Brian Seasholes
The Endangered Species Act at 40: Species Profiles

HOOVER'S WOOLLY-STAR

HOOVER'S WOOLLY-STAR
(*ERIASTRUM HOOVERI*)

Range

Historic: Four counties in and near California's San Joaquin Valley (Kern, San Luis Obispo, Santa Barbara, and Fresno)

When listed: Essentially the same as historic.

When delisted: Significant population expansion within historic range, and expansion to three new counties (Los Angeles, San Benito, and Kings Counties), and expansion into new types of habitat.

Listed status: Threatened [55 FR 29361-29370] July 19, 1990.

Current status: Recovered [68 FR 57829-57837] October 7, 2003.

Official reasons for listing: Habitat degradation and destruction due to agriculture, urbanization, groundwater recharge basins, disposal of nutrient laden agricultural runoff, oil and gas development, cattle grazing, off-road vehicles.

Recovery criteria: There are various criteria pertaining to habitat protection, formulating a management plan, and population monitoring.[1]

Population

Historic: 19 sites.[2]

When listed: 118 sites.

When delisted: over 1,528 sites.

---

[1] Secure and protect specified recovery areas from incompatible uses:75% of occupied habitat on public lands in each of the four metapopulations; and 640 acres or more of occupied habitat on the floor of San Joaquin Valley.

Management plan approved and implemented for recovery areas that included survival of the species as an objective: For all protected areas indentified as important to continued survival.

Population monitoring in specified recovery areas shows: Stable or increasing in four metapopulations and San Joaquin Valley floor population through one precipitation cycle; if declining, determine cause and reverse trend (U.S. Fish and Wildlife Service 1998f, p.180).

[2] U.S. Fish and Wildlife Service 2001e, p.13475.

CLAIMS THAT HOOVER'S-WOOLLY STAR IS AN ESA SUCCESS STORY

1) "A California native plant listed as a threatened species for 13 years—has been recovered and no longer needs the protection of Federal law."—U.S. Fish & Wildlife Service[3]

2) "Lesser-known species like the Hoover's woolly-star…have seen their populations recover with the current protection afforded under the Endangered Species Act. But, this important law can only work if faithfully and honestly implemented."—Noah Greenwald, Center for Biological Diversity.[4]

3) "For we can now finally prove one thing conclusively: The Endangered Species Act works. Period."—then Interior Secretary Bruce Babbitt, speaking about the planned delisting of thirty-four species, one of which was Hoover's woolly-star.[5]

4) "The delisting is due in large part to recovery."—U.S. Fish & Wildlife Service[6]

[3] U.S. Fish and Wildlife Service 2003c.

[4] Greenwald 2009.

[5] U.S. Department of Interior 1998.

[6] U.S. Fish and Wildlife Service 2003b, p.57833.

CONSERVATION of HOOVER'S WOOLLY-STAR

Hoover's woolly-star is a species of plant that is a member of the phlox family. It is named after Robert F. Hoover, former professor of botany at California Polytechnic State University San Luis Obispo who was thought to have been the first person to collect it in 1937. Hoover's woolly-star grows to about 4"-8" in height and consists of wiry stems with narrow, thread-like leaves, and, when it blooms, small white flowers.

Hoover's woolly-star is clearly a case of data error under the Endangered Species Act. Yet the U.S. Fish and Wildlife Service (FWS) and the Center for Biological Diversity maintain otherwise and consider the woolly-star an ESA success story. The following examination of the woolly-star's conservation will look at six issues; data error, non-existent threats, habitat requirements, conservation efforts, delayed delisting, and data error denial.

DATA ERROR

Hoover's woolly-star is clearly a case of data error for three reasons. First, subsequent to the woolly-star's listing under the ESA, surveys found the plant to be much more numerous and widespread than previously thought. Second, research and observations revealed that most of what were thought to be threats turned out either not to be threats or to be diminished threats. Third, the woolly-star's preferred habitat turned out possibly to be different than what the plant was originally thought to prefer, which contributed the massive population increase and range expansion.

MASSIVE POPULATION INCREASE

The principle reason the Hoover's woolly-star is a case of data error is that its population increased massively, not only after the FWS listed it but even between when the agency proposed and finalized the plant's listing. Even though the FWS it original estimate of the woolly-star's population was a gross underestimate, the agency went ahead anyway and listed the plant.

PROPOSED FOR LISTING

In 1989 when the FWS proposed to list Hoover's woolly-star under the ESA, the plant was known to exist in 38 sites, or populations, in four California counties (Fresno, Santa Barbara, San Luis Obispo, and Kern). Most of the sites were along the floor of the Central Valley. Of the 38 known populations, 35 occurred on private land (one of which was owned by The Nature Conservancy, but ownership has since changed to the Center for Natural Lands Management), and two sites were on the federal Elk Hills Naval Petroleum Reserve. Large portions of the Central Valley were, and continue to be, under some sort of agriculture. The FWS assumed agriculture was a threat to the woolly-star because 11 of the 49 known historic sites had been extirpated by conversion of land for agricultural purposes.[7]

It is not entirely clear what the woolly-star's total population (i.e., number of individual plants) was in 1989, but of the 30 known sites on private land (plus a portion of another site on public land), seven contained 5,000-40,000 plants, for a total population of 35,000-280,000 plants. The other 23 sites on private land had less than 1,000 plants each. The area covered by all of these sites varied from 1-400 acres.[8] The distribution was: the Temblor Range, which runs along the southwestern end of the San Joaquin Valley (Kern and San Luis Obispo Counties); Cuyama Valley (San Luis Obispo and Santa Barbara Counties), which is some 15-20 miles southwest of the Temblor Range; and scattered in various locations along the floor of the San Joaquin Valley from Fresno County to points south. The FWS did not provide population estimates for the sites on federal land.

These population estimates, however, were almost certainly inaccurate. In the same Federal Register document in which the FWS was proposing to list the woolly-star under the ESA, the agency admitted the plant was likely significantly more abundant. "Preliminary results [of a 1988 survey on Naval Petroleum Reserve-1] reported finding 28 'populations' primarily along the northern end and southern boundaries of NPR-1."[9] Yet the FWS tried to diminish the importance of these populations because immediately after acknowledging their presence the

[7] U.S. Fish and Wildlife Service 1989a, p.31205.

[8] U.S. Fish and Wildlife Service 1989a, p.31205.

[9] U.S. Fish and Wildlife Service 1989a, p.31205.

agency stated, "Though neither the Department of Energy nor the Bureau [of Land Management, the two federal agencies with jurisdiction over NPR-1] has undertaken any special management of these localities, the latter agency gives limited management consideration to candidate species [for listing under the ESA]."[10]

It is remarkable that even though the survey revealing 28 populations on NPR-1 was conducted at least a year before publication of the proposal to list the woolly-star, the FWS appears to have made no effort to investigate. Perhaps this was because the FWS was aware its case for listing the woolly-star would be undermined by including these populations.

It bears noting that the author of the proposed listing was FWS biologist Gail Kobetich who gained notoriety in the early-to-mid-1990s among a number of residents of eastern Riverside County in southern California. Kobetich was the lead biologist in charge of a number of species, including the Stephen's kangaroo rat. To protect the rat, the FWS prevented people from discing—a practice in which metal discs are towed by a tractor—vegetation on their land as a means of fire prevention. Discing was necessary because at the end of the summer and early fall the combination of dry vegetation and the strong Santa Ana winds created ideal conditions for wild fires. Such a fire occurred in late October, 1993 and burned 25,000 acres and twenty-nine homes, nineteen of which were in FWS designated kangaroo rat habitat. The incident came to the public's attention due to an op-ed in the Wall St. Journal, but it gained national attention when it aired on the television news show 20/20.[11] In response, supporters of the ESA claimed protection of the kangaroo rat was not responsible, and for vindication of their view pointed to a July 1994 report by the General Accounting Office, since renamed the General Accountancy Office.[12] However, the report was so full of errors and omissions that it was essentially invalid, as revealed in an analysis by Ike Sugg of the Competitive Enterprise Institute.[13]

Another chapter of the kangaroo rat saga occurred in 1995 when a number of landowners and agricultural groups submitted a petition to delist the rat to the local FWS office. The petition was dropped off with a secretary at the FWS office by Dennis Hollingsworth, then a consultant,

---

[10] U.S. Fish and Wildlife Service 1989a, p.31205.

[11] Sugg 1993; American Broadcasting Corporation 1993.

[12] General Accounting Office 1994a.

[13] Sugg 1994.

who went on to serve in the California Legislature from 2000-2010. Hollingsworth did not bother to get written acknowledgement that he submitted the petition in person, such as a receipt, because he assumed that Gail Kobetich would receive the petition. When Hollingsworth phoned a few weeks later to check on the status of the petition he spoke with Kobetich who claimed the office had never received the petition. While Kobetich's behavior was childish, to say nothing of dishonest, it provides an indication of the type of conduct in which he was willing to engage. All of this is germane to the proposal to list Hoover's woolly-star because it appears that Kobetich, as the author of the proposal, may have ignored data that would have shown the woolly-star's population to be 74% larger than initially thought and portrayed in the listing proposal.

Yet even Kobetich seems to have sensed that the justification for listing the woolly-star had diminished by the time he wrote the listing proposal in 1989. "Although the number of extant populations (38), including those located on NPR-1 [28], provides greater flexibility in recovery and reduces the likelihood that the species will go extinct in the immediate future, the threats facing the 31 sites…on private property, at least in part, suggest that the species is likely to become and endangered species within the foreseeable future. Because of the limited threats facing the foothill populations [most of which were on public land]…and the likelihood additional occurrences may be found in these upland areas," the woolly-star should be listed as threatened, rather than the more imperiled status of endangered.[14]

POPULATION INCREASE IN ONE YEAR

One year after the 1989 proposal, the FWS listed Hoover's woolly-star as threatened. In the year between the proposed and final listing, ***81*** additional populations were discovered, which brought the total number of populations to 118 because one population had been extirpated.[15] Of the 118 sites, 70 occurred on private land, 39 on federal land, and 9 on what appears to be one or more types of public land.[16] 26 of these "newly discovered" sites were actually the estimated 28 sites on the NPR-1 known to exist prior to the woolly-star's proposed listing in 1989 but which the FWS opted not to include in the listing proposal even though the

[14] U.S. Fish and Wildlife Service 1989a, p.31206.

[15] U.S. Fish and Wildlife Service 1990c, pp.29364-29365.

[16] U.S. Fish and Wildlife Service 1990c, p.29368.

agency could have done so. In 1988 a consultant, EG&G Energy Measurements, wrote a report that contained information about these 26 sites. But when the FWS listed the woolly-star, the agency claimed otherwise. "Since the publication of the proposed rule, EG&G Energy Measurements (1988) released a report on the distribution and status of Hoover's wooly [*sic*] star and other 'sensitive' species occurring on public land within Elk Hills on the Naval Petroleum Reserve (NPR-1)."[17] Of course the proposed rule was published in 1989, one year after the 1988 report.

It is possible that the FWS misportrayed this chronology because the agency knew it had a problem on its hands. The woolly-star's massive population increase called into question the legitimacy of plans to place it on the endangered species list. Although the FWS acknowledged the population increase "reduces the likelihood that the species will go extinct in the immediate future, 92 percent of the extant populations of *E. hooveri* are variously threatened" from land conversion to agriculture, urbanization, and oil and gas development.[18] To which the FWS added, "However, *E. hooveri* is likely to become in danger of extinction in the near future. As a result, *E. hooveri* fits the definition of a threatened species as defined in the Act."[19] As will be discussed in the subsequent section, the threats claimed by the FWS turned out to be largely illusory, and so this characterization was inaccurate.

POST-LISTING POPULATION INCREASE

The substantial population increase in the year between the woolly-star's proposed and final listing under the ESA foreshadowed what would occur in the coming years as the extent of the erroneous listing of Hoover's woolly-star became apparent. Many more populations were found in the years following listing because the FWS and other federal and state agencies did what they should have done prior to listing; actually conduct careful surveys. This process started in 1990 due to the initiation of what would be an eight year effort to write a multi-species recovery plan for eleven species, one of which was the woolly-star, in the San Joaquin Valley region. "During the 8 years of [recovery] planning, Federal and State agencies conducted

[17] U.S. Fish and Wildlife Service 1990c, p.29365.

[18] U.S. Fish and Wildlife Service 1990c, p.29368.

[19] U.S. Fish and Wildlife Service 1990c, p.29368.

extensive surveys and research and learned new information about *E. hooveri* biology, including its abundance, distribution and its response to disturbance," stated the FWS.[20]

In addition to being a poster child for data error, Hoover's woolly-star is a good example of the downside of the precautionary principle, the notion that action should be taken even if the evidence is sketchy because the potential costs of action far outweigh the potential costs of inaction. One of the downsides of applying the precautionary principle in the case of the woolly-star is that resources spent on listing, writing the recovery plan, and delisting could have been better spent on species that were truly imperiled.

In two federal agencies conducted surveys; the Bureau of Land Management in 1992 and 1994, and the U.S. Department of Energy in 1998. The results were remarkable; the discovery of at least 1,338 woolly-star sites, totaling a minimum 135,479,000 plants (no that is not a typo, it is 135 *million*) in only two of the four regions known to harbor the woolly-star (Kettleman Hills and Antelope Plain). The total population was likely significantly larger because Kettleman Hills had the most plants, 135,000,000, while Antelope Plain contained approximately 479,000.[21] The new populations also added at least 2,426 acres to the amount of land occupied by the woolly-star.[22]

In addition to a massive population increase, the woolly-star's range expanded significantly. One such expansion was from the Cuyama Valley approximately 140 miles north to the Panoche Hills in San Benito County. The woolly-star also was now found in Kings County. The population had grown so large that the FWS grouped it into four sub-populations called metapopulations: Kettleman Hills (Fresno and Kings Counties); Carrizo Plan, Elkhorn Plain, Temblor Range, Caliente Mountains, Cuyama Valley, Sierra Madre Mountains (San Luis Obispo, Santa Barbara and the western edge of Kern Counties); Lokern, Elk Hills, Buena Vista Hills, Coles Levee, Maricopa, Taft (Kern County); and Antelope Plain, Lost Hills, Semitropic area (Kern County).

Instead of admitting the woolly-star's range expansion and massive population increase was because of data error, the FWS explained it away as due to rainfall. High amounts of rain in

[20] U.S. Fish and Wildlife Service 2003b, p.57830.

[21] U.S. Fish and Wildlife Service 2001e, p.13476.

[22] U.S. Fish and Wildlife Service 2001e, p.13475.

the spring of 1993 resulted in good growing conditions for many plants, including the woolly-star. According to the FWS, low rainfall accounted for the relatively few woolly-stars found prior to listing. "The results of the 1986 survey [on which the FWS based listing], however, did not accurately reflect the distribution of the species because of the poor growing conditions during that period," claimed the FWS.[23] The San Joaquin Valley, the region in which much of the woolly-star population occurred, is an arid and semi-arid region, averaging less than 10 inches of rain per year.[24] The Hoover's woolly-star adapted to living in this environment by flourishing in years of good rainfall, as occurred in 1993 following high rainfall in the spring.[25] This period of high rainfall also coincided with when surveys were being conducted so it is not surprising that many more population sites were discovered. But rainfall alone cannot account for the massive population increase, which was due as much, if not more, to erroneous data at the time of listing than it was precipitation levels. The FWS simply had little idea of the woolly-star's true range and abundance.

DELISTING

When the FWS proposed to delist the woolly-star in 2001, approximately 25% of the total number of plants were on BLM land, less than 7% on U.S. Forest Service or Department of Energy land, 23% on split estate lands, meaning the surface rights were privately owned but the subsurface mineral rights were federally owned, 18% on lands that were both split estate and private, and the remaining 27% on private lands.[26] As these numbers indicate, the majority of the woolly-star's population was privately owned.

Even though delisting should have occurred in March 2002, one year after the publication of the proposed delisting as mandated by the ESA, the FWS did not delist Hoover's woolly-star until more than two-and-a-half years later, in October 2003.[27] As occurred when the woolly-star was listed, more sites were discovered between the proposed and final delisting, this time 78

[23] U.S. Fish and Wildlife Service 2001e, p.13475.

[24] U.S. Fish and Wildlife Service 2003b, p.57830.

[25] U.S. Fish and Wildlife Service 2001e, p.13475.

[26] U.S. Fish and Wildlife Service 2001e, p.13476.

[27] U.S. Fish and Wildlife Service 2003b.

sites; 72 on BLM land, 3 on Los Padres National Forest, and at least three in the Antelope Valley region of Los Angeles County. The Antelope Valley populations were especially consequential because they expanded the woolly-star's range some 87 miles southeast of the nearest populations in the San Joaquin Valley. In addition, the most important area in the Antelope Valley region was about 100 square miles, and in the vicinity of Edwards Air Force Base, contained 7-12 *million* plants.[28] The FWS did not include population estimates for the newly discovered populations on BLM or Forest Service land or, for that matter, most of the estimated 1,534 sites on which woolly-star existed at the time of delisting. Also, the FWS did not disclose the total amount of land area occupied by the woolly-star, but the agency did state that the plant was under one form of protection or another on 286,000 acres. It is entirely likely the FWS did not include range-wide data on the total population and amount of habitat occupied because doing so would have made the magnitude of the data error much more apparent. The FWS, always sensitive to anything that might portray the ESA in a negative light, apparently chose not to disclose the total population estimate or did not try very hard to arrive at one. The three populations in the Los Padres National Forest were somewhat significant because they were found at an elevation of 2,700-3,000 feet, which was some 500 feet higher than any previously known population. The other novel aspect of these populations is they were found in habitat consisting predominantly of junipers, a type of vegetation never before found in proximity to the woolly-star.

Even though the FWS has not been able to admit that such a massive population increase constitutes data error, other more objective observers have, including a report published by the National Research Council, an arm of the National Academies of Science:

> "[I]nformation on an organism's status might be scanty because little effort has been taken to find and study it. In addition, finding rare species often requires specialized survey techniques that are not systematically applied, or the methods used might simply be inappropriate if little is known about the species. Finally, we might not have long enough time-series data or be looking in the right places (Taylor, 1993)—witness the proliferation of several threatened or endangered annual plants following heavy rains that

[28] U.S. Fish and Wildlife Service 2003b, p.57831.

> broke the recent several-year drought in California's San Joaquin Valley. Hoover's woolly-star (*Eriastrum hooveri*) has been found in so many locations where it was formerly unknown or thought to be extirpated that resource agencies might soon submit a delisting petition."[29]

Even though this was published in 1995, it took the FWS another six years to submit a delisting petition.

Others have also realized the woolly-star is a case of data error. "The Hoover's woolly-star (*Eriastrum hooveri*) has been proposed for delisting in California as new populations have been discovered," according to Laurie Litman and Richard Harris, who are, respectively: owner of InfoWright, a business that creates and edits written content, and who happens to have a Master's in entomology from the University of California, Davis; and Cooperative Extension Specialist with the Department of Environmental Science, Policy, and Management at the University of California, Berkeley, and who has a PhD in Wildland Resource Management.[30] Litman and Harris seem to have been able to reach the correct conclusion about the woolly-star's delisting for two reasons. First, they don't appear to be cheerleaders for the ESA, just people interested in accurate information about the Act. Second, their conclusion about the woolly-star appeared in a University of California publication that was subject to anonymous peer review.

UNTHREATENING THREATS

The other aspect of data error in the case of Hoover's woolly-star is that most of what the FWS thought to be threats at the time of listing turned out either not to be threats or were less significant than originally portrayed by the agency.

EARLY HINTS

When the FWS proposed to list the woolly-star in 1989, there were several indications that threats identified by the agency were exaggerated or even wild speculation. The threats identified were; habitat conversion to agriculture, urbanization, conversion of habitat to

[29] National Research Council 1995, p.194.

[30] Litman and Harris 2007, p.5

groundwater recharge basins or disposal of nutrient-laden agricultural runoff, oil and gas development, grazing, and off-road vehicles.[31] Due to these threats, specifically urbanization and conversion of land to agriculture, 11 of the 49 historical sites had been eliminated. Of the 38 sites extant at the time the FWS proposed to list the woolly-star, the agency considered 29 and a portion of another site, or some 78% of the total number of sites, as insecure because they existed on private land where the FWS assumed them to be vulnerable to the aforementioned threats.[32]

The final rule listing the woolly-star modified the plant's habitat requirements, particularly tolerance of disturbance. While the proposed listing rule indicated that any anthropogenic disturbance was detrimental, the final rule, quoting the 1988 report by the consultant, EG&G Energy Measurements, stated that the woolly-star sites on the Naval Petroleum Reserve-1, "occur primarily in 'formerly disturbed sites, particularly on or adjacent to abandoned or little-used roadways.'"[33] So with the publication of the final rule, the FWS had to admit that low-level and infrequent disturbance was not detrimental to the woolly-star and was perhaps even beneficial. Another revision between the proposed and final rules was that most of the 28 sites on NPR-1 were where little, if any, petroleum or gas development occurred; slopes of hills or on the borders of NPR-1. The FWS admitted most of the oil and gas development "has taken place at higher elevations along Skyline Road," away from known woolly-star sites.[34]

All of these discoveries between the proposed and final listing—so many additional populations, that minimal and infrequent anthropogenic disturbance did not appear to be a threat and was perhaps even beneficial, and that the 28 sites on NPR-1 were essentially safe from disturbance—would seem to have been cause for celebration, and perhaps even a reevaluation of whether the Hoover's woolly-star merited listing under the ESA. Not a chance. The FWS was determined to list the woolly-star whether doing so was merited or not. According to the final rule, of the 118 known sites, overgrazing was a threat to 9 sites, while "[t]he remaining 109 populations are threatened by various activities" such as "future oil and gas development,"

---

[31] U.S. Fish and Wildlife Service 1989a, p.31205.

[32] U.S. Fish and Wildlife Service 1989a, p.31205.

[33] U.S. Fish and Wildlife Service 1990c, p.29365.

[34] U.S. Fish and Wildlife Service 1990c, p.29365.

"mineral extraction," "livestock grazing," and the constant threats of agricultural and urban development on the floor of the Central Valley.[35] Prior to laying out this litany of threats, the FWS noted that the 28 sites on NPR-1 were unlikely to be disturbed by oil and gas development. Yet when the FWS subsequently enumerated the litany of threats, the agency contradicted itself by stating, "Future oil and gas development in the Elk Hills and adjacent areas may damage or destroy the 28 populations on NPR-1."[36]

As this contradiction indicates, the FWS had already made up its mind to list the woolly-star even if the data was pointing in the other direction. The FWS had constructed a narrative of the woolly-star being threatened with extinction by human activity, and the agency would not be dissuaded from following this narrative even in the face of contradictory evidence. Indeed, as FWS stated in the final rule, "Although the number of extant populations (118), including those located on private land, provides greater flexibility and reduces the likelihood that the species will go extinct in the immediate future, 92 percent of the extant populations of *E. Hooveri* are variously threatened."[37] Yet FWS knew very well at the time that this dire picture was untrue in the case of the 28 sites on NPR-1, and likely inaccurate for a number of the remaining populations. "Because of limited threats facing the foothill populations of *E. Hooveri* and the likelihood additional occurrences may be found in these upland areas, this species is not now in immediate danger of extinction," according to the FWS when it listed the woolly-star.[38]

FINALLY COMING CLEAN

In 2001, when the FWS proposed to delist the woolly-star, the agency finally came clean about the threats to the plant that the agency portrayed as so dire in the proposed and final listings. Most of the threats either turned out not to be threats or significantly diminished threats.

[35] U.S. Fish and Wildlife Service 1990c, p.29367.

[36] U.S. Fish and Wildlife Service 1990c, p.29367.

[37] U.S. Fish and Wildlife Service 1990c, p.29368.

[38] U.S. Fish and Wildlife Service 1990c, p.29368.

Oil and Gas Development

When the FWS proposed to delist the woolly-star, the agency labeled oil and gas development as "the predominant threat" when the plant was listed.[39] It turned out, however, that at the time of delisting in 2001 even though oil and gas development occurred at 21% of the population sites, it was actually a minimal threat for several reasons.[40] First, a number of the oil fields were at the peak of their development and so little, if any, further development would occur.[41] On NPR-1, oil development took place on higher elevations, not the lower elevations where 73% of the woolly-star population on NPR-1 occurred.[42] Mobil Oil Corporation placed exclosures—herbivore-proof fences—around property it leased in the Lost Hills and this benefitted the woolly-star. In addition, pipelines in the Lost Hills protected woolly-star habitat because the pipelines restricted off-road vehicle access.

Lastly, and most significantly, the woolly-star turned out to be tolerant, and even thrived, on sites in oilfields that had previously been disturbed. "Because *Eriastrum hooveri* establishes on disturbed substrates such as well pads and pipeline rights-of-way after a period of non-use, the species likely will continue to exist both on federally and privately owned, fully developed oilfields," noted the FWS.[43] Observations of two disturbed sites on NPR-1 found that three years after being disturbed, the density of woolly-stars was similar to that of undisturbed sites.[44] When the FWS delisted the woolly-star, the agency was even more explicit about the threat, or lack thereof, posed by oilfields. "The average *E. hooveri* density was higher on sites where mechanical ground disturbance (typical of oilfield development) was observed, and lower on sites where other types of disturbance (by grazing, alluvial deposit, fire, unknown) were observed (EG&G 1995a)."[45]

---

[39] U.S. Fish and Wildlife Service 2001e, p. 13477.

[40] U.S. Fish and Wildlife Service 2001e, p. 13477.

[41] U.S. Fish and Wildlife Service 2001e, p. 13477.

[42] U.S. Fish and Wildlife Service 2001e, p. 13477.

[43] U.S. Fish and Wildlife Service 2001e, p. 13477.

[44] U.S. Fish and Wildlife Service 2001e, p. 13477.

[45] U.S. Fish and Wildlife Service 2003b, p.57831.

Agricultural and Urban Development

Agriculture and urban development has occurred along much of the floor of the San Joaquin Valley, which is the southern portion of the Central Valley. Yet few of the woolly-star populations were located along the valley floor so agriculture and urban development did not constitute much of a threat. In addition, much of the valley floor "is agriculturally developed, virtually to its fullest extent," according to the FWS. Potential agricultural development was unlikely to occur in the hills bordering the valley because the hills were less desirable (i.e., poorer soils and more difficult to operate machinery on) than the valley. The FWS also acknowledged that water supplies in the Southern San Joaquin Valley, where most of the woolly-star populations existed, were very limited and so would inhibit further agricultural and urban development.[46]

Despite this, the National Wildlife Federation, in a 2001 report titled, *Paving Paradise: Sprawl's Impact on Wildlife and Wild Places in California*, claimed the Hoover's woolly-star as a species threatened by sprawl.[47] "These findings [in the report] give added urgency to developing smart growth solutions to sprawl, solutions that conserve vital wildlife habitat," said then NWF president, Mark Van Putten, of the report.[48] The report's analysis was based on a peer reviewed journal article co-authored by Brian Czech, a FWS biologist and activist, who also happened to be the chief researcher for the NWF paper.[49] At least in the case of Hoover's woolly-star, such research and the peer review did not prevent such an erroneous conclusion about the threat of sprawl.

Off-Road Vehicles

In 1994, the BLM wrote a report concluding that 15% of the woolly-star sites examined were threatened by off-road vehicles and that roads near populations were also a threat. The reality, however, was far different, and the FWS revealed this when the agency proposed to delist the woolly-star. "[M]any of these dirt roads are very remote, seldom traveled, and inaccessible

[46] U.S. Fish and Wildlife Service 2001e, p.13477.

[47] Doyle et al., 2001, p.21.

[48] National Wildlife Federation 2001.

[49] National Wildlife Federation 2001.

to the public due to locked gates," stated the FWS. "Most of the sites documented in the [BLM] report had no threats or documented impacts because the sites were inaccessible to vehicles."[50] In general, "Off-highway vehicle impacts are rare occurrences."[51] Moreover, there were documented instances of woolly-stars growing along inactive motorcycle trails, as well as seldom used or abandoned roads. "This light road use appears to help maintain the presence of the species, although the plants do not grow in the actual tire tracks," according to the FWS.[52] However, the FWS contradicted itself on this point. "The species has been found growing on several inactive motorcycle paths, some of which were approximately 46 cm. (18 in.) deep."[53] In either case, "The populations do not extend into areas, which apparently have suitable habitat, that surround the roads," stated the FWS, apparently because these adjacent areas had not been disturbed by off-road vehicles.[54] On the issue of off-road vehicles, the FWS concludes, "The low number of documented impacts and the recolonizing ability of *E. hooveri* indicate that off-highway vehicle use does not represent a threat to the long-term survival of the species."[55]

Livestock

Grazing and trampling by livestock turned out to be a minimal threat. "[O]bservations [subsequent to listing] of the wiry and low-growing *E. hooveri* plants have shown that they are not desirable forage for livestock (BLM 1994); therefore, grazing does not constitute a serious threat to *E. hooveri*," according to the FWS.[56] And as for trampling, "Only 5 percent of the sites recorded by Lewis were affected by cattle and sheep grazing activities; therefore, livestock trampling does not appear to constitute a serious threat to *E. hooveri*."[57]

[50] U.S. Fish and Wildlife Service 2001e, p. 13477.

[51] U.S. Fish and Wildlife Service 2001e, p. 13477.

[52] U.S. Fish and Wildlife Service 2001e, p. 13477.

[53] U.S. Fish and Wildlife Service 2001e, p. 13477.

[54] U.S. Fish and Wildlife Service 2001e, p. 13477.

[55] U.S. Fish and Wildlife Service 2001e, p.13477.

[56] U.S. Fish and Wildlife Service 2001e, p.13478.

[57] U.S. Fish and Wildlife Service 2001e, p.13478.

Competition with non-native grasses

When the FWS listed Hoover's woolly-star the agency thought non-native grasses were a threat because they were aggressive and would crowd-out the woolly-star. But in the proposed delisting, the FWS notes, "Considering the wide distribution and abundance of preferred habitat areas with relatively open surface area and low numbers of nonnative species, however, competition with nonnative grasses is not a threat to the long-term survival of *E. hooveri*."[58]

Groundwater recharge basins

The final delisting rule published by the FWS in 2003 provided further clarification on two threats not discussed in the proposed delisting, one of which was groundwater recharge basins. It turns out that there is only one groundwater recharge basin in the woolly-star's habitat, the Kern Water Bank.[59] But it appears that the woolly-star existed on approximately 3,756 of the water bank's 19,990 acres.[60]

Nutrient-laden agricultural runoff

The other so-called threat mentioned by the FWS when it delisted the woolly-star was agricultural runoff. "[W]e are not aware of impacts…from disposal of nutrient-laden agricultural effluent," the agency states. "Land application of manure or dairy waste seepage is typically not conducted on natural habitat and is not likely to impact *E. hooveri*."[61] There was the potential that a water storage project, known as Arroyo Pasajero, was going occur in the future but "if it goes forward, [it] will have an insignificant effect on *E. hooveri*," according to the FWS.[62]

[58] U.S. Fish and Wildlife Service 2001e, p.13478.

[59] U.S. Fish and Wildlife Service 2003b, p.57835.

[60] U.S. Fish and Wildlife Service 1998f, p.17.

[61] U.S. Fish and Wildlife Service 2003b, p.57835.

[62] U.S. Fish and Wildlife Service 2003b, p.57835.

RANGE AND HABITAT EXPANSION

As with most of the so-called threats to the woolly-star, when the FWS delisted the plant the agency significantly revised much of what was known about the types of habitat in which the woolly-star could exist. At the time of listing, a habitat type called cryptogamic crust (a mix of algae, mosses, fungi, bacteria and lichens that form a layer, or crust) was thought to be the woolly-star's preferred habitat type because populations of the plant on the floor of the San Joaquin Valley tended to exist in it.[63] However, with the discovery that most of populations existed in the foothills bordering the valley, there had to be a reevaluation of the habitat types that would support the woolly-star. The proposed delisting reflected this when it noted, "In the areas of largest concentration of plants, which occurs on both privately and publicly owned land in the Kettleman Hills, the species has been found growing primarily on Cantua coarse sandy loam."[64] This may have occurred because the woolly-star preferred coarse sandy loam or because much of the preferred habitat along the floor of the San Joaquin Valley had been destroyed or disturbed to such an extent that it was rendered unsuitable for the woolly-star. Research also revealed that while the woolly-star preferred sparsely vegetated habitat, it could also be found in areas of dense vegetation.[65]

Surveys conducted subsequent to listing found the woolly-star in two new habitat types. The millions of woolly-stars found around Edwards Air Force Base were in the Mojave Desert habitat.[66] 1993 surveys in the Los Padres National Forest in Santa Barbara County found six woolly-star populations[67] at 500 feet higher elevation than any previously known populations and in a new habitat type, juniper woodland.[68]

---

[63] U.S. Fish and Wildlife Service 1990c, p.29365.

[64] U.S. Fish and Wildlife Service 2001e, p.13475.

[65] U.S. Fish and Wildlife Service 2003b, p.57831.

[66] U.S. Fish and Wildlife Service 2003b, p.57831.

[67] U.S. Fish and Wildlife Service 2001e, p.13477.

[68] U.S. Fish and Wildlife Service 2003b, p.57831.

HABITAT CONSERVATION

Compared to data error, conservation efforts for the woolly-star were relatively insignificant. One such conservation measure was when the BLM agreed to incorporate consideration of the woolly-star, as mandated by Section 7 of the ESA, into any reviews of oil and gas development.[69] Yet, as the FWS admitted, oil and gas development was a minimal threat. The BLM also agreed that upon delisting it would regard the woolly-star as a "special status species," which would give it heightened protection from oil and gas development and grazing. But, again, as acknowledged by the FWS, these two activities had not been, and were not likely to be, significant threats to the woolly-star.

In February 1998, the Department of Energy sold NPR-1 to Occidental Petroleum. As part of the sale, Occidental agreed to dedicate 7,075 acres for conservation of endangered and threatened species.[70] According to the woolly-star's recovery plan, the woolly star was one of four "target" species for which Occidental set aside the land.[71] Even though Occidental did this, the FWS did not consider this as counting towards the meeting recovery goals that focused on habitat protection because it was privately owned. Recovery goals specified that habitat would only be considered protected if publically owned.

This is one of the shortcomings of the FWS's implementation of the ESA because more species have some or their entire habitat on private land than on public land. Private lands are the linchpin to successful endangered species conservation, and yet the FWS looks askance at private lands. Were the ESA less punitive and the FWS less threatening to private landowners, then the agency would likely be more successful working out conservation arrangements for endangered species on private lands. There are many forms such arrangements could take such as rental payments, payments to produce or maintain a certain number of a given species or of a given amount of habitat, conservation easements, etc. Unfortunately, due to the FWS's narrow view of conservation, and the ESA's penalties that scare off landowners, the ESA has had limited effectiveness on private lands.

---

[69] U.S. Fish and Wildlife Service 2001e, p.13476.

[70] U.S. Fish and Wildlife Service 2001e, p.13476.

[71] U.S. Fish and Wildlife Service 1998f, p.18.

Two of the woolly-star's three recovery criteria pertained to specific amounts of land to be conserved; 75% of occupied habitat on public lands within each of the four metapopulations, and at least 640 acres conserved along the floor of the San Joaquin Valley. When FWS delisted the woolly-star, the agency stated that protection of some 286,000 acres in various land parcels met these criteria.

A closer look, however, at the land parcels that constituted these 286,000 acres reveals the Hoover's woolly-star played only a peripheral role in the conservation of these parcels. The only comprehensive listing of land parcels and species protected in each parcel that could be found was in the Recovery Plan for Upland Species of the San Joaquin Valley.[72] The woolly-star was one of eleven species covered by the plan. The information on land parcels is contained in a table that contains a variety of information on each land parcel, including what are termed "Target Species" and "Other Species." As the names imply, Target Species are those targeted by the acquisition or designation of a given parcel, while Other Species refers to those species that were not targeted but also were protected.

The recovery plan contains information on 17 parcels totaling 149,263 acres on which Hoover's woolly-star, among several of the eleven other species in the recovery plan, occurs. Each land parcel typically has multiple species on it that fall in both the Target Species and Other Species categories. Of the various species mentioned in the 17 parcels, there are 76 occurrences of Target Species and 41 of Other Species. Hoover's woolly-star, however, constitutes only 5% of the Target Species occurrences, and 27% of the Other Species. These numbers indicate that the woolly-star played a relatively minor role in land acquisition and designation of these land parcels. These numbers also indicate that land conservation benefitting the Hoover's woolly-star was more a byproduct of land conservation for other endangered species. Indeed, as the FWS observed when it proposed to delist the woolly-star, many land parcels "have been acquired for listed animals."[73] The agency makes no mention of parcels acquired for listed plants.

---

[72] Although the recovery plan's date of publication in 1998 meant that the information contained in it was five years old by the time the woolly-star was delisted in 2003, it was the single most comprehensive source of information on land parcels on which the woolly-star occurred.

[73] U.S. Fish and Wildlife Service 2001e, p.13476.

DELAYED DELISTING

In addition to the recovery goals for public lands and land conservation along the valley floor, the third recovery goal for the Hoover's woolly-star was the need for formal management plans that would ensure protection and monitoring of the plant. Yet around the time of delisting in 2003, the necessity of this goal was increasingly questionable for a couple reasons; the woolly-star's massive population and range increase subsequent to listing, and the fact that many of the land parcels on which the plant existed were already under some sort of protection (especially parcels on public land, which the FWS regarded as the only truly secure form of ownership).

The woolly-star would have been delisted in 2002 but for this third recovery goal. "The Hoover's woolly-star's delisting has been delayed due to additional analysis required to justify the Service's decision and post-delisting monitoring requirements," according to the Interior Department.[74] The apparent hold-up was the FWS was waiting for the BLM, which had 1,128 woolly-star sites in all four metapopulations on its lands, to designate the woolly-star as a "sensitive species." This designation meant the woolly-star's conservation would be specifically addressed in any BLM actions requiring approval under the National Environmental Policy Act (NEPA). The BLM's Caliente Resource Management Plan was the mechanism considered by the FWS to be adequate for implementing protective measures for the woolly-star.

The FWS also considered a number of other habitat conservation efforts as affording the woolly-star protection: six Habitat Conservation Plans done under the auspices of the ESA that included the woolly-star; Occidental Petroleum's land, known as Elk Hills, formerly Naval Petroleum Reserve-1, and Occidental's agreement to conserve 7,075 acres with rare species within the 38,227 acre property; and a management plan for lands administered by the Center for Natural Lands Management, a private organization created in part to hold land from private entities that serves as mitigation (i.e., permission from regulatory agencies, such as FWS) for development activities that disturb protected habitats and species.[75]

---

[74] U.S. Department of the Interior. 2003, p.261.

[75] U.S. Fish and Wildlife Service 2003b, pp.57832-57833.

The BLM's Caliente Resource Management Plan and an unnamed "separate agreement," were considered by the FWS to be adequate to meet the ESA's requirement to monitor species for at least five years after delisting.[76]

DELISTING IN NAME ONLY?

Apparently FWS and federal government are going to act as if they never delisted the woolly-star. "The recently delisted Hoover's woolly-star, will, according to an agreement between BLM and USFWS, continue to be treated on BLM lands as if it were still listed (USFWS 2003b)," according to the draft Resource Management Plan for the Carrizo Plain National Monument.[77] So it seems that, in a situation somewhat similar to that of the bald eagle, Hoover's woolly-star was delisted in name only in because the land-use regulations that applied to it under the ESA will apply in perpetuity on federal land.

DATA ERROR DENIAL

Given the factors surrounding the woolly-star's conservation—the massive increase in population, occupied habitat, and geographic range, what were thought to be threats at the time of listing turned out not to be so, or were less so than originally thought when the species was listed, and the relatively minor importance of habitat protection efforts—the only reasonable conclusion would seem to be that the plant is clearly a case of data error. Indeed, the FWS seemed to conclude as much in 2001 when it proposed to delist the woolly-star. "We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by *Eriastrum hooveri*," stated the agency. "We conclude that, based on more complete survey data and information on the biology of the species than was available at the time of listing, *E. hooveri* is not likely to become endangered within the foreseeable future throughout all or a significant portion of its range."[78] The FWS also added,

[76] U.S. Fish and Wildlife Service 2003b, pp.57836-57837.

[77] U.S. Bureau of Land Management. 2008a, p.3-45.

[78] U.S. Fish and Wildlife Service 2001e, p.13477.

"Large areas of potential suitable habitat remain unsurveyed, and it is likely that additional sites remain undiscovered throughout the range of this species."[79]

However, something funny happened on the way to delisting. The FWS backed away from any intimation of data error and claimed the woolly-star should be considered recovered due to successful conservation under the ESA. "The delisting is due in large part to recovery," the FWS claimed.[80] The FWS's assertion of recovery was all the more astonishing because, as predicted in the proposal to delist, additional populations were, indeed, discovered. Apparently, two of these sites were discovered in 1998, but were not included in the proposed delisting in 2001. These two sites were located in the Antelope Valley in Los Angeles County, which was some 87 miles to the southeast of the nearest population in the San Joaquin Valley. In 2002, further surveys were carried out in the Antelope Valley and "numerous occurrences" of the woolly-star were discovered in Kern County as well as Los Angeles County.[81] And in 2003, more woolly-stars turned up, this time 7 to 12 *million* individual plants in the vicinity of Edwards Air Force Base in Kern County.[82] And yet this does not constitute data error.

When delisting occurred, the FWS issued a press release that contained a Question & Answer section on the woolly-star in which the following appeared:

> "**Q.** ***Did the Service err in listing this plant?***
>
> **A.** No. Based on the best information available when the Service proposed the plant for listing, Hoover's woolly-star met all the standards for protection outlined in the ESA. With the results of new field surveys and other new information now available, the Service believes the plant is no longer endangered or threatened."[83]

---

[79] U.S. Fish and Wildlife Service 2001e, p.13476.

[80] U.S. Fish and Wildlife Service 2003b, p.57833.

[81] U.S. Fish and Wildlife Service 2003b, p.57831.

[82] U.S. Fish and Wildlife Service 2003b, p.57831.

[83] U.S. Fish and Wildlife Service 2003f.

While FWS claimed to have answered the question as to whether the woolly-star is a case of data error, the answer given quite clearly does not do so because it is a non sequitur. This is because the FWS's assertion that the date on which the woolly-star was listed was the "best information available" does not mean that subsequent information could not render the listing information erroneous. By this standard, the entire scientific method—observation and gathering information, hypothesis formulation, use of hypothesis to predict phenomena, and independent verification of hypothesis—would cease to exist. People could arbitrarily decree that information gathered at a certain point in time will constitute all that is valid on a given topic, even if anything subsequently discovered renders the original data and hypothesis invalid. Clearly, this is absurd and logically untenable. Nevertheless, this is the reasoning FWS has employed in claiming the data used to justify the woolly-star's listing is, and always will be, free of error.

The FWS took another crack at claiming the woolly-star's resurgence is due to recovery, not data error. "The listing and subsequent recovery planning efforts resulted in increased inventory activities for *Eriastrum hooveri* throughout its range," the agency claimed. This, however, is a bogus argument that is akin to the question about whether a tree falling in the forest makes any sound if nobody is there to hear it. Of course it does. The laws of physics that cause a falling tree to make noise are not dependent on human observation. Discovering what existed all along—in the case of Hoover's woolly-star, individual plants and the conditions under which the species exists—cannot constitute any meaningful success. Or perhaps the FWS is claiming credit for the high amounts of rain in the spring of 1993, which helped lead to the discovery of many hundreds more populations and millions of plants.

As this claim and the illogical Q&A indicate, the FWS has grown sensitive to the topic of data error. The woolly-star is one of latest efforts by the FWS to define out of existence the category of data error, in this case data error due to surveys that find a species to be more abundant than initially thought. This started with the American alligator (1975), then eastern brown pelican (1985), followed by the three Palau birds (1985), the rydberg milk-vetch (1989), three kangaroo species (1995), and has continued with Tinian monarch (2004), Eggert's sunflower (2005), and Virginia northern flying squirrel (2008).

Another factor that likely contributed towards the FWS's refusal to acknowledge Hoover's woolly-star as a case of error is that the plant was one of the thirty-four species that

then Interior Secretary Babbitt claimed proved the ESA worked. In May 1998, to much fanfare, Babbitt announced, "For we can now finally prove one thing conclusively: The Endangered Species Act works. Period. In the near future many species will be flying, splashing and leaping off the list. They made it. They are graduating. For the first time we can get past the rhetoric and see the light at the end of the tunnel.[84] Babbitt's announcement garnered widespread media attention and applause from environmental pressure groups despite that his proof was full of holes. For example, five species were extinct, twelve were cases of data error, and three were "DDT birds," meaning the ban of the pesticide DDT in 1972, not passage of the ESA in 1973, was the paramount cause of their resurgence (a more detailed examination of Babbitt's "proof" is contained in this book's conclusions). So Babbitt had put the woolly-star on a pedestal, and the FWS very likely felt considerable pressure not only to delist it but to label its resurgence as due to successful recovery under the ESA, not data error.

CONCLUSIONS

The delisting of Hoover's woolly-star is due to data error, not successful recovery under the ESA. The combination of the woolly-star's massive population increase, range expansion, and that almost all of what were thought to be threats turned out not to be threats or pose significantly less of a threat. Compared to these three factors, conservation efforts under the ESA were relatively. If Hoover's woolly-star does not qualify as a case of data error, then it is hard to see how any species would. Unfortunately, proponents of the ESA have falsely claimed the woolly-star as recovered in rather transparent attempts to garner the Act undeserved credit.

84. U.S. Department of Interior 1998.