June 24, 2013

National Black-footed Ferret Conservation Center
US Fish and Wildlife Service
P.O. Box 190
Wellington, CO 80549
Attn: Draft Recovery Plan


Please accept the following comments on behalf of the Center for Biological Diversity and WildEarth Guardians in response to the U.S. Fish and Wildlife Service’s (FWS) Draft Black-footed Ferret Recovery Plan (Draft Recovery Plan). We appreciate the opportunity to provide comment.

The Draft Recovery Plan contains several significant deficiencies that put in question whether the black-footed ferret will ever achieving wild, self-sustaining populations in any portion of its range. One of the primary goals of the Endangered Species Act (ESA) is the recovery of threatened and endangered species—restoring species to the point that they are self-sustaining in the wild. Restoring self-sustaining populations furthers the ESA’s larger goal of “conserving the ecosystems upon which threatened and endangered species depend.” The ferret Draft Recovery Plan’s proposed numeric recovery criteria represent less than 1% of the species’ likely historic abundance and less than 1% of its historic range. None of the proposed population goals meet minimum population viability levels that would protect against genetic inbreeding, nor would there be any guarantees that ferret populations would have connectivity with one another. Finally the recovery criteria do not directly address the critical threats that caused the ferret’s decline to the point of near-extinction. The Draft Recovery Plan merely asserts without any factual support that the recovery goal of 3,000 ferrets will address these threats because the presence of 3,000 ferrets will “maximize flexibility of various management options” and “minimize risk of [threats] affecting multiple populations.” These assumptions are not rationally connected to the facts presented and do they represent sufficient threat abatement under the standards of the ESA to delist the black-footed ferret.

1 These comments were sent via email to Pete Gober at the National Black-footed Ferret Conservation Center. We attempted to upload to regulations.gov using the docket number provided in the Federal Register notice on April 23, 2013, but were unable to upload any documents to the web portal.
I. The Numeric Recovery Criteria in the Draft Plan are Insufficient to Ensure Self-Sustaining Populations.

The goal of the Endangered Species Act is to “promote populations that are self-sustaining without human interference.”\(^3\) The legislative history of the Act makes clear the self-sustaining populations are the best way to ensure that species are restored “to the point where they are viable components of their ecosystems.”\(^4\) As observed in *California State Grange v. National Marine Fisheries Service*, the both the FWS’ and National Marine Fisheries Service’s (NMFS) practice and policy has consistently been that delisting of a listed species cannot occur until that species is self-sufficient in the wild.\(^5\) Despite multiple references in the Draft Recovery Plan to establishing self-sufficient populations of ferrets in the wild, the Draft Recovery Plan’s numeric recovery criteria, both in terms of population levels required or suitable habitat that is maintained, will not achieve self-sufficient populations of ferrets.

A. The Population Goal of 3,000 Breeding Adults in Insufficient to Achieve Recovery.

The draft Recovery Plan proposes a recovery criteria of “at least 3,000 breeding adults, in 30 or more populations, with at least one population in each of at least 9 of 12 States within the historical range of the species, with no fewer than 30 breeding adults in any population, and at least 10 populations with 100 or more breeding adults.” This recovery criteria is insufficient for several reasons. Most critically, the Draft Recovery Plan fails to explain, using the best available science, how the target of 3,000 breeding adults relates to the effective breeding size of the ferret over the long-term. The recovery team assumes that during a given year that approximately “approximately one-third of all potential breeders will actually breed.” This number would in theory be above the 500 adult threshold normally considered necessary to maintain a genetically viable population. Unfortunately, this target is based on multiple, unsupported assertions. First, the FWS assumes that one third of ferrets will breed in a given year based on an assumption from the 1988 ferret recovery plan that approximately “20-50 percent of the population” breeds during a given year. But the 1988 ferret recovery plan was written at a time when there were no black-footed ferrets in the wild. In other words, the assumed ratio of total population (N) compared to the effective breeding population (N\(_e\)) is simply based on a guess from 1988. The FWS has put forth no data or research to corroborate the actual N:N\(_e\) ratio for black-footed ferrets.

Second, as explained by Frankham (1995), N:N\(_e\) ratio are generally lower than suspected, which means that “wildlife populations are in a worse state genetically than is currently recognized.”\(^6\) The FWS assumption that one half or one third of adult ferrets breed in a given year may be overly optimistic. If this is true, then the effective breeding population may be much lower than suspected. In fact, Frankham suggests that the likely the effective breeding population for many species is often an order of magnitude less than the total breeding population size. If this is true for black-footed ferrets, than a recovery criteria of 3,000 ferrets could potentially translate into an effective breeding population of only 300 ferrets, far below the

---

3 *Trout Unlimited v.Lohn*, 559 F.3d 946, 9957 (9th Cir. 2009).
minimum 500 threshold generally thought necessary to maintain genetic diversity. If the goal is to ensure an effective breeding population of 500 individuals, then the recovery criteria should be revised upwards to at least 5,000 individuals.

Third, the 500 $N_e$ level should be viewed as a bare-minimum. As the Draft Recovery Plan notes, 500 individual can retain genetic diversity “in an idealized or carefully controlled population.” The black-footed ferret population is not idealized, and post-delisting would certainly not be carefully controlled. A precautionary approach for maintaining genetic variability in wild populations that are not carefully controlled may require an $N_e$ population between 500-1,000, and possibly as high as 5,000 individuals. This precautionary approach would therefore require a minimum overall ferret population between 5,000-10,000 individuals, and potentially as high as 50,000 ferrets if the $N: N_e$ ratio is indeed 10:1. The Draft Recovery Plan fails to explain the scientific basis for its assumptions for and why a 3,000 ferret population goal would preserve long-term genetic diversity in light of more current scientific information regarding conservation genetics.

The numeric population recovery criteria target is also problematic given the lack of connectivity between populations and the lack of balance required amongst all ferret reintroduction sites. In theory, the population recovery criteria can be achieved if 20 populations each only have the bare-minimum of 30 breeding adults (a total of 600 ferrets) while 10 populations each contain approximately 240 ferrets (a total of 2,400 ferrets). Populations of 30 ferrets could mean an effective breeding population of only 2-4 ferrets in a given year in a particular population. Such small effective breeding populations are not sufficient to maintain any level of genetic viability over the long term. The recovery criteria should be revised such that all populations require at least 100 individuals at the downlisting stage. If the scientific data demonstrate that 100 ferrets/reintroduction site are insufficient to maintain genetic diversity, informed by $N: N_e$ then this numeric recovery criteria should be revised upwards for delisting. Until additional research is completed, the existence and value of large ferret populations at some reintroduction location should be viewed skeptically in terms of their long-term contribution to the species. As demonstrated at the Conata Basin reintroduction site, even a population that appeared to sustain a relatively large number of ferrets may still not be sufficient to maintain long-term viability in light of the threat of sylvatic plague.

Finally, the Draft Recovery Plan states that the reintroduction sites will “be managed as a metapopulation through immigration and emigration at a few adjacent sites as well as through translocation of wild-born ferrets at more widely separated sites.” If immigration and emigration does occur between some populations, then some genetic diversity might be preserved and lower population targets might be appropriate. However, the Draft Recovery Plan does not identify between which reintroduction locations that natural immigration and emigration of ferrets might occur or even if any such movements have ever occurred in the extant populations. The Draft Recovery Plan does not describe whether and to what extent connectivity between populations exists. If connectivity is unlikely due to habitat fragmentation, then even under the best possible scenario, it is highly likely that the 3,000 effective breeding population will be large enough to

---

maintain long-term genetic health. The Draft Recovery Plan should identify at which reintroduction sites, natural immigration and emigration can occur and explain how the population levels at each reintroduction area relate to the larger metapopulation and why each population would be of sufficient population size to maintain long-term genetic variability. Otherwise, it is possible that many peripheral populations will be maintained at the minimum 30-ferret level, and would be nothing more than a token population to achieve the arbitrary recovery criteria in the Draft Recovery Plan.

B. The Habitat Recovery Criteria of 494,000 acres in Insufficient to Achieve Recovery.

The Draft Recovery Plan sets forth an acreage criteria required to support black-footed ferrets across habitat containing all three species of prairie dog where black-footed ferrets are present. Setting aside the fact that this figure is directly based on the inadequate population numeric target for the species, this criteria is still insufficient because it leaves little room for error in determining the minimum acres/ferret needed to ensure the long-term future for the species. The Draft Recovery Plan anticipates that 85 percent of ferrets will occur in black-tailed prairie dog habitat. Based on a 225 acre-per-female calculation, the Draft Recovery Plan assumes that approximately 382,000 acres of black-tailed prairie dog habitat will be required to support the recovery goal of 3,000 ferrets. Another 112,000 acres of white-tailed and Gunnison prairie dog habitat will be needed to meet the overall recovery goal. These targets represent bare-minimums and contain no margin for safety. While some research suggests that female ferrets require approximately 75 acres of prairie-dog occupied habitat, on-the-ground data from the Conata Basin site in South Dakota indicate that approximately 216 acres/ferret are required to sustain each individual ferret in that population. Thus, while the 225 acres/ferret level in the Draft Recovery Plan is slightly above the acreage requirements observed at the Conata Basin, the reality is that substantial uncertainty exists about what ferrets require to ensure their long-term persistence across different habitats throughout their range.

As the Draft Recovery Plan notes, the prairie dog population at the Conata Basin recently declined, leading to a decline in ferrets, which could suggest that additional habitat is required in light of the threat of sylvatic plague to allow ferret populations to recovery from plague outbreaks. To ensure long-term persistence, more habitat is likely needed at each reintroduction site to account for the uncertainty relating to outbreaks of plague. Another substantial source of uncertainty stems from the fact that 10 additional reintroduction sites have yet to be identified, and the habitat requirements for ferrets might be substantially larger than at Conata Basin. Until the acreage:ferret ratio is fully explored at each reintroduction location using field-verified data, making any assumptions regarding minimum acreage requirements is simply an arbitrary guess that likely underestimates the acres needed to foster recovery.

More broadly, the 494,000 acre recovery criteria target represents only 13 percent of the land area currently occupied by prairie dogs in the United States. Today, approximately 3.7 million acres of land support prairie-dogs; this represents a 96% decline from the species’ historic geographic range. While there are no historic data on the pre-European population of black-footed ferret, even if the ferret were restored to all currently occupied prairie dog habitat, it would still likely only occupy four percent of its likely historic range (there is no reason not to assume that the ferret’s range was coextensive with that of prairie dog species). A final recovery
target of 3,000 ferrets on 494,000 acres represents 0.52 percent of the species’ likely historic range. Under any objective standard such as the IUCN Red List, a species that has declined by 99.5 percent would still clearly qualify as critically endangered.\(^9\) Rather than setting recovery criteria that would allow the ferret to become self-sustaining, viable components of the ecosystems they inhabit, the Draft Recovery Plan is merely managing to prevent extinction. The Draft Recovery Plan criteria should be revised upwards to provide sufficient habitat for a much larger ferret population of between 5,000-12,000 individuals plus a larger margin of safety in the event that ferrets require additional prairie-dog habitat in portions of the range where reintroduction activities have yet to occur.

II. If Translocations and Reintroductions are Required into the Foreseeable Future, then the Black-footed Ferret Cannot be Considered Recovered.

The Draft Recovery Plan states that “due to habitat fragmentation, interpopulation transfers of individuals will likely be necessary in perpetuity.” And as a result, the Draft Recovery Plan states that captive breeding of ferrets will continue post-delisting to augment wild populations when outbreaks of sylvatic plague or other stochastic events occurs at a reintroduction site. This approach to recovery conflicts with the spirit and Congressional intent of the ESA.

If the Draft Recovery Plan itself does not ensure that the black-footed ferret achieves self-sustaining populations in the wild, then the ESA makes clear that the species cannot be considered recovered.\(^10\) As a clear and contrasting example, the FWS proposed listing the wolverine (\textit{Gulo gulo}) as a threatened species because “by 2045, maintenance of the contiguous United States wolverine population in the currently occupied area may require human intervention to facilitate genetic exchange and possibly also to facilitate metapopulation dynamics by moving individuals between habitat.”\(^11\) If human-assisted movements of individual animals to maintain viability is a justification for protecting a species under the ESA, then it cannot also be true that the ferret should be considered recovered if it will require the same type of human-assisted movements to maintain viability into the foreseeable future.

The FWS conclusion that ferret reintroductions will be required “in perpetuity” is simply self-defeating. The black-footed ferret was once the most endangered species in North America and was twice thought to have gone extinct in the wild. Only by bringing all known individuals into captivity and implementing a comprehensive captive-breeding program was the FWS able to save the species from extinction. Recovery efforts for this species only commenced 20 years ago when the first reintroductions began in Wyoming and South Dakota. Achieving recovery will likely take many more decades of work considering the decline of the ferret took hundreds of years to accomplish. Thus the statement that reintroductions will be needed “in perpetuity” fails to put in perspective the history of the ferret and the geographic and temporal scale of the challenge ahead to recover the species. This statement also contradicts the Draft Recovery Plan

---


\(^10\) \textit{Trout Unlimited v.Lohn}, 559 F.3d 946, 9957 (9th Cir. 2009).

itself, which states that black-footed ferret recovery “is biologically possible; however, the restoration of adequate prairie dog habitats will take more time, patience, and commitment by Federal, State, tribal, and private land managers than has occurred to date.” The efforts to improve the status of the black-footed ferret have had significant initial success, considering that the species was extinct in the wild. However, the FWS and its partners must conduct restoration efforts at a far greater spatial scale before the FWS can rightly conclude that the captive breeding will be required into perpetuity and that delisting can occur without self-sufficient wild populations. FWS appears to have concluded that since augmentation from captive populations will always be required, that it may simply delist the species prior to ever attempting to establish conditions that will lead to ferret viability range-wide. Instead, the ferret will be subject to the vagaries of budget fluctuations, State agency conservation priorities, and local politics and maintained at precariously low population numbers. Such an approach will keep the ferret in constant risk of localized extirpations and will keep the species from ever becoming a viable component of the ecosystems it inhabits.

The reality is that much more can be done right now to recover the ferret than is being planned and envisioned by the FWS. The Draft Recovery Plan notes that 3-5 large potential reintroduction areas exist that could support ferret reintroductions plus an additional 181 sites throughout the species historic range that could be utilized for ferret reintroduction in the next 10 years. If the FWS has identified this many reintroduction sites, it makes little sense for the Draft Recovery Plan to call for the establishment of only 30 populations of ferret. The Draft Recovery Plan should establish recovery criteria that requires ferret reintroductions in the majority of the 181 sites that have been identified as suitable habitat. Nor does it make sense for the Draft Recovery Plan to only require ferret populations in nine of the twelve States in the historic range of the species when reintroductions could occur in all twelve States, something which the Draft Recovery Plan also recommends.

Finally, it is also worth noting that downlisting can be achieved by 2020 only if there is “aggressive management” of prairie dog habitat and “aggressive reintroduction efforts” of ferrets. But, if these efforts do not succeed, then FWS should reassess recovery goals in 2020. Until ferrets reach levels where downlisting to threatened status could occur, too much uncertainty about what can and cannot be accomplished through recovery actions to unilaterally declare that reintroductions and translocations must continue into the future post-delisting.

### III. Recovery Criteria Must Directly Address Each of the Five Statutory Threat Factors. In the Absence of Adequate Regulatory Mechanisms, the Ferret Cannot be Delisted.

Section 4(f) of the ESA requires that recovery plans contain “objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions [Section 4] that the species be removed from the list.” Because a species can only be removed from the list when none of the five listing factors are present, all recovery plans must address the five listing factors that originally resulted in the decision to protect a species as threatened or

---


endangered. Recovery plans must address the original causes of listing and also any subsequently discovered or understood threats so that delisting is possible.  

The Draft Recovery Plan for the black-footed ferret fails to address the most significant threats to the species: the inadequacy of existing regulatory mechanisms. Because the Draft Recovery Plan fails to set forth recovery actions that would result in adequate regulatory mechanisms—specifically regulatory mechanisms to protect the prairie dogs and to prevent poisoning of ferrets and their prey—it is legally inadequate.

The Draft Recovery Plan makes clear that the loss of habitat, impacts from sylvatic plague and the continued persecution of prairie dogs are the main threats to the ferret moving forward. The Plan states:

the lack of regulatory mechanisms that conserve stable, relatively large prairie dog populations [is] a high magnitude, imminent threat to black-footed ferret recovery at the present time. It may be the single, most limiting factor regarding successful recovery of the ferret. Without large, stable prairie dog complexes, ferret recovery in the wild cannot be achieved.

Because black-footed ferrets are habitat specialists, it is not surprising that the species recovery depends upon improved conservation and management of prairie dogs. The Draft Recovery Plan notes that protective regulations for prairie dogs are required to address (1) the poisoning of prairie dogs and (2) the maintenance of large prairie dog complexes. If State-level management of prairie dogs improved, then “opportunities for ferret recovery at sites with marginal potential” could substantially improve. Yet despite the clear recognition that State management of prairie dogs is a key hurdle to overcome for black-footed ferret recovery, the FWS states, “[the] lack of regulatory mechanisms for prairie dogs would persist regardless of the listing status for the ferret.” Such a conclusion represents a fundamental misunderstanding of the function of the ESA. The ESA is designed to address this exact situation where inadequate regulatory mechanisms are harming a declining species by protecting it as threatened or endangered. If regulatory mechanisms are inadequate to protect an at-risk species, then the solution is to keep protecting it under the ESA.  

To ensure that regulatory mechanisms are developed, a recovery plan could include criteria that require Federal, State, tribal, or local

15 Indeed, the FWS has listed other species, including the Canada lynx, based solely on a finding that factor D, the inadequacy of regulatory mechanisms, was present:

In the proposed rule, various threats were identified as potentially affecting lynx populations . . . . However, there is inconclusive evidence that any of these factors, with the exception of inadequate regulatory mechanisms, may actually adversely affect the contiguous United States’ lynx population. At the local level, particularly in the Southern Rockies, habitat loss and fragmentation may negatively affect lynx . . . . However, at the [population] scale, we conclude the factor threatening lynx is the inadequacy of existing regulatory mechanisms . . . .

government bodies to develop regulatory mechanism to protect a species, its habitat or its prey. Indeed, as it is the FWS itself that has repeatedly denied ESA protection to prairie dogs, it is more than slightly hypocritical for the agency to continue to call out the lack of protections for prairie dogs as the most significant threat to the ferret while also claiming it is not empowered to address that threat.

In the case of the ferret, the Draft Recovery Plan notes that a conservation plan has been developed for the black-tailed prairie dog, but only three States within the range of the ferret have met the objectives in this plan. The Draft Recovery Plan further notes that while all states within the historic range of the ferret have produced State Comprehensive Wildlife Conservation Strategies, “(t)hese strategies describe priorities for management of wildlife species, but do not result in any protection for the species.” The FWS goes on to note that “(m)anagement of these reintroduction sites would need to continue, regardless of the species’ listing status,” but does not describe how such management would be guaranteed without the protections of the ESA, and does not make a guarantee of such management a criteria for delisting.

A specific recovery criteria must be included in the final Recovery Plan requiring that all States within the historic range of the ferret have sufficient enforceable regulatory mechanisms to protect the prey of the black-footed ferret and that the States all meet the objectives of the black-tailed prairie dog conservation plan. Again, the FWS indicates that very need in the Draft Recovery Plan:

- Ferret recovery is biologically possible; however, the restoration of adequate prairie dog habitats will take more time, patience, and commitment by Federal, State, tribal, and private land managers than has occurred to date. Proactive management of prairie dogs, with regard to maintenance of sufficient quantity and quality of prairie dog habitat to support black-footed ferret recovery, is critical.

Unfortunately, FWS fails to take the logical, and legally required step of establishing criteria that guarantee the critical need is met.

The Draft Recovery Plan also relies on continued work of the Black-footed Ferret Recovery Implementation Team (BFFRTT), while acknowledging that the BFFRTT is not regulatory in nature and that its effectiveness has varied. Reliance on the BFFRTT without a corresponding recovery criteria that requires a regulatory mechanism empowering the team to carry out its recommendations is inadequate to ensure the continued existence of the ferret. The Draft Recovery Plan relies on the BFFRTT continuing to maintain captive breeding facilities and planning and conducting post-delisting monitoring, yet no law or regulation would guarantee that action. Simply put, the FWS cannot rely on the BFFRTT to undertake necessary actions when no law or regulation guarantees its funding, effectiveness or even its existence.

Similarly, the Draft Recovery Plan notes that poisoning of prairie dogs with zinc phosphide and anticoagulant pesticides remains an imminent and high magnitude threat to black-footed ferrets due to the possibility that they will be poisoned in turn if they consume affected prairie dogs. Large-scale poisoning of prairie dogs that curtails potential ferret habitat for future recovery sites also a threat to ferret recovery. The Draft Recovery Plan notes that “threat due to poisoning could be ameliorated by adequate regulatory mechanisms that…limit the type of
poison used at ferret recovery sites so as to preclude secondary impacts.” Again, despite this clear threat to the ferret, the Draft Recovery Plan does not contain any recovery criteria that directly address this threat. Pesticides can be regulated through the Section 7 consultation process, as occurred with Rozol, an anticoagulant poison used in a portion of the ferret’s range.16 Section 7 consultations should occur for all pesticides used to control prairie dog populations where there is overlap with the range of the ferret. And additional regulatory restrictions can be imposed at the State and local level to limit how pesticides are applied in the habitat of ferrets. Again, the FWS relies on a mere statement that management of prairie dog poisoning would need to continue without guaranteeing regulatory mechanisms adequate to guarantee that outcome. The final Recovery Plan must contain recovery criteria that address this specific threat.

Instead of developing recovery criteria to address the threats to the ferret that derive from inadequate existing regulatory mechanisms, the Draft Recovery Plan instead relies on an arbitrary (and biological inadequate) demographic threshold as an indicator that threats are sufficiently abated to declare the ferret recovered. The Plan asserts that the presence of 3,000 adult ferrets will “minimize risk of affecting multiple populations simultaneously” through the poisoning of prairie dogs and that this number of ferrets will “maximize the flexibility of various management options” for prairie dogs. This claim is not justified by any facts and does not explain how threats to the ferret will in reality be abated. Likewise, delisting can purportedly occur if the population remains at the 3,000 ferret level for three years in a row because this “will provide evidence of continued active management by States, tribes, and Federal agencies.” However, given the admitted lack of monitoring capacity and the stochastic nature of sylvatic plague, changes in a ferret population at any level over such a short time frame would be difficult to detect and even more difficult to understand. It is also noteworthy that the downlisting criteria of 1,500 ferrets contains exactly the same language as the delisting criteria in terms of justification. In other words, just as 3,000 ferrets “minimize risk of affecting multiple populations simultaneously” through secondary poisoning, 1,500 ferrets also “minimize risk of affecting multiple populations simultaneously.” The FWS provides no explanation as to how these different numbers of ferrets address to what degree these risks are being reduced because there do not appear to be any data or demographic modeling to support these claims. This concern is particularly dire when the species faces known threats that can wipe out entire populations such as sylvatic plague.

Congress intended that recovery plans serve two very specific functions: to guide the agency’s actions in recovering the species or subspecies to the point that the protection of the ESA is no longer necessary, and to provide objective, scientifically valid criteria to determine when in fact a species has reached that point. A recovery plan is considered the “central organizing tool” for the agency in planning and implementing each species’ recovery and ultimate delisting.17 Because the Draft Recovery Plan fails to set forth valid recovery criteria,

---


17 Nat’l Marine Fisheries Serv., Interim Endangered and Threatened Species Recovery Planning Guidance § 1.1 (Version 1.2 2007); see also Fund v. Babbitt, 903 F. Supp. at 103 (finding that a recovery plan provides guidance to the agency in stopping and reversing a species’ decline and identifies which threats must be neutralized to ensure its continued existence; “A recovery plan is one of the most important tools to ensure sound scientific and logistical decision-making throughout the recovery process.”).
the FWS’ ability to organize and prioritize meaningful recovery actions that will achieve recovery is severely limited.

The joint NMFS-FWS Recovery Guidance states that “merely increasing a species’ numbers, range and abundance does not ensure its long term health and sustainability; only by alleviating threats can lasting recovery be achieved.”\textsuperscript{18} The Draft Recovery Plan for the ferret stands in stark contrast to the FWS’s own guidance on recovery plans by rejecting this approach, an approach that has been ratified by the courts.\textsuperscript{19} The Recovery Plan sets forth an arbitrary population target. Then it develops an arbitrary habitat goal to barely meet the habitat needs for this arbitrary population goal. Finally, it categorically asserts that somehow if these targets are met, then threats to the ferret have abated. Such an approach is arbitrary and capricious.

Respectfully submitted

Brett Hartl
Endangered Species Policy Director
Center for Biological Diversity
Washington, D.C. 20008
bhartl@biologicaldiversity.org

Bethany Cotton
Wildlife Program Director
WildEarth Guardians
Denver, CO 80202
bcotton@wildearthguardians.org
