

# Golden Coast vs. Oiled Coast

## The potential impact of California's natural oil seeps on seabirds

### Natural Seeps

Although oil spills have had a major impact on seabird populations, contamination from natural seeps are a consistent threat. Oil and gas seeps naturally occur in California. Liquid and gaseous hydrocarbons leak out of the ground, fed by natural underground reserves. The greatest seeps occur in the Santa Barbara Channel in California with around 5 million gallons entering the marine environment per year. The rate of release may vary over time but is more pronounced during the late winter months.

### Seabirds and Oil

Seabirds rely heavily on the condition of their feathers. Bird's feathers contain microscopic barbs and barbules which lock together to form a tight barrier. Properly aligned feathers keep water and air out and ensure that the bird is buoyant and insulated. When feathers are contaminated with oil, the interlocking property of barbs and barbules is disrupted. Feathers covered in oil become matted and separation of feathers exposes the sensitive skin to adverse conditions. Feather condition impairs flying, buoyancy, ability to regulate body temperature, and ability to capture food. Birds instinctively try to get rid of the oil by preening, which results in the ingestion of oil and severe damage to internal organs. Oil pollution is a serious source of mortality for seabirds.

### Impact Assessment

This spatial analysis included the ranges of 10 seabird species, further described below. The winter range was selected for seabirds that have a designated winter range, and the year-long range was selected for those that do not. The main map includes the range of each species merged by their IUCN Red List status and population trend to create 5 separate categories. The individual maps contain the range of each individual species, a 25-mile buffer around the samples collected from seeps, and the oil and gas reserve found in California.

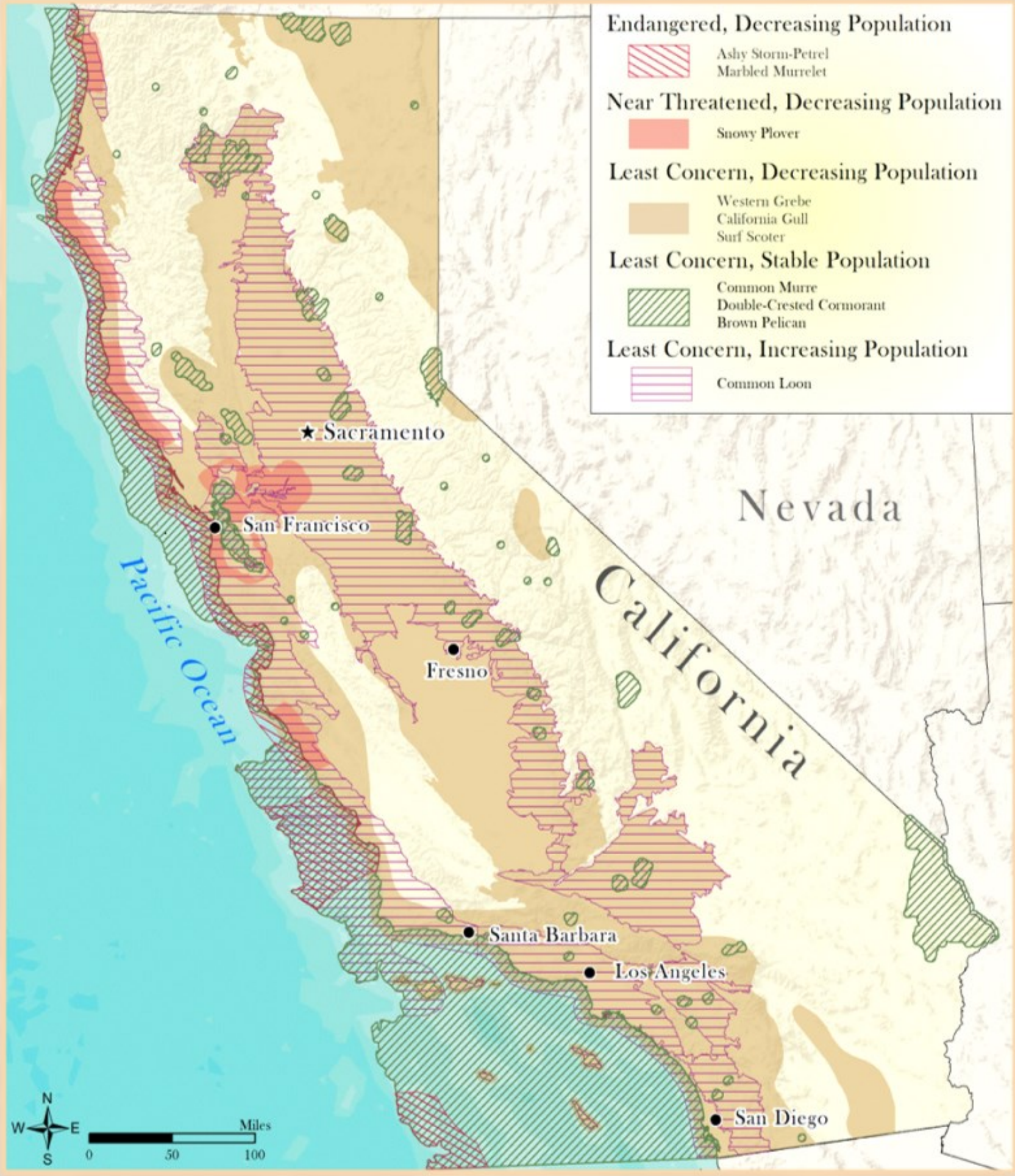
### Seep vs Spilled

The chemical composition of oil is used to determine where a sample originated. This is a process called 'fingerprinting'. Analytical chemists are able to determine hydrocarbons unique to seeps and spills

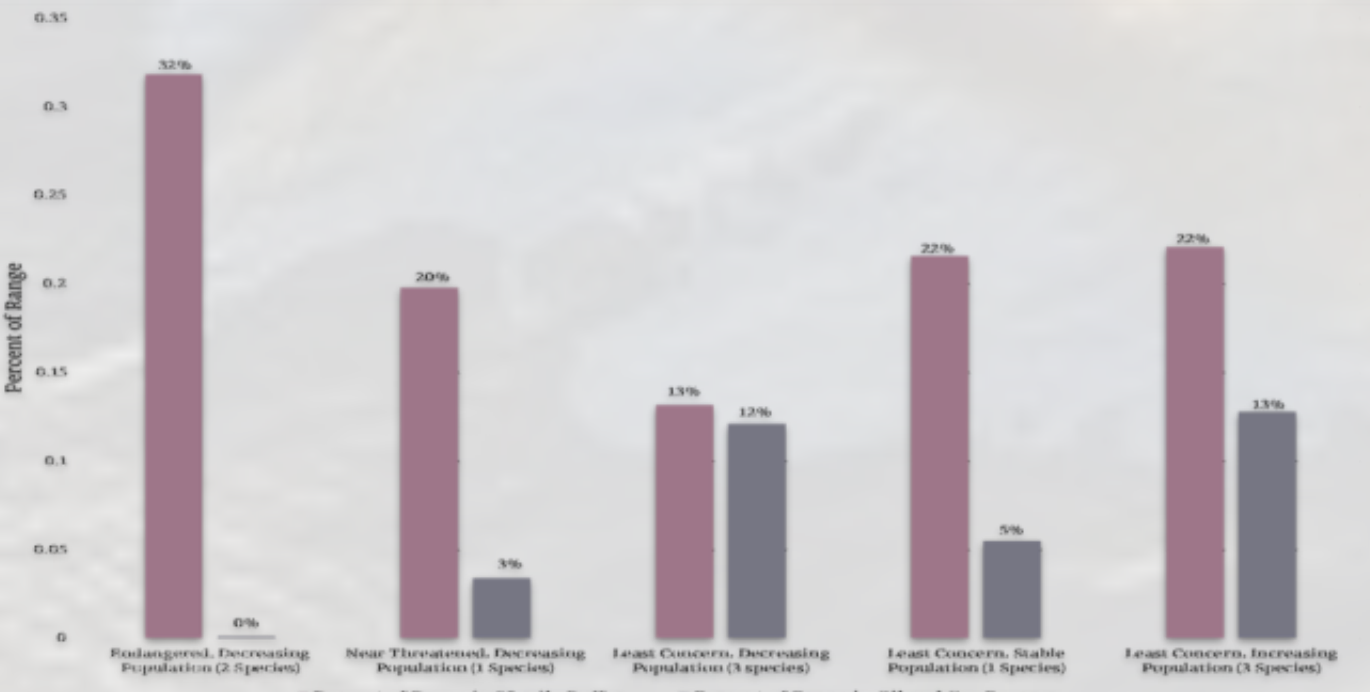


### Seabird Habitats in California

2016



### Conservation Impacts



Understanding the habitat range of seabirds in California will help provide information on possible species affected by natural seepage and assess those at greatest risk. As seen from the analysis, least concern species have a large range in the buffer zone and oil and gas reserve. This is of conservation concern specifically for species with decreasing populations. Oil contamination has the possibility to decrease the breeding population, as is the same for seabirds that migrate and over-winter in California. These species should also be considered for conservation efforts in California.

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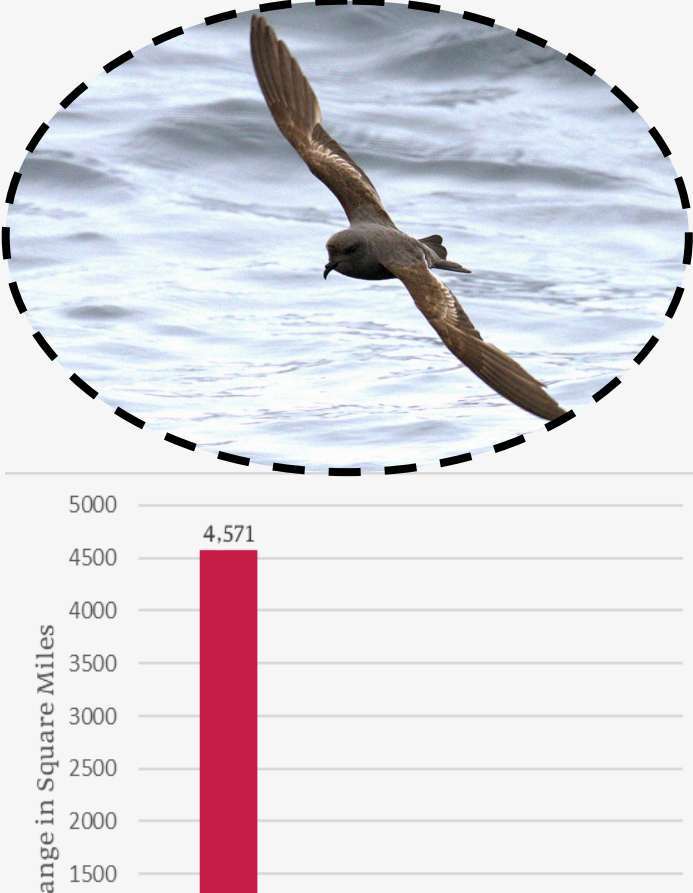
**Data Source:** BOEM, California Fish and Wildlife, ESRI, and PETRODATA

**Projection:** NAD 1983 California Teale Albers FT US

### Ashy-Storm Petrel



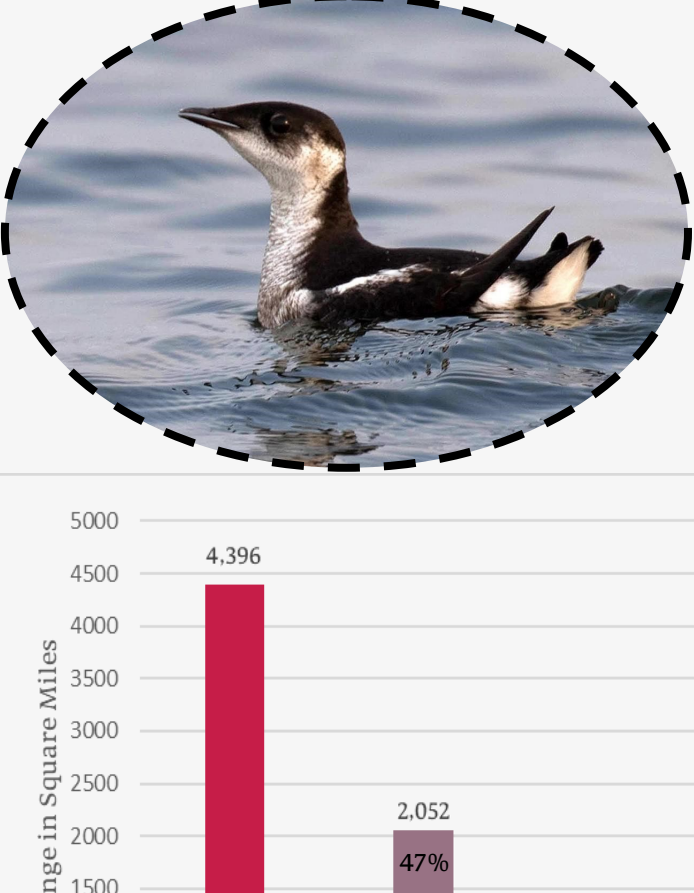
*Oceanodroma homochroa*  
IUCN Status: Endangered  
Population Trend: Decreasing



### Marbled Murrelet



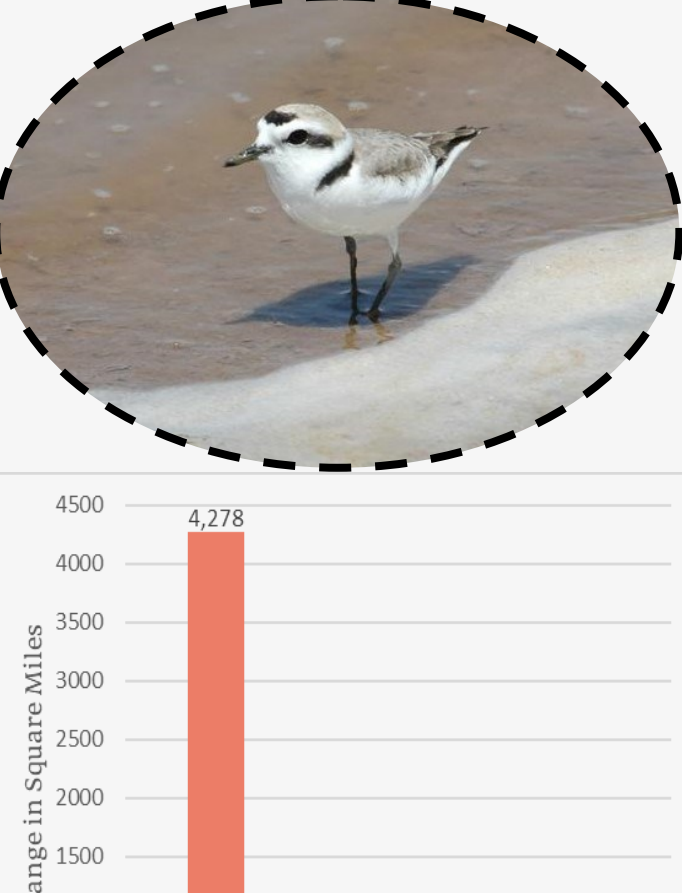
*Brachyramphus marmoratus*  
IUCN Status: Endangered  
Population Trend: Decreasing



### Snowy Plover



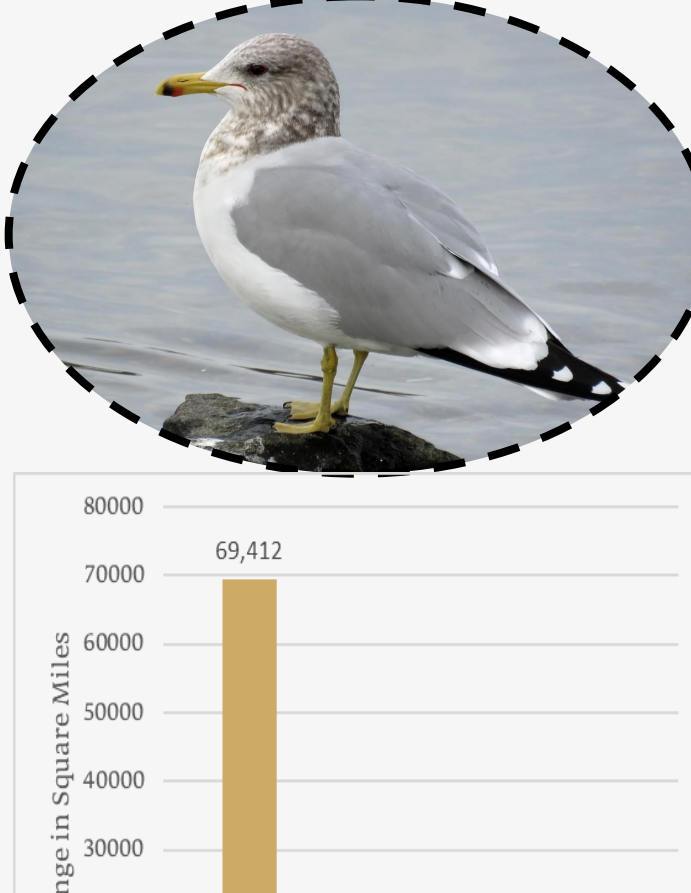
*Charadrius nivosus*  
IUCN Status: Near Threatened  
Population Trend: Decreasing



### California Gull



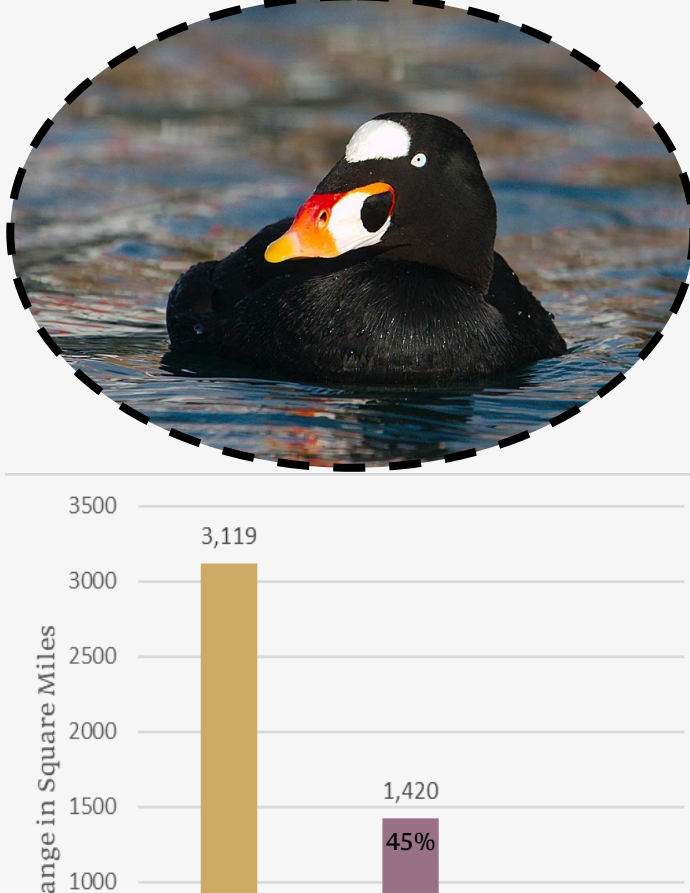
*Larus californicus*  
IUCN Status: Least Concern  
Population Trend: Decreasing



### Surf Scoter



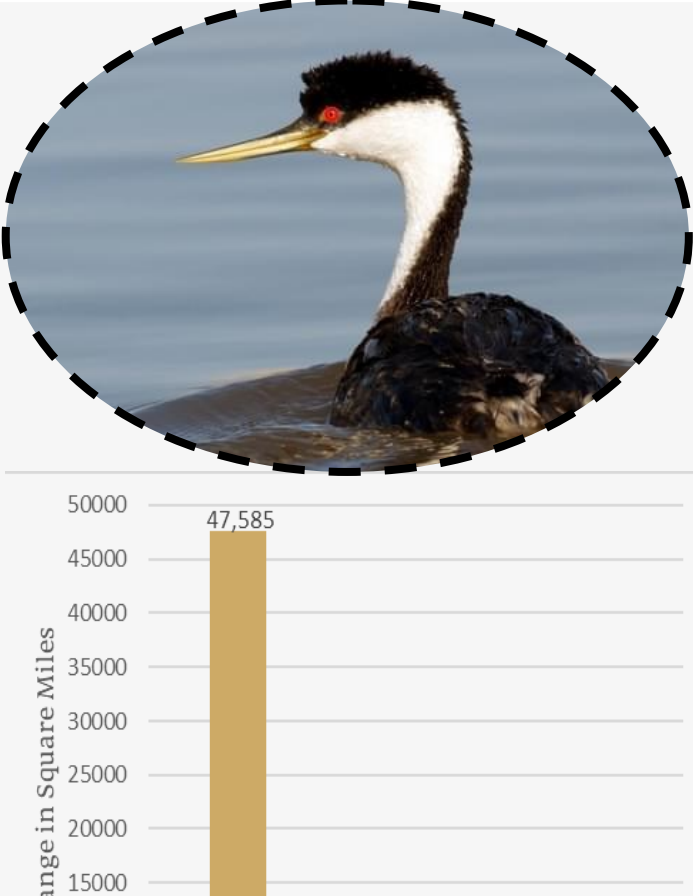
*Melanitta perspicillata*  
IUCN Status: Least Concern  
Population Trend: Decreasing



### Western Grebe



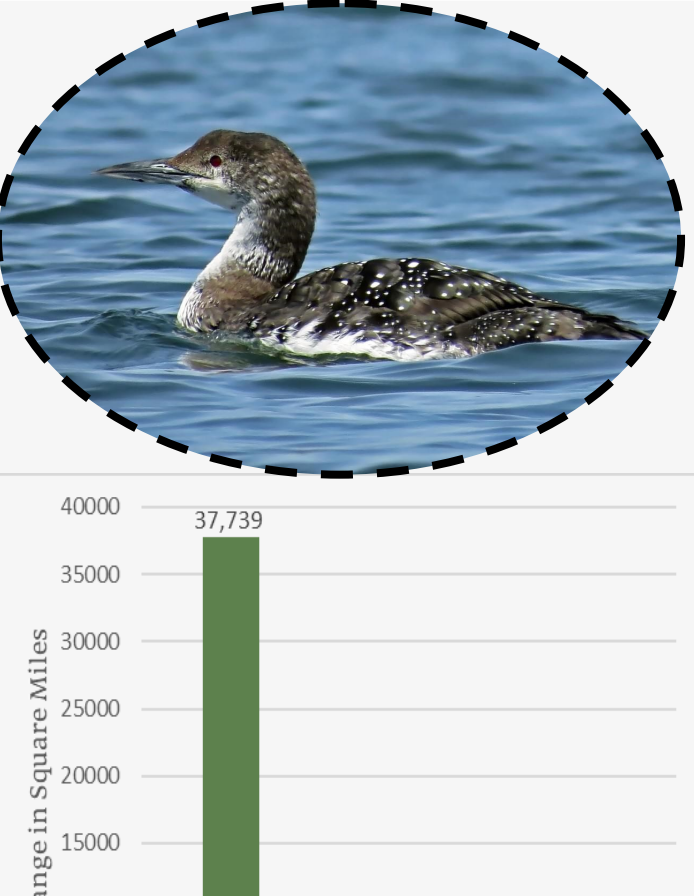
*Aechmophorus occidentalis*  
IUCN Status: Least Concern  
Population Trend: Decreasing



### Common Loon



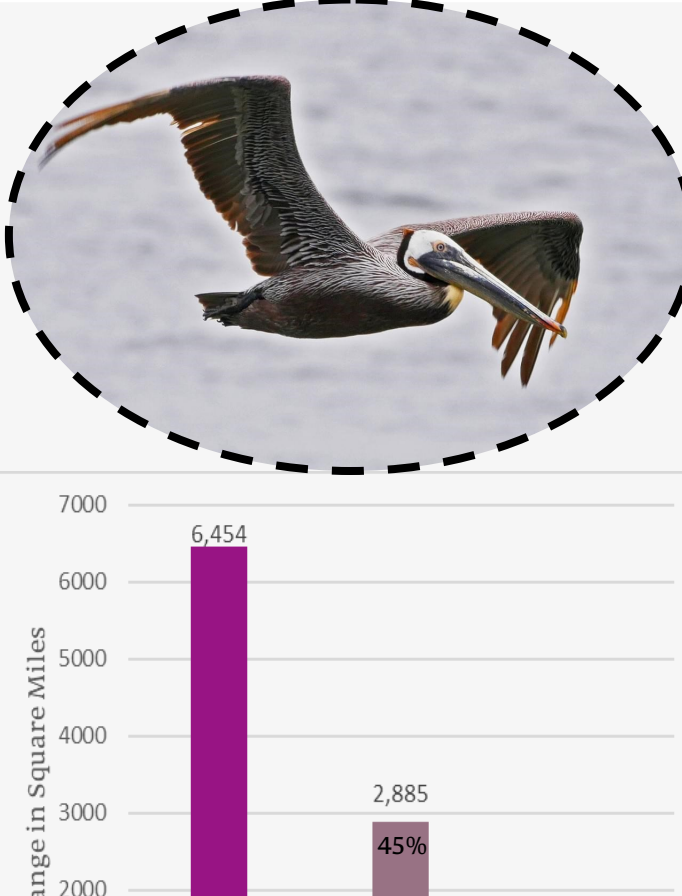
*Gavia immer*  
IUCN Status: Least Concern  
Population Trend: Stable



### Brown Pelican



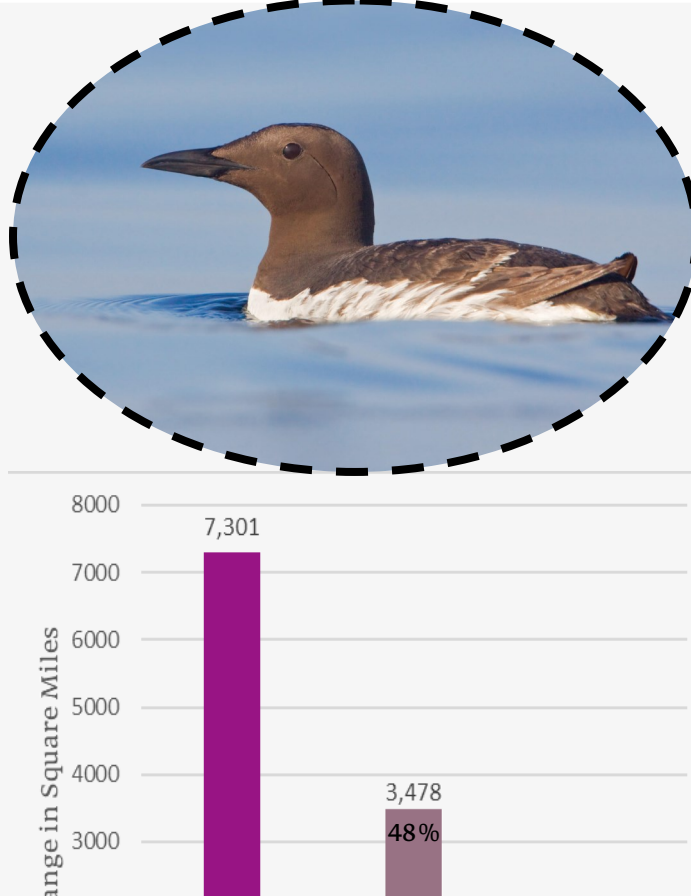
*Pelecanus occidentalis*  
IUCN Status: Least Concern  
Population Trend: Increasing



### Common Murre



*Uria aalge*  
IUCN Status: Least Concern  
Population Trend: Increasing



### Double-Crested Cormorant



*Phalacrocorax auratus*  
IUCN Status: Least Concern  
Population Trend: Increasing

