

Recommendations

The recommendations within the individual species accounts fall into the following main categories:

- i) Implement Management Actions and Status Changes on Behalf of Individual Species, as Appropriate. This review identifies 12 Class I taxa (including subspecies) which may meet the criteria for Threatened or Endangered status under CESA, based on the available scientific evidence. Of these, two species are currently protected under the Federal Endangered Species Act (FESA). The designation of a taxon as Class I does not, however, necessarily mean that it should be petitioned for listing. Formal listing may be justifiably avoided or postponed if effective ongoing or recent efforts are already in place to conserve the species. If, in lieu of listing, new management efforts are feasible and implemented, the status of the species should be monitored closely to determine if the efforts are adequate to conserve the species. Should new or existing management actions prove ineffective, status reviews in accordance with CESA should be conducted. Species protection programs should continue to be a high priority; accordingly, the Species of Special Concern documents produced by the Department should be updated at least every ten years, and more frequently if staffing and funding resources allow.
- ii) Protect Habitat. Impacts to habitat, mainly loss, but also fragmentation and degradation, are the principal threats facing Special Concern and listed taxa. Habitat impacts are diverse, including, for example, habitat conversion to agricultural and urban land uses, wetland and riparian degradation due to surface water diversion and groundwater pumping, timber harvesting, and destruction/disturbance of mines, caves, and structures used by roosting bats. The highest priorities for habitat protection for mammal Species of Special Concern remain those identified by Williams (1986): riparian forests and wetlands, especially those along the Colorado River and the San Joaquin Valley; tidal wetlands, especially those in San Francisco, San Pablo, and Suisun bays and in the south coast region; the grasslands and desert scrub communities in the San Joaquin and Salinas valleys; the alluvial fan sage scrub and coastal sage scrub communities of Riverside, San Bernardino, Los Angeles, Orange, and San Diego counties; and mature and old-growth coniferous forests. Most of these areas are where no large scale community conservation planning is occurring. In addition, over the last 40 years, 800,000 acres (16%) of Sierra Nevada hardwoods have been converted to other land uses and vegetation types (Standiford et al. 1996); over 80% of California's oak woodlands are privately-owned (Greenwood et al. 1993). The Department's Resource Assessment Program has identified the Sierra Nevada foothills as one of its highest priorities for species population assessment and monitoring
- iii) Support the expansion of regional biodiversity conservation programs. Conservation efforts over the last 10 years have evolved from site-specific habitat conservation plans for individual listed species prepared as requirements for "take" permits under CESA and FESA, to regional multispecies habitat conservation plans that target a range of sensitive species. Regional conservation plans focus on conservation of natural communities, ecosystems, multiple listed and non-listed species, and the ecological processes necessary to sustain them. Implementing such regional plans combines the technical issues of conservation biology and the participatory issues in affected regions, especially in areas of high human population growth, resulting in better public support for conservation. Examples of these plans include CALFED Bay-Delta program, which includes species conservation and habitat restoration measures for the San Francisco Bay watershed and the footprints of the State and Federal Water Projects, and the Natural Community Conservation Planning program, a cooperative effort to conserve species at the ecosystem scale. These programs are an important complement to and extension of ongoing efforts to protect individual species and the habitats they

occupy. Regional programs should include species for which enough information is available to determine that the species can reasonably be assumed to be in the planning area and will be sustainably conserved under the program. Regional multispecies conservation planning has the potential to prescribe conservation actions for larger portions of California's landscape than any other tool or funding mechanism. Multispecies habitat conservation planning efforts are of high priority for the following areas: the east San Francisco Bay, including wetlands, riparian, and uplands of Contra Costa, Santa Clara, Alameda, and Solano counties; the southern San Joaquin Valley; the coastal and alluvial fan sage scrub habitats of the south coast region, including Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties; the Coachella Valley region; and the wetlands and riparian habitats of the Central Valley and Colorado River basin.

iv) Expand field studies. Field studies are needed to better understand the distribution, abundance, and habitat requirements of Special Concern and Watch List taxa. The Department's resource assessment program can play an important role in assessing distribution, abundance and population trend. The Department's State Wildlife Plan (to be completed in 2005) can help direct and prioritize surveys, monitoring and research needs for these taxa. Key populations should be monitored to document population trends. The need is most urgent for the following mammals: Townsend's big-eared bat (*Corynorhinus townsendii*), California leaf-nosed bat (*Macrotus californicus*), southwestern river otter (*Lutra canadensis sonora*), Pacific pocket mouse (*Perognathus longimembris pacificus*), and the San Bernardino kangaroo rat (*Dipodomys merriami parvus*). Given the increasingly fragmented nature of California's natural communities, as well as the increasing reliance on small, fragmented reserves, field studies should also be conducted on dispersal abilities and other aspects of natural history that influence the ability of species to maintain metapopulation structure in fragmented habitats. Field studies are also needed on the badger (*Taxidea taxus*), possibly relying on photographic stations, due to its low natural densities and elusive habits. This species may meet the criteria for the Special Concern list, but data on its distribution and abundance are lacking.

v) Expand public education and awareness activities. To educate California's citizens, the Department will disseminate this document to agencies and other interested parties via our website to help inform the both the public and private sectors of the continued decline of California's native mammal fauna and associated habitats.

vi) Implement species reintroduction measures where appropriate. Species reintroductions are appropriate only under special circumstances. For the majority of Special Concern and listed taxa, the root cause of population declines is habitat loss. For these taxa, the costs of habitat restoration and reintroduction efforts would be prohibitive, with little or no chance of success. For species which have been extirpated from all or part of their original range in California, but for which apparently suitable habitat exists, reintroduction remains a conservation alternative to be evaluated on a case-by-case basis. One possible example is the Humboldt marten, which has apparently been extirpated from the forests of the north coast region.