



October 19, 2009

Public Comments Processing
Attn: FWS-R6-ES-2008-0131, Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, Suite 222
Arlington, VA 22203

Via Federal Rule-Making Portal, <http://www.regulations.gov>, Docket No. FWS-R6-ES-2008-0131

Re: ESA Status Reviews for 29 Mountain-Prairie Species

Dear Fish and Wildlife Service:

On behalf of WildEarth Guardians, Center for Native Ecosystems, Biodiversity Conservation Alliance, Gifford Pinchot Task Force, Wild Utah Project, the Xerces Society for Invertebrate Conservation, and our members, we provide comments on 29 species for which the U.S. Fish and Wildlife Service (“FWS”) is conducting 12-month status reviews under the Endangered Species Act (“ESA”). We discuss the imperilment of each of the 29 species and review how each qualifies under one or more of the ESA listing factors.

Introduction

FWS should fully communicate with state and tribal Natural Heritage Programs (NHPs) in conducting these status reviews. The agency should contact the NHP for each state or tribe in which any of the 29 species is found and request information regarding abundance, distribution, status, and threats, including all of the Element Occurrence Records for each of these species. FWS should also inquire with each of the NHPs as to what other information is available for each species, including reports produced by NHP staff and other published and gray literature of which NHP staff are aware.

In addition, while preparing the 12-month findings, FWS must take its recent commitment to ecosystem conservation¹ seriously and carefully consider whether there are additional species that share the ecosystems that these 29 species inhabit that also

¹See, for example, http://www.fws.gov/midwest/EcosystemConservation/ecosystem_approach.html, visited October 18, 2009. See also, quotes from FWS spokespeople in Finley 2009 [Attachment 1].

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warrant listing. If so, FWS should propose listing packages that include all of these species.

For those species that historically or currently occur on U.S. Bureau of Land Management (BLM) lands, FWS should consider that the BLM Manual 6840 revision has weakened protections for BLM Sensitive species. *See* Nelson et al. (2009) [Attachment 2]. This diminishment in protection on BLM lands should factor in FWS's consideration of ESA listing Factor D (discussed below), the adequacy of existing regulatory mechanisms.

If FWS delays in issuing a 12-month finding for any of these species, we request that the comment period be reopened so that we can provide new information as it becomes available.

ESA Listing Factors

The ESA specifies the following factors for determining whether a species qualifies for listing:

- A. The present or threatened destruction, modification, or curtailment of habitat or range;
- B. Overutilization for commercial, recreational, scientific, or educational purposes;
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; and
- E. Other natural or manmade factors affecting its continued existence.

See 16 U.S.C. § 1533(a)(1)(A-E). A species needs to meet only one factor to qualify for ESA listing.

Information on 29 Species

Flora

1. **Yellowstone sand verbena** (*Abronia ammophila*) is a flowering plant in the four o'clock family ranked by scientists as critically imperiled. It is found only on a narrow band of shoreline on Yellowstone Lake in Yellowstone National Park in Wyoming near Pelican Creek and 3 other locations on the west side of the lake. It is located in open, sunny sites on sand with widely spaced vegetation just above the maximum splash zone. There is one known population in 4 locations, with a total of approximately 8,000 individuals, the majority of which were seedlings during 1998 surveys. *See* Whipple 2002 [Attachment 3]. One of these locations contains 96% of all known plants. The smallest of the subpopulations may have disappeared due to recreation. The species has been extirpated from a significant portion of its range due to human impacts. *Id.* Threats include shoreline recreation pressure, campground development, and drought. *See* NatureServe Account for *Abronia ammophila* [Attachment 4]. Zeinath et al. (2003: P-1)

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[Attachment 5] describe a large historic decline and high vulnerability of this species. In its 90-day finding for this species, FWS recognized Factors A (habitat loss and degradation due to recreation) and E (small population size and a restricted range) as potential threats. 74 FR 41649 at p. 41654. We suggest that FWS should also consider drought to be a threat. The NatureServe account for this species notes campground development and “widespread” non-motorized recreation but further notes the importance of drought in its description of threats:

Lake levels have dropped under drought conditions, and species’ capacity to shift zone of occupancy or rebound with return of water levels is presumed at some level.

See NatureServe Account. FWS’s 90-day finding cited Whipple (2002), which provides a thorough review of documented habitat loss and declines for this species. Jennifer Whipple is a Yellowstone National Park Botanist. She also notes several management changes that would improve the chances of Yellowstone sand verbena recovery, including closing trails and beach access in some locations. FWS must evaluate whether NPS has adopted these changes - if not, the sand verbena may also warrant listing based on inadequate regulatory mechanisms. Whipple (2002: 260) states:

...this endemic restricted to the shoreline of Yellowstone Lake certainly qualifies as a rare species that must be carefully managed. The limited distribution and relatively small number of plants increases the danger that the species could undergo a significant decline that could lead to its global imperilment.

Whipple further states:

Since the census in 1998, the summers have been relatively dry, with drought conditions occurring during 2000 and 2001. The total number of extant sand verbena individuals can be presumed to have dropped significantly, and many of the plants in the recruit and medium size classes have probably died from water stress.

Whipple (2002: 265). In addition, Whipple indicates that global warming may influence lake levels that could in turn impact *Abronia ammophila*. *Id.*

This species has previously been a candidate for ESA listing. In 1993, it was ranked a Category-2 candidate with an unknown trend. 58 FR 51144 at p. 51147. The Category-2 designation signified that a taxon likely merited ESA listing but FWS lacked adequate information for a listing proposal. 58 FR 51144 at p. 51145. In 1996, *Abronia ammophila* was dropped from the ESA candidate list along with all other Category-2 and 3 species. 61 FR 7596-7613. Since 1996, botanists at Yellowstone National Park have studied this species and there is now adequate information for a listing proposal. Indeed, Whipple writes:

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The limited distribution and relatively small number of plants increases the danger that the species could undergo a significant decline that could lead to its global imperilment, and necessitate its listing as either endangered or threatened under the Endangered Species Act.

See Whipple 2002 at p. 260. We understand that the National Park Service has provided information to FWS regarding this species. We suggest that you request information from Ms. Whipple and Yellowstone National Park about relevant surveys, studies, or data about this species in the course of its ESA status review.

Additional sources include Fertig (2000a) [Attachment 6], who notes: “Long-term trends are probably downward, based on historical records of populations near the Fishing Bridge area (this habitat is not unsuitable due to high recreation impacts)” (p. 2). Consider also the references cited in Fertig (2000a), including Marriott (1993) and Whipple (1999). There is sufficient information for FWS to issue a listing proposal for the Yellowstone sand verbena, based on ESA Listing Factors A (habitat loss and degradation due to park visitation), E (small range, limited numbers, drought, climate change), and possibly D (inadequacy of regulatory mechanisms).

2. **Ross’ bentgrass** (*Agrostis rossiae*) is a type of grass ranked by scientists as critically imperiled. This grass is found only in the Firehole River Valley in Yellowstone National Park in Wyoming. Its habitat is warm ground around hot springs and geysers; it requires sufficient moisture to survive. The soil temperature within an inch under this species is 100°F. According to NatureServe and FWS, there are 4-5 known populations,² totaling perhaps 5,000-7,500 plants, and it has never been found outside of Firehole. Threats include recreation, effects of bison, competition from other plants, and changes in habitat due to fluctuations in thermal activity. See NatureServe Account for *Agrostis rossiae* [Attachment 7] and Fertig 2000b [Attachment 8]. Zeinath et al. (2003: P-1) describe a moderate historic decline and high vulnerability of this species. Oliff et al. (2001) [Attachment 9] mention the threat from exotic species to *Agrostis rossiae*. 187 exotic plant species have been recorded in Yellowstone Park. See National Park Service 2002 [Attachment 10]. See also United Nations Environment Program (2008) [Attachment 11].

In its 90-day finding, FWS recognized threats to this species from Factors A (habitat loss and degradation due to park visitation and competition from other species) and E (changing thermal activity). 74 FR 41649 at p. 41654. Although FWS mentioned in its finding that, “Small population sizes within a very restricted range make *A. rossiae* vulnerable to stochastic extinction events...” (*Id.*), it did not recognize this as a separate threat. We suggest that, in addition to the threats it has recognized for this species, FWS consider additional threats under Factor E: small population size, restricted range, and drought. In terms of the last threat, the NatureServe account for this species notes, “Requires sufficient moisture--not seen in 1987 (very dry).” We suggest that FWS further investigate the potential threat from drought.

²The Wyoming National Heritage Program has indicated there may be 7 populations. Pers. comm., Bonnie Heidel.

Additional sources relevant to examination of Ross's bentgrass habitat requirements and genetics are: Tercek & Whitbeck (2004) [Attachment 12] and Tercek et al. 2003 [Attachment 13].

Thermal springs are successional habitats. As plates move so do the hot spots that create these environments. FWS should be sure to designate critical habitat for the bentgrass that takes into consideration what areas will be necessary for recovery for the long-term, including designating areas that are likely to become thermal spring sites in the future. Moreover, because thermal springs are such unusual environments, there may be other species (including invertebrates or algae) endemic to this area that should be included as well, including other species of *Agrostis*. The thermal basins of the Yellowstone area are a major tourist draw, and they have been heavily developed. FWS should protect this rare *Agrostis* species under the Act to conserve its habitat.

Ross' bentgrass was nominated for ESA listing as Threatened by the Smithsonian in 1975. See Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 90. This species was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 61 FR 7596-7613. We understand that the National Park Service has provided additional information to FWS regarding this species, which FWS should carefully consider in preparing its status review. After 34 years of waiting, it is time for FWS to propose Ross' bentgrass for ESA listing.

3. **Hamilton milkvetch** (*Astragalus hamiltonii*) is a flowering plant in the pea family ranked by scientists as critically imperiled. Its range includes Moffat County, Colorado; and Uintah County, Utah, in areas west and southwest of Vernal, Utah. It is endemic to the Uinta Basin and occurs on federal (BLM, NPS, tribal), state, and private lands. Its habitat is reddish soils on semi-barren, eroding bluffs and hilltops of the Duchesne River formation, warm desert shrub communities, sometimes with scattered juniper and pinyon pine. According to NatureServe, there are 9-10 known populations, with a total of approximately 10,000-15,000 plants. See NatureServe Account for *Astragalus hamiltonii* [Attachment 14]. However, the Vernal Field Office of BLM states that, "The Hamilton milkvetch is currently known from only 19 sites (329 acres) between Lapoint and Vernal, Utah."³ According to NatureServe, threats include oil and gas development, off-road vehicle use, and trampling.

In its 90-day finding, FWS concludes that this species may be threatened by Listing Factor A (habitat loss and degradation due to energy exploration and development). 74 FR 41649 at p. 41655. While FWS discusses threats from off-road vehicles and invasive weeds, it does not list them as separate threats to this plant. *Id.* We suggest that FWS consider both of these threats as interrelated to and also separate from energy exploration and development.

³See http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/proposed_rmp_/chapter_3.Par.61163.File.dat/Chapter%203.pdf at p. 3-109.

There is ample basis for listing Hamilton milkvetch due to the threat from energy development. In 2002, while Resource Management Plan revision was underway, the Vernal Field Office of the BLM estimated that 6,530 new oil and gas and coal bed methane wells would be drilled within the next 15 years.⁴ By the time the final RMP was issued, the BLM admitted that this many wells could be expected within the first five years of the RMP's issue date.⁵

This still appears to have underestimated drilling in the Basin, as there currently are two project proposals in the Vernal Field Office that comprise over 10,000 wells. EOG Greater Chapita Wells Natural Gas Infill Project anticipates up to 7,028 new wells.⁶ Kerr-McGee's Greater Natural Buttes Area Gas Development Project anticipates an additional 3,496 wells.⁷

Most of the Uinta Basin has been leased for oil and gas drilling. FWS should evaluate the percentage of Hamilton milkvetch habitat that has already been leased, since the BLM's position is that valid existing rights granted via leases preclude the agency's ability to impose conditions on drilling.⁸

Invasive weeds should also be considered a threat to Hamilton milkvetch. The FEIS for the Vernal RMP revision stated:

Russian thistle, halogeton, and cheatgrass are undesirable weed species that occur throughout the Uinta Basin, Clay Basin, and Browns Park. These three plants are already heavily established along the roadsides, and the populations increase with oil field development. Cheatgrass has become so widespread that control efforts are focused on reducing its density through large-scale habitat manipulation programs, and not by individual sprayings. In 1992, a cheatgrass inventory identified 55,700 acres as having greater than 60% cheatgrass cover, and 162,000 acres were identified as having 10-60% cheatgrass cover. The cheatgrass infestation in the VPA has increased and is a major management concern.⁹

⁴See http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/mineral_potential.Par.99242.File.dat/Appendix%20A%20Oil%20&%20Gas%20Dev2.pdf at p. A-1.

⁵See http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/rod_approved_rmp.Par.12251.File.dat/VernalFinalPlan.pdf at p. 32.

⁶See http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/greater_chapita_wells.Par.75438.File.dat/Greater%20Chapita%20Scoping%20Notice.pdf.

⁷See <http://governor.utah.gov/rdcc/Y2007/07-8570.pdf>.

⁸See, for example, the Castle Peak EIS issued by the Vernal Field Office, where the BLM asserted that it could not comply with FWS's Biological Opinion because of existing leases. See 70 FR 61301 at p. 61302. [Attachment 15].

⁹See http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/proposed_rmp_/chapter_3.Par.61163.File.dat/Chapter%203.pdf at p. 3-121.

In Colorado, this species is recognized as *Astragalus lonchocarpus* var. *hamiltonii*. Its status was reviewed at the 2005 Colorado Rare Plant Symposium.¹⁰ Information in this section comes from both information compiled by CNHP in this report and from Erin Robertson's notes from this meeting.

It is only known from one Element Occurrence Record in Colorado, within Dinosaur National Monument. The University of Colorado Herbarium database includes a specimen that appears to correspond to this locality (COLO 432482). This collection was made by Steve O'Kane. FWS should contact O'Kane at the University of Northern Iowa since he is familiar with many of the species under review.

In 2005, the single occurrence in Colorado had not been revisited since 1991, and at that time it included only 12 individuals. CNHP noted that the existing location experienced heavy grazing in the past, and participants noted that grazing was a problem for the species in Utah. It appears that the last observation date in Utah may also have been from 1991.

Dinosaur National Monument is home to many rare endemics. However, Colorado botanists often lament that the park's botanist, Tamara Naumann, has not been able to devote any time to rare plant monitoring for several years now. All of her time is reportedly taken up with weed management.¹¹ FWS should be sure to contact Naumann. It appears that the National Park Service may also contribute to the need to list this species by failing to employ adequate regulatory mechanisms to simply track current status and threats for Hamilton milkvetch and other imperiled species.

The Biodiversity Scorecard for Colorado lists recreation/hiking as another potential threat.¹²

The symposium presentation indicated that land ownership in Hamilton milkvetch habitat in Utah included National Park Service, National Wildlife Refuge, Ute, BLM, State, and private. FWS should contact refuge staff (presumably at Ouray NWR) for more information on status and threats there. Tribal and State lands in the Uinta Basin are being developed especially quickly and intensively, and for the most part SITLA has been disinterested in rare plant conservation.

There is some doubt as to whether the Colorado occurrence is indeed Hamilton milkvetch. UNHP seems to think the Colorado record is questionable. Participants at the

¹⁰See

http://www.cnhp.colostate.edu/download/documents/2005/2005%20rare%20plant%20symposium_final.pdf

¹¹See

<http://www.cnhp.colostate.edu/download/documents/2005/Second%20Annual%20Colorado%20Rare%20Plant%20Symposium-2005.pdf>

¹²See

http://www.cnhp.colostate.edu/download/documents/2008/A_Biodiversity_Scorecard_for_Colorado_Oct08_PARTIAL_DRAFT.pdf

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2005 Colorado symposium noted that Aaron Liston at Oregon State University and/or Mike Sanderson at University of Arizona may have genetic data for this species, so FWS should be sure to contact them for this review.

Hamilton milkvetch was nominated for ESA listing as Endangered by the Smithsonian in 1975. *See* Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 57. It was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51151; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

4. **Isely milkvetch** (*Astragalus iselyi*) is a flowering plant in the pea family ranked by scientists as critically imperiled. It occurs only in Utah, in Grand and San Juan Counties on federal (BLM, USFS) and state land. Its habitat is moist sites in gypsum and selenium clay outcrops of the Morrison and Paradox formations in the vicinity of Moab and along the western and northern foothills of the La Sal Mountains on the Grand-San Juan County line, in pinyon-juniper and desert shrub communities between 5,000-6,500 feet. There are 8-9 known populations. It appears to be short-lived, with new plants produced in years of adequate precipitation. Threats include grazing, mining, recreation, road construction, and off-road vehicles. *See* NatureServe Account for *Astragalus iselyi* [Attachment 16].

In its 90-day finding, FWS considers it to have a narrow range and a small population number approximately 2,500 individuals. 74 FR 41649 at p. 41655. FWS states that it may warrant listing under ESA Listing Factor A due to habitat loss from uranium mining and possibly off-road vehicle use. FWS should also consider the threats listed in its NatureServe account, as well as ESA Listing Factor E, given its vulnerability to extinction due to this plant's narrow range and small population numbers. As we indicate below, ESA Listing Factor D (inadequacy of regulatory mechanisms) may qualify as an additional threat.

Uranium mining may pose a major threat to this species. It only occurs on the Formations targeted for uranium mining. FWS should examine the status of mining claims and uranium leases within Isely milkvetch habitat, and assess whether there are indications of increased activity and/or interest in the area.

Jeep safaris are very popular in the Moab area, and FWS should also consider whether Isely milkvetch may be threatened by this activity.

The Utah NHP investigated the status of this species over the course of a few years. FWS should be sure to seek the expertise of Ben Franklin, and should also review this report on Isely milkvetch status: Franklin, M.A. 2003. 2001-2002 survey results: *Astragalus iselyi* Welsh (Isley milkvetch). Utah Natural Heritage Program, Division of

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Wildlife Resources, Salt Lake City. 46 pp.¹³ In addition, Utah NHP included a species account in the 2005 rare plant report which FWS should include in its review (UNHP 2005).¹⁴ This account indicates that Isely milkvetch has been dropped from the BLM Sensitive list and is not on the Forest Service Sensitive list even though it occurs on the Manti-La Sal National Forest.

UNHP (2005: 29) indicates the following about Isely milkvetch status:

There appears to be a misperception concerning the abundance of the species. Its seed dispersal, in part, begins from stable “source site” locations. Seeds travel down-slope along naturally disturbed drainage bottoms into larger wash bottoms and, along the way, onto locations of man-caused disturbance, e.g., roadside ditches and little used 4x4 tracks, where they become, at least temporarily, established. Some years, this plant is very abundant on these unnaturally disturbed locations; many of the current herbaria collections are from such locations. This occasional roadside-abundance has perpetuated a false impression of this plant’s overall abundance. The stable “source site” locations actually appear to be extremely limited (Franklin 2003a). Loss of these sites may be the greatest threat to the persistence of this plant’s populations. The Morrison and Mancos formations are a source for uranium. Due to uranium price increases, there is an ongoing rush in the restaking of old claims by claimants and in the staking of new ones (Trotter, pers. comm. 2005).

Due to the imperilment of this species and the several threats it faces, FWS should promptly issue a listing proposal for Isely milkvetch.

5. **Skiff milkvetch** (*Astragalus microcymbus*) is a flowering plant in the pea family ranked by scientists as critically imperiled. Its name means “little boat,” referring to its fruit’s resemblance to an inverted skiff. It occurs only in Gunnison and Saguache counties in Colorado. It inhabits open sagebrush or sagebrush-juniper habitats in steep and rocky areas, including federal public lands, at elevations of 7600-8400 ft. *See* NatureServe Account for *Astragalus microcymbus* [Attachment 17].

In its 90-day finding, FWS considered there to be 4 populations, within a range of 15 miles and numbering 10,322 individuals. Four demographic monitoring plots show an overall decline in numbers. A population viability analysis predicts all 4 populations will be lost by 2030. FWS considers this species as possibly threatened under ESA Listing Factors A (habitat loss due to off-road vehicle use) and E (drought). 74 FR 41649 at p. 41655.

¹³While it appears from its 90-day finding that FWS reviewed Franklin (2003), FWS did not list the references cited in that finding. We urge FWS to fully consider Franklin (2003).

¹⁴UNHP (2005) is online at: http://dwr.cdc.nr.utah.gov/ucdc/ViewReports/Plant_Report_2005.pdf. This document is approximately 138 MB and therefore too large for transmittal. FWS should download this document in its entirety.

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We believe that FWS already has adequate information in its files to proceed with listing. Our understanding is that Ellen Mayo with FWS was reviewing this species for inclusion in the Candidate list even before the G1/G2 petition was submitted. The Biodiversity Scorecard for Colorado assigns skiff milkvetch a threats status score of 2, indicating that threats are, “Moderate to severe, imminent threat to 20-60% of [populations].”¹⁵

Skiff milkvetch’s status was reviewed at the 2005 Colorado Rare Plant Symposium.¹⁶ Mining and residential development were cited as threats along with the ones enumerated in the *Federal Register* notice. The symposium presentation noted that ownership also included private land.

The official symposium notes contain detailed information on this species which FWS should consider in its status review.¹⁷ For example, Denver Botanic Gardens (DBG) investigated the quality of the seed bank and after testing more than 20 sites, only a single seed had been detected. DBG also noted that seeds frequently aborted. Participants also noted that a large population crash like that observed for skiff milkvetch can have long-term genetic consequences - this suggests skiff milkvetch may also meet the listing criteria for other factors because of genetic concerns.

Symposium participants noted that *Physaria rollinsii* is sympatric with *Astragalus microcymbus* and also rare. FWS should strongly consider listing both of these species in a single package.

The University of Colorado Herbarium possesses skiff milkvetch specimens.¹⁸ Some of these specimen labels mention that plants are located along roads with weeds, so both roads and weeds should be investigated as potential threats.

FWS should contact both the BLM and the Colorado Natural Areas Program (CNAP) regarding management of the ACEC/Natural Area. CNAP has a well-organized archive and a network of volunteer stewards who assess site conditions (in 2005 the steward was Lori Brummer, who FWS should also contact).

At the 2009 Colorado Rare Plant Symposium it was reported that with rabbit exclosures in place, higher fruit set has been detected. FWS should both examine whether BLM’s existing regulatory mechanisms are adequate (e.g., has the agency created enough exclosures), and what the underlying causes of unsustainable herbivory by rabbits may be. One idea to consider would be whether the rabbit population is increasing, and if so,

¹⁵See

http://www.cnhp.colostate.edu/download/documents/2008/A_Biodiversity_Scorecard_for_Colorado_Oct08_PARTIAL_DRAFT.pdf, unpagged.

¹⁶See

http://www.cnhp.colostate.edu/download/documents/2005/2005%20rare%20plant%20symposium_final.pdf.

¹⁷See

<http://www.cnhp.colostate.edu/download/documents/2005/Second%20Annual%20Colorado%20Rare%20Plant%20Symposium-2005.pdf>.

¹⁸See <http://cumuseum.colorado.edu/Research/Botany/Databases/search.php>.

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if this may somehow be related to Gunnison's prairie dog declines. For example, the Colorado Division of Wildlife has expressed concern that after plague events Gunnison's prairie dogs have difficulty outcompeting Wyoming ground squirrels; ground squirrels expand into former prairie dog colonies; and prairie dogs do not become reestablished at these sites. When a prairie dog complex declines, perhaps rabbits in this area behave similarly. Or, perhaps Gunnison's prairie dog declines have led to loss of predator populations in the area that previously kept rabbits in check.

FWS should appreciate how difficult it is to secure detailed long-term monitoring capturing precipitous declines like those documented for skiff milkvetch. To have that information in hand and not protect the species under the Act would be tragic.

Skiff milkvetch was nominated for ESA listing as Endangered by the Smithsonian in 1975. *See* Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 57. It was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51151; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

6. **Precocious milkvetch** (*Astragalus proimanthus*) is a flowering plant in the pea family ranked by scientists as critically imperiled. It occurs only on bluffs of the Henry's Fork River and vicinity of McKinnon in southwestern Sweetwater County, Wyoming on summits and upper slopes of ridges at about 7000 ft elevation in cushion plant communities. *See* NatureServe Account for *Astragalus proimanthus* [Attachment 18]. There are 3 known populations (Heidel, pers. comm., Fertig 2001[Attachment 19]) that perhaps should be considered just 1 population. Its total distribution is less than 320 acres within a 4 by 14 mile area. Fertig (2001: 3) provides this population estimate:

Laura Welp and Jim Glennon documented 2644 plants in 11 colonies in 2000 and estimated the entire state population at 10,500-13,000 (Fertig and Welp 2001). Previously, Marriott (1989) had estimated the population size at 25,000-40,000 individuals and Robert Lichvar had estimated ca 22,000 individuals in 1981 (Whiskey Basin Consultants 1981).

This jibes with the estimate provided in FWS's 90-day finding. In its finding, FWS recognized the threat to this species under ESA Listing Factor A (habitat loss and degradation due to energy exploration and development). FWS should further consider the threats described in Fertig (2001) and below, which fall under ESA Listing Factors A and E (vulnerability to extinction given limited range). FWS appears to dismiss the multitude of threats that Fertig identified on the basis that they are unquantified. 74 FR 41649 at p. 41655-41656. There is no basis in the ESA for only considering those threats that are quantified.

Fertig (2001) cites Marriott (1989), which FWS should review as well: Marriott, H.J. 1989. Inventory and monitoring of *Astragalus proimanthus* (precocious milkvetch).

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Prepared for the Bureau of Land Management, Rock Springs District by the Wyoming Natural Diversity Database, Laramie, WY.

Last spring the Wyoming Native Plant Society conducted a field trip to precocious milkvetch habitat and found that one of the colonies had been destroyed. A dumpsite near McKinnon had been reclaimed, and in the process the precocious milkvetch habitat was removed from that portion of the site. FWS should contact the Society for more information regarding this extirpation.

FWS should also consider the information available in this report: Fertig, W. and L. Welp. 2001. Status of Precocious milkvetch (*Astragalus proimanthus*) in southwest Wyoming. Prepared for the Bureau of Land Management Wyoming State Office by the Wyoming Natural Diversity Database, Laramie, WY.¹⁹

The precocious milkvetch was nominated for ESA listing as Endangered by the Smithsonian in 1975. See Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 57. It was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51152; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

7. **Cisco milkvetch** (*Astragalus sabulosus*) is a flowering plant in the pea family ranked by scientists as critically imperiled. It occurs only in Grand County, Utah in salt desert shrub communities on slopes of clay hills of the Mancos and Cedar Mountain formations. There are 5 or fewer populations with a total of less than 18,000 plants on a total area of 200 acres. However, some potential habitat has not been surveyed. Threats include roads, oil and gas development, transmission corridors, and recreation. See NatureServe Account for *Astragalus sabulosus* [Attachment 21].

In its finding, FWS recognized the threat to this species under ESA Listing Factor A (habitat loss and degradation due to energy exploration and development). 74 FR 41649 at p. 41656. It should consider additional threats discussed in the NatureServe Account for this species and below, which generally fit under ESA Listing Factor A. Additionally, FWS should consider the threat from ESA Listing Factor E (vulnerability to extinction due to narrow range).

Two varieties of *Astragalus sabulosus* are now recognized, and FWS must evaluate each variety for protection under the Act. UNHP's 2005 rare plant report (cited above) includes species accounts for both varieties, and FWS should carefully consider the information this report contains.

UNHP (2005: 33) includes the following information on threats to *Astragalus sabulosus* var. *sabulosus* (Cisco milkvetch):

¹⁹While it appears from its 90-day finding that FWS reviewed Fertig & Welp (2001), FWS did not list the references cited in that finding. We urge FWS to fully consider Fertig & Welp (2001) [Attachment 20].

At the several locations of this taxon, Atwood (1995) notes evidence of excessive livestock grazing, i.e., its having an effect on native vegetation, the invasion of cheat grass, excessive trailing; past and present highway construction and maintenance; and oil and gas pipelines, drill pads and access roads. Suggestions as to possible solutions to the above concerns are provided along with recommendation as to locations that should be considered as essential habitat.

FWS should consider Atwood (1995) in its status review: Atwood, D. 1995. Final report for candidate sensitive plant survey to the USDI Bureau of Land Management, State Office, for *Astragalus sabulosus* Jones, Cisco milkvetch. 11 pp. + appendices.²⁰

UNHP (2005) also includes an account for *Astragalus sabulosus* var. *vehiculus* (stage station milkvetch). Only one location is known. The account includes the following review of this variety's status:

There have been as many as an estimated 10,000 plants with 50% of them being indicated as mature (Atwood 1995); during later drought years, these numbers were much lower. The habitat is dissected by a primary recreation access road that is heavily used by mountain bikers and 4x4 vehicles. The area is open to cattle grazing and a power line transects the habitat. Trampling of seedlings by grazing livestock and power line maintenance could have a significant impact on the species. As a selenophyte, and likely poisonous, it is doubtful that cattle eat it. It is possible that the implementation of an off-road use plan and coordination with the power company would assist in preventing negative impacts (Atwood 1995; Atwood and Franklin 1996). See p. 35.

Atwood and Franklin (1996) is not included in the literature cited; FWS should request this full citation and report from UNHP.

We also believe that one of the *Astragalus sabulosus* sites may be vulnerable to disturbance associated with a dinosaur quarry.

The Cisco milkvetch was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51152; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

8. **Schmoll milkvetch** (*Astragalus schmolliae*) is a flowering plant in the pea family ranked by scientists as critically imperiled. It occurs only in southwestern Colorado in Mesa Verde National Park, and is expected to also occur on the Ute Mountain Ute Reservation. It inhabits the top and terraces of Chapin Mesa, as well as openings in

²⁰While it appears from its 90-day finding that FWS reviewed Atwood (1995), FWS did not list the references cited in that finding. We urge FWS to fully consider this source.

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pinon-juniper forests, at 6,000-8,000 feet. There are 6 known populations, with a total of approximately 300,000 plants, but scientists believe it is rapidly declining. Threats to this plant include drought, fire, exotic species, and livestock grazing. See NatureServe Account for *Astragalus schmolliae* [Attachment 22].

In its 90-day finding, FWS stated that the species may be threatened under ESA Listing Factors A (habitat loss and degradation from fire, non-native plants, and possibly road construction and grazing) and E (drought). 74 FR 41649 at p. 41656.

Schmoll milkvetch was included in the 2005 Colorado Rare Plant Symposium²¹ and the official symposium notes.²² The following threats are noted (in addition to those from the *Federal Register*): browsing by mule deer, rabbits and butterfly larvae. Notes Erin Robertson took at the symposium include additional concerns that deer and rabbit grazing was killing seedlings. As of 2005, half of the individuals had died, probably because of drought. The 2002 fire probably burned half of the species' habitat.

Center for Native Ecosystems (CNE) has been concerned about Mexican spotted owl management at Mesa Verde National Park because at times it has seemed like leadership has been focused on reducing fire risk without considering how to do that in a way that also benefits imperiled species. It appears that fire may have improved reproductive output for Schmoll milkvetch. On the other hand, as FWS noted in the 90-day finding, fire can facilitate infiltration of noxious weeds. FWS should carefully examine Mesa Verde's management plan to determine whether it is likely to conserve Schmoll milkvetch.

FWS should consult with long-time Mesa Verde botanist Marilyn Colyer on this species.

Schmoll milk-vetch was nominated for ESA listing as Endangered by the Smithsonian in 1975. See Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 58. It was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51152; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

9. **Fremont County Rockcress** (*Arabis* (= *Boechnera*) *pusilla*) is a flowering plant in the mustard family ranked by scientists as critically imperiled. It is found only in the South Pass area in Fremont County, Wyoming in the southern Wind River Range, on federal public land (BLM). Its habitat is cracks and crevices of sparsely vegetated outcrops at 8,000-8,100 ft amidst a surrounding community of sagebrush grassland. As

²¹See

http://www.cnhp.colostate.edu/download/documents/2005/2005%20rare%20plant%20symposium_final.pdf.

²²See

<http://www.cnhp.colostate.edu/download/documents/2005/Second%20Annual%20Colorado%20Rare%20Plant%20Symposium-2005.pdf>.

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of 1997, there was only one known population, with 250 or fewer plants, on less than 60 acres. FWS states that occupied habitat is between 6-16 acres. 74 FR 41649 at p. 41656. According to NatureServe, while quarrying was a past threat and gold mining is a potential threat, the site has been withdrawn from mineral entry. Other threats are off-road vehicle use and livestock grazing, but the plants are protected from these threats as long as the current enclosure is maintained. Despite these protective measures, the population declined substantially from 1988-2003, possibly due to drought. See NatureServe Account for *Arabis* (= *Boechea*) *pusilla* [Attachment 23].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from off-road vehicle use). 74 FR 41649 at p. 41656. However, FWS should also recognize the threat under ESA Listing Factor E (drought and vulnerability to extinction due to small range and small number of individuals). See Heidel (2005) [Attachment 24].²³

Wyoming Natural Diversity Database has prepared a species abstract for the rockcress (Fertig 2000c) [Attachment 25]. This abstract is somewhat dated. Heidel (2005) provides a more recent status review, which FWS should fully consider. This status review identified very limited potential habitat for the species and confirmed that the single population is still the only one known. In addition to the decline in numbers noted above, the review noted that, “A comparison between the number of fruits per plant in 1988-2003 indicated that the mean dropped (10.38 - 5.41 fruits per flowering plant)” (p. 14).

We understand that WYNDD collected monitoring data this year. FWS should request these data for use in the status review.

The BLM created a Habitat Management Plan for the rockcress in 1994: USDI Bureau of Land Management, 1994. *Arabis pusilla* (small rockcress) habitat management plan, HMP WY-048-WHA-P1 and environmental assessment EA WY-048-EA-93-64. Green River Resource Area of Rock Springs District, BLM. FWS must carefully evaluate whether the BLM has fully implemented this plan.

This plant was a category-2 candidate for ESA listing from 1985-1992, was a category-1 candidate from 1992-1999, when it was dropped due to conservation actions taken by the BLM. 65 FR 63044 at p. 63046. We strongly urge FWS to issue a listing proposal for the species, given its continued decline and potential threats from drought and vulnerability to extinction given its narrow range and small population numbers.

10. **Boat-shaped bugseed** (*Corispermum navicula*) is a flowering plant in the goosefoot family ranked by scientists as critically imperiled. It occurs in Colorado and perhaps Oklahoma. Its habitat is sandy dunes and possibly sandy or gravelly shores. There are 2 known populations, but the population size is unknown. Off-road vehicle use is a threat to one of the populations. See NatureServe Account for *Corispermum navicula* [Attachment 26].

²³While it appears from its 90-day finding that FWS reviewed Heidel (2005), FWS did not list the references cited in that finding. We urge FWS to fully consider this report.

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from off-road vehicle use). 74 FR 41649 at p. 41657.

The North Sand Hills is the site of a major off-road vehicle play area that is totally overrun with vehicles. Clearly the Kremmling Field Office of the BLM's existing regulatory mechanisms are not adequate to conserve this species. To truly appreciate the degree of disturbance occurring in this area, the author of the bugseed status review should visit this area on a weekend.

The Kremmling Field Office has begun the process of revising this RMP. CNE has nominated habitat for boat-shaped bugseed as an Area of Critical Environmental Concern, and our understanding is that staff have nominated this area for ACEC designation as well. However, BLM has a very poor track record of actually designating ACECs. CNE has nominated many ACECs in our history, and although BLM has found that most of them do meet the relevance and importance criteria, BLM has *never* actually designated one of our nominated areas.

Oil and gas drilling has been going on in North Park for decades. BLM has offered lease parcels in boat-shaped bugseed habitat in the recent past, and ended up withdrawing them because of sage-grouse concerns. There is no guarantee that habitat for the bugseed will be protected in the long run.

The Colorado Rare Plant Conservation Initiative prioritized North Park for development of a Conservation Action Plan.²⁴ This plan focuses on North Park phacelia, and states, "Secondary threats based on recent analyses include residential development, roads, noxious weed invasions, and potentially by future oil and gas development" (p. 3).

FWS should be sure to contact Megan Maguire with the Kremmling BLM, Brian Kurzel with the Colorado Natural Areas Program, and Betsy Neely with The Nature Conservancy for more information regarding this species.

Flora of North America is accepting this as a valid taxon.²⁵

The Biodiversity Scorecard for Colorado assigns boat-shaped bugseed a threats status score of 2, indicating that threats are, "Moderate to severe, imminent threat to 20-60% of [populations]."²⁶

²⁴See <http://conserveonline.org/workspaces/corareplantinitiative/documents/north-park-action-plan/view.html>.

²⁵See http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242415484.

²⁶See http://www.cnhp.colostate.edu/download/documents/2008/A_Biodiversity_Scorecard_for_Colorado_Oct08_PARTIAL_DRAFT.pdf, unpagged.

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11. **Pipe Springs cryptantha** (*Cryptantha semiglabra*) is a flowering plant in the borage family ranked by scientists as critically imperiled. Its range includes Coconino and Mohave counties in Arizona and Washington County in Utah. Its habitat is clay soils in mixed desert shrub, sagebrush, and pinyon-juniper communities. There are 1-5 populations currently known. Threats include livestock grazing, development, and off-road vehicle use. See NatureServe Account for *Cryptantha semiglabra* [Attachment 27].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from livestock grazing and off-road vehicle use). 74 FR 41649 at p. 41657.

The Utah record is based on a 1927 collection with confusing locality information. Our understanding is that UNHP has mapped a location based on the information available, but there is little confidence that the species actually occurs in Utah. FWS should discuss these specifics with UNHP when preparing the status review.

The Pipe Springs cryptantha was nominated for ESA listing as Threatened by the Smithsonian in 1975. See Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 58.

12. **Weber whitlowgrass** (*Draba weberi*) is a flowering plant in the mustard family ranked by scientists as critically imperiled. It is known to occur at only one location, in Summit County, Colorado. Its habitat is among rocks along streams near timberline. Its total population is currently estimated to be around 80 plants, according to information presented at the 2009 Colorado Rare Plant Symposium. Threats include road and dam construction and maintenance, recreation, mining, exotic species, and climate change. See NatureServe Account for *Draba weberi* [Attachment 28].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from recreation and possibly road construction and dam maintenance). 74 FR 41649 at p. 41657. However, earlier in the finding, FWS noted that there are no conservation plans in place and water flow/discharge to the creek may not be reliable. Therefore, it appears that ESA Listing Factor D (inadequate regulatory mechanisms) is also met for this species.

Weber whitlowgrass status was reviewed at the 2005 Colorado Rare Plant Symposium.²⁷ In addition to threats listed in the *Federal Register* notice, the symposium presentation also included mining and noxious weeds as threats. FWS should investigate these as well.

The 90-day finding did not disclose that the occupied habitat is owned by Colorado Springs Utilities. Although Colorado Springs Utilities has known for years that they are the managers of the sole population, they still have not prepared any kind of conservation

²⁷See

http://www.cnhp.colostate.edu/download/documents/2005/2005%20rare%20plant%20symposium_final.pdf.

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plan. Their website discusses how they are protecting Preble's meadow jumping mouse, greenback cutthroat trout, and raptors, but makes no mention of the whitlowgrass.²⁸ Until the whitlowgrass is legally protected like these other species, it is unlikely that Colorado Springs Utilities will actively conserve this species. As Decker (2006: 3)²⁹ noted, “we should not assume that cautious non-interference will be sufficient to preserve the species.” At the 2006 Colorado Rare Plant Symposium, it was mentioned that Steve Olson with the Pike-San Isabel National Forest had been talking with Colorado Springs Utilities about conserving the whitlowgrass, so FWS should also contact Olson for more information. However, FWS must not rely on future or voluntary conservation actions when making listing determinations.

Decker (2006) expected that Mike Windham's *Draba* treatment would be available in *Flora of North America* later that year. However, the Brassicaceae volume has still not been published, although the scheduled publication date is now listed as 2009.³⁰ FWS should contact Missouri Botanical Garden, the lead for this volume, to see if it can obtain an advanced copy of the *Draba* treatment. FWS should also be sure to contact Windham directly.

Weber whitlowgrass appears to be dependent on water discharged from a dam, yet neither the 90-day finding nor Decker (2006) have seriously evaluated the threat that climate change poses to the species. Decker (2006) listed climate change as a potential threat, but mostly discussed this in the context of predicted loss of alpine habitats. However, climate change should be expected to cause changes in reservoir discharge, and this seems like a much more immediate threat than loss of the alpine. As Decker (2006: 19) noted in discussing the threat of environmental stochasticity:

Potential events that could severely affect *Draba weberi* include extreme, isolated precipitation events or unusually high precipitation years that result in excessive discharge from the reservoir, structural failure of the dam, and unusually severe avalanche runout that covers the occurrence with debris. Unusual weather events, including severe drought or unseasonable temperatures, could also drastically affect the occurrence.

Whether climate change increases or decreases discharge levels, the effects are likely to be deleterious to the whitlowgrass.

The Front Range of Colorado will also see increasing pressure on its water storage systems. The combination of climate change predictions involving less precipitation falling as snow (and thus stored naturally in winter snowpack) and continued population growth means that Front Range communities are actively attempting to expand water storage facilities. FWS should evaluate whether future expansion may be proposed for this reservoir.

²⁸See <http://www.csu.org/business/environment/wildlife/item1042.html>.

²⁹See <http://www.fs.fed.us/r2/projects/scp/assessments/eriogonumbrandegeei.pdf>.

³⁰See <http://www.fna.org/publ-sched-details>.

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For these reasons, we believe that Factor E is also met for Weber whitlowgrass - climate change and stochastic events pose particular threats to this species because there is only one occurrence in existence and its survival is tied to reservoir management.

The Biodiversity Scorecard for Colorado characterizes this species as poorly conserved, and assigns the highest possible threat ranking to the whitlowgrass.³¹ This may well be the rarest plant in Colorado, and it certainly warrants protection under the Act.

13. **Brandegee's wild buckwheat** (*Eriogonum brandegeei*) is a flowering plant in the buckwheat family ranked by scientists as either critically imperiled or imperiled. It occurs in Chaffee and Fremont counties in Colorado. Its habitat consists of clay banks and flats in open sagebrush and pinyon-juniper communities. There are 8 known populations, but some are highly separated from each other: they occupy a 5 by 15 mile area in Chaffee County (along the Arkansas River) and a 2 by 3 mile area in Fremont County (in Garden Park, north of Canon City). The plant occurs on federal public lands. Threats include off-road vehicles, recreation, development, timber, mining, exotic species, grazing, climate change, fire, pollution, and rust. See NatureServe Account for *Eriogonum brandegeei* [Attachment 29].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factors A (habitat loss and degradation from recreation, off-road vehicle use, development, and road construction) and E (inadequacy of regulatory mechanisms regarding off-road vehicle use). 74 FR 41649 at p. 41658. FWS should also consider the species threatened, by its small number of populations and population isolation, under ESA Listing Factor E.

Brandegee's wild buckwheat's status was reviewed at the 2005 Colorado Rare Plant Symposium.³² The official notes from the symposium also include important information that is not mentioned in the 90-day finding. Although the population size is relatively large (although as Anderson (2006) recounts most botanists do not believe that there are millions of plants as FWS implies), the area occupied is still quite small - estimated at 1.2 square miles.³³

In 2001 Juniper Davis prepared a draft status review for Brandegee's wild buckwheat for CNE. While Anderson (2006) provides important updates to the information presented in Davis's review, FWS should still consider the information that Davis compiled [Attachment 30], some of which was based on telephone conversations that may have included details not covered by Anderson. Davis also provided conservation

³¹See

http://www.cnhp.colostate.edu/download/documents/2008/A_Biodiversity_Scorecard_for_Colorado_Oct08_PARTIAL_DRAFT.pdf.

³²See

http://www.cnhp.colostate.edu/download/documents/2005/2005%20rare%20plant%20symposium_final.pdf.

³³See

<http://www.cnhp.colostate.edu/download/documents/2005/Second%20Annual%20Colorado%20Rare%20Plant%20Symposium-2005.pdf>.

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recommendations, and FWS should carefully consider whether these have been implemented in the intervening eight years.

ORV use is an ongoing problem in the buckwheat's habitat. The 2005 Symposium presentation includes a photo showing ORV tracks running through the Droney Gulch site. Anderson (2006: 26) stated, "this area is also besieged by human impacts from off-road vehicle use, high impact camping, residential development, and trash dumping." Denver Botanic Gardens's 2008 monitoring report states that ORV use "has devastated vegetation in the Cleora site area" (p. 9).

At the 2009 Colorado Rare Plant Symposium it was reported that there still were ORV conflicts on BLM land, and that the BLM was working on reducing these by installing fences and rocks. BLM has been aware of this problem for years and still has not effectively curtailed ORV use of habitat, which must be considered evidence of inadequate regulatory mechanisms.

The 90-day finding states that information was not presented as to whether the two Areas of Critical Environmental Concern designated within habitat for the buckwheat provide adequate regulatory mechanisms. However, Davis (2001) and Anderson (2006) report that the BLM still has not created management plans for these ACECs. While Anderson (2006) states that some Droney Gulch roads have been closed, he also reports that enforcement is difficult because of understaffing. Anderson also cites Erik Brekke with the BLM for the following: "Users frequently pull down barriers and breach fences to gain access to off-limits areas (Brekke personal communication 2004)" (p. 9).

We believe that although ORV use has been closed in the Garden Park ACEC, trespass is still a concern. We understand that BLM will partner with Wildlands Restoration Volunteers on a road obliteration project within the ACEC which is slated to take place during the 2010 and 2011 field seasons.

The Castle Gardens site has not been designated as an ACEC. The Arkansas Valley TMP closed the area to ORV use and BLM has erected some barriers and signage, but our understanding is that the area may still operate as an unofficial motorcycle playground, with plants occurring among the motorcycle tracks. FWS should contact Leah Quesenberry at the BLM for more information on the latest attempts to curtail ORV use at this site.

The Quiet Use Coalition (QUC) has worked hard to ensure BLM implements the closures in the Arkansas Valley TMP by contributing volunteer effort and money for boulders to close off around 20 illegal ORV routes, bicycle trails, and the motorcycle playground in the Castle Gardens area. Tom Sobal with QUC reports that many of the closures they have installed have been ripped out and/or trespassed around. QUC and BLM are attempting to repair and replace damaged closures. BLM has allowed one designated road to remain open through the CNHP Potential Conservation Area, which obviously makes prohibiting vehicle use in the general area more challenging – illegal spur routes are a constant concern. Effectively closing areas to motorcycle use has proved especially

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difficult because motorcycles are able to maneuver around many closures that are effective against use by other types of ORVs. Additional educational signage could also prove helpful – not all of the barriers that have been installed are signed. QUC also was able to work with a private landowner in the Castle Gardens area to design and erect signs to prevent access, which resulted in a reduction in illegal ORV use in the area. FWS should consider how protection under the Act could improve management across ownerships and provide incentives for conserving the buckwheat on private land.

The QUC also reports that just this summer the Colorado Division of Wildlife closed a one-mile illegal ORV route impacting the buckwheat in the Droney Gulch area.

Brandege's wild buckwheat is also known from the Big Bend area east of Droney Gulch ACEC. While the BLM owns this site, it is managed by State Parks as an official motorcycle recreation area. Again, plants are located right among the tracks. There is a concern among the agencies that closing this site to ORV use would further disperse ORV impacts, including potentially affecting other buckwheat populations, but it is obviously problematic that with such limited occupied habitat for the buckwheat, a portion is actively managed for intensive motorized use.

FWS should contact Dave Anderson with the Colorado Natural Heritage Program, Erik Brekke with the BLM, Jenny Neale with Denver Botanic Gardens, Brian Kurzel with the Colorado Natural Areas Program, Tom Sobal with Quiet Use Coalition, and Aaron Clark with the Southern Rockies Conservation Alliance for more information about their personal experiences with ORVs in Brandege's wild buckwheat habitat. We have heard many accounts stating that the BLM is actively trying to address ORVs in buckwheat habitat, but the unfortunate truth is that impacts continue to occur. Listing and designation of critical habitat for the buckwheat are new tools that could be applied to help address this daunting problem. ESA protection may help provide the agency funding and staff necessary to ensure that good plans on paper actually result in secure habitat on the ground.

At the 2009 Colorado Rare Plant Symposium it was noted that the BLM recently acquired parcels adjacent to the Garden Park ACEC. We understand that Brandege's wild buckwheat has been found within this new parcel. FWS should inquire as to whether the BLM has taken steps to expand the ACEC boundary.

Anderson (2006) and the 2008 Denver Botanic Gardens monitoring report both stated that no Brandege's wild buckwheat seedlings have ever been observed. Conserving existing individuals must be prioritized. Anderson (2006: 33) stated that some plants may be "hundreds of years old." FWS should act now to prevent further loss of individuals to ORVs, development, and other threats.

FWS must also seriously consider whether disease threatens the buckwheat. Anderson (2006) contains a discussion of this threat, and links rust presence to drought. FWS must consider how climate change and thus predicted increases in frequency and intensity of drought may combine with other stressors to the buckwheat to potentially elevate the

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threat posed by the rust. Therefore, we believe that Factors C and E are also met for the buckwheat because disease and climate change/drought (and synergistic effects of all of these threats) also threaten Brandegee's wild buckwheat.

Residential development in the Arkansas Valley is also a serious threat to the buckwheat, and even if the ACECs on BLM land provided effective management, much of the range on private land would remain at risk. FWS should contact The Nature Conservancy for more information on private land development in the Arkansas River Valley. TNC has been working on metrics for gauging conservation success, and the valley is a priority area of theirs, so they may have current statistics available.

Weeds may also pose a threat to the buckwheat. In 2006 Colorado Natural Areas Program and CNHP staff visited the Garden Park population and noted the presence of tamarisk as well as trespass motorized vehicle use and stock ponds in buckwheat habitat (Kurzle 2006) [Attachment 31].

The Biodiversity Scorecard for Colorado characterizes Brandegee's wild buckwheat as "weakly conserved" and assigns the species a threats status score of 2, indicating that threats are, "Moderate to severe, imminent threat to 20-60% of [populations]."³⁴

Brandegee's wild buckwheat was nominated for ESA listing as Threatened by the Smithsonian in 1975. *See* Report on Endangered and Threatened Plant Species of the United States, House Document No. 94-51 at p. 91. It was designated a Category-2 candidate species in 1980 and a Category-1 candidate species in 1993 (58 FR 51163), but it was removed from candidate status in 1996 due to FWS's assertion that it was a taxon "proven to be more abundant or widespread than previously believed or... not subject to any identifiable threat." 61 FR 7596 at p. 7610. With very few known populations and many apparent threats, FWS should promptly issue a listing proposal for this species.

14. **Frisco buckwheat** (*Eriogonum soredium*) is a flowering plant in the buckwheat family ranked by scientists as critically imperiled. It occurs only on private land in the vicinity of town of Frisco, in the San Francisco Mountains in Beaver County, Utah. Its habitat is white limestone outcrops, with gravel, rock, and boulder surface in a pinyon-juniper community. As of 1997, only a single population was known to exist. *See* NatureServe Account for *Eriogonum soredium* [Attachment 32]. While there is one other reported location, UNHP (2005) (cited above) debunks it as an incorrect locality listing. The main threat to this species is mining.

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from mining)). 74 FR 41649 at p. 41658. FWS should also consider the species threatened, by its extremely limited range, under ESA Listing Factor E.

³⁴See

http://www.cnhp.colostate.edu/download/documents/2008/A_Biodiversity_Scorecard_for_Colorado_Oct08_PARTIAL_DRAFT.pdf, unpagged.

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UNHP (2005) includes a species account for Frisco buckwheat, which provides the following information regarding status:

Kass (1992a) speculates, after having extensively searched for similar potential habitat in adjacent ranges unsuccessfully, that due to the uniqueness of the geologic substrate “this taxon will not be found elsewhere.” He estimated the total population size at 2,000 individuals with a total area of approximately 400 acres. Robinson (2004a) provided an estimate of as high as 1,000 plants, but indicated that she relocated only one population. Kass (1992a) notes that, at the time of his report, there was speculation of renewed gold and silver mining, and Robinson (2004a) indicates that mining of limestone rock is ongoing. She also made the observation that populations appear to be declining. *See p. 85.*

FWS must include consideration of Kass (1992a) and Robinson (2004a) in its status review. The complete citations for Kass (1992a) and Robinson (2004a) are as follows: Kass, R.J. 1992a. Status report on *Eriogonum soredium*. Prepared for USDI Bureau of Land Management, Utah State Office, Salt Lake City. 16 pp.; Robinson, M. 2004a. BLM Challenge Cost Share: Status report, Frisco buckwheat (*Eriogonum soredium*). Rocky Mountain Environmental Research, Monroe, Utah. 19 pp. + appendix.

FWS has included three species endemic to the San Francisco Mountains of Utah in the 29 species granted positive 90-day findings and is well poised to produce a single listing package for these three species, which would be in keeping with its recent commitment to provide ecosystem protection via multiple-species listings under the Act. *Lepidium ostleri* and *Trifolium friscanum* share type localities (and threats) with *Eriogonum soredium*.

FWS should contact Elaine York with The Nature Conservancy for more information about this area. We believe that TNC had funding to contract UNHP to more intensively survey the area for these three species, but in the end failed to secure access to these private lands. To us, this does not bode well, and instead suggests that landowners may not intend to conserve these species.

We understand that windpower projects have been proposed in this general area. FWS should carefully evaluate whether wind development could threaten these species as well.

We believe that the Utah Native Plant Society is preparing an extensive report on this species. FWS should consult Tony Frates for additional information.

Frisco buckwheat was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51164; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

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15. **Ostler's peppergrass** (*Lepidium ostleri*) is a flowering plant in the mustard family ranked by scientists as critically imperiled. It occurs in the San Francisco Mountains, Beaver Bottoms-Upper Beaver and Sevier Lake watersheds in Beaver County, Utah. Its habitat is pinyon-juniper communities, often in shaded sites on limestone outcrops with scattered rocks and gravel. According to UNHP, there is only one population. It is threatened by mining. See NatureServe Account for *Lepidium ostleri* [Attachment 33].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from mining)). 74 FR 41649 at p. 41659. FWS should also consider the species threatened, by its extremely limited range, under ESA Listing Factor E.

The above discussion of Frisco buckwheat also applies to Ostler's peppergrass.

UNHP (2005) includes a species account for the peppergrass, which provides the following information regarding status:

After having extensively searched for and not found similar potential habitat in adjacent ranges, Kass (1992b) speculates that it is not likely to be found beyond this range. Atwood (2002b) estimated the total population size at 20,000 individuals covering a total area of approximately 100 acres. Kass (1992b) indicates that past impacts to this plant's habitat have resulted from mining activities, and notes that, at the time of his report, there was speculation of renewed gold and silver mining. Evidence of recent seismic activity was observed in the habitat. Atwood (2002b) stresses the need for protecting its very limited habitat, and suggests that purchase by private conservation groups or the establishment of a botanical area might accomplish this. Additional survey and monitoring are recommended. See p. 105.

FWS should ensure that the information from these reports is included in its status review. The complete citations for Kass (1992b) and Atwood (2002b) are as follows: Kass, R.J. 1992b. Status report on *Lepidium ostleri*. Prepared for USDI Bureau of Land Management, Utah State Office, Salt Lake City. 16 pp.; Atwood, D. 2002b. Status Report: *Lepidium ostleri* S. L. Welsh & S. Goodrich. Prepared for: USDI Bureau of Land Management, Utah State Office, Salt Lake City. 16 pp. + appendices and figures.

Ostler's peppergrass was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51171; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

16. **Lesquerella navajoensis** (a bladderpod) is a flowering plant in the mustard family ranked by scientists as critically imperiled. It occurs in Apache County, Arizona; McKinley County, New Mexico; Kane County, Utah, and the Navajo Nation. Its habitat

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is mesa rims of Todilto limestone outcrops in pinyon-juniper woodland. There were 2 populations known as of 2002. It is threatened by mining. *See* NatureServe Account for *Lesquerella navajoensis* [Attachment 34].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from mining)). 74 FR 41649 at p. 41659-41660. FWS should also consider the species threatened, by its extremely limited range, under ESA Listing Factor E. FWS should review Salywon et al. (2005) [Attachment 35], which indicates the use of *Lesquerella* species in industrial products, and their cultivation. FWS should evaluate whether and how this may impact *L. navajoensis*.

There appears to be disagreement about the identity of the plants in Utah. FWS should be sure to consult the following experts in order to sort out whether the Utah occurrence actually represents *Lesquerella navajoensis* or a different taxon: Steve O’Kane, Mike Windham, Stan Welsh, Walt Fertig, and Ben Franklin. Our understanding is that most if not all of these authorities do not recognize this occurrence as *L. navajoensis*, but that there is little consensus regarding to which taxon the occurrence should be assigned. We have also heard a rumor that Walt Fertig failed to find these plants recently, so it is possible that the Utah population may already have been extirpated. This contention, however, should be verified with Walt Fertig directly.

FWS should also contact the Navajo Department of Fish & Wildlife about this species. *See* Roth (2001) [Attachment 36], a Navajo Department of Fish & Wildlife species account for *L. navajoensis*. In 2005, the Department noted the following in a proposal to uplist the species from Group 4 (Any species or subspecies for which the Navajo Nation Department of Fish and Wildlife NNDFW does not currently have sufficient information to support their being listed in G2 or G3 but has reason to consider them) to Group 3 (A species or subspecies whose prospects of survival or recruitment are likely to be in jeopardy in the foreseeable future.): 1) it is restricted to Todilto Limestone outcrops in northwestern New Mexico, northeastern Arizona and southern Utah; several known populations are threatened due to their proximity to roads and limestone quarries; there are 10 known populations on Navajo land; and its NatureServe ranks (Navajo Department of Fish & Wildlife 2005) [Attachment 37]. As of September 2008, *L. navajoensis* was on the Navajo Endangered Species List under Group 3 (Navajo Department of Fish & Wildlife 2008) [Attachment 38]. FWS should follow suit and propose this species for federal ESA listing.

17. **Flowers penstemon** (*Penstemon flowersii*) is a flowering plant in the figwort family ranked by scientists as critically imperiled. It occurs only in the Uinta Basin in Duchesne and Uintah counties in Utah. Its habitat is salt desert shrub communities on slopes and benches. *See* NatureServe Account for *Penstemon flowersii* [Attachment 39].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from off-road vehicle use and energy exploration and development)). 74 FR 41649 at p. 41660. FWS should also consider the species threatened, by its narrow range, under ESA Listing Factor E and by Factor D since it is

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almost entirely restricted to private and tribal land. UNHP (2005) reports that one population occurs on Bureau of Reclamation land.

Tony Frates with the Utah Native Plant Society is preparing a comprehensive report on Flowers penstemon, and FWS must obtain this before completing the status review for this species. In addition to the threats mentioned in the 90-day finding, Frates will present information regarding threats posed by development near Roosevelt and road widening. Frates has observed the destruction of plants bulldozed near a reservoir. The road to Vernal bisects the penstemon's habitat; habitat fragmentation is a very real threat.

In addition to Frates, FWS should contact Ben Franklin with the Utah Natural Heritage Program and Jim Spencer with NRCS who are also familiar with the penstemon's status.

Flowers penstemon was included in UNHP (2005), which stated, "Past losses of habitat through agricultural development, continued livestock grazing and recreational activity are the greatest threats to this plant's persistence (Heil and Melton 1995a)" (p. 131). We believe that habitat loss to agriculture, overgrazing, and residential development are probably greater threats than ORVs or oil and gas for this species. UNHP (2005) also gives this revealing partial description of distribution which suggests how much habitat has been lost: "it is on a few flatland locations that have not been converted to farmland or otherwise developed" (p. 131).

Flowers penstemon was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51179; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

18. **Gibbens penstemon**³⁵ (*Penstemon gibbensii*) is a flowering plant in the figwort family ranked by scientists as critically imperiled. It occurs in Moffat County, Colorado; Daggett County, Utah; and Carbon and Sweetwater counties, Wyoming. Its habitat consists of shale or sandy-clay of the Browns Park formation, with surrounding vegetation of pinyon-juniper woodland, sagebrush, or greasewood-saltbush communities. See NatureServe Account for *Penstemon gibbensii* [Attachment 40]. It occurs on federal (BLM and FWS), state (Utah and Wyoming), and private lands. There are 8 documented populations: 2 in Colorado (one of these includes the Utah occurrence), and 6 in Wyoming, two of which were unknown in 2007. One of the newly discovered populations in Wyoming is within 3 miles of another population documented in 2007. *Penstemon gibbensii* abundance is estimated to be 11,000-14,000 plants with an areal extent of approximately 300 acres³⁶ (Heidel 2009) [Attachment 41].

³⁵Dorn (1982) named this species after the original collector, Robert Gibbens. Therefore the common name should be either Gibbens penstemon or Gibbens's penstemon or Gibbens' penstemon (which is a grammatically incorrect but commonly used construction), but not Gibben's penstemon.

³⁶Heidel (2009: 21) includes a proviso on estimates of areal extent: "It is important to note that the species' local distribution patterns are not continuous where they are present, and the species may occupy anywhere from 5-50% of the area as mapped so any map of population boundaries over-represents occupied habitat."

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In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from energy exploration and development, livestock grazing, and off-road vehicle use). 74 FR 41649 at p. 41660-41661. There are many threats to this plant that FWS should fully consider. According to Heidel (2009: 27): “Grazing, mineral development, recreation, roads and weeds are potential threats. Drought, climate conditions and big game herbivory may directly or indirectly impact the species and erode its habitat.” Fertig 2000d [Attachment 42] indicates that development is causing a loss of habitat. Therefore, in addition to ESA Listing Factor A, Gibbens penstemon is also threatened by ESA Listing Factors D (inadequate regulatory mechanisms) and E (drought and climate change).

Wyoming

For information on the status of this species in Wyoming, FWS should consider Heidel (2009) and Fertig (2000d). In Wyoming, drought/climate change has been documented to be a significant threat to this species. Writes Heidel (2009: 29):

...the affects of drought on *Penstemon gibbensii* warrant careful consideration as “natural threats,” whether as possible harbinger of climate change or chance events. The estimated *P. gibbensii* population numbers are significantly down in the Cherokee Basin, Flat Top Mountain and T84N R18W occurrences. There is no trend data available for Willow Creek but it appears that its habitat with gentle slopes and east aspect is less harsh than all other settings. It would be valuable to know if Colorado populations have undergone sharp decline since the time of pre-drought surveys. The results of monitoring within and between the Cherokee Basin and Flat Top Mountain suggest that species’ habitat is highly vulnerable to erosion under prolonged drought, particularly in the steeper slope segments and where gravel and skeletal rock fragments are wanting. The two monitoring sites are appropriate to revisit to evaluate trends in the wake of drought. If erosion has removed most of the seed bank with surface substrates at Cherokee Basin, then recovery will take multiple life cycles rather than just a moist year or two.

Colorado Native Plant Society (1997) also indicated that drought/climate change could be negatively impacting this species: “Only a few flowers are open at any one time, giving the plants an aspect of poor vigor. Dorn speculated that this may be an indication that the plants once grew under wetter conditions and that the species could be in a long-term decline due to climatic change: (p. 19). See Colorado Native Plant Society. 1997. Rare plants of Colorado. Second edition, 1997. Helena: Falcon Press Publishing Co., Inc. 107 pp.

FWS should fully consider drought as a threat under ESA Listing Factor E.

Moreover, Heidel (2009) provides a lengthy list of real and potential threats: past and current grazing wild and domestic ungulates; oil and gas development; uranium mining; potential coal mining; potential wind energy development; potential quarrying; off-road

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vehicles; roads; recreation; weeds; and, as discussed above, drought. Oil and gas development has taken place in occupied habitat of this plant:

One pipeline has been laid across a western colony of *Penstemon gibbensii* at the Sand Creek occurrence, one pipeline has been laid through or adjoining a southern colony of the Willow Creek occurrence, and another pipeline was put in across Willow Creek between colonies. In addition, a wellpad has been constructed above a southeast colony of the Sand Creek occurrence (immediately upslope of Figure 10), and the road that crosses the colony has been upgraded for heavy machinery. See p. 28.

Despite the claim that penstemon habitat is too steep for oil and gas to pose a threat, it is directly impacting these populations.

FWS was correct to conclude in the 90-day finding that ESA Listing Factor A (habitat loss and degradation) is relevant for this species, but we urge the agency to consider more land uses that are causing this habitat loss and degradation.

In the face of the many threats it faces, current legal protections of *Penstemon gibbensii* are inadequate. Part of one occurrence is on lands under easement by The Nature Conservancy's Wyoming Field Office. The BLM Rawlins Field Office has built an enclosure at one site to study species' response to grazing. A trend toward decline is reported within this enclosure (pers. comm. with Bonnie Heidel, Oct. 15, 2009). As Fertig (2000d: unnumbered p. 3) describes, "All other sites are on BLM or state lands managed for multiple use (mostly gas development, grazing, and recreation)".

The Rawlins RMP and ROD³⁷, issued in 2008, acknowledges that Gibbens penstemon occurs in the Field Office, but the only management provision mentioned for the penstemon is to maintain the fencing for the enclosure. Although an ACEC was nominated for Gibbens penstemon, BLM never considered its designation, as the ROD explains:

The BLM has reviewed its administrative record and found that comments submitted through scoping (during a comment period for gathering input on potential ACECs) included recommendations for designating ACECs to protect the following areas, habitats, or species: McCarty Canyon, areas surrounding North Platte Reservoirs, Flattop Mountain (including any habitat for Gibbens penstemon), Ferris Dunes (including the large dune field, grass-dominated wetland communities, and any habitat for the kangaroo rat), and Ferris Mountain (including any habitat for Cedar Rim thistle north of the area). These recommendations were mistakenly

³⁷See

http://www.blm.gov/pgdata/etc/medialib/blm/wy/programs/planning/rmps/rawlins/rod.Par.91191.File.dat/05_Record_of_Decision_and_Approved_Rawlins_RMP.pdf

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overlooked in documentation. Because the BLM did not review or consider the recommendations in accordance with BLM Manual 1613, the protest is granted and these recommended areas will be considered at the earliest opportunity as part of the next planning process conducted in the RFO. (p. 1-2)

Thus, although the BLM has acknowledged that the agency violated its own Manual direction by failing to evaluate whether Gibbens penstemon habitat met ACEC designation criteria, rather than correct the problem the BLM has simply said they will consider designation during the next RMP revision. The lifetime of an RMP is usually 15-20 years.

The Reasonable Foreseeable Development Scenario for the Rawlins RMP revision anticipates that 9,310 new wells will be drilled within the Field Office during the RMP's lifetime.³⁸

Gibbens penstemon is known from the Green River Formation so FWS should also evaluate whether oil shale development could threaten the species.

Fertig and Thurston (2003) have modeled potential habitat for Gibbens penstemon in Wyoming. FWS should consider including all potential habitat in the critical habitat designation to help offset the difficulties that climate change may create in achieving recovery for this species. See: Fertig, W. and R. Thurston. 2003. Modeling the Potential Distribution of BLM Sensitive and USFWS Threatened and Endangered Plant Species in Wyoming. Unpublished report prepared for the Bureau of Land Management Wyoming State Office by Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

Utah & Colorado

The single occurrence in Utah is along the north side of the Green River, within half a mile west of the Colorado state line. It was reportedly collected by John Anderson and Frank Smith. The Vernal RMP FEIS states that Gibbens penstemon occurs on one site encompassing 6 acres in the Brown's Hole portion of Daggett County. However we could find no discussion beyond this in the RMP, ROD, or FEIS. Heidel (2009) states that the Utah occurrence is on State land, which would provide little to no protection.

This species' status in Colorado was reviewed as part of the 2005 Rare Plant Symposium.³⁹ The symposium presentation reported that there were 17,000 individuals total, of which 6,300 were found in Colorado. In addition to threats included in the 90-day finding, the presentation cited noxious weeds and uranium mining.

³⁸ See

http://www.blm.gov/pgdata/etc/medialib/blm/wy/programs/planning/rmps/rawlins/rfd.Par.7334.File.dat/Fin_al_RFORFD_Doc.pdf, p. 37.

³⁹ See

http://www.cnhp.colostate.edu/download/documents/2005/2005%20rare%20plant%20symposium_final.pdf.

In 2004, CNE hosted a field trip to Gibbens penstemon habitat on BLM lands and on Brown's Park National Wildlife Refuge. At that time the Refuge staff were aware that the penstemon occurred on the property but had never looked for it before we contacted them. Trespass grazing was an ongoing issue. FWS should be sure to contact current refuge staff while preparing the status review, partly to ascertain how the agency's own management could be improved.

The Little Snake Field Office of the BLM manages the non-Refuge habitat in Colorado. The Little Snake RMP is under revision now. We are attaching comments we submitted on the DEIS [Attachment 43]. In the draft RMP, BLM contemplated ACEC designations that would partly cover Gibbens penstemon occurrences, but in the end chose not to include these in the preferred alternative. The BLM anticipates that over 3,000 new wells will be drilled in the Field Office over the 15-year life of the plan. FWS should ensure that it reviews the final RMP if it is completed before the 12-month finding is issued.

The Biodiversity Scorecard for Colorado characterizes Gibbens penstemon as “weakly conserved” and assigns the species a threats status score of 2, indicating that threats are, “Moderate to severe, imminent threat to 20-60% of [populations].”⁴⁰

Resource Management Plan revisions finalized in 2008 in the Vernal Field Office and Rawlins Field Office of the BLM failed to provide any protection against threats beyond fencing out grazing on 15 acres in Wyoming. The Little Snake RMP is under revision now and the DEIS failed to include ACEC protections for the penstemon in the preferred alternative. Heidel (2009) reported that 7 of the 9 occurrences rangewide occur on BLM lands. The BLM has passed up a major opportunity to improve regulatory mechanisms for Gibbens penstemon, and FWS must take this neglect seriously.

Gibbens penstemon was a Category-2 candidate for ESA listing until 1996, when FWS removed all Category-2 and 3 species from its candidate list. 58 FR 51144 at p. 51179; 61 FR 7596-7613. Since 1996, scientific knowledge about this species and the threats it faces have increased substantially, and it warrants proposed listing under the ESA.

19. **Pale blue-eyed grass** (*Sisyrinchium sarmentosum*) is a flowering plant in the iris family ranked by scientists as critically imperiled or imperiled. It occurs in two counties (Klickitat and Skamania) in southcentral Washington and Clackamas County in northern Oregon. In total, it numbers approximately 5,000-7,000 individual plants, with a total of 18 recorded occurrences. Its total occupied area is less than 1,000 acres. According to NatureServe, it is threatened by development, agriculture, and plant succession. Additional potential threats cited are livestock grazing and off-road vehicle use. See NatureServe Account for *Sisyrinchium sarmentosum* [Attachment 44]. FWS recognized all of this information and these threats and potential threats in its 90-day finding,

⁴⁰See

http://www.cnhp.colostate.edu/download/documents/2008/A_Biodiversity_Scorecard_for_Colorado_Oct08_PARTIAL_DRAFT.pdf, unpagged.

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alongside threats from genetic reduction, drought, and climate change. 74 FR 41649 at p. 41662.

USFS (2008) [Attachment 45] describes 21 occurrences for the species, 13 of which are in Washington, and 9 of which are on the Gifford Pinchot National Forest. Of these 9 occurrences, 1 (Pine Tree Springs) is extirpated and 2 (Little Mosquito Lake and Little White Salmon) may be in decline. Further, two occurrences on the Mt. Hood National Forest “are in extreme decline with five or fewer individuals.” USFS (2008: C-12 to C-13) further notes that many of the populations of this iris are too small to be self-sustaining and that invasive plants threaten the species. We suggest that FWS investigate invasive plants as a threat to *Sisyrinchium sarmentosum*.

In 2007, USFS reauthorized grazing on the Ice Caves Grazing Allotment, an extremely important allotment for this species (USFS 2007a, 2007b) [Attachments 46 & 47]. USFS (2007b) indicates that only five populations of this species, range-wide, have the potential to be self-sustaining: three of these are on the Gifford Pinchot National Forest (South Prairie, Peterson Prairie, and Cave Creek populations), and two are on the Mount Hood National Forest (Little Crater Meadow and Lower Lake populations). The three largest of these populations (with thousands of individuals) are all on the Ice Caves allotment within the Gifford Pinchot National Forest (USFS 2007b: 108). This allotment contains 82-90% of all known individuals, range-wide. *Id.* Yet, the USFS adopted a grazing regime (Alternative B) that it acknowledged would impact this iris (USFS 2007b: Table 3-21). While the USFS states that a drift fence would be established to prevent livestock entry into an important area occupied by *Sisyrinchium sarmentosum*, it also disclosed that, “Grazing could occur periodically “behind” the drift fence, at the discretion of the Forest Service...” (USFS 2007a: 2). USFS sources (2007a, 2007b) and comments submitted by the Washington Native Plant Society (2007) [Attachment 48] and Gifford Pinchot Task Force 2007 [Attachment 49] are also important for their documentation of the very real threats that livestock grazing poses to this iris.

Moreover, even if this iris is protected from grazing on the allotment, it faces shrinking habitat due to natural succession and encroachment of woody species into its meadow habitat (USFS 2007b: 109). An additional threat cited by USFS is hybridization with the relatively common *Sisyrinchium idahoense* (USFS 2007b: 114). Wilson (2000)⁴¹ indicates that many populations of this species should be preserved as they may contain unique alleles, and the large population at South Prairie should be preserved because it is the only population known to be genetically variable.

This species has previously been a candidate for ESA listing. In 1993, it was ranked a Category-2 candidate with a stable trend. 58 FR 51144 at p. 51186. It was removed from the candidate list in 1996. 61 FR 7596-7613. There is now sufficient information for FWS to proceed with a listing proposal for this imperiled iris.

⁴¹This article was obtained via a Freedom of Information Act request to FWS Region 6. It is already in FWS’s possession and therefore is not attached.

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20. **Frisco clover** (*Trifolium friscanum*) is a flowering plant in the pea family ranked by scientists as critically imperiled. It occurs in Beaver and Millard counties in Utah. Its habitat is volcanic gravels and limestone in pinyon-juniper communities. See NatureServe Account for *Trifolium friscanum* [Attachment 50].

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from mining)). 74 FR 41649 at p. 41662.

The above discussions of Frisco buckwheat and Ostler's peppergrass also apply to Frisco clover.

UNHP (2005) (cited above) includes a species account for Frisco clover, which provides the following information regarding status:

Recent survey has resulted in the discovery of two new populations for this taxon, i.e., on the northwest side of the Tunnel Spring Mountains and on Blue Mountain. Though two of the recently visited sites have current population estimates, Atwood (2002d) indicates that the status of remaining sites is not well documented. Atwood (2002d) states that, "this is one of the most threatened of the rare plants in the West Desert." The plant's populations in the San Francisco Mountains are on "un-mined patented mining claims"; the Wah Wah Mountains population is adjacent to an active quarry; and the newly discovered Tunnel Spring Mountains population has been fragmented by a newly built grazing allotment fence (Atwood 2002d). Atwood (2002d) suggests seeking a conservation easement for the San Francisco Mountains populations, and recommends the instigation of a study to obtain an understanding of the plant's biology, ongoing visits in order to more regularly evaluate status, and additional survey of potential habitat. See p. 195.

FWS should be sure to include the information from Atwood (2002d) in its status review. The complete citation for Atwood (2002d) is as follows: Atwood, D. 2002d. Status report: *Trifolium friscanum* (S. L. Welsh) S. L. Welsh. Prepared for: USDI Bureau of Land Management, Utah State Office, Salt Lake City. 13 pp. + appendices and figures.

This species has previously been a candidate for ESA listing, under a prior taxonomic designation: *Trifolium andersonni* var. *friscanum*. In 1993, it was ranked a Category-2 candidate with an unknown trend. 58 FR 51144 at p. 51189. It was removed from the candidate list in 1996. 61 FR 7596-7613. There is now sufficient information for FWS to proceed with a listing proposal for this imperiled clover.

Fauna

21. **Frigid ambersnail** (*Catinella gelida*) is a terrestrial snail ranked by scientists as critically imperiled. While its historic range includes 10 states: Iowa, Illinois, Indiana, Kentucky, Michigan, Mississippi, Missouri, Ohio, South Dakota, and Wisconsin, it is

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currently known only from Iowa and South Dakota. According to NatureServe, there are 14 populations known in Iowa and 8 in South Dakota. See NatureServe Account for *Catinella gelida* [Attachment 51]. However, according to FWS's 90-day finding, there are 14 known sites in Iowa, 12 in South Dakota (in the Black Hills), and 19 sites in Wisconsin. 74 FR 41649 at p. 41656. Scientists estimate that this snail has declined by 75-90%. See NatureServe Account.

In its 90-day finding, FWS stated that this species may be threatened under ESA Listing Factor A (habitat loss and degradation from roads, livestock trampling, and logging disturbances). 74 FR 41649 at p. 41657. FWS should also consider ESA Listing Factor D (inadequate regulatory mechanisms) given the finding by Frest and Johannes (1993) (cited in NatureServe Account) finding that none of the sites are large or adequately protected, and given the Black Hills National Forest (BHNF) Resource Management Plan fails to adequately protect this species (as we describe below). In addition, Frest and Johannes (2002: 30)⁴² describe this species as a "glacial relict." FWS should therefore thoroughly investigate whether climate change is impacting this snail (ESA Listing Factor E).

This species appears to be suffering from a lack of adequate regulatory mechanisms (ESA Listing Factor D). Frest and Johannes (2002) rank the frigid ambersnail as a Species of Special Concern. See pp. 70-74. However, in the years since there, USFS has provided adequate attention to this species, despite USFS providing significant habitat for the species in South Dakota. Indeed, in 2005, USFS had an opportunity to designate the frigid ambersnail as a Management Indicator Species, but chose not to do so,⁴³ nor has it designated this species as a Sensitive species.

In a March 1997 Addendum to this Revised Forest Plan (page II-43), the USFS issued the following "forestwide" direction: "For the snail 'species of special concern,' conserve habitat at colonies identified by Frest and Johannes in their 1993 report." However, the Revised Plan failed to specify how the habitat was to be conserved. Accordingly, in September 1999, Biodiversity Associates (now Biodiversity Conservation Alliance - BCA), the Biodiversity Legal Foundation, and several other concerned parties filed an administrative appeal against the Revised Forest Plan. This appeal challenged (among other things) the USFS's failure to provide adequate protections for the snails in question. In the USFS's 1999 ruling on this administrative appeal, the Chief of the Forest Service concluded:

The Forest has conducted comprehensive inventory or monitoring for some species, but the information obtained was not always utilized in the development of the Revised Plan. An example is the study completed in

⁴²See Frest, T.J. and Johannes, E.J. 2002. Land Snail Survey of the Black Hills National Forest, South Dakota and Wyoming, Summary Report, 1991-2001. 127 pp. plus appendices. This report was obtained via a Freedom of Information Act request to FWS Region 6. It is already in FWS's possession and therefore is not attached.

⁴³See http://www.fs.fed.us/r2/blackhills/projects/planning/assessments/saic_2005_mis_selection.pdf at p. 36 (Table 3-6).

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1993 by Frest and Johannes under contract from the Forest and the U.S. Fish and Wildlife Service, for land snails on the Black Hills National Forest (BHNF), two of which are currently listed as MIS [Management Indicator Species] and Sensitive (Vol. R34, pp. 1457-1547). The information which was provided was used in the development of LRMP standard 3103 (Revised Plan, p. II-43) which requires conserving habitat for the ‘snail species of special concern’ at colonies identified in the Frest report. There is fairly strong language in the Frest report relative to the declining status and potential extirpation of some of these species or subspecies from the planning area [i.e., BHNF]. In the case of one designated as MIS and sensitive, the BHNF constitutes potentially all or a significant portion of its range (Vol. R-34, p. 1489). Also, the authors made recommendations for listing some of the other surveyed species under the ESA. Despite this information, the Forest Service did not explicitly address these findings in the biological evaluation or elsewhere in the record. The biological evaluation (FEIS Appendix H) provided a good example of the habitat requirements of the two species listed as MIS and sensitive, along with a generic discussion of potential threats, but failed to adequately describe the current population and habitat status. Maps of the Forest showing habitat capability for these two species display suitable and optimal habitat (FEIS Appendix H, pp. H-149 through H-150), without addressing the findings in the Frest report that indicated much of the existing habitat area had been substantially modified by grazing or logging, leaving it unsuitable for these species (Vol. R-34, p. 1483, 1485). These shortcomings are further compounded by the lack of clearly stated population and habitat objectives and a lack of a species-specific monitoring plan and monitoring objectives. The adequacy of standard 3013 in providing for the short-term or long-term viability of these species was not supported in the record. The determination (FEIS Appendix H, pp. H-142) that the proposed action ‘[m]ay adversely impact individuals but [is] not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide’ appears to be unsupported.⁴⁴

The Chief also found: “The Frest report [1993], included in the administrative record and referenced in the FEIS, raises significant concerns about continued viability of sensitive snail species found in the BHNF.” *Id.*, page 67. This confirms that the Revised Forest Plan does not provide adequate regulatory protections for the five snail taxa of special concern, including the frigid ambersnail.

In response to the inadequacies found in the Revised Forest Plan, the Chief ordered the BHNF to institute “interim direction” that provides “additional protection (supplementing existing LRMP direction) for at-risk colonies during the interim period and prevents

⁴⁴October 12, 1999 Decision for Appeals of the Black Hills National Forest, Land and Resource Management Plan, page 51.

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further loss of occupied habitat quality, quantity and distribution. *Id.* The “interim direction” specific to land snails reads as follow:

Specific conservation measures must be provided for sensitive species. Project files shall include an analysis of the known or expected effectiveness of such measures, relative to minimizing risks to sensitive species viability, based on best available scientific information.

Ensure that all known colonies of sensitive snail species (Cockerell’s striate disc and Cooper’s Rocky Mountain snail) are protected from adverse effects of livestock use and other management activities.

Frigid ambersnail, however, is not included in this “interim direction.”

Biodiversity Associates (now, BCA) succeeded in securing an agreement from the USFS to provide 200-foot “no activity” buffers around the colonies identified in the 1993 Frest and Johannes report for all of the snail taxa but this buffer only applied to a few timber sales. Many more timber projects have since occurred. In spite of the “interim direction” no meaningful actions have been exercised to protect the frigid ambersnail. For example, there has been:

- no withdrawal from mineral development
- no change to grazing practices
- no change to water development
- no protections from recreation or off-road vehicle travel
- no fire protection

In the 90-day finding, FWS indicates that it has ample information in its files from which to conduct a status review on this species. Based on the imperilment and the multiple ESA listing factors that apply to the ambersnail, FWS should promptly issue a proposal to list this species.

22. **Platte River caddisfly** (*Ironoquia plattensis*) is a caddisfly ranked by scientists as critically imperiled or imperiled. According to NatureServe, it is found in Buffalo, Hall, Kearney, and Merrick counties in the Middle Platte watershed in Nebraska. *See* NatureServe Account for *Ironoquia plattensis* [Attachment 52]. Riens and Hoback (2008) [Attachment 53] found that, of its six historical locations, only five still contained this species, and four had low numbers. Threats documented during the survey included habitat degradation from changes in river flow and exotic vegetation, as well as exotic fish (mosquitofish, *Gambusia affinis*). These scientists describe it as likely one of the rarest insects in the world and state that the species “should be strongly considered for protection under the Endangered Species Act.” *Id.* In its 90-day finding, FWS found that the Platte River caddisfly may be threatened under Listing Factor A (habitat loss and degradation due to impoundments, dewatering, land management projects, and channel modifications). 74 FR 41649 at p. 41658. FWS should also consider threats from exotic fish (under Listing Factor C or E) and exotic vegetation (under Listing Factor A or E).

FWS should fully consider a report by Vivian & Hoback (2009) [Attachment 54], particularly the review of historic and new populations at pp. 6-7. These researchers found:

At present, although more sites have been discovered, numbers of Platte River caddisflies are much lower than when the species was described in 1999. A number of potential threats including exotic mosquitofish, vegetation (Bt-corn waste, cedars, phragmites, reed canary grass), and drought appear to pose significant threats to the persistence of this species. If the Bombeck site is used as the standard for measuring population status in other sloughs, an average of more than 14 larvae per sample were collected compared with a maximum of 6.4 larvae per samples from other sites. Based on our findings, the Platte River caddisfly should remain a species of high concern in the Platte River drainage. *Id.* at pp. 7-8.

Additional relevant research includes Whiles et al. (1999) [Attachment 55], who conclude that habitat destruction has limited the distribution of this species. They write that only 25% of native lowland grassland habitat in Nebraska's Platte River valley remains and suffers from high fragmentation. These researchers also found that *Ironoquia plattensis* provides an important food source for aquatic and terrestrial predators, including migratory birds. It also facilitates energy flow and decomposition in its wetland system, thereby performing an important ecological function. *Id.* More recently, Meyer and Whiles (2008) [Attachment 56] noted that this species is more likely to occur at natural rather than restored wetlands, as well as further describing the important ecological functions of this species.

Batzer et al. (2007) [Attachment 57] described caddisflies as "probably sensitive to changes in land use in adjacent terrestrial habitats, suggesting the need for protecting terrestrial buffer zones around wetlands," specifically mentioning *I. plattensis*. *See* p. 284. Caddisflies are ecologically important and also useful as indicators of ecosystem health.

Researchers have documented decline of this species as well as threats under multiple ESA Listing Factors. FWS should therefore issue a listing proposal for the Platte River caddisfly.

23. **Mist forestfly (or meltwater lednian stonefly) (*Lednia tumana*)** is a stonefly ranked by scientists as critically imperiled. While its range includes Montana, North Dakota, and Washington in the U.S., and Manitoba, Canada, it is currently known to occur at only two alpine streams in Glacier National Park in Montana. Its habitat is cold glacial meltwater streams at extremely high elevations. Threats include natural disturbance and climate change. *See* NatureServe Account for *Lednia tumana* [Attachment 58] and Montana Field Guide (2009) [Attachment 59]. In its 90-day finding, FWS found that *Lednia tumana* may be threatened by climate change impacts under Listing Factor E. 74 FR 41649 at p. 41659. Additional information on climate

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change predictions and effects in Glacier National Park is online at: http://www.nrmcs.usgs.gov/research/glacier_retreat.htm (visited October 16, 2009). *See also* information on sources on climate change presented in the discussion of the next species, *Lepidomeda copei*.

Based on its imperilment and threats under ESA Listing Factor E, we urge FWS to promptly issue a listing proposal for the mist forestfly.

24. **Northern leatherside chub** (*Lepidomeda copei*) is a bony fish ranked by scientists as critically imperiled or imperiled. It occurs in the upper Snake River and Beaver River drainages. Its habitat is rocky flowing pools, sometimes riffles, of cold creeks and small to medium rivers. There are 11 known populations in Wyoming and 5 in Idaho. It is known from four general locations and is estimated at less than 2,500 individuals. It is extremely rare and has experienced dramatic historic decline. The NatureServe Account for *Lepidomeda copei* finds that threats include irrigation projects, impoundments, dewatering, stream alterations, siltation, grazing, non-native species (e.g. brown trout), and use as a bait minnow. *See* NatureServe Account for *Lepidomeda copei* [Attachment 60]. Utah Division of Wildlife Resources (UDWR) also describes habitat loss and fragmentation due to water diversion, livestock grazing and nonnative species as threats to this species. *See* UDWR 2009 [Attachment 61].

In its 90-day finding for this species, FWS recognized habitat loss, fragmentation and degradation due to water development, stream alteration, livestock grazing and nonnative species as potential threats to this species. 74 FR 41649 at p. 41659.

The FWS should also consider the information in the following documents in its analysis of threats to this species:

US Environmental Protection Agency Environmental Monitoring and Assessment Project's Ecological Assessment of Western Streams and Rivers (Stoddard et al. 2005) [Attachment 62].

This report is an assessment of the ecological condition of western waters, and the most important factors affecting those conditions. The EPA and states collected biological, chemical and physical data at over 1340 perennial stream and river locations. Results provide a comprehensive picture of the biological quality of perennial waters across the West, including streams and rivers within the current and historical distribution of the northern leatherside chub. The report aims to 1) describe the ecological condition of all perennial flowing western streams and rivers (with the exception of the lower Columbia, Snake, Missouri and Colorado Rivers) with direct measures of plants, fish and other aquatic life, 2) identify and rank the relative importance of chemical, biological, and physical disturbances affecting stream and river condition and acting as stressors on resident biological assemblages; including physical disturbance to riparian vegetation and stream channels, chemical disturbance to water quality, and disturbance due to presence of non-native species.

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The FWS should consider the information in this report in its analysis of listing factors A (physical, chemical and biological disturbances that result in loss and modification of northern leatherside chub habitat), C (predation by brown trout and other non-native species), D (condition of western streams demonstrates that current regulatory mechanisms are likely inadequate to address many of the threats to northern leatherside chub), and E. (presence of mercury in fish, and degradation of water quality due to high levels of mercury, nitrogen, salinity, phosphorus etc. may threaten northern leatherside chub).

US Global Climate Change Report (Karl et al. 2009).⁴⁵ This report discusses climate change impacts in the U.S., both nationally and on the regional level. It discusses a range of impacts on native ecosystems and wildlife. This report should inform the Service's analysis of Listing Factor E – Other Natural and Manmade Factors: the threat from climate change.

Climate Change Impacts on Water Resources, Part II. of National Water Program Strategy Response to Climate Change. U.S. Environmental Protection Agency, Office of Water Resources, 17pp. [Attachment 63]. This report gives an overview of how air and water temperature increases and changes in rainfall and snowfall levels and distribution due to climate change, are likely to impact water resources and fisheries in the United States. This overview, and the references it contains, should inform the FWS's analysis of listing factor E – as it provides a useful framework for considering how climate change may impact the northern leatherside chub.

Paper on impacts of irrigation canals on northern leatherside chub in Wyoming (Roberts & Rahel 2008) [Attachment 64]. The abstract for this paper reads as follows:

Irrigation canals can be a major source of mortality for fish in the Rocky Mountain region. Our study looked at how fish were affected by the irrigation canal system in the Smiths Fork, a tributary to the Bear River in western Wyoming. There are two native species of conservation concern in the Smiths Fork drainage: Bonneville cutthroat trout *Oncorhynchus clarkii utah* and northern leatherside chub *Lepidomeda copei*. Our objectives were to determine the relative abundance of each species within the canals and the fate of trout (Bonneville cutthroat trout and brown trout *Salmo trutta*) that enter canals. During the summer of 2003 we sampled 30 sites within the Covey Canal system, which is the largest canal system withdrawing water from the Smiths Fork. Because fish were observed to accumulate at certain spots in the canal system, we developed a sampling scheme that incorporated both random sample sites and sites known to attract fish. We estimated that between 6,300 and 10,400 fish encompassing 10 species were entrained in this canal system. The two most abundant species were speckled dace *Rhinichthys osculus* (29% of all fish) and mountain sucker *Catostomus platyrhynchus* (37% of all fish). Bonneville cutthroat trout and

⁴⁵Online at: <http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf>.

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northern leatherside chub each comprised 2% of the total entrained fish. We implanted 30 Bonneville cutthroat trout and 13 brown trout with radio transmitters to determine whether entrained trout could leave the canal system when water levels were reduced in late summer. We found that 77% of the transmitter-implanted fish died within the canals, indicating that this system functions as sink habitat for Bonneville cutthroat trout and brown trout. Based on this mortality rate, we estimated that 120 Bonneville cutthroat trout (95% confidence interval, 75–165) and 299 brown trout (280–317) perished in the Covey Canal system during the summer of 2003.

The FWS should consider the potential impact of entrainment in irrigation canals and subsequent mortality on northern leatherside chub in its analysis of listing factors A and E.

Sources describing threat of predation on northern leatherside chub

Several sources cited within the Rangewide Conservation Agreement and Strategy for Northern Leatherside (*Lepidomeda copei*) describe predation by non-native species (particularly brown trout and brook trout) as a threat to northern leatherside chub. See UDWR (2009), cited above. The FWS should consider this information in its analysis of listing factor C – disease or predation.

Disease and parasites

Many native fish species in the western U.S. are threatened by disease and parasites. There is very little information currently available about how disease and parasites may impact northern leatherside chub. However, the FWS should attempt to determine whether disease and parasites threaten northern leatherside chub.

Utah Report on swimming performance for Utah fishes with critical information for culvert design (Aedo et al. 2009) [Attachment 65]. This report suggests that culverts may act as barriers to native fish passage, when designed based on models of salmonid swimming performance, as salmonids can swim at velocities well above the physical ability of native fishes, including southern leatherside chub, a close relative of northern leatherside chub. We note that many culverts within the range of the northern leatherside chub were likely designed without fish passage in mind. Those designed with fish passage in mind may have been designed based on models of salmonid swimming performance. Thus culverts may contribute to fragmentation of northern leatherside chub habitat. The Service should consider this information in its analysis of listing factor A.

Small Population Size and Isolation

Though both the Service's 90-day finding and the Rangewide Conservation Agreement and Strategy for Northern Leatherside (*Lepidomeda copei*) (UDWR 2009), note that the northern leatherside chub exists only in small, fragmented populations, the Service's 90-day finding does not consider small population size and isolation to be a threat to the

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species. The FWS should evaluate whether the northern leatherside chub is threatened by small population size and increased isolation due to habitat fragmentation.

U.S. EPA EnviroMapper for Water⁴⁶

Water pollution may be a threat to the northern leatherside chub. The U.S. EPA EnviroMapper for Water at <http://map24.epa.gov/emr/> contains GIS data on water quality that should be considered in FWS's analysis of Listing Factors A and E. For example, this data shows that many of the stream segments within the geographical management units for northern leatherside chub (See pg. 30 of UDWR (2009)) are impaired and are designated under section 303d of the Clean Water Act. This suggests that many of the stream segments currently or historically occupied by the northern leatherside chub may have water quality problems. Northern leatherside chub may be threatened by degradation of water quality.

Geocommunicator database on fluid and hard rock minerals⁴⁷

Exploration and development of fluid minerals (oil and gas) and hard rock minerals may also threaten northern leatherside chub. GIS data on the location of oil and gas potential, oil and gas leases, producing oil and gas wells, and locations where future oil and gas wells have been authorized can be found at www.geocommunicator.gov. This website also contains GIS data on locations of hard rock mining claims and permits. This data shows that there is oil and gas potential within the eastern geographical management units (See pg. 30 of UDWR 2009) for northern leatherside chub. Along the eastern edge of the map of the geographical management units, there are existing oil and gas leases, existing permits to drill for oil and gas, and producing oil and gas wells. Oil and gas development can negatively impact fish through road construction and other surface disturbance that fragments habitat and contributes to sedimentation problems, through accidental spills (from pipelines, holding ponds and during transport) and runoff of contaminants into rivers and streams, movement of contaminants through groundwater and into surface water as a result of hydraulic fracking, and through water depletion for oil and gas development activities. The FWS should consider whether oil and gas development poses a threat to northern leatherside chub within the eastern portion of its distribution. In addition, the GIS data available at www.geocommunicator.gov shows that there are numerous hard rock mining claims within the geographical management units for northern leatherside chub. Mining can negatively impact northern leatherside chub through road construction and other surface disturbance that causes loss and fragmentation of habitat, through accidental spills and runoff of heavy metals and other contaminants into rivers and streams, and through water depletion for mining activities. The FWS should consider the information available at www.geocommunicator.gov in its analysis of Listing Factors A and E.

25. **Bearmouth mountainsnail** (*Oreohelix sp. 3*) is a terrestrial snail ranked by scientists as critically imperiled or imperiled. It occurs in the Bearmouth area of

⁴⁶See <http://map24.epa.gov/emr/>.

⁴⁷See www.geocommunicator.gov.

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Montana (southeast of Missoula) and may exist on Lolo National Forest or nearby state lands. Its habitat is bare rock, talus, and scree. It is considered to be declining. Threats include road construction, mining, highway maintenance, roadside spraying, and grazing. According to NatureServe, “The species is declining both in number of colony sites and in numbers of individuals. The main factor in decline is habitat loss and degradation from human activity...” See NatureServe Account for *Oreohelix sp. 3* [Attachment 66]. In its 90-day finding, FWS found that *Oreohelix sp. 3* may be threatened Listing Factor A (habitat loss and degradation due to highways and associated activities). 74 FR 41649 at p. 41660.

FWS cites Frest and Johannes (1995),⁴⁸ who describe this species as surviving “in a few very small colonies” (p. 115). These researchers describe the threats captured in the NatureServe account and specifically recommend federal ESA listing, stating:

Federal and State (MT) listing as Endangered is appropriate, in our opinion. The area of occurrence was collected heavily by R. B. Brunson from the 1940s through the 1960s; we have recently begun resurvey of the same region. It is unlikely that many additional sites will be found, or that the geographic range will be extensively increased. *Id.*

FWS should also consider the discussion in Hendricks (2003)⁴⁹ on threats to *Oreohelix* spp. (see especially pp. 5-6). While Hendricks’ report does not specifically address the Bearmouth mountainsnail, its discussion of potential threats may be relevant for the FWS’s status review for this species. Additionally, in their report for the Northern Region of the U.S. Forest Service, Hendricks et al. (2006) [Attachment 67] state,

Only recently has there been recognition by biologists that many mollusk species in the region are threatened with a variety of potentially detrimental land use activities, prompting renewed inventories. See p. 1.

While there is a lack of information specific to the Bearmouth mountainsnail, the available information indicates very low numbers and a variety of threats within this species’ limited habitat. FWS is required to make listing decisions based upon the best available scientific data (16 U.S.C. § 1533(b)(1)(A)), and we therefore recommend FWS issue a listing proposal for this species.

26. **Byrne Resort mountainsnail** (*Oreohelix sp. 31*) is a terrestrial snail ranked by scientists as critically imperiled or imperiled. It occurs on Old Byrne Resort in Granite County and may occur on the Lolo National Forest or nearby state lands. Its habitat is

⁴⁸Frest, T.J. and E.J. Johannes. 1995. Interior Columbia Basin mollusk species of special concern. Final report to the Interior Columbia Basin Ecosystem Management Project, Walla Walla, Washington. Contract #43-0E00-4-9112. 274 pp. plus appendices. This report was obtained via a Freedom of Information Act request to FWS Region 6. It is already in FWS’s possession and therefore is not attached.

⁴⁹Hendricks, P. 2003. Status and Conservation Management of Terrestrial Mollusks of Special Concern in Montana. Report to Region I, U.S. Forest Service. Montana Natural Heritage Program, Helena. 67 pp. + appendices. This report is already in FWS’s possession and therefore is not attached.

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open, dry limestone and talus. Threats include road construction materials, grazing, and roadside spraying. *See* NatureServe Account for *Oreohelix sp. 31* [Attachment 68]. NatureServe states,

Some colonies extant thirty to fifty years ago have already disappeared, and many dead shells can be found in the talus at the current colony sites... *Id.*

In its 90-day finding, FWS found that *Oreohelix sp. 31* is known to exist at only one site and may be threatened Listing Factor A (habitat loss and degradation due to road construction). 74 FR 41649 at p. 41660. However, it seems that there are additional threats to this snail, including grazing, roadside spraying, and the former Byrne Resort (Frest and Johannes 1995). These researchers wrote, “The species is declining, both in number of sites and absolute numbers, due primarily to human activities.” *Id.* They also recommended federal ESA listing, citing the same reasons as the Bearmouth mountainsnail. *Id.*

We again suggest that FWS consult Hendricks (2003) and Hendricks et al. (2006) for a discussion of threats facing *Oreohelix* spp.

While there is a lack of information specific to the Bearmouth mountainsnail, the available information indicates very low numbers and a variety of threats within this species’ limited habitat. FWS is required to make listing decisions based upon the best available scientific data (16 U.S.C. § 1533(b)(1)(A)), and we therefore recommend FWS issue a listing proposal for this species.

27. **Longitudinal gland pyrg** (*Pyrgulopsis anguina*) is a freshwater snail ranked by scientists as critically imperiled. Its range is White Pine County, Nevada and Millard Co, Utah in the Hamlin-Snake Valley watershed. This species is known only from three springs. *See* NatureServe Account for *Pyrgulopsis anguina* [Attachment 69].

In its positive 90-day finding for *Pyrgulopsis anguina*, FWS found that habitat loss and degradation (due to spring diversion, roads, residential and agricultural development) and climate change/drought pose threats to this species. 74 FR 41649 at p. 41661.

In February of 2009, the Center for Biological Diversity filed a petition to list 42 species of Great Basin springsnails from Nevada, Utah and California as threatened or endangered under the Endangered Species Act, including *Pyrgulopsis anguina*. *See* Center for Biological Diversity et al. (2009) [Attachment 70]. The information in this petition should inform the FWS’s 12 month finding for this species.

28. **Hamlin Valley pyrg** (*Pyrgulopsis hamlinensis*) is a freshwater snail ranked by scientists as critically imperiled. It is a narrow endemic that occurs in only one location in Beaver County, Utah, in the Hamlin-Snake Valley watershed. *See* NatureServe Account for *Pyrgulopsis hamlinensis* [Attachment 71].

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In its positive 90-day finding for *Pyrgulopsis hamlinensis*, FWS found that habitat loss and degradation (due to spring diversion, roads, residential and agricultural development, groundwater depletion and contamination) and climate change/drought pose threats to this species. 74 FR 41649 at p. 41661.

In February of 2009, the Center for Biological Diversity filed a petition to list 42 species of Great Basin springsnails from Nevada, Utah and California as threatened or endangered under the Endangered Species Act, including *Pyrgulopsis hamlinensis*. See Center for Biological Diversity et al. (2009) (cited above). The information in this petition should inform the FWS's 12 month finding for this species.

29. **Sub-globose snake pyrg** (*Pyrgulopsis saxatilis*) is a freshwater snail ranked by scientists as critically imperiled. It is a narrow endemic that occurs in one spring in Millard County, Utah, in the Hamlin-Snake Valley watershed. See NatureServe Account for *Pyrgulopsis saxatilis* [Attachment 72].

In its positive 90-day finding for *Pyrgulopsis saxatilis*, FWS found that habitat loss and degradation (due to spring diversion, roads, residential and agricultural development, groundwater depletion and contamination), the presence of an invasive mollusk (*Melanoides*), and climate change/drought pose threats to this species. 74 FR 41649 at p. 41661.

In February of 2009, the Center for Biological Diversity filed a petition to list 42 species of Great Basin springsnails from Nevada, Utah and California as threatened or endangered under the Endangered Species Act, including *Pyrgulopsis saxatilis*. See Center for Biological Diversity et al. (2009) (cited above). The information in this petition should inform the FWS's 12 month finding for this species.

Conclusion

In conclusion, all 29 species under review for ESA listing warrant such listing, as either endangered or threatened species. We urge the Service to issue listing proposals for all of these species based on their imperilment and the threats from habitat loss, climate change, and other factors. Within one year after issuing the listing proposals, the Service should issue final listing rules in order to provide these 29 plant and animal species with the full protections of the ESA.

Warranted but precluded findings for these species may pose a significant risk to their well-being because such findings could escalate the threats from habitat loss and other factors to these species. Warranted but precluded findings would also be illegal, given the lack of expeditious progress in the FWS listing program.

Please contact us for assistance in contacting any of the experts cited or for any of the sources referenced.

Sincerely,

/s/Nicole J. Rosmarino

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List of Attachments

Introduction

Attachment 1: Finley, Bruce. 2009. Endangered Species Lists May be Broadened. Denver Post, October 7, 2009.

Attachment 2: Nelson, P., Smith, B., Mueller, M., Belenky, L., Culver, N., and B. Snape. Memo to Laurel Angell, Staff, U.S. House of Representatives, House Natural Resources Committee Re: U.S. Bureau of Land Management Special Status Species Policy, BLM Manual 6840, dated February 18, 2009.

1 - Yellowstone sand verbena (*Abronia ammophila*)

Attachment 3: Whipple, J. 2002. Yellowstone Sand Verbena (*Abronia ammophila*): A Yellowstone Lake Endemic. In Anderson, R.J., and D. Harmon, eds. 2002. *Yellowstone Lake: Hotbed of Chaos or Reservoir of Resilience? Proceedings of the 6th Biennial Scientific Conference on the Greater Yellowstone Ecosystem*. October 8–10, 2001, Mammoth Hot Springs Hotel, Yellowstone National Park. Yellowstone National Park, Wyo., and Hancock, Mich.: Yellowstone Center for Resources and The George Wright Society. Pp. 256-268.

Attachment 4: NatureServe Account for *Abronia ammophila*. Downloaded March 21, 2008.

Attachment 5: Zeinath, D., Heidel, B., and G. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. November 2003. Report by Wyoming Natural Diversity Database.

Attachment 6: Fertig, W. 2000a. Wyoming Natural Diversity Database State Species Abstract for *Abronia ammophila*. Dated June 30, 2000.

2 - Ross's bentgrass (*Agrostis rossiae*)

Attachment 7: NatureServe Account for *Agrostis rossiae*. Downloaded March 21, 2008.

Attachment 8: Fertig, W. 2000b. Wyoming Natural Diversity Database State Species Abstract for *Agrostis rossiae*. Dated August 2, 2000.

Attachment 9: Oliff, T., Renkin, R., McClure, C., Miller, P., Price, D., Reinhart, D., and J. Whipple. 2001. Managing a Complex Exotic Vegetation Program in Yellowstone National Park. *Western North American Naturalist* 61(3): 347–358.

Attachment 10: National Park Service. 2002. Environmental Assessment for Wildland Urban Interface Fuels Management, Yellowstone National Park, Wyoming.

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Attachment 11: United Nations Environment Programme. 2008. World Heritage Site Account for Yellowstone National Park. Updated February 2008.

Attachment 12: Tercek, M.T. and J.L. Whitbeck. 2004. Heat avoidance life history strategy controls the distribution of geothermal *Agrostis* in Yellowstone. *Ecology* 85(7): 1955-1966.

Attachment 13: Tercek, M.T., D.P. Hauber and S.P. Darwin. 2003. Genetic and historical relationships among geothermally adapted *Agrostis* (bentgrass) of North America and Kamchatka: evidence for a previously unrecognized, thermally adapted taxon. *American Journal of Botany* 90(9): 1306-1312.

3 - Hamilton milkvetch (*Astragalus hamiltonii*)

Attachment 14: NatureServe Account for *Astragalus hamiltonii*. Downloaded March 21, 2008.

Attachment 15: Federal Register Notice for Castle Peak Environmental Impact Statement. 70 FR 61301-61302 (October 21, 2005).

4 - Isely milkvetch (*Astragalus iselyi*)

Attachment 16: NatureServe Account for *Astragalus iselyi*. Downloaded March 21, 2008.

5 - Skiff milkvetch (*Astragalus microcymbus*)

Attachment 17: NatureServe Account for *Astragalus microcymbus*. Downloaded March 21, 2008.

6 - Precocious milkvetch (*Astragalus proimanthus*)

Attachment 18: NatureServe Account for *Astragalus proimanthus*. Downloaded March 21, 2008.

Attachment 19: Fertig, W. 2001. Wyoming Natural Diversity Database State Species Abstract for *Astragalus proimanthus*. Dated February 12, 2001.

Attachment 20: Fertig, W. and L. Welp. 2001. Status of Precocious Milkvetch (*Astragalus proimanthus*) in Southwest Wyoming. Wyoming Natural Diversity Database report for the U.S. Bureau of Land Management. Dated February 10, 2001.

7 - Cisco milkvetch (*Astragalus sabulosus*)

Attachment 21: NatureServe Account for *Astragalus sabulosus*. Downloaded March 21, 2008.

8 - Schmoll milkvetch (*Astragalus schmolliae*)

Attachment 22: NatureServe Account for *Astragalus schmolliae*. Downloaded March 21, 2008.

9 - Fremont County Rockcress (*Arabis* (= *Boechea*) *pusilla*)

Attachment 23: NatureServe Account for *Arabis* (= *Boechea*) *pusilla*. Downloaded March 21, 2008.

Attachment 24: Heidel, B. 2005. Review Draft - Status of *Boechea pusilla* (small rockcress) in Wyoming. Prepared for the Bureau of Land Management. Wyoming Natural Diversity Database, Laramie, WY.

Attachment 25: Fertig, W. 2000c. Wyoming Natural Diversity Database State Species Abstract for *Arabis* (= *Boechea*) *pusilla*. Dated June 14, 2000.

10 - Boat-shaped bugseed (*Corispermum navicula*)

Attachment 26: NatureServe Account for *Corispermum navicula*. Downloaded March 21, 2008.

11 - Pipe Springs cryptantha (*Cryptantha semiglabra*)

Attachment 27: NatureServe Account for *Cryptantha semiglabra*. Downloaded March 21, 2008.

12 - Weber whitlowgrass (*Draba weberi*)

Attachment 28: NatureServe Account for *Draba weberi*. Downloaded March 21, 2008.

13 - Brandegee's wild buckwheat (*Eriogonum brandegeei*)

Attachment 29: NatureServe Account for *Eriogonum brandegeei*. Downloaded March 21, 2008.

Attachment 30: Davis, Juniper. 2001. Draft Status Review for Brandegee Wild Buckwheat (*Eriogonum brandegeei* Rydberg). Prepared for Center for Native Ecosystems.

Attachment 31: Kurzel, B. 2006. Colorado Natural Areas Program memo regarding Garden Park. Dated November 24, 2006.

14 - Frisco buckwheat (*Eriogonum soledium*)

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Attachment 32: NatureServe Account for *Eriogonum soredium*. Downloaded March 21, 2008.

15 - Ostler's peppergrass (*Lepidium ostleri*)

Attachment 33: NatureServe Account for *Lepidium ostleri*. Downloaded March 21, 2008.

16 - *Lesquerella navajoensis* (a bladderpod)

Attachment 34: NatureServe Account for *Lesquerella navajoensis*. Downloaded March 21, 2008.

Attachment 35: Salywon, A.M, Dierig, D.A., Rebman, J.P., and D.J. de Rodriguez. 2005. Evaluation of new *Lesquerella* and *Physaria* (Brassicaceae) Oilseed Germplasm. American Journal of Botany 92(1): 53–62. 2005.

Attachment 36: Daniela Roth. 2001. Species account for *Lesquerella navajoensis*. Navajo Natural Heritage Program, P.O. Box 1480, Window Rock, AZ 86515. Additional copies at <http://nnhp.nndfw.org/>.

Attachment 37: Navajo Department of Fish & Wildlife. 2005. Navajo Endangered Species List, August 9, 2005.

Attachment 38: Navajo Department of Fish & Wildlife. 2008. Navajo Endangered Species List, September 10, 2008.

17 - Flowers penstemon (*Penstemon flowersii*)

Attachment 39: NatureServe Account for *Penstemon flowersii*. Downloaded March 21, 2008.

18 - Gibbens penstemon (*Penstemon gibbensii*)

Attachment 40: NatureServe Account for *Penstemon gibbensii*. Downloaded March 21, 2008.

Attachment 41: Heidel, B. 2009. Survey and monitoring of Gibbens' penstemon (*Penstemon gibbensii*) in south-central Wyoming. Prepared for the Bureau of Land Management. Wyoming Natural Diversity Database, Laramie, WY.

Attachment 42: Fertig, W. 2000d. Wyoming Natural Diversity Database State Species Abstract for *Penstemon gibbensii*. Dated November 24, 2000.

Attachment 43: Comments by Wilderness Society et al. on BLM Little Snake Draft Resource Management Plan/Environmental Impact Statement.

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19 - Pale blue-eyed grass (*Sisyrinchium sarmentosum*)

Attachment 44: NatureServe Account for *Sisyrinchium sarmentosum*. Downloaded March 21, 2008.

Attachment 45: U.S. Forest Service. 2008. Invasive Plant Treatment Final Environmental Impact Statement, Gifford Pinchot National Forest. Appendix C. March 2008.

Attachment 46: U.S. Forest Service. 2007a. Decision Notice and Finding of No Significant Impact: Authorization of Grazing on the Ice Caves Horse & Cattle Allotment, Gifford Pinchot National Forest. Dated September 21, 2007.

Attachment 47: U.S. Forest Service. 2007b. Environmental Assessment, Ice Caves Grazing Allotment, Gifford Pinchot National Forest. Dated September 2007.

Attachment 48: Washington Native Plant Society. 2007. Comments on reauthorization of grazing on the Ice Caves Grazing Allotment. Letter to District Ranger Nancy Ryke, dated March 22, 2007.

Attachment 49: Gifford Pinchot Task Force. 2007. Comments on reauthorization of grazing on the Ice Caves Grazing Allotment. Letter to District Ranger Nancy Ryke, dated March 21, 2007.

20 - Frisco clover (*Trifolium friscanum*)

Attachment 50: NatureServe Account for *Trifolium friscanum*. Downloaded March 21, 2008.

21 - Frigid ambersnail (*Catinella gelida*)

Attachment 51: NatureServe Account for *Catinella gelida*. Downloaded March 21, 2008.

22 - Platte River caddisfly (*Ironoquia plattensis*)

Attachment 52: NatureServe Account for *Ironoquia plattensis*. Downloaded March 21, 2008.

Attachment 53: Riens, J.R. and W.W. Hoback. 2008. Population status and potential threats to the Platte River caddisfly (*Ironoquia plattensis*). Poster presented at the North Central Branch of the Entomological Society of America 2008 Meeting.

Attachment 54: Vivian, L.A. and W.W. Hoback. 2009. Conservation status, habitat assessment, and model to predict the occurrence of the Platte River caddisfly. Grant report, dated June 30, 2009.

Attachment 55: Whiles, M.R., Goldowitz, B.S., and R.E. Charlton. 1999. Life History

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and Production of a Semi-Terrestrial Limnephilid Caddisfly in an Intermittent Platte River Wetland. *Journal of the North American Benthological Society* 18(4): 533-544.

Attachment 56: Meyer, C.K. and M.R. Whiles. 2008. Macroinvertebrate communities in restored and natural Platte River slough wetlands. *J. N. Am. Benthol. Soc.* 27(3):626–639.

Attachment 57: Batzer, D.P., Cooper, R., and S.A. Wissinger. 2007. Wetland Animal Ecology in Batzer, D.P. and R.R. Sharitz (eds.) *Ecology of Freshwater and Estuarine Wetlands*. University of California Press, Berkeley. Pp. 242-284.

23 - Mist forestfly (or meltwater lednian stonefly) (*Lednia tumana*)

Attachment 58: NatureServe Account for *Lednia tumana*. Downloaded March 21, 2008.

Attachment 59: Montana Field Guide. 2009. Online at <http://fieldguide.mt.gov>.

24 - Northern leatherside chub (*Lepidomeda copei*)

Attachment 60: NatureServe Account for *Lepidomeda copei*. Downloaded March 21, 2008.

Attachment 61: Utah Division of Wildlife Resources. 2009. Rangewide Conservation Agreement and Strategy for Northern Leatherside (*Lepidomeda copei*), June 2009.

Attachment 62: Stoddard, J.L, Peck, D.V., Paulsen, S.G., Van Sickle, J., Hawkins, C.P., Herlihy, A.T., Hughes, R.M., Kaufmann, P.R., Larsen, D.P., Lomnický, G. Olsen, A.R., Peterson, S.A., Ringold, P.L., and Whittier, T.R. 2005. An Ecological Assessment of Western Streams and Rivers. EPA 620/R-05/005. September 2005. U.S. Environmental Protection Agency, Environmental Monitoring and Assessment Project, Office of Research and Development, Washington, D.C., 56 pp.

Attachment 63: Climate Change Impacts on Water Resources, Part II. of National Water Program Strategy Response to Climate Change. U.S. Environmental Protection Agency, Office of Water Resources, 17pp.

Attachment 64: Roberts, J.J. and Rahel, F.J. 2008. Irrigation Canals as sink habitat for trout and other fishes in a Wyoming drainage. *Transactions of the American Fisheries Society* 137:951-961.

Attachment 65: Aedo, J., Belk, M. Hotchkiss, R. Morphology and swimming performance of Utah fishes: critical information for culvert design in Utah streams. Report No. UT-09.12. September 2009. Utah Department of Transportation Research Division. Brigham Young University, Salt Lake City, UT. 59pp.

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25 - Bearmouth mountainsnail (*Oreohelix sp. 3*)

Attachment 66: NatureServe Account for *Oreohelix sp. 3*. Downloaded March 21, 2008.

Attachment 67: Hendricks, P., B. A. Maxell and S. Lenard. 2006. Land Mollusk Surveys on USFS Northern Region Lands. A report to the USDA Forest Service, Northern Region. Montana Natural Heritage Program, Helena, Montana. 11 pp. plus appendices.

26 - Byrne Resort mountainsnail (*Oreohelix sp. 31*)

Attachment 68: NatureServe Account for *Oreohelix sp. 31*. Downloaded March 21, 2008.

27 to 29 - *Pyrgulopsis* spp.

Attachment 69: NatureServe Account for *Pyrgulopsis anguina*. Downloaded March 21, 2008.

Attachment 70: Center for Biological Diversity et al. 2009. Petition to list 42 species of Great Basin springsnails from Nevada, Utah, and California as threatened or endangered under the Endangered Species Act. Submitted to the U.S. Fish and Wildlife Service February 17, 2009.

Attachment 71: NatureServe Account for *Pyrgulopsis hamlinensis*. Downloaded March 21, 2008.

Attachment 72: NatureServe Account for *Pyrgulopsis saxatilis*. Downloaded March 21, 2008.