The Bureaucratically Imperiled Mexican Wolf

The U.S. Endangered Species Act (ESA) of 1973 aims to restore endangered species by conserving their ecosystems and by reining in "economic growth and development untempered by adequate concern and conservation" (U.S. Endangered Species Act 1973). Conservation biology has reaffirmed that imperative by demonstrating the connection between ecosystem conservation, population viability, and species recovery. Concurrently, economic interests have increased their influence on policy to a point where ecosystem conservation is often evaded even when its need is transparent: chinook salmon (*Oncorhynchus tshawytscha*) along the Snake River are imperiled by large dams maintained for industry and agriculture (Barker 2005), habitat of the extremely rare Ivory-billed Woodpecker (*Campephilus principalis*) is threatened by construction of a major irrigation pumping station (National Wildlife Refuge Association 2005), and the endangered jaguar (*Panthera onca*) is without a recovery plan and habitat protection in the rapidly developing southwestern United States (Povilitis 2002).

A species is bureaucratically imperiled when economic interests or ideological opposition gain public agency collaboration or complacency in blocking genuine progress toward conservation as mandated under law (Table 1). We focus on the Mexican gray wolf (*Canis lupus baileyi*) conservation program to exemplify historical, geographic, biological, socioeconomic, and political factors that contribute to the making of a bureaucratically imperiled species. We offer suggestions for redirecting Mexican wolf policy to achieve the fundamental goal of species recovery through ecosystem conservation under the ESA.

Originally, the Mexican wolf ranged north from central Mexico to approximately today's U.S. Interstate Highway 10 in Arizona and New Mexico (Young & Goldman 1944). It was exterminated from the southwestern United States by the U.S. Bureau of Biological Survey (Brown 1983; Robinson 2005). In 1950 the Bureau's successor agency, the U.S. Fish and Wildlife Service (FWS), launched a program in Mexico that eliminated almost all of its wolves by the mid-1970s. These extermination campaigns reflected an institutionalized antipredator alliance between the U.S. government and the livestock industry.

Some 20 years after the Mexican wolf was placed on the U.S. endangered species list in 1976, settlement of a lawsuit filed by wildlife advocates prompted FWS to undertake a reintroduction program with captive-bred animals. The agency established the Blue Range Wolf Recovery Area (BRWRA), which covers predominantly public lands in east-central Arizona and west-central New Mexico, just beyond the northern boundary of the Mexican wolf's geographic range (Young & Goldman 1944). The objective was to establish a population of at least 100 wild wolves in 9 years (by 2006) within the 17,752 km^2 Gila and Apache national forests (USFWS 1996)—an important first step toward restoration but short of the widely accepted recovery goal in conservation biology of interconnected, multiple populations within a species' natural range.

In 1998 FWS began releasing Mexican wolves to the BRWRA with major policy constraints that attempt to balance wolf restoration with perceived limits of social and political tolerance (USFWS 1998; Robbins 2005). First, Mexican wolves that depredate livestock are controlled. Second, no reductions in livestock numbers and distribution or changes in livestock husbandry practices are required to better accommodate wolves. Unlike Yellowstone National Park and central Idaho, where northern gray wolves (*C. l. occidentalis*) were successfully reintroduced in the mid-1990s, the BRWRA lacks a large core area of livestock-free habitat where Mexican wolves can be lightly managed or left alone (USFWS 1996; Bangs et al. 1998). Third, initial releases of captive-born wolves are limited to a "primary recovery zone" that is part of the smaller Arizona portion of the BRWRA (USFWS 1996). This hampers the program's ability to release wolves where they are most needed, that is, in high-quality habitat lacking wolves or for replacement of lost mates and genetic enhancement (Bergman et al. 2004). Finally, unlike wolf recovery programs elsewhere in the western United States (USFWS 1994), Mexican wolves are not allowed to colonize public lands beyond recovery-area boundaries (USFWS 1998). Whether these policies are acceptable can be evaluated by comparing progress in Mexican wolf recovery with program goals and anticipated results.

The projected growth of the BRWRA wolf population was 15 breeding

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Table 1. Examples of bureaucratic jeopardy to U.S. species linked to economic interests or political ideology.

Tactic	*Species*	*Synopsis*
Protection under ESA[a] withheld	westslope cutthroat trout (*Oncorhynchus clarki lewisi*)	FWS[b] rejected ESA protection, dismissing scientific evidence of its imperilment from hybridization with exotic fish; ESA protection requires changes in economic activities potentially involving agriculture, dam operations, mining, livestock grazing, and urbanization (www.wildlands.org/w_wct.html; www.earthjustice.org/urgentprint.html?ID=226).
Protection under ESA withheld	Pacific fisher (*Martes pennanti*)	FWS acknowledges west coast population of fisher is at risk of extinction from habitat loss and fragmentation but has withheld listing; protection of the fisher's old-growth forest habitat would impede logging of large trees in Sierra Nevada and northwest national forests. (www.nrdc.org/bushrecord/2004_04.asp).
Protection under ESA delayed	San Diego ambrosia (*Ambrosia pumila* [Nutt.] Gray)	In 1978 Smithsonian Institution petitioned listing under ESA sighting numerous threats, including urban sprawl and livestock grazing; prompted by lawsuits, the plant was listed in 2002 after substantial population losses (www.endangeredearth.org/alerts/result.asp?index=1159).
Adequate conservation goals and recovery plans not prepared	chinook salmon (*Oncorhynchus tshawytscha*)	A federal conservation plan fails to identify wild salmon as a recovery goal: salmon are now mostly hatchery raised (www.wildsalmon.org/actioncenter/wss-news.cfm).
Adequate conservation goals and recovery plans not prepared	humpback chub (*Gila cypha*)	The target for a recovered population, set at 2,100, is fewer fish than when the species was listed under ESA over 30 years ago; threats are mainly large dams in the Colorado River system; a federal court has rejected the inadequate recovery goals (www.earthjustice.org/urgent/print.html?ID=200).
Adequate conservation goals and recovery plans not prepared	Mexican gray wolf (*Canis lupus baileyi*)	A single population struggles because of excessive management controls; no plans to reestablish the subspecies in its original geographic range.
Conservation plan implementation avoided	jaguar (*Panthera onca*)	Yielding to property rights, development, and ranching interests, a state-led conservation group, created in lieu of a federal recovery team, failed to implement agreed-on habitat conservation measures for the southern borderlands of the United States (Povilitis 2002).
Conservation plan implementation avoided	Florida panther (*Puma concolor coryi*)	Adopting a controversial, now discredited theory that the panther is a forest obligate, FWS approved major development projects in habitat regarded as essential under the species recovery plan; need to establish two additional panther populations recognized in recovery plans since the early 1980s, but little progress has been made toward achieving that goal (http://www.panthersociety.org/DiscreditingaDecadeofPantherScience.pdf).
Conservation plan implementation avoided	leatherback turtle (*Dermochelys coriacea*)	Allowing unproven, experimental fishing technology, authorities reopened areas to longline catch of swordfish and tuna where high bycatch levels had previously led to closures; recovery plan goal is to reduce the "severe threat" of commercial fishing to this highly endangered sea turtle (www.earthjustice.org/news/print.html?ID=893; Ovetz 2005).

[a] *Endangered Species Act.*
[b] *U.S. Fish and Wildlife Service.*

packs and 83 wolves by the end of 2005 (year 8 of the program). Release of wolves from captivity was to end after 2002 (USFWS 1996). In contrast, FWS estimated five breeding packs and 35–49 wolves at the end of 2005 (AZGFD 2006). This shortfall occurred despite the release of 90 captive wolves (C. Buchanan, personal communication), including 18 released in 2004–2005. Management removals (58) and human-caused mortality (31) accounted for a high "failure rate" for collared wolves that averaged 64% annually from 1998 to 2003 (AMOC 2005), necessitating continued population supplementation. Most removals were of wolves moving outside the BRWRA boundary (36%) or depredating livestock (24%), and most mortalities of

collared wolves involved illegal gunshot (61%, AMOC 2005), an indication that the substantial policy constraints on the Mexican wolf have not deterred poachers.

In 2005 an interagency Adaptive Management Oversight Committee (AMOC 2005), which had acquired most management authority over the reintroduction program, imposed additional restrictions on wolf recovery. These politically motivated restrictions, first proposed at closed meetings arranged by a U.S. congressional representative between regional FWS officials and opponents of the Mexican wolf reintroduction program (Soussan 2005), include a moratorium on new releases of captive-bred wolves in 2006 (if the number of breeding pairs in the wild is six or more on 31 December 2005, which, as it turned out, was not the case) and removal of wolves known or likely to have been involved in three livestock depredation incidents in a single year, regardless of their genetic significance to the population or any subsequent cessation of depredations. The AMOC, led by the Arizona Game and Fish Department, also seeks state-agency authority to permanently remove any wolves that depredate livestock or create locally unacceptable impacts on native ungulate populations if the wolf population reaches 125 individuals (AMOC 2005).

Under prevailing policies, the Mexican wolf recovery program is left with a struggling BRWRA wolf population and the absence of plans to reestablish the subspecies in its core geographic range. Although the FWS recovery team for gray wolves in the Southwest seeks to establish other populations of the Mexican wolf, it has been considering areas well to the north of the subspecies' original range, in northern Arizona, northern New Mexico, and Colorado (Draper 2004). The apparent rationale is that these areas have larger blocks of habitat with less potential for livestock conflict than the "Sky Island" mountain ranges of southern Arizona and New Mexico, and that they do not rely on Mexico helping to restore the Mexican wolf. However, this approach threatens the distinctiveness of the Mexican wolf in violation of the ESA's requirement to conserve valid subspecies. Subspecies may have ecologically relevant adaptations and potential to become a new species—compelling biological reasons to conserve them (O'Brien & Mayr 1991).

If Mexican wolves are introduced farther north, hybridization and genetic swamping by the northern gray wolf can be expected. Wolves transplanted to the Yellowstone region from western Canada have flourished and are dispersing south, with a confirmed report of a wolf reaching central Colorado (Gebhart 2004). Mexican wolves should also be less competitive than northern wolves in territorial disputes, averaging 44% smaller in body size (J. Oakleaf, unpublished data; USFWS 2003).

Even in the absence of northern wolves, Mexican wolves placed to the north of the BRWRA would face an evolutionary environment different from that of their original range, including major differences in prey. Coues white-tailed deer (*Odocoileus virginianus couesi*) and the collared peccary (*Tayassu tajacu*), both among the smallest of North American ungulates, are prevalent (Hall 1981) over most of the Mexican wolf's original range, whereas large-bodied elk (*Cervus elaphus*), abundant to the north, are largely absent (Leopold 1959; Hoffmeister 1986).

Policy regarding regional boundaries for recovery of subspecies should not ignore evolutionary biology, which is how genetic distinctiveness develops. Isolation by distance, climate, and habitat on a continental scale, along with prey specialization by wolves in different regions, explains variability in genetic structure of wolf populations in North America (Carmichael et al. 2001; Geffen et al. 2004). Other barriers to gene flow may have been social; smaller Mexican wolves might have had difficulty penetrating territories of larger wolves to the north. The certainty is that significant morphological and genetic differences exist between Mexican wolves and other gray wolves despite the species' vagility (Nowak 1995; Garcia-Moreno et al. 1996).

The Mexican wolf should be restored to its core geographic range. As a first step, politically motivated management constraints on wolves within and beyond the BRWRA must be eased to allow natural population growth, dispersal, and translocation in areas important to the recovery of Mexican wolves. To reduce wolf-livestock conflicts, new public lands management policies are needed. For example, ranchers could be offered a grazing retirement option that included fair compensation for closure of their public-grazing allotments (Reese 2005). Ranchers that continue in the area would implement conflict-reducing practices such as removing or applying lime to their dead cattle to prevent wolf scavenging and habituation to feeding on livestock (Paquet et al. 2001).

A second step is landscape-level conservation in the Sky Islands region south of the BRWRA to Mexico. Southern Arizona and New Mexico include numerous mountain ranges and lowlands that can serve as important habitat patches and linkages for establishing a metapopulation of Mexican wolves and restoring wolf movement between the United States and Mexico. Wolf restoration should be part of a broader policy of conserving native biodiversity in the borderland region, including other wide-ranging species such as the jaguar. Policy changes are needed to reduce livestock and road densities on public lands, provide safe passage for wildlife across highways, and discourage land development and border control activities that destroy key habitat areas and jeopardize trans-border movements of wildlife. Bold leadership by FWS and state wildlife agencies is needed to engage land-management agencies, local and regional planning authorities, and private

landowners in "greater ecosystem" conservation.

Finally, U.S. efforts must fully coordinate with Mexican efforts to recover the Mexican wolf, an animal whose original range links habitats of globally outstanding biodiversity in northern Mexico to those in the United States Sky Islands (World Wildlife Fund 1999). Mexico's priorities for the Mexican wolf include reintroduction, conservation of habitat, consolidation of a system of wildlife areas, conservation agreements with ranchers, farmers, and mining interests, and stronger collaboration with the United States (SEMARNAT 2000).

Ineffective manipulative management and neglect of ecosystem conservation in deference to economic or ideological interests increasingly jeopardize wildlife recovery programs in the United States. How can management authorities reverse this trend and restore bureaucratically imperiled species? Full program accountability is a start. Measures must include candid assessments of on-the-ground progress toward recovery or lack thereof; disclosure and elimination of politically based substitutes for essential conservation goals and measures; channeling of behind-the-scenes program opposition to open forums for public debate; and an unequivocal commitment to science-based analysis and decision making.

Anthony Povilitis,*§ David R. Parsons,† Michael J. Robinson,‡ and C. Dusti Becker*

*Life Net, P.O. Box 1220, Lukeville, AZ 86341, U.S.A.
†The Rewilding Institute, P.O. Box 13768, Albuquerque, NM 87192, U.S.A.
‡Center for Biological Diversity, P.O. Box 53166, Pinos Altos, NM 88053, U.S.A.
§email povilitis@huemul.net

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