

in the east; and that part of Texas lying north of U.S. Highway 62/180 (63 FR 1752).

This final rule will not affect any of these three existing nonessential experimental populations for gray wolves, nor will it affect the existing special regulations that apply to them.

G. Gray Wolf-Dog Hybrids

The many gray wolf-dog hybrids in North America have no value to gray wolf recovery programs and are not provided the protections of the Act. Wolf-dog hybrids, when they escape from captivity or are intentionally released into the wild, can interfere with gray wolf recovery programs in several ways. They are familiar with humans, so they commonly are attracted to the vicinity of farms and residences, leading to unwarranted fears that they are wild wolves hunting in pastures and yards. In such situations they may exhibit bold behavior patterns and show little fear of humans, leading to human safety concerns. They generally have poor hunting skills; thus, they may resort to preying on domestic animals, while the blame for their depredations is commonly and mistakenly placed on wild wolves. These behaviors, when reported in the media or spread by word of mouth, can erode public support for wolf recovery efforts. In addition, although unlikely, feral wolf-dog hybrids may mate with wild wolves, resulting in the introduction of dog genes into wild wolf populations. For these reasons, this rule does not extend the protections of the Act to gray wolf-dog hybrids, regardless of the geographic location of the capture of their pure wolf ancestors.

In recovery programs for other threatened or endangered species, hybrids and hybridization could perhaps play an important role. This decision to not extend the protections of the Act to gray wolf-dog hybrids should not be taken as an indication of our position on the potential importance of hybrids and hybridization to recovery programs for other species. Determining the importance and treatment under the Act of hybrids requires a species-by-species evaluation.

H. Conservation and Recovery of the Gray Wolf

Understanding the Service's strategy for gray wolf recovery first requires an understanding of the meaning of "recover" and "conserve" under the Act. "Conserve" is defined in the Act itself (section 3(3)) while "recovery" is defined in the Act's implementing regulations at 50 CFR 402.02. Conserve is defined, in part, as "the use of all

measures and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary." Recovery is defined as "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act." Essentially, recover and conserve both mean to bring a species to the point at which it no longer needs the protections of the Act, because the species is no longer threatened or endangered.

Important Principles of Conservation Biology

Representation, resiliency, and redundancy are three principles of conservation biology that are generally recognized as being necessary to conserve the biodiversity of an area (Shaffer and Stein 2000). Although the Act is not a biodiversity conservation statute, in some ways it functions as such on a single species level. Thus, we can and should apply these principles when establishing goals for individual species' recovery under the Act.

The principle of representation is the need to preserve "some of everything"—every species, every habitat, and every biotic community—so biodiversity can be maintained. At the species level it also calls for preserving the genetic diversity that remains within a species, in order to maximize the species' ability to cope with short-term environmental variability and to adapt and evolve in response to long-term environmental change.

Redundancy and resiliency both deal with preserving "enough to last," but they address it at distinctly different levels. Redundancy addresses the need for a sufficient number of populations of a species, while resiliency deals with the necessary size (numerical and geographic) of those individual populations that are needed for species' persistence over time. Larger populations are more resilient to environmental changes and other threats to their existence. The redundancy that comes from preserving multiple populations provides additional assurances of species' survival. (In the broader conservation biology context, these two principles are also applied to biotic communities and ecosystems.)

Due to the vast array of life forms that are potentially subject to the protections of the Act, and the variety of physical, biological, and cultural factors acting on them, these three principles must be applied on a species-by-species basis to determine the appropriate recovery

goals. For example, addressing the need for redundancy and resiliency for nonmotile organisms, species of limited range (for example, island or insular species), or those species restricted to linear features of the environment (stream or shoreline species) should be expected to result in recovery goals that are quite different from goals developed for habitat generalist, widely distributed, and/or highly mobile species.

Application of These Principles to the Gray Wolf DPSs

Because this rule finalizes three new DPS listings for the gray wolf (see "Designation of Distinct Population Segments" below), we evaluated what is necessary for long-term extinction avoidance in each DPS, and the extent of progress made to date toward that goal in each DPS. This examined whether recovery is underway across a significant portion of each DPS to ensure long-term viability when that recovery is completed. Each DPS evaluation used the principles of conservation biology and focused on the size, number, makeup, and distribution of wolves in the individual DPSs, and the threats manifest there, in order to determine if the gray wolf is in danger of extinction throughout all or a significant portion of the respective DPS.

Eastern DPS

The original Recovery Plan for the Eastern Timber Wolf and the 1992 revision of that plan (Service 1978, 1992a) established and reiterated criteria to identify the point at which long-term population viability would be assured in the eastern United States (Recovery Plans for the gray wolf are discussed in more detail below). Although the 1978 Recovery Plan predated the scientific field of conservation biology, it embodied conservation biology tenets in its recovery criteria, and those criteria were carried forward unchanged in the 1992 revised recovery plan. The Eastern Timber Wolf Recovery Team was subsequently queried by the Service in 1997, and at that time the Eastern Team reviewed the criteria and found them to be adequate and sufficient to ensure long-term population viability (Peterson *in litt.* 1997).

The principles of representation, resiliency, and redundancy are fully incorporated into the recovery criteria developed by the Eastern Timber Wolf Recovery Team. The need to maintain the Minnesota wolf population is believed to be vital, because the remaining genetic diversity of gray