



24 June 2002

Rick D. Cables, Regional Forester
Rocky Mountain Region
U.S. Department of Agriculture/Forest Service
Region 2, Rocky Mountain Region
740 Simms St.
Lakewood, CO 80225
Fax: (303) 275-5299

VIA POSTAL MAIL AND FAX

**RE: Administrative Procedures Act Petition to Develop Region-wide
Drought Policy**

Dear Regional Forester,

Notice is hereby given pursuant to sections 553(e) and 555(e) of the Administrative Procedures Act, 5 U.S.C. §§ 553(e) et seq., that Forest Guardians, American Lands Alliance, and Center for Native Ecosystems petition the Regional Forester for the Rocky Mountain Region (Region 2) of the U.S. Forest Service (USFS) within the U.S. Department of Agriculture, for the issuance of a rule concerning a region-wide drought policy for management of land uses on National Forest Service lands.

We believe that USFS development of a region-wide drought policy is in the interest of the public, the Forest Service, and native ecosystems on Forest Service lands. Rather than simply react to crisis, the Forest Service should engage in long-term planning that provides more certainty for public land users and safeguards the needs of native species. Planning on a regional scale will ensure fairness and certainty better than ad hoc decisions made by a number of individual range managers regarding different individual permit holders. While site-specific conditions are relevant and should be taken into consideration, establishing a region-wide drought policy will enable the region to set a floor for certain potentially damaging activities while permitting local managers to be flexible to site-specific conditions. A region-wide policy will allow all parties to better plan for the inevitable.

In addition, we contend that the issuance of a rule concerning a USFS Region 2 drought policy is necessary for the Forest Service to fulfill its legal obligation to manage for viable populations of native species (36 C.F.R. § 219.19) and to manage for the diversity of plant and animal communities on Forest Service planning units (36 C.F.R. § 219.26).

In 2002, much of the Western United States is facing drought conditions of a severity that has not been witnessed in decades. Throughout the Rocky Mountains and the Great Plains, precipitation levels have been exceptionally low, with potentially devastating consequences for native vegetation and wildlife. Given the severe nature of the drought this year, and the fact that this level of drought can be expected to exacerbate the effects of all land use activities on Forest Service lands—for example, livestock grazing permitted by the Forest Service—we are concerned that the Rocky Mountain Region has no systematic policy in place for addressing inevitable drought situations.

Most wildlife and plant species are more stressed during drought, so the impacts of all human uses of USFS lands are likely to be higher than in times of normal precipitation. In addition, the Region's systematic monitoring failures make it incapable of observing declining trends and a region-wide drought policy is therefore doubly needed. For example, on the White River National Forest, a timber sale is proceeding without wildlife population and trend data required by the National Forest Management Act.¹ To the extent that the current fire situation is pulling USFS staff away from their normal duties,² we would expect that monitoring of wildlife populations and habitat conditions will suffer this year more than most.

Land uses that have the potential to exacerbate drought's impacts on native flora, fauna, and natural processes include, but are not limited to, livestock grazing, logging, motorized recreation, seismic surveys, and oil, gas, and minerals extraction. Soils are more vulnerable to erosion during drought (Le Houérou 1996), particularly with declines in plant productivity and the consequent loss of vegetative protective cover. As explained below, there is thus a strong potential for land uses on National Forests and Grasslands to contribute to heightened erosion and degradation of water and habitat quality in times of low precipitation. In this petition, we emphasize the impacts of livestock grazing, but other land uses are also likely to take their toll on wildlife and habitat health during drought. The drought policy we are requesting should apply to the full range of land use activities.

The Current USFS Response to Drought is Inadequate

According to information received by Forest Guardians from the Regional Office, the Forest Service's means of dealing with the current drought are inadequate. Drier regions experience more frequent droughts (Le Houérou 1996); drought, fires, and native herbivory drive prairie grassland ecology (Knopf 1996; Weaver et al. 1996); and droughts regularly occur in the West (Limerick et al. 2002). Drought is therefore inevitable in the U.S. Forest Service's Rocky Mountain Region. We regard the lack of a region-wide drought policy as a significant oversight,

¹NFMA requires that the Forest Service monitor populations of Management Indicator Species (36 C.F.R. § 219.19). Despite this ongoing duty, most, if not all National Forest units within Region 2 have still failed to gather population abundance and trend data on all Management Indicator Species. The ongoing litigation involving the Baylor Park timber sale is a case in point.

²In personal communication between Arapaho-Roosevelt National Forest staffperson Dorene Summerland and Dr. Nicole Rosmarino on 19 June 2002, when Ms. Summerland was asked how often habitat conditions and forage utilization levels would be monitored after livestock were put on allotments in the Sulphur Ranger District, Ms. Summerland replied that she didn't know, as she might be pulled away to help fight area fires (Dorene Summerland, pers. comm., Dr. Nicole Rosmarino, 19 June 2002).

particularly given the increased susceptibility of the land to human abuse during drier times (Thomas 1997).

In the absence of a formal drought policy based on objective scientific recommendations, the agency has no means of ensuring that the health of soils, watersheds, riparian areas, threatened and endangered species, and fire ecology are protected in cases of extreme climatic conditions. In light of the fact that drought can have severe long-term effects on soil productivity, vegetative vigor, wildlife, and sensitive riparian systems, such a policy is needed to provide a systematic, coordinated, and scientifically valid means of ensuring that native ecosystems are protected in times of drought. At the regional and forest level, the failure of the Rocky Mountain Region of the Forest Service to have such a policy in place equates to a failure to provide necessary protections to watersheds, native species, and natural ecosystems.

According to information provided to Forest Guardians by the Region, the agency has addressed the drought issue by means of a livestock grazing memorandum to forest supervisors and field office managers and through meetings with the livestock industry (See Cables and Morgan, correspondence dated 31 May 2002). Representatives of the environmental community were not invited to those meetings.

The memorandum itself represents with surprising audacity the lengths to which the U.S. Forest Service will go to minimize impacts on the livestock industry. Nowhere in the memorandum is there mention of any concern for the wildlife – including imperiled species – which are most vulnerable in times of drought. Additionally, as we will discuss further below, the memo fails to address any other land uses the impacts of which are exacerbated by drought. Some excerpts from the memorandum are revealing:

As public land managers, it is our responsibility to apply sound management that will sustain the long-term productivity and health of the rangelands. Equally important, we have the responsibility of being good neighbors to local communities and permit holders to help them properly manage the lands under their care and to minimize impacts to their operations.

...all parties [USFS and livestock industry] clearly understand that we must manage the natural resources to keep the impact of the drought within levels that will ensure long-term health of rangelands and the sustainability of the livestock industry. (See Cables and Morgan, correspondence dated 31 May 2002: 1, emphasis added)

These excerpts indicate that the USFS is oriented toward minimizing impacts on the livestock industry as much, or more than, considering the needs of the land or its numerous duties to protect native species and communities. The needs of wildlife species are nowhere mentioned – unless vaguely disguised under “sound management” or the “health of rangelands.” Further, the USFS in Region 2 is unwilling, it would seem, to adopt enforceable standards to serve as a baseline for individual forest and field office responses to the memorandum. This is clear in the following statement:

Response to drought must occur on an allotment specific, case-by-case basis rather than applying broad scale remedies. (See Cables and Morgan, correspondence dated 31 May 2002, p. 1)

Along these lines, the memorandum repeatedly references the Forest Service's need to be flexible in the drought situation.³ The document lists possible actions such as using pastures scheduled for rest, changing seasons of use and/or livestock numbers, using vacant allotments and allotments in non-use, and the increased use of herding techniques. Any of these measures merely “may” (Cables and Morgan, correspondence dated 31 May 2002: 2, emphasis not added) be applicable on different planning units. In addition, the memorandum fails to specify that seasons of use should be shortened and stocking numbers reduced and does not prescribe that forage utilization limits should be lowered in times of drought.

Most glaringly, the memorandum calls for opening up pastures scheduled for rest, vacant allotments, and those in non-use, for livestock grazing. Given that Natural Resource Conservation Service Conservation Reserve Program Lands have been opened to livestock grazing (allowing utilization levels of up to 75%!),⁴ the USFS has a heightened responsibility to keep vacant and non-use allotments ungrazed to provide for the needs of wildlife in USFS planning areas. As discussed below, wildlife are also stressed during drought, yet we are unaware of any special measures proposed or being undertaken by the Service to address stress to wildlife. Thus, as the memorandum communicates, the priority of USFS is to sustain continued livestock grazing, rather than truly meet its multiple-use mandate and the need to provide for viable populations of native wildlife (36 C.F.R. § 219.19).

The response of individual Forest Service units to the Regional Forester's memorandum has been highly variable, with livestock numbers in some allotments being cut, and others in nonuse (Chuck Quinby, pers. comm., with Kirsten Stade on June 12, 2002). While we commend the non-use of allotments by livestock ranchers and decreases in stocking rates in other allotments,⁵ we believe that a region-wide drought policy is necessary to ensure consistency and adequacy in the U.S. Forest Service's response to drought in the Rocky Mountain Region.

Indeed, on some ranger districts in the Arapaho-Roosevelt National Forest, vacant allotments are being used or contemplated for use this season, while livestock numbers remain unaltered on others. The same forage utilization limits used in wet years are being used during drought. In addition, permittees are being relied on to convey important range and riparian condition information to USFS staff and are expected to herd livestock out of riparian areas of their own accord (Vernon LaFontaine, pers. comm., Dr. Nicole Rosmarino, 19 June 2002; Dorene Summerland, pers. comm., Dr. Nicole Rosmarino, 19 June 2002). While we do not object to permittees conveying information to USFS staff, a USFS monitoring program must be based on enforceable, consistent measurements made by federal employees accountable to forest

³In their two-page memorandum, Cables and Morgan used the word “flexibility” three times (Cables and Morgan, correspondence dated 31 May 2002).

⁴See Reuters News Service, 23 May 2002, “USDA allows grazing on Western lands amid drought.”

⁵See Lipsher, Steve. 2002. “Ranchers asked to limit grazing.” Denver Post June 14, 2002. Reduced use of allotments appears to be the case on the Pawnee National Grassland, for instance (Maggie Marston, pers. comm., Dr. Nicole Rosmarino, 18 June 2002).

plan standards and guidelines. Moreover, industry self-regulation alone cannot be relied upon to safeguard native species and ecosystems on USFS land.

On the Grand Mesa, Uncompahgre, and Gunnison National Forests, USFS staff informed Forest Guardians that, “The Forest Service does not dictate [livestock] numbers in drought. That’s a business management decision of the family ranch” (Floyd Reed, pers. comm., Kirsten Stade 20 June 2002). This indicates reluctance on the part of the USFS on some Region 2 forests to “interfere” with livestock ranchers’ operations. This reluctance would seem to us a hindrance to the USFS obligation to protect native flora and fauna and natural ecosystems on USFS land.

While some Forests may take a proactive stance, in the absence of a systematic drought policy we have no assurance that there will be consistent and adequate protection of native species and ecosystems. We strongly caution against considering a rainfall or two as an adequate basis for returning livestock to the ground after a prolonged period of drought. A scientifically sound drought policy would give the agency and other concerned citizens some basis for trusting that livestock grazing and other land uses are only being reinitiated when soil, vegetation, watershed, imperiled and sensitive species habitat, and riparian conditions have recovered sufficiently from the drought to allow for these land uses without causing significant long-term damage.

We believe a Regional Drought Policy should employ the Standard Precipitation Index (SPI), as this is an objective standard based on measurements of external data. Such a methodology provides a consistent means of addressing drought conditions through scientific analysis, and allows the agency to make important decisions about protecting native ecosystems in times of severe stress in an objective manner. All forests throughout the region should be using the SPI, as well as other objective tools such as the Palmer Drought Index, to provide sound scientific bases for management decisions regarding drought.

In the Southwestern Region, the Tonto National Forest’s drought policy provides clear, conservative direction as to when livestock may be returned to the land after periods of drought. The policy provides that:

Drought periods shall end when the SPI for the last 12 months becomes positive. Even though precipitation has returned to normal, rangeland plants normally need more time to recover. The Team shall establish standards for re-stocking allotments that will ensure the protection of rangelands until proper recovery is complete. Generally, after normal precipitation resumes, re-stocking shall not occur until after a minimum of one growing season of rest. In cases of prolonged or severe drought, two or more seasons of rest may be required prior to re-stocking.

Tonto National Forest Rangeland Drought Policy at 4. As should be the case throughout the Rocky Mountain Region, the Tonto is acknowledging the severe stress that drought represents to vegetation, soils, and wildlife, and is erring on the side of caution when determining at what point one can defensibly add to this stress the additional impact of livestock grazing. This use of the Precautionary Principle should be the basis for the entire Region’s approach to drought management, and for a comprehensive region-wide drought policy.

For its part, livestock grazing has likely contributed to the extreme fire danger (and extensive fires) being witnessed in the Rocky Mountain Region. Several scientific studies have shown that livestock grazing leads to a reduction of fine fuels, namely herbaceous vegetation, thereby reducing or altogether eliminating natural high frequency, low intensity fire regimes. This disruption in the natural fire regime, especially in ponderosa pine forests, has led to dense tree stocking that is implicated in the causation of high intensity fires. In fact, a 1984 study of Douglas fir and ponderosa pine forests found that grazing caused an increase in the number of small trees. The study, published in the Journal of Range Management, concluded that,

Continued livestock grazing without fuel management will cause reductions in the frequency of low intensity fires, but will promote conditions that favor the occurrence of infrequent, high intensity fires. (Zimmerman and Neuenschwander 1984.)

Drought is no new phenomenon in the Great Plains and Rocky Mountains. The Forest Service should be aware of the devastating consequences that land uses and drought in combination may have on the land and should engage in long-term planning to safeguard native species, ecosystems, and natural processes.

Whereas with grazing the Region has at least taken the small step of suggesting some drought management changes, we have no evidence that the Region has taken adequate measures to adjust other land uses due to the impacts of drought. Other land uses which impact soil and water quality, such as motorized vehicle use, logging, oil and gas extraction, and others, need to be restricted in times of drought.

For example, in Region 2, according to USFS staff, off-highway vehicles (OHVs) have only been restricted in the San Juan National Forest in response to drought (Chuck Quinby, USFS, pers. comm. with Kirsten Stade, 19 June 2002). On the National Forest websites in Region 2, while fire bans were broadcasted, there were no advertised restrictions on OHV use.⁶ Off-road vehicle use can crush, break, trample, and reduce vegetative cover (see, for example, Bury et al. 1977; Weaver and Dale 1978; Cole and Bayfield 1993). Vegetation that is stressed by drought conditions may be more susceptible to such impacts. Moreover, vegetative cover decreases, as a result of the combined effects of off-road vehicle use and sustained drought, can increase the likelihood of soil erosion. Soils, especially sensitive soils, are susceptible to rapid erosion when stripped of vegetation (Sheridan 1979). Increased erosion can result in water quality declines (Miller 1970), which would presumably be exacerbated during times of drought due to decreased flows.⁷

⁶For example, see Arapaho-Roosevelt National Forest at <http://www.fs.fed.us/r2/arnf/recreation/index.htm>, visited 19 June 2002; Grand Mesa, Uncompahgre, and Gunnison National Forests <http://www.fs.fed.us/r2/gmug/>, visited 19 June 2002; White River National Forest http://www.fs.fed.us/r2/whiteriver/bulletin_board.html, visited 19 June 2002.

⁷For more information about the environmental impacts of off-road vehicle use, please refer to the "Petition to Enhance and Expand Regulations Governing the Administration of Recreational Off-Road Vehicle Use on National Forests," submitted to the U.S. Forest Service by Wildlands CPR et al. on April 5, 2000. We incorporate this document, and all the studies it cites, into this drought policy petition.

Impacts on Imperiled and Keystone Species

We are particularly concerned about the impacts of drought on prairie dogs (Cynomys spp.) and the lesser prairie chicken (Tympanuchus pallidicinctus). The black-tailed prairie dog (C. ludovicianus) and lesser prairie chicken are both federal candidates for listing under the Endangered Species Act (66 Federal Register 54817 (October 30, 2001)). In addition, we are concerned about other prairie dog and keystone species. The USFS should develop a region-wide policy that addresses the impact of land uses during drought on these imperiled and keystone species.

First, several species of prairie dogs inhabit USFS Region 2: the black-tailed prairie dog, white-tailed prairie dog (C. leucurus), and Gunnison's prairie dog (C. gunnisoni). Prairie dogs suffer from multiple and intersecting threats, including habitat destruction and degradation, shooting, poisoning, and plague. As a consequence, the black-tailed prairie dog has been extirpated from southeastern Arizona, has suffered range reductions in Kansas, Nebraska, New Mexico, Oklahoma, Texas, Canada, and Mexico, has been reduced by 98-99% throughout its range, and is a candidate species for listing (65 Federal Register 5476-5488 (February 4, 2000)).

White-tailed and Gunnison's prairie dogs are also imperiled species. Although they are not yet candidates for ESA listing, they have smaller population and range sizes than the black-tailed prairie dog and suffer from similar threats. Currently, white-tailed prairie dogs are estimated to inhabit 600,000 acres (Knowles 2001), compared with estimates that black-tailed prairie dogs occupy approximately 791,000 acres (Miller and Reading 2002). Gunnison's prairie dogs have also endured substantial acreage and population reductions and are estimated to currently occupy only 236,000 acres (Knowles 2001).

Drought can negatively impact prairie dogs. This year, drought is suspected of reducing black-tailed prairie dog populations on the Charles M. Russell National Wildlife Refuge (Johnson 2002). In addition, drought was one of several factors suspected of causing white-tailed prairie dog declines in Shirley Basin, Wyoming (Van Fleet et al. 2001). Gunnison's prairie dogs depend on an herbaceous understory in grassland or shrubland habitat (Pizzimenti and Hoffman 1973; Fitzgerald and Lechleitner 1974). To the extent that drought impacts plant productivity, the species will be negatively affected.

However, prairie dogs have endured drought for millennia. Indeed, as indicated above, the arid and semi-arid areas that prairie dogs inhabit feature drought as a normal occurrence. Moreover, black-tailed prairie dogs evolved with heavy ungulate grazing. Prairie dogs and bison (Bison bison) have a mutually beneficial relationship. In more mesic areas, while bison reduce vegetation height, thus allowing prairie dog expansion into mixed- and tall-grass prairie, prairie dog clipping, grazing, and burrowing activities increase the succulence and nutritional value of forage. As a result, bison spend an inordinate amount of time grazing and wallowing on prairie dog towns (Krueger 1986). Cows themselves appear to select for prairie dog towns and prairie dogs may select for cattle-grazed areas (Knowles 1986; Licht and Sanchez 1993).

One major concern centers on how land management activities may exacerbate the impacts of drought on prairie dogs. Human disturbance, habitat degradation and fragmentation,

and direct mortality all play a role in prairie dog imperilment. Activities such as energy development, off-road vehicle use and road construction, recreational target shooting, poisoning, and livestock grazing are all threats to prairie dog persistence. The increased stress on prairie dogs during drought may be exacerbated by the impacts of any of these activities. For example, livestock may negatively impact prairie dogs by causing brush encroachment and reducing available forage, particularly given their inordinate grazing on prairie dog towns. In addition, prairie dogs expand or contract in response to the previous year's precipitation. After a drier year, they generally expand in order to obtain sufficient forage (Dr. Richard Reading, pers. comm., Dr. Nicole Rosmarino, Jan. 2002). These colony expansions may generate increased hostility among ranchers. In times of drought, the scarcity of forage may encourage ranchers to lethally control prairie dogs in a futile attempt to prolong livestock grazing on a forage-depleted landscape. While the U.S. Forest Service has a standing policy prohibiting black-tailed prairie dog poisoning, this policy does not protect white-tailed or Gunnison's prairie dogs. Moreover, compliance with this policy is unclear. For all prairie dogs, there is a potential for declining populations as their colonies experience brush encroachment and forage depletion from livestock grazing.

In addition to being imperiled, prairie dogs play keystone roles in the ecosystems where they exist (Kotliar et al. 1999; Bangert and Slobodchikoff 2000; Kotliar 2000; Miller et al. 2000). A part of prairie dogs' keystone role is their hydrological functions. Prairie dogs increase water filtration on soils within their colonies, and there is increased soil moisture content due to prairie dog colonization (Day and Detling 1994). One author (Outwater 1996) asserts that prairie dogs' burrows act as megapores, channeling precipitation to the water table. Day and Detling (1994) also note the role of prairie dog burrows to facilitate water infiltration to greater depths.

We therefore request that, given prairie dogs' imperilment, the keystone role they perform, and their water conservation functions, a region-wide drought policy be developed which ensures that prairie dog populations be protected and recovered on USFS lands. Land management impacts on the prairie dog ecosystem must be carefully considered, and the drought policy should include specific, enforceable standards for limiting degradation of prairie dog habitat in times of drought.

Second, lesser prairie chickens are vulnerable to impacts of drought and those impacts are highly likely to be worsened with continued anthropogenic impacts, including livestock grazing of nesting and foraging areas. According to the U.S. Fish and Wildlife Service (2001: 10),

drought may impact lesser prairie-chickens through its effect on seasonal growth of vegetation necessary to provide nesting and roosting cover, food, and escape from predators.

Land management activities such as livestock grazing have the potential to reduce desirable food plants and vegetation necessary for nesting cover and forage. There is a high likelihood that these negative impacts of livestock grazing will occur:

Because the lesser prairie-chicken depends on medium and tall grasses that are preferred by cattle in regions of low rainfall, its habitat is easily overgrazed (USFWS 2001: 7).

We strongly urge that a region-wide drought policy considers the impacts of land management activities on lesser prairie chickens in times of drought.

Third, we are concerned about land use impacts on beavers (*Castor canadensis*). For instance, livestock grazing degrades riparian areas (e.g., Fleischner 1994; Muldavin et al. 1998; Belsky et al. 1999; Bock and Bock 2000), thereby impacting riparian flora and fauna, including beavers. Riparian areas are very valuable for wildlife in the western U.S. (Fleischner 1994; Muldavin et al. 1998). The primary method by which livestock cause this damage is through destruction of riparian vegetation, which leads to the erosion of streambanks, lowering of the water table, conversion of stable, gently-flowing perennial streams to ephemeral streams characterized by flash flooding, and transformation of ephemeral streams to dry washes (Muldavin et al. 1998; Bock and Bock 2000). Other land uses that affect water quality and alter hydrology may negatively impact beaver.

Willows (*Salix spp.*) are important streamside vegetation and are associated with beavers (Olson and Hubert 1994). Livestock damage to willows and hydrological disruption may render habitat unsuitable to beaver dam- and lodge-building and foraging behavior (Olson and Hubert 1994). Beaver play an important role in creating and maintaining riparian areas (Muldavin et al. 1998) and are described as a keystone species that creates habitat for native flora and fauna by modifying local hydrology, stream geomorphology, and habitat conditions.⁸ Among the consequences of beaver activities are: the creation and expansion of wetlands, elevated water tables in riparian areas, enhanced forage and cover for wildlife, improved watershed stability, reduction in high flows and downstream flooding, more constant summer flows, the retention of sediment and organic matter, increased aquatic invertebrate production, and increased total aquatic productivity. In particular, an elevated water table in areas adjacent to ponds and canals enhances riparian plant growth and stabilizes stream banks (Olson and Hubert 1994). All of these beaver-induced effects on riparian areas are vital for sustaining wildlife in times of drought.

In addition, beaver may play a role in counteracting non-native salt-cedar (*Tamarix spp.*), which is increasingly imperiling some western riparian areas. Salt-cedar can outcompete native cottonwoods and willows (Muldavin et al. 1998) and is particularly hardy in times of drought (Stevens 2002). Beaver can reduce salt cedar or tamarisk through their felling and flooding activities (Glausiusz 1996). Conversely, livestock don't tend to eat salt cedar, but do graze on cottonwood and willow saplings and thus provide a competitive advantage to salt cedar (Muldavin et al. 1998). Livestock grazing may therefore prevent, or erode, the capacity for beavers to offer themselves, other wildlife, and native vegetation a hedge against drought.

Pocket gophers (Family Geomyidae) are also keystone species (Sherrod 1999; Sherrod and Seastedt 2001). There are several different pocket gopher species in the Rocky Mountain Region, including the northern pocket gopher (*Thomomys talpoides*), plains pocket gopher (*Geomys bursarius*), yellow-faced pocket gopher (*Cratogeomys castanops*), Botta's pocket

⁸See Southwestern Willow Flycatcher Recovery Plan. Draft of April 2001. Appendix K.

gopher (*T. bottae*), Wyoming pocket gopher (*T. clusius*), and Idaho pocket gopher (*T. idahoensis*). One study concluded “the activities of pocket gophers cascade through the trophic web” (Huntly and Inouye 1988: 792). Pocket gophers play important roles in soil formation and movement (Armstrong 1987; Huntly and Inouye 1988; CDOW 2000) and consequent plant diversity (Huntly and Inouye 1988); as a prey base for avian, mammalian, and reptilian predators (CDOW 2000); and their burrows provide habitat for other species (Vaughan 1961; Chase et al. 1982; CDOW 2000). Like other rodents, pocket gophers’ digging activities aerate the soil and increase their ability to absorb precipitation (Muldavin et al. 1998). Where land management activities reduce pocket gopher populations and distribution (e.g., habitat degradation through road construction, livestock grazing, off-road vehicle use, or lethal control of pocket gophers), pocket gophers’ assistance in water conservation will be compromised.

Ecosystem Protection and Natural Processes

We emphasized keystone and umbrella species in the preceding section due to the potential for keystone and umbrella species protection to afford collateral protection to other native flora and fauna within the same ecosystem (Miller 1998/1999) and due to the USFS’s obligation to manage for viable populations of native species (36 C.F.R. § 219.19). However, broad ecosystem impacts and the integrity of natural processes must also be considered in a region-wide drought policy, particularly given the USFS’s obligation to manage for the diversity of plant and animal communities on Forest Service planning units (36 C.F.R. § 219.26).

We are very concerned that continued livestock grazing, fire suppression, and other management practices have altered natural fire ecology in the Rocky Mountain Region, thereby worsening the impacts of drought on forest and rangeland health. For instance, as mentioned above, scientific research indicates that livestock grazing can result in fine fuel reduction, which suppresses fire occurrence and unnaturally increases forest densities, thereby creating the potential for catastrophic fires rather than high frequency, low intensity fires (Zimmerman and Neuenschwander 1984). In addition, livestock have been implicated in the spread of noxious weeds (Fleischner 1994; Muldavin et al. 1998; Belsky and Gelbard 2000; LeJeune and Seastedt 2001), which alter fire ecology and hydrology in native ecosystems.

The Need for a Region-wide Drought Policy

Based on the evidence we have presented on the potential for land uses on USFS lands to exacerbate the impacts of drought on native flora, fauna, and natural processes, the Forest Service should adopt a region-wide drought policy that will minimize these negative impacts. Sensible application of the Precautionary Principle now is preferable to permanent watershed and riparian degradation, the destruction of native plant communities in favor of exotics, and the possible extinction of numerous species as a result of the devastating consequences of these land uses in times of scarcity.

The need for a Region 2 drought policy is clear, as drought will arrive again to the Rocky Mountains. Unfortunately, humans are typified by their short memories, tending to believe that favorable weather is “normal” (Le Houérou 1996). As Bock and Bock (2000: 26) quote from a rancher neighbor during a wet summer, “You know, I’ve lived in this country for twenty-five

years, and this is about the first typical summer we've had." The tendency to stock rangelands and engage in land uses at levels determined in wetter year can result in severe, unanticipated impacts, such as overgrazing effects during drought (Muldavin et al. 1998). Fortunately, these impacts can be anticipated and managed, but only through adequate region-wide drought planning.

To ensure that the present and subsequent droughts are addressed in a systematic, cautious, and consistent manner, we call upon the Forest Service to adopt a region-wide drought policy based on a sound scientific methodology for determining objective measures to protect resources in time of drought. This policy should utilize the Palmer Drought Index and/or the Standard Precipitation Index to identify those areas that are affected by drought, and should use conservative, scientific methodology for determining responsive measures such as restrictions on motorized recreation and reductions on livestock use of USFS lands.

Thank you for taking the time to read and respond to this petition. I look forward to the Forest's response, and am available at (719) 523-4123 to discuss this matter.

Sincerely,

Nicole Rosmarino, Ph.D.
Endangered Species Coordinator
Forest Guardians
and

Kirsten Stade
Conservation Biologist
Forest Guardians

Harlin Savage
Southern Rockies Organizer
American Lands Alliance

Jacob Smith
Executive Director
Center for Native Ecosystems

References

Armstrong, David M. 1987. Rocky Mountain Mammals. Colorado Associated University Press. Pp. 107-109.

Bangert, R.K. and C.N. Slobodchikoff. 2000. "The Gunnison's prairie dog structures a high desert grassland landscape as a keystone engineer." Journal of Arid Environments 46:357-369.

Belsky, A. Joy and Jonathan L. Gelbard. 2000. "Livestock grazing and weed invasions in the arid west." Published by the Oregon Natural Desert Association.

Belsky, A. Joy, A. Matzke, and S. Uselman. 1999. "Survey of livestock influences on stream and riparian ecosystems in the western United States." Journal of Soil and Water Conservation, First Quarter 1999: 419-431.

Bock, Carl E., and Jane H. Bock. 2000. The View From Bald Hill: Thirty Years in an Arizona Grassland. Berkeley, CA: University of California Press.

Bury, R.B., R.A. Luckenbach, and S.D. Busack. 1977. "The effects of off-road vehicles on vertebrates in the California desert." Wildlife Res. Repts., No. 8, U.S. Fish and Wildlife Service, Washington, DC.

Cables, Rick D., USFS Region 2 Regional Forester, and Ann J. Morgan, USFS State Director, correspondence to Forest Supervisors and Field Office Managers, dated 31 May 2002.

Chase, Janis D., Walter E. Howard, and James T. Roseberry. 1982. "Pocket Gophers." In Wild Mammals of North America. Johns Hopkins University Press. Pp. 239-255.

Cole, D.N., and N.P. Bayfield 1993. "Recreational trampling of vegetation: standard experimental procedures." Biological Conservation 63(3):209-215.

Colorado Division of Wildlife (CDOW). 2000. Covers ranking record for Thomomys talpoides macrotis. Report printed June 22, 2000.

Day, T.A., and J.K. Detling. 1994. "Water Relations of *Agropyron smithii* and *Bouteloua gracilis* and Community Evapotranspiration Following Long-term Grazing by Prairie Dogs." American Midland Naturalist 132:381-92.

Fitzgerald, J.P., and R.R. Lechleitner. 1974. "Observations on the biology of Gunnison's prairie dog in Central Colorado." American Midland Naturalist 92:146-163.

Fleischner, Thomas L. 1994. "Ecological costs of livestock grazing in western North America." Conservation Biology 8(3):629-644.

Glausiusz, Josie. 1996. "Trees of Salt." Discover March 1996. Pp. 30-32.

- Huntly, Nancy and Richard Inouye. 1988. "Pocket gophers in ecosystems: patterns and mechanisms." BioScience 38(11):786-793.
- Johnson, Clair. 2002. "Spring surveys find few transplanted ferrets survived winter." Billings Gazette May 15, 2002.
- Knopf, Fritz L. 1996. "Prairie legacies—birds." In Prairie Conservation Eds. Fred B. Sampson and Fritz L. Knopf. Washington, DC: Island Press.
- Knowles, Craig J. 1986. "Some relationships of black-tailed prairie dogs to livestock grazing." Great Basin Naturalist 46(2): 198-203.
- Knowles, Craig. 2001. "Status of the white-tailed and Gunnison's prairie dog." Prepared for Environmental Defense and National Wildlife Federation, December 5, 2001.
- Kotliar, Natasha B. 2000. "Application of the new keystone-species concept to prairie dogs: how well does it work?" Conservation Biology 14(6): 1715-1721.
- Kotliar, Natasha B., Bruce W. Baker, April D. Whicker, Glenn Plumb. 1999. "A critical review of assumptions about the prairie dog as a keystone species." Environmental Management 24 (2): 177-192.
- Krueger, Kirsten. 1986. "Feeding Relationships Among Bison, Pronghorn, and Prairie Dogs: An Experimental Analysis." Ecology 67(3):760-770.
- Le Houérou, Henry N. 1996. "Climate change, drought and desertification." Journal of Arid Environments 34: 133-185.
- LeJeune, Katherine D. and Timothy R. Seastedt. 2001. "Centaurea species: the forb that won the West." Conservation Biology 15(6): 1568-1574.
- Licht, Daniel S., and Kenneth D. Sanchez. 1993. "Association of black-tailed prairie dog colonies with cattle point attractants in the northern Great Plains." Great Basin Naturalist 53(4):385-389.
- Limerick, Patricia Nelson, William Travis, and Tamar Scoggin. 2002. "Workshop report: Boom and bust in the American West." A Report from the Center for the American West, University of Colorado at Boulder.
- Marston, Maggie, USFS Pawnee National Grassland, pers. comm., Dr. Nicole Rosmarino, 18 June 2002.
- Miller, Brian, and Richard Reading. 2002. "Threats to the black-tailed prairie dog and a plan for conservation." Wild Earth 12(1): 46-55.

Miller, Brian, Richard Reading, Jim Strittholt, Carlos Carroll, Reed Noss, Michael Soule, Oscar Sanchez, John Terborgh, Donald Brightsmith, Ted Cheeseman, and Dave Foreman. 1998/99. "Using focal species in the design of nature reserve networks." Wild Earth Winter 1998/99. Pp. 81 – 92.

Miller, Brian, Rich Reading, John Hoogland, Tim Clark, Gerardo Ceballos, Rurik List, Steve Forrest, Lou Hanebury, Patricia Manzano-Fischer, Jesus Pacheco, and Dan Uresk. 2000. "The role of prairie dogs as a keystone species: response to Stapp." Conservation Biology 14(1):318-321.

Miller, P. 1970. "Case study no. XVI: off-road recreational vehicle composite." National Technical Information Service. Environmental Problems on The Public Lands PB 196 170. Springfield, VA, 37pp.

Muldavin, Esteban H., Steven P. Platania, James N. Stuart, Greg H. Farley, Patricia Melhop, and Jayne Belnap. 1998. "Southwest." In Mac, M.J., P.A. Opler, C.E. Puckett Haecker, and P.D. Doran. Status and trends of the nation's biological resources. 2 vols. U.S. Department of Interior, U.S. Geological Survey, Reston, VA. Pp. 543-592.

Olson, Rich and Wayne A. Hubert. 1994. "Beaver: water resources and riparian habitat manager." University of Wyoming. 48 pp.

Outwater, Alice B. 1996. Water: A Natural History. New York, NY: BasicBooks.

Pizzimenti, J.J., and R.S. Hoffman. 1973. "Cynomys gunnisoni." Mammalian Species 25:1-4.

Reading, Richard P., Conservation Biology Director for the Denver Zoological Foundation, pers. comm., Nicole J. Rosmarino, January 2002.

Reed, Floyd, USFS, pers. comm., Kirsten Stade, Forest Guardians, 20 June 2002

Sheridan, D. 1979. "Off-road vehicles on public land." Council on Environmental Quality, U.S. Government Printing Office. Report No. 041-011-00041-6.

Sherrod, Susan K. 1999. "A multiscale analysis of the northern pocket gopher (*Thomomys talpoides*) in the alpine, Niwot Ridge, CO." Ph.D. dissertation, University of Colorado. 142 pp.

Sherrod, Susan K., and Timothy R. Seastedt. 2001. "Effects of the northern pocket gopher (*Thomomys talpoides*) on alpine soil characteristics, Niwot Ridge, CO." Biogeochemistry 55: 195-218.

Stevens, Dr. Larry E. 2002. "Exotic tamarisk on the Colorado Plateau." Online at <http://www.cpluhna.nau.edu/Biota/tamarisk.htm>, visited site 12 June 2002.

Thomas, David S.G. 1997. "Science and the desertification debate." Journal of Arid Environments 37: 599-608.

U.S. Fish and Wildlife Service (USFWS). 2001. Listing form for the lesser prairie chicken (Tympanuchus pallidicinctus).

Van Fleet, L., B. Luce, M. Grenier, T. Spivey, and B. Hotchkiss. 2001. "Habitat evaluation of Primary Management Zone 1 in the Shirley Basin/Medicine Bow Black-footed Ferret Management Area, Wyoming." Completion report. 15 April 2000-14 April 2001. Wyoming Game and Fish Department, Lander. 9 pp.

Vaughan, Terry A. 1961. "Vertebrates inhabiting pocket gopher burrows in Colorado." Journal of Mammalogy 42(2):171-174.

Weaver, T., and D. Dale. 1978. "Trampling effects of hikers, motorcycles and horses in meadows and forests." Journal of Applied Ecology 15:451-457.

Weaver, T., Elizabeth M. Payson, Daniel L. Gustafson. 1996. "Prairie ecology—the shortgrass prairie." In Prairie Conservation Eds. Fred B. Sampson and Fritz L. Knopf. Washington, DC: Island Press.

Zimmerman, G. Thomas and L.F. Neuenschwander. 1984. "Livestock Grazing Influences on Community Structure, Fire Intensity and Fire Frequency in the Douglas-fir/ Ninebark Habitat Type." Journal of Range Management 37(2): 104-110.