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Biodiversity in Santa Monica Bay and its Watershed

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3.0 Biodiversity in Santa Monica Bay and its Watershed

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The concept of biodiversity covers genetic, species, and ecosystem diversity. These types of diversity are important for ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic reasons (Convention on Biological Diversity 1993). Genetic diversity gives populations the ability to adapt to changing environmental conditions and is the source of plant varieties and pet breeds. Species diversity supports increased ecosystem function and services (Zedler, Callaway, and Sullivan 2001). Finally, ecosystem diversity creates the variety of land and waterscapes that we are familiar with.

Santa Monica Bay and its watershed were historically diverse. A wide range of ecosystems, including a variety of upland, riparian, coastal wetland, and marine habitats, supported thousands of species of native plants, insects, reptiles, fish, mammals, and birds. This high diversity is what brings us amazing natural phenomena such as the famous grunion run or the giant kelp, known as an "underwater rain forest" for its high diversity and productivity. These are also among what make the area adjacent to the Bay attractive to humans for activities ranging from commercial and recreational fishing to diving, tidepooling, hiking, and bird-watching.

Special Regulatory Status means species that are listed by the federal or state governments as threatened, endangered, or at risk of becoming extinct due to dwindling populations.

However, rapid population growth and urbanization during the last century have resulted in severe damage to biological resources and the subsequent loss of biodiversity in the Bay and its watershed. This rapid development cleared vast areas of natural habitats and altered or fragmented the native landscape. Pollution, disease, hunting, and industrialized fishing have also contributed to the decline in population or even expiration of several plant and animal species. Climate change now threatens to further alter the native habitats of the surviving species.

One measure of the severity in the loss of diversity is the kind and number of species attaining special regulatory status. Of the species whose ranges encompass Santa Monica Bay and its watershed, 128 are being tracked by the state because of their rarity (Table 3.3-1). Plants and mosses are particularly affected (Figure 3.3-1), as are terrestrial habitats in the area (Figure 3.3-2). Some of the best known species, including the red-legged frog (*Rana draytonii*, discussed in Article 3.1), the El Segundo blue butterfly (*Euphilotes battoides allyni*), and the coastal California gnatcatcher (*Polioptila californica californica*) attained special regulatory status in the 1970s, 80s, and 90s. Fishing, disease, pollution, and continued disturbance of habitats have brought about more recent decline of other species, including the giant sea bass (*Stereolepis gigas*) white and black abalone (*Haliotis*

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sorenseni and *H. cracherodii*, respectively) and southern steelhead trout (*Oncorhynchus mykiss irideus*).

Table 3.3-1. Number of species in Santa Monica Bay and its watershed that are in the California Natural Diversity Database of Rare Plants and Animals. Rare marine species were added. "Informal" means the species status is ranked by the state or a non-profit organization [International Union for Conservation of Nature (IUCN Red List), American Fisheries Society, or the Western Bat Working Group], but not protected by law. *Data source: California Department of Fish and Wildlife's California Natural Diversity Database of Rare Plants and Animals.*

Status	Formal (Legal)	"Informal"
Extirpated / Possibly Extirpated	0	4
Endangered / Critically Imperiled / Full Legal Protection	27	14
Threatened / Rare / Imperiled / Vulnerable	14	15
Sensitive / of Concern / Vulnerable / Near Threatened	38	7
Watched / State Tracked Seed Bank	1	3
Protected under Marine Mammal Protection Act	5	0

Figure 3.3-1. Number of special status species by class. The categories shown here are the same as in Table 3.3-1. *Data source: California Department of Fish and Wildlife's California Natural Diversity Database of Rare Plants and Animals.*

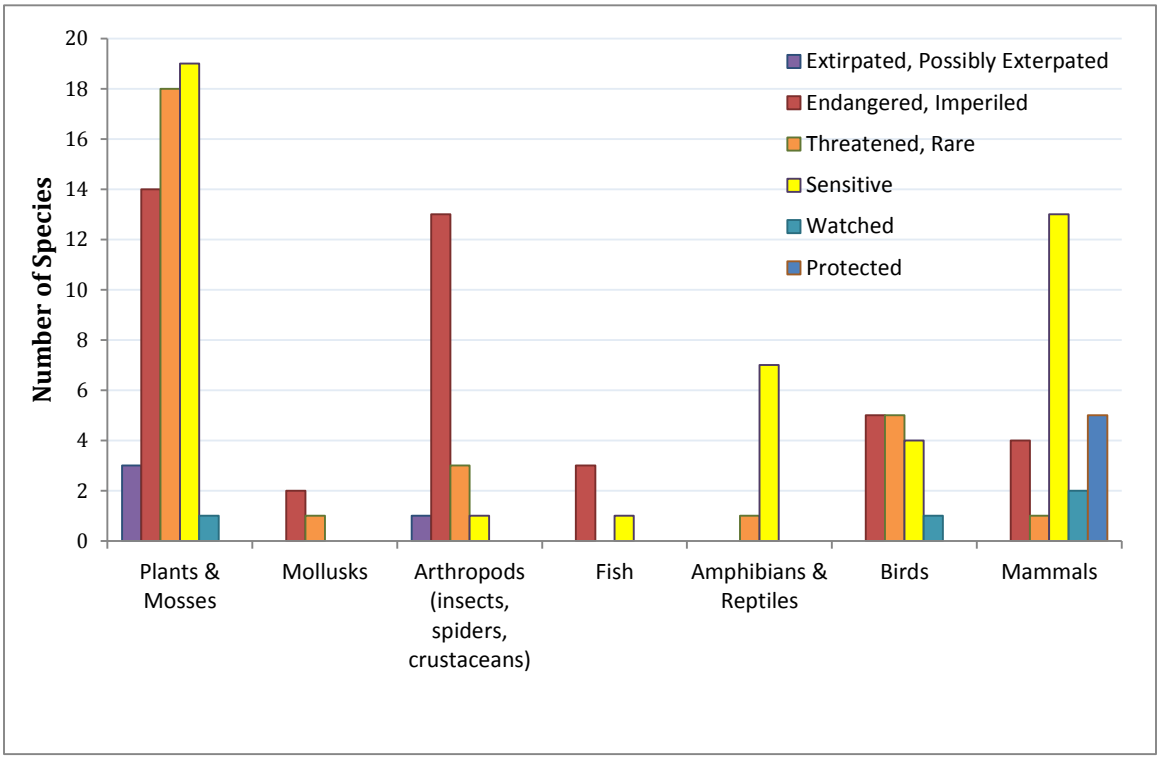
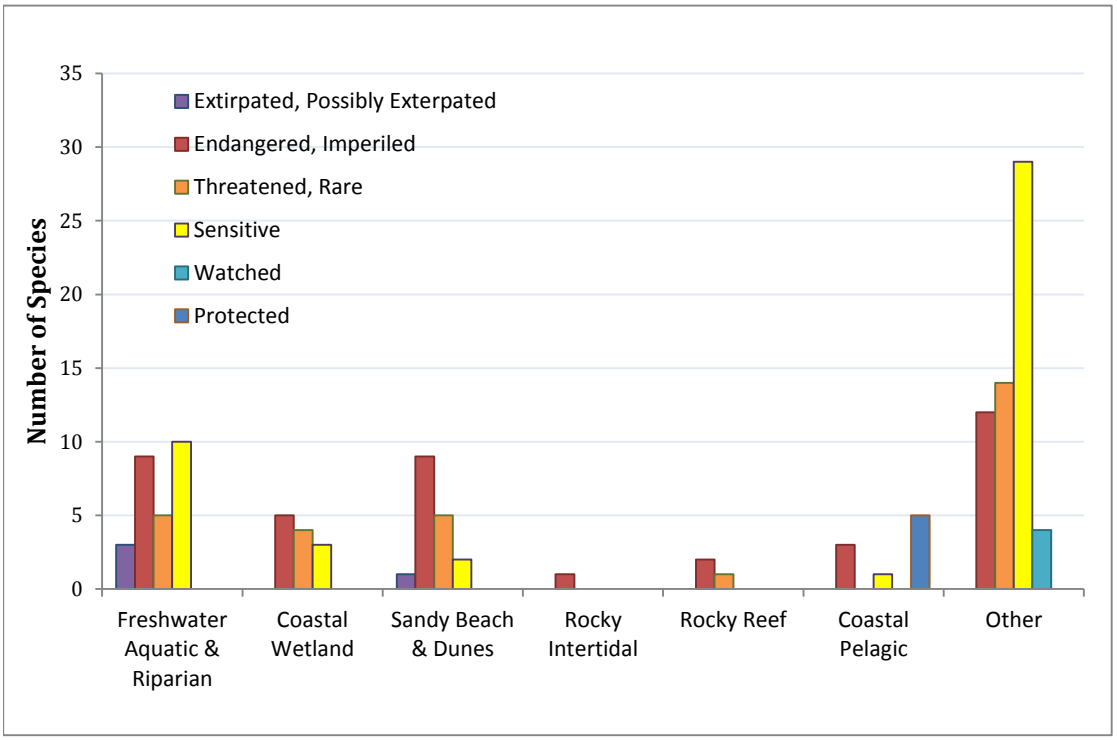


Figure 3.3-2. Number of special status species by habitat type. "Other" refers to terrestrial habitats in the Santa Monica Bay Watershed not incorporated in the habitat categories listed. It includes coastal scrub, chaparral, oak savannah, valley and foothill grassland, cismontane woodland, and closed-cone coniferous forest. *Data source: California Department of Fish and Wildlife's California Natural Diversity Database of Rare Plants and Animals.*



The articles in this section focus on several issues of biodiversity, such as restoring endangered populations and their genetic diversity (Section 3.1), population decline and what that may mean for coastal ecosystems (Section 3.2, Section 3.3), and managing populations to maintain diversity while allowing extraction (Section 3.4). More discussion on the issues surrounding ecosystem diversity can be found in Chapter 2 of this report.

References

Convention on Biological Diversity (1993). Preamble. <https://www.cbd.int/convention/articles/default.shtml?a=cbd-00> [Accessed on 28 July 20150].

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