

recovery in general is to eventually have wild populations that are self-sustaining and no longer in need of protection under the Act. The strongest argument for this strategy is the fact that these populations are subject to many types of catastrophic events, ranging from widespread phenomena such as hurricanes, wildfire, or ungulates, to localized events like landslides, predators, or even disease outbreaks. The multi-population approach offers the opportunity to protect wider latitude of genetic variability for the species as a whole, rather than concentrating on a single or small number of areas with genetically more similar individuals. The Service's use of Hawaii and Pacific Plant Recovery Coordinating Committee (HPPRCC) guidelines for population size and numbers of populations needed to maintain Hawaiian plant taxa are probably the best general guide, since the general tenets of minimum viable population size and numbers are not defined for Hawaiian taxa. The targets (8 to 10 from 100 to 500) used in the critical habitat designations are generally lower than those used by the HPPRCC to identify essential habitat for listed plants and should be considered as the "low end" of what is likely needed for recovery.

*Our Response:* We agree that the multi-population approach to conservation is necessary for the recovery of Hawaii's endangered plants. We have used the lower end of the HPPRCC guidelines, as that is what the Service believes is essential to the conservation of the species, based on the current conservation literature (see "Criteria Used to Identify Critical Habitat" section).

(11) *Comment:* Two peer reviewers stated that just because a species is found in a certain habitat now does not mean that this habitat is the best place for it to thrive and reproduce. For example, repeated references to steep slopes as being primary constituent elements of critical habitat should not be construed as representing optimum habitat; they are likely remnant populations. The current distribution of a species today may not be a good indication of its optimal habitat, for example dry and mesic forest plants that are historically known only from lowland areas and not high elevation areas (where relatively more complete data are found); areas that were extremely degraded before good records were kept on species distribution and habitat needs.

*Our Response:* Our regulations state that the Secretary shall designate as critical habitat areas outside the geographical area presently occupied by

a species only when a designation limited to its present range would be inadequate to ensure the conservation of the species. In our designation, we used the best scientific and commercial data available, both historic and current, from a variety of sources (see "Methods" section) to specify any particular area as critical habitat (section 4(b)(2) of the Act) and to determine the physical or biological features essential to the conservation of the species (section 3(5)(A) of the Act). As pointed out by reviewers, biological information is extremely limited for many species, and therefore the only information available may indicate the species is restricted to a particular topography, soil or forest type. No critical habitat was designated for a species outside of its known historic range or known suitable habitat.

(12) *Comment:* Several comments were received in support of the designation of unoccupied habitat. Unoccupied habitat within critical habitat is important for natural dispersal of plant populations beyond their current distribution as well as providing sites for reintroduction of new populations if needed. The biological needs of the species are well enough known to warrant the protection of unoccupied habitat. These unoccupied areas will be especially important to dry and mesic forest species. Protecting unoccupied habitat is essential since currently occupied areas are inadequate for recovery. On the other hand, several comments were also received against the designation of unoccupied habitat. Some felt that at least 70 percent of the proposed critical habitat is not really habitat at all, in that it is not inhabited by any of the species but is unoccupied. Because there is no data to show that excluding these areas will result in the extinction of the species, the Service should omit them from consideration. Several areas do not contain listed species or do not contain records of historic sightings and so do not appear to be warranted as essential for the conservation of any species. The lands that could be excluded from critical habitat without causing the species to go extinct include Unit D1, D2, N, L, and private lands. Other commenters were concerned that is difficult for the Service to justify its expanded proposed designation if it does not know what physical and biological features are essential to the species' growth, germination or methods of seed dispersal as required by its own rules. The vast majority of the proposed areas are presently unoccupied by the species in question and their successful

introduction to and survival in these areas is speculative. These commenters believe that the first proposed designation was correct.

*Our Response:* Our recovery plans for these species (Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999) identify the need to expand existing populations and reestablish wild populations within historic range. We have revised the designated critical habitat in the final rule to incorporate new information and/or address comments and new information received during the comment periods, including information on areas of potentially suitable unoccupied habitat for some of these species. Many of the units have been reduced based on this newly available information. However, for most of the species, there are not enough existing populations and most of them are not currently viable. While they may continue to exist at their current low numbers until a catastrophic event causes their extinction, the Service's goal, as stated in section 2(b) of the Act, is to recover the species. Therefore, the protection of additional unoccupied critical habitat is essential to ensure the recovery of these species through reintroduction. We also realize that, although propagation and reintroduction are difficult for some species, both are vitally important to their recovery. Many recovery plans therefore include research into best methods of propagation and reintroduction as important tasks prior to attempting reintroduction.

(13) *Comment:* Some commenters stated that good quality habitat should be designated in lieu of more degraded habitat. However, degraded areas should only be excluded from proposed critical habitat if they lack the ability to become habitat in the future. On the other hand, some commenters said that they see little on-the-ground logic to defend designations of unoccupied habitat and believe the Service must have other strategies rather than just carving out land areas, especially in highly degraded or altered habitats. In some instances, all potential habitats for a species have been degraded to the point that alien species dominate the site. Recovery efforts in these situations need to include both species management, coupled with habitat restoration efforts.

*Our Response:* We agree that recovery of a species is more likely in higher quality habitat containing the physical or biological features essential to the conservation of the species. To this end, several units have been excluded for some species, as sufficient area is available in less degraded areas. However, for some species, particularly