still low (Niemann et al. 2015). Although conclusions regarding possible carcinogenicity and other health effects of glyphosate remain controversial, we feel that sufficient additional data has accumulated regarding the chronic toxic effects of the formulated products on aquatic and terrestrial animals and humans to warrant reconsideration of the tolerable residue levels of glyphosate and AMPA in plant and animal products and the environments. The recent reclassification of glyphosate as probably carcinogenic by the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO) was based primarily on research with the main formulated product Roundup (IARC, 2015; Seralini et al. 2014). Additional research is needed to come to a definitive conclusion on the chronic health effects of the various formulated products containing glyphosate.<sup>68</sup>

Further NEPA analysis needs to identify uncertainties about this apparent reliance on the linear dose-response, which “assumes that the greater the dose of a toxic substance, the greater the effects, and vice versa, often phrased as ‘the dose makes the poison.’”<sup>69</sup> Reliance on the linear dose response approach is outdated. Researchers now generally accept that “non-linear dose-responses—responses in which low levels of exposure may produce more significant effects than high levels and responses in which effects at high doses sometimes plateau or tail off—often occur.”<sup>70</sup> None of the regulatory studies of glyphosate considered the possibility of non-linear dose-responses.<sup>71</sup>

For example, what is the potential exposure for chemically sensitive individuals? The Forest Service’s own resource report hints at the possibility that herbicides may be more poisonous to some individuals than others in recognizing that “[h]uman susceptibility to toxic substances can vary substantially” and that “some individuals may be unusually sensitive so individual susceptibility to the herbicides proposed in this EA cannot be predicted specifically.”<sup>72</sup> The number of individuals who are more susceptible to lower levels of glyphosate may be very large - thousands of Americans have contracted non-Hodgkin’s lymphoma because of exposure to glyphosate.<sup>73</sup>

#### **4. The EA needs to disclose and evaluate other adverse human health effects such as endocrine disruption**

Glyphosate based herbicides have long-term toxicity and interfere with mammalian organs in numerous ways, including genotoxicity and endocrine disruption.<sup>74</sup> Even at low concentrations, glyphosate damages liver, kidney and skin

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<sup>68</sup> *Id.*

<sup>69</sup> Brown, V. & E. Grossman. 2017. *Supra.*

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

<sup>72</sup> Krosse, P.C. 2019. *Supra.*

<sup>73</sup> Baum Hedlund webpage. *Supra.*

<sup>74</sup> Pesticide Action Network. 2016. *Supra*, at 3.

cells.<sup>75</sup> The EA considers risks to other human health systems as “low” and claims that “to date” there are no known risks to reproductive, neurologic, immunologic or endocrine systems.<sup>76</sup> This statement in part reflects highly limited, short-term tests on glyphosate alone without ever testing the actual formulations used by the Forest Service through which human, fish and wildlife and the environment would experience actual exposure.<sup>77</sup> Further, although the EA does not explicitly say so, the “low” risk assertion in part reflects the Forest Service’s failure to seek out readily available studies measuring effects to these health systems.<sup>78</sup>

There are a number of studies that have found endocrine disruption effects that are significant and more pronounced when testing actual herbicide formulations rather than glyphosate in isolation.<sup>79</sup> Many of these studies also found endocrine disruption at doses substantially lower than those used in agriculture.<sup>80</sup> The NEPA analysis should explain what an endocrine disruptor does, and disclose that exposure to glyphosate, even at lower levels than those deemed safe by regulators, may result in reproductive problems, including miscarriages, birth defects and cancerous tumors.<sup>81</sup>

#### **5. The NEPA analysis needs to revisit the discussion of how long glyphosate poisons the environment**

NEPA analysis needs to provide region-specific analysis regarding chronic risks of herbicides relative to degradation rates, which can vary substantially. Herbicide persistence “depends on several factors including light, temperature and soil moisture” and dissipation occurs in multiple ways: photo-degradation, chemical degradation, microbial degradation, leaching and volatilization. Recent studies show that glyphosate is “quite resistant to degradation” and broken down in dead plant material and soil and leaves decomposition products such as aminomethyl phosphoric acid.<sup>82</sup> Multiple studies published in 2015 and 2016 show that glyphosate and its degradation content may persist for over a year in some soils.<sup>83</sup> Recent research (2017) has also shown that that risks of groundwater and surface water contamination are much higher than indicated in early studies prepared by Monsanto.<sup>84</sup>

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<sup>75</sup> *Id.*

<sup>76</sup> EA/FONSI at 15.

<sup>77</sup> Pesticide Action Network. 2016. *Supra*, at 3..

<sup>78</sup> Krosse, P.C. 2019. *Supra*, at 11.

<sup>79</sup> Pesticide Action Network. 2016. *Supra*, at 3.

<sup>80</sup> *Id.*

<sup>81</sup> Pesticide Action Network. 2016. *Supra*, at 3.

<sup>82</sup> van Bruggen, A.H.C. et al. 2018.

<sup>83</sup> *Id.*

<sup>84</sup> *Id.* Environmental health scientists have also documented “shifts in microbial communities in soil, plants, water, and intestinal tracts and the association with specific plant and animal pathogens (Ackermann et al. 2015; Priestman et al. 2005; Sanogo et al., 2000, 2001)” caused by glyphosate use that may have severe impacts on plant, animal and human health. The EA also needs to address these indirect effects of glyphosate.

## **6. Chemical spraying in Wilderness with no limit requires an EIS**

The Wilderness Act provides that:

Except as otherwise provided in this chapter, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this chapter, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.<sup>85</sup>

The weed management plan for northern Tongass ranger districts identified Wilderness areas as ecologically critical areas and admitted that broadcast spraying would have “major” effects on Wilderness character. This project thus approves use of herbicide application methods and formulations that can remain in Wilderness waters and soils for extended periods of time and kill native plants, impairing Wilderness character. The FONSI arrives at the disturbing conclusion that broadcast spraying would have “moderate” impacts to wilderness character while tarp treatments would have a “major” effect.<sup>86</sup> As explained throughout these comments, the Forest Service’s beliefs about the safety and short-term localized effects of glyphosate ignores multiple findings about the persistence, mobility and impacts of glyphosate formulations and the analysis vastly understates potential impacts to wilderness character.

### ***B. Glyphosate spraying entails other unknown and cumulative risks to numerous forest values***

The International Agency for Research on Cancer’s monograph explains that “[g]lyphosate is a broad-spectrum, post-emergent, non-selective, systemic herbicide, which effectively kills or suppresses all plant types, including grasses, perennials, vines, shrubs and trees.” The International Agency for Research on Cancer’s 2015 monograph found that glyphosate:

- penetrates soil, air, surface waters, groundwater and food
- breaks down in soil but does not break down in water
- enters surface waters not just through direct application but also through atmospheric deposition and run-off
- is detectable in tested fruits and vegetables
- has immunosuppressive effects on studies of fish species, meaning that it reduces their ability to fight infections and diseases
- is carcinogenic for animals.

Other summary reviews of scientific studies show that:<sup>87</sup>

- Glyphosate taken in by plants moves to the part of the plant used for food, such as wild blueberries.

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<sup>85</sup> 16 U.S.C. § 1133(b).

<sup>86</sup> EA/FONSI at 39.

<sup>87</sup> We can provide a reference list or documents supporting these findings.



- Juvenile fish are up to four times more susceptible to toxicity associated with glyphosate. Vegetation killed by glyphosate also increases stream temperature, which results in a corresponding increase in toxicity to fish such as juvenile salmon sensitive to temperature.
- Glyphosate use exacerbates the displacement effect of clearcutting on birds and small mammals.
- Furthermore, the agency needs to re-evaluate the effectiveness of herbicide treatments. According to researchers, “[g]iven the paucity of published information and regular use of non-selective herbicides, there is a critical need for land management agencies to assess non-target effects of the herbicide treatments they are implementing.”<sup>88</sup>

### **1. Analyze impacts to non-target plant species**

The EA recognizes potential effects on non-target plants when non-target species are interspersed with target invasive species.<sup>89</sup> The prevalent use of glyphosate also raises substantial questions about environmental effects because of its non-selective nature and danger of suppressing non-target native plants. The non-selectivity in turn creates the possibility that non-native plants will quickly recolonize a treated area due to a competitive advantage over native plants killed by glyphosate. Glyphosate effectiveness studies have focused on its effects on the target species over a short period of time, rather than long-term impacts on native plants. Further, new research indicates that plants that survive glyphosate can show adverse effects for long periods of time as “glyphosate has been found to persist in low levels in some surviving perennial forest plants for at least 1 year.”<sup>90</sup> The Forest Service also needs to gather additional scientific data regarding impact of the other herbicides, including a discussion of the selectivity of aminopyralid and imazapyr. There were very few studies available regarding those herbicides earlier this decade.

### **2. Re-analyze impacts to fish and wildlife in light of recent research**

The EA/FONSI arbitrarily relies on the agency’s 2013 analysis, the outdated SERA exposure scenarios and EPA registration process in assuming that herbicides will have negligible to minor localized adverse effects on fish and wildlife and the aquatic environment based on the agency’s belief that herbicides have limited mobility in the environment, “minimal toxicity” to invertebrates and vertebrates, rapid dissipation and biodegradation of herbicide mean minimal risk of water contamination.<sup>91</sup>

To the best of our knowledge, the EPA conclusions about wildlife reflect a narrow set of studies on small subsets of species and do not address many of the same issues implicated in the previous discussion: for example, how much poison is

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<sup>88</sup> Wagner, V., P.M. Antunes, M. Irvine & C.R. Nelson. 2017. Herbicide usage for invasive non-native plant management in wildland areas of North America. *Journal of Applied Ecology* 54, 198-204. Available at: <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.12711>

<sup>89</sup> EA/FONSI at 11.

<sup>90</sup> Wood, J.L. 2019. The present of glyphosate in forest plants with different life strategies one year after application. *Canadian Journal of Forest Research* 49(6) 586-594.

<sup>91</sup> EA/FONSI at 18-22.

too much, non-linear effects, uncertainties and unknown risks associated with exposure at juvenile life stages and effects of endocrine disruptors. We submit that the analysis of the NEPA intensity factors with regard to controversy and uncertainties and unknown risks to wildlife in the EA/FONSI was flawed. In general, glyphosate and residues such as AMPA are more mobile and persist in the environment for longer than assumed by the Forest Service, meaning that the entire analysis of the intensity factors as evaluated for fish and wildlife in the EA is wrong.<sup>92</sup>

The Forest Service needs to evaluate substantial questions about wildlife impacts in an EIS and review recent literature that disagrees with agency conclusions about the mobility, toxicity and duration of glyphosate and glyphosate-based herbicide effects on fish and wildlife. For example:

(1) There are significant differences between glyphosates that contain surfactants or other ingredients, and in the absence of known concentrations of glyphosate and other ingredients, “it is difficult to determine the toxicity of the formulated herbicide on a taxon of wildlife let alone a single species.”<sup>93</sup> In other words, as with impacts to humans, additives cause significant “multiplier effects.”<sup>94</sup> Aminomethyl phosphoric acid, for example, glyphosate’s main metabolite, has persisted for nearly 8 months and frequently appears in streams and water bodies.<sup>95</sup>

(2) Research conducted after 2015 by scientists indicate glyphosate causes adverse physiological effects to mammals, birds, reptiles and amphibians.<sup>96</sup>

(3) Glyphosate persists in the environment, including in non-target plants that provide forage for multiple wildlife species, for longer periods of time than assumed by the Forest Service. Some glyphosate residues may translocate into shoots and fruit in some plants, and there is significant uncertainty about residue persistence, the effect on forage quality, and the impact of chronic low-level exposure on herbivorous and omnivorous wildlife species.<sup>97</sup> As with human exposure, there are

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<sup>92</sup> Kissane, Z. and Shephard, J.M. 2017. The rise of glyphosate and new opportunities for biosentinel early-warning studies. *Conservation Biology* 31(6) 1293-1300. Available at: [biosentinel-early-warning-studies.pdf \(murdoch.edu.au\)](http://www.murdoch.edu.au/biosentinel-early-warning-studies.pdf)

<sup>93</sup> Durkin, P.R. 2011. Glyphosate-Human Health and Ecological Risk Assessment. Final Report. Syracuse Environmental Research Associates, Inc., Manlius, New York. Prepared for U.S. Forest Service, Southern Region, Atlanta. USDA Forest Service Contract: AG-3187-C-06-0010

<sup>94</sup> Kissane, Z. and Shephard, J.M. 2017. *Supra*.

<sup>95</sup> *Id.*

<sup>96</sup> A few of the relevant studies include: [1] Gill, J.P.K. et al. 2018. Glyphosate toxicity for animals. *Chemistry letters* 16(2): 401-426; [2] Landrigan, P.J. & F. Belppoggi. 2018. The need for independent research on the health effects of glyphosate based herbicides. *Environmental Health* (2018) 17:51. <http://doi.org/10.1186/s12940-018-0392-z>; [3] Leveroni, F.A., J.D. Caffetti & M.C. Pastori. 2017. Genotoxic response of blood, gill and liver cells of *Piaractus mesopotamicus* after an acute exposure to a glyphosate based herbicide. *Caryologia, International Journal of Cytology, Cytosystematics, and Cytogenetics* 70(1):21-28; [4] Myers, J.P., et al. 2016. (*Supra.*); and [5] Tarazona et al. 2017. Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC. *Arch Toxicol* (2017) 91:2723-2743. DOI 10.1007/s00204-017-1962-5.

<sup>97</sup> [1] Wood, J.L. 2019. The present of glyphosate in forest plants with different life strategies one year after application. *Canadian Journal of Forest Research* 49(6) 586-594; [2] Mesnage, R., Defarge, N.,

substantial questions about the effects of chronic sub-lethal exposure to wildlife, even at levels lower than those deemed safe by regulatory agencies.<sup>98</sup>

(4) Because of impacts to non-target plants, glyphosate treatments have reduced forage availability and potentially forage quality for ungulates accompanied by displacement effects and possibly population declines.<sup>99</sup>

(5) Effects to multiple species are more serious than assumed by the Forest Service. Amphibians are particularly vulnerable because preferred habitats can contain high concentrations of herbicides and exposures at common concentrations have been found to exterminate or nearly exterminate multiple amphibian species. Studies show fish species exposed to glyphosate formulations suffer from acute poisoning, structural effects on gills, kidney, liver and gut, oxidative stress, genotoxicity, metabolic, immune, endocrine, neurotoxic and reproductive effects. There are also major impacts to estuarine species, particularly juvenile crab and shrimp. Effects on aquatic communities and ecosystems can exceed effects to individual species due to impacts on overall species richness.<sup>100</sup>

### **III. The environmental analysis must provide site-specific information**

Also, the project's approach to herbicide spraying across a large area without disclosing locations or specific treatments is troubling and violates NEPA. This approach resembles recent "Landscape Level Analysis" strategies for timber projects. Alaska District Court federal Judge Gleason rejected this approach in March 2020 in *SEACC et al. v. U.S. Forest Service* as a violation of NEPA. Any further analysis should provide greater detail about when and where the public could face exposure to herbicides – and how much.

The strategy for this project would defer site-specific determinations about herbicide applications or other treatments for future implementation plans. The EIS for this project must include some type of determination or estimate of where and when these activities will occur rather than reserving siting decisions for the future.<sup>101</sup> NEPA's requirement that environmental analyses provide sufficient specificity to insure informed decisionmaking and meaningful public participation requires more detail than a large-scale map or a blank card provided in an appendix to an EA.<sup>102</sup>

The broad-scale map suggests treatments could occur in the vicinity of community use areas, in watersheds or in areas used for subsistence purposes, including gathering berries or other activities that involve contact with plants. The

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Spirous de Vendomois, J., & Seraline, G.E. 2015. Potential toxic effects of glyphosate and its commercial formulations below regulatory limits. Food and chemical toxicology, an international journal published for the British Industrial Biological Research Association. 84 133-53. Available at: [Mesnage et al. FCT Review revised final accepted.pdf](#) (kcl.ac.uk); [3] Kissane, Z. and Shephard, J.M. 2017. *Supra*.

<sup>98</sup> *Id.*

<sup>99</sup> Hunt, J. & P. Matute. 2019. Review of glyphosate use in British Columbia. Available at: [TR2019N21.PDF \(fpinnovations.ca\)](#).

<sup>100</sup> Pesticide Action Network. 2016. *Supra*, at 52-56.

<sup>101</sup> See, e.g. *SEACC et al. v. U.S. Forest Service*. Case No. 1:19-cv-00006-SLG. (D. Alaska 2020).

<sup>102</sup> *SEACC et al. v. U.S. Forest Service*. Case No. 1:19-cv-00006-SLG. (D. Alaska 2020).

site-specific information is necessary to assess both ecological and human safety impacts. Without this information, the public will also be unable to review the project as it relates to other impacts such as timber sales that are the likely current and future cause of many infestations.

The 2013 Wrangell-Petersburg Weed Management Project EA explained that “[d]efining an acreage ‘cap’ allows the analysis in the EA to proceed within maximum, well-defined parameters” and provided useful information about the potential extent of proposed treatments.<sup>103</sup> The 2013 project also targeted invasive weeds on 441 acres that the agency determined posed a threat to the ecological integrity of occupied areas and it limited application methods to reduce airborne drift and other effects.<sup>104</sup> But the approach taken here neither provides “useful information” about proposed treatments nor allows for public review of site-specific actions. Instead, the Forest Service would develop an annual implementation plan that theoretically authorizes herbicide spraying anywhere on an estimated 5,811 acres. This approach violates NEPA.

#### ***IV. The Forest Service needs to expand the Range of Alternatives***

In general, the project purpose is to maintain, improve or restore the natural range of habitat conditions in the project area and reduce invasive plant infestations and risks native or desired non-native species caused by invasive plant infestations.<sup>105</sup> The relevant Forest Plan goal is to “reduce, minimize or eliminate the potential for introduction, establishment, spread and impact of invasive species.” The applicable standard and guideline directs the agency to treat priority species infestations and reduce population sizes and/or limit the spread of priority invasive species.

The two alternatives – the proposed action and status quo under the 2013 Wrangell-Petersburg Weed Management Project – provide for only two ways to achieve these goals. The proposed action would authorize unlimited broadcast spraying of glyphosate herbicides<sup>106</sup> and the no-action alternative maintains glyphosate treatments but at lower levels and through less dangerous application methods. The proposed action is a new and different activity – it more than doubles the estimated acreage available for herbicide treatments, changes the application methods and exposes more sensitive areas to intensive herbicide treatments. It also differs from the 2013 Weed Management Project in that glyphosate’s cancer risks were not fully known at the time.

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<sup>103</sup> Forest Service. 2013. Environmental Assessment, Decision Notice and Finding of No Significant Impact, Wrangell-Petersburg Weed Management Project at 14. R10-MB-758. July 2013.

<sup>104</sup> *Id.* at 1-3.

<sup>105</sup> EA/FONSI at 6.

<sup>106</sup> The agency’s own analyses indicate that the proposed action is excessive. On one hand, the EA/FONSI seeks to artificially minimize effects by claiming that the treatments will be limited, yet on the other hand, the proposed action provides no limits. See EA/FONSI at 39 (claiming that “the amount of herbicide used is not expected to increase markedly because capacity is unlikely to change”); Forest Service. 2013. Environmental Assessment, Decision Notice and Finding of No Significant Impact, Wrangell-Petersburg Weed Management Project at 14 (“[i]t is expected that acres treated annually would be substantially less than 200 acres, considering limited budgets and recent treatment history”).



The failure to consider alternative and less poisonous ways to reduce the infestations violates NEPA. NEPA imposes an obligation to “[r]igorously explore and objectively evaluate all reasonable alternatives.”<sup>107</sup> An agency must “consider such alternatives to the proposed action as may partially or completely meet the proposal’s goal,” meaning that it is reasonable to consider alternatives that meet other objectives.<sup>108</sup> The Forest Service could, for example, like the U.S. Air Force, contemplate 21<sup>st</sup> century technologies and consider ways to obviate “the need to spend millions of dollars on toxic chemicals” by using a distributed array machine or even a “NatureZap”<sup>109</sup> (photo at right).

A “reasonable” range of alternatives includes alternatives “that are practical or feasible” and not just those alternatives preferred by the agency.<sup>110</sup> The key criterion for determining whether a range of alternatives is reasonable is whether the “selection and discussion of alternatives fosters informed decisionmaking and informed public participation.”<sup>111</sup> The exploration of alternatives to an agency’s preferred course of action is critical, because “[w]ithout substantive, comparative environmental impact information regarding other possible courses of action, the ability of an EIS to inform agency deliberation and facilitate public involvement would be greatly degraded.”<sup>112</sup>

The need to consider non-chemical treatments in weed treatment projects has been a NEPA requirement for years based on the agency’s own recognition that herbicide treatments “may have greater potential to pose risks to human health and the environment than other alternatives.”<sup>113</sup>

The Forest Service developed two alternatives for the 2013 Weed Management Project EA that addressed concerns with herbicides even before the IARC had



Global Neighbor recently demonstrated its distributed array machine, which is pulled behind a tractor and includes dozens of individual lights in a grid pattern to treat the area passing underneath. (U.S. Air Force photo)

<sup>107</sup> 40 C.F.R. § 1502.14(a); see also *Barnes v. U.S. Dep’t. of Transp.*, 655 F.3d 1124, 1131 (9<sup>th</sup> Cir. 2011)(“Congress created NEPA to protect the environment by requiring that federal agencies carefully weigh environmental considerations and consider potential alternatives to the proposed action before the government launches any major federal action”).

<sup>108</sup> *City of New York v. U.S. Dep’t of Transp.*, 715 F.2d 732, 742-742 (2<sup>nd</sup> Cir. 1981).

<sup>109</sup> USAF. 2018. Directed Energy For Widespread Vegetation Control A Step Closer To Reality. Avail. At: <https://media.defense.gov/2018/Mar/06/2001886655/-1/-1/1/G-CEQ-40Questions.pdf>  
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[GLOBALNEIGHBOR\\_AF121-207%20\(CONCEPT\).PDF](https://www.energy.gov/sites/prod/files/2018/06/f53/G-CEQ-40Questions.pdf)

<sup>110</sup> Council on Environmental Quality (CEQ), Forty Most Asked Questions, Questions 2A and 2B; 40 C.F.R. §§ 1502.14, 1506.2(d); available at <https://www.energy.gov/sites/prod/files/2018/06/f53/G-CEQ-40Questions.pdf>.

<sup>111</sup> *Westlands Water Dist. V. U.S. Dep’t of Interior*, 376 F.3d 853, 872 (9<sup>th</sup> Cir. 2004)(citations omitted).

<sup>112</sup> *New Mexico ex rel. Richardson*, 565 F.3d 683, 708 (10<sup>th</sup> Cir. 2009)(citations omitted).

<sup>113</sup> *Blue Mountains Biodiversity Project v. U.S. Forest Service*, 229 F.Supp.2d 1140 (2002).



established glyphosate's carcinogenic potential.<sup>114</sup> The No-Action Alternative responded to public concerns about herbicides because the Forest Service could still allow manual and mechanical treatments approved through Categorical Exclusions.<sup>115</sup> The Forest Service also developed what it described as a "reasonable alternative" - Alternative 3 - to address public concerns about herbicide use by relying primarily on manual and mechanical treatments.<sup>116</sup>

And yet now the Forest Service neither considers a chemical-free alternative at all nor any other alternatives which could reduce the risks associated with glyphosate by excluding broadcast spray and/or restricting the use of one or all three proposed herbicides to non-Wilderness, non-riparian and other sensitive areas such as wildlife foraging habitat. The EA does not even contain an alternative requiring selective application of herbicides. Broadcast spraying covers large areas, affecting more non-target plants and increasing risks associated with drift while spot spraying and hand treatments reduce impacts to soil and non-target organisms.<sup>117</sup>

#### **V. Conclusion: Prepare an EIS**

For the above reasons, if you continue planning on this project, the Forest Service must analyze the impacts of glyphosate formulations on human health and safety, fish and wildlife and island ecosystems in an EIS.

A handwritten signature in dark ink that reads "Rebecca Knight". The signature is written in a cursive, flowing style.

Rebecca Knight, President.

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<sup>114</sup> Forest Service. 2013. Environmental Assessment, Decision Notice and Finding of No Significant Impact, Wrangell-Petersburg Weed Management Project at 11, 14. R10-MB-758. July 2013.

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

<sup>117</sup> Krosse, P.C. 2019. *Supra*, at 11-12.

## ***List of documentation being submitted with this objection***

The following are provided in PDF format:

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Myers, J.P., et al. 2016. Concerns over use of glyphosate-based herbicide and risks associated with exposures: a consensus statement. *Environmental Health* (2016) 15:10. DOI 10.1186/s12940-016-0117-0

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van Bruggen, A.H.C. et al. 2018. Environmental and health effects of the herbicide glyphosate at 256. *Science of the Total Environment* 616-6-7 (2018) 255-268.

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