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First name: Bruce

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Organization:

Title:

Comments: Crystal Powell

District Ranger

Cibola National Forest

Attn: Bryan West

11776 Highway 337

Tijeras, NM 87059

Dear Ms. Powell,

I am writing to share my opposing opinions and questions about the proposed Sandia Peak Ski Area Mountain Coaster.

My opinions are based on 45 years of experience as an academic ecologist. My students, colleagues, and I published peer-reviewed papers about the prevalence of scale-dependent structure, biodiversity, and dynamics in animal populations, vegetation, and stream networks. We studied the Mexican spotted owl, scrub and piñon jay populations, ecotones of piñon-juniper woodlands in Sandia Park, woodland vegetation in the Los Pinos Mountains, climate niche of the Lesser prairie chicken, habitat of the Florida panther, and biodiversity of riparian vegetation along stream networks (citations available upon request).

The common denominator in our work is that the smallest parts of forests and streams are parts of a greater, coherent whole - there is no justification for sacrificing any part of an ecosystem without expecting effects on the whole system.

From 2004-2020 I was founding director of the UNM Sustainability Studies Program. In that guise, I advised a student thesis about habitat and movement of mountain lions in the Sandia and Monzano Mountains.

The perspectives of ecology and sustainability open many questions about the proposed project.

Studies of animal movement suggest that any structure built to span from high to low elevation on a mountainside will interfere with on-contour movements of large animals such as bears and mountain lions. The effects could be worse during rearing season and affect the animals' maintenance of territories and social relations. The coaster will concentrate human activity in the area during critical times for wildlife.

My analyses of climate trends and tree rings in New Mexico demonstrate significant increases in temperature that decrease the growth of woody vegetation. The proposed coaster implies two things. One, as a tourist attraction it will incur carbon emissions via transportation to the facility, thereby exacerbating climate changes that threaten the forest. It is too easy to excuse such a relatively small bit of the global carbon budget, but here too the principle of part-to-wholeness recognizes that every choice matters (Milne 2017, Elements of a holistic theory to meet the sustainability challenge.

Systems Research and Behavioral Science, 34(5), pp.553-563).

Clearing existing trees to accommodate new structures will open the ground surface to solar radiation that will alter the hydrology and organization of the ecosystem (Milne and Gupta 2017. Horton ratios link self-similarity with maximum entropy of eco-geomorphological properties in stream networks. Entropy, 19(6), p.249.), possibly accelerating the transition from forest to vegetation atypical of the area. In a study of the nearby Los Pinos Mountains, we quantified how tree density itself (measured in 0.72 ha parcels) feeds back positively to promote

tree density, independently of water balance (Kerkhoff et al. 2004).

I close with a personal anecdote. As a youngster growing up in Central New York, I took a couple of rides on an early mountain coaster at a local ski area. As exhilarating as the rides were, I soon lost interest. Now I wonder about the economic viability of such a project in a world where most people are entertained by apps. How is society to weigh the benefits against the costs of lost biodiversity on public land?

Sincerely,

Bruce T. Milne
Emeritus Professor