

# LEACH'S STORM-PETREL

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## TAXONOMY

**Scientific name:** *Oceanodroma leucorhoa* (Vieillot, 1818)

**Common name:** Leach's Storm-petrel

**Family:** Hydrobatidae

**Taxonomic comments:**

Taxonomy confused and controversial (Huntington et al. 1996, AOU 1998, Sibley 2001). Three to four subspecies currently recognized: *Oceanodroma leucorhoa leucorhoa*, *O. l. chapmani*, *O. l. socorroensis*, and *O. l. cheimomnestes*. *O. l. leucorhoa* is found in the North Pacific and Atlantic Oceans, including Alaska, and is the largest of the subspecies. Possible incipient speciation (See Huntington et al. 1996 for discussion).



## DESCRIPTION

**Basic description:** A medium-sized storm-petrel.

**General description:**

Medium-sized storm-petrel with mostly darkish brown plumage; upperparts slightly grayer. Tail is distinctly forked, feet are webbed, and wings are long and angled back at the carpal joint. Sexually monomorphic; no seasonal or age-related plumage variability. Nominate race, *O. l. leucorhoa*, has distinct white rump patch; dark-rumped individuals more common towards southern end of Pacific range (Sibley 2001). See Naveen (1981) for detailed information on storm-petrel identification.

**Length (cm):** 18-22

**Weight (g):** 40

**Reproduction:**

Proportionally large, single egg incubated by both adults (mean shift 2.5 days; n=78 pairs) for 37-50 days (mean 43.3 days; n= 26 burrows; Huntington et al. 1996). Egg neglect relatively common. Chicks may become torpid if interval between parental feedings exceeds 3+ days (Huntington et al. 1996). Nestlings typically attain 1.5 times mass of adults, but lose much of this fat before fledging (Ricklefs et al. 1980). Fledging occurs between 60-70 days. Most do not begin breeding until 5<sup>th</sup> summer (Cowger 1976). This species is socially and genetically monogamous (Mauck et al. 1995).

**Ecology:**

A truly oceanic species, returning to land under hours of darkness only during breeding season; winters in tropical waters. Forages singly or in small loose groups in the open ocean; is not attracted to ships. Nocturnalism and burrow-nesting are considered adaptations for avoiding avian predators; remote island nesting avoids mammalian

predators (Lack 1968). Predation at breeding colonies is likely the main cause of mortality (Huntington et al. 1996). Oldest known banded bird was at least 36 years old (Huntington et al. 1996); many adults likely live more than 20 years (Boersma and Groom 1993).

**Migration:**

*Atlantic.* Spring: Northward movement via western Atlantic to North American Islands, arriving on breeding grounds in Maine April-May (Cowger 1976). Fall: Pre-breeders depart August; breeders and fledglings leave September to November. Present in tropical latitudes November-March (Pratt et al. 1987; Huntington et al. 1996).

*Pacific.* Spring: Begin northward movement February-March. Fall: "Usually most abundant seabird species over equatorial and subtropical surface waters in eastern Pacific in spring and fall, slightly less abundant in cool La Nina years" (Ribic et al. 1992).

**Food:**

Invertivore, piscivore. Surface feeder. Major food items vary geographically and seasonally, but include zooplankton, fishes (e.g., capelin and sand lance), crustaceans (e.g., euphausiids, amphipods, isopods and copepods), small squids and jellyfish. Worms, tunicates, insects etc. likely consumed as well (Huntington et al. 1996). In northwest Atlantic, diet mainly myctophids and amphipods, also euphausiids and other crustaceans (Montevecchi et al. 1992). At several Alaskan islands in the North Pacific, diet mainly myctophids and secondarily amphipods, euphausiids and unidentified fishes (Dragoo et al. 2004).

**Phenology:**

Diurnal, but most active at breeding colonies at night. Feeds offshore by day and possibly at night (Cowger 1976).

**Habitat:**

*Pelagic:* Wide ranging in open sea, wherever zooplankton and nekton of suitable size are available, especially at fronts and eddies where upwelling brings prey to the surface (Haney 1986). Winters on open sea, comes ashore only to breed.

*Breeding:* Nests on islands with enough soil for burrows or crevices between rocks, normally far enough offshore to avoid predatory mammals, within approximately 200 km of feeding grounds (Skov et al. 1994). Burrow dug by male. Usually nests in same burrow in successive years.

## STATUS

**Global rank:** G5 (20Nov1996)

**Global rank reasons:**

Very common and appears to be increasing.

**State rank:** S5B (02Aug2005)

**State rank reasons:**

Relatively widespread and abundant; breeding population >3.5 million. Many breeding colonies protected within the Alaska Maritime National Wildlife Refuge. Some colonies in the Aleutian Islands were probably extirpated by introduced foxes and rats, but at least a few colonies are recovering following fox removal. Mammals introduced to breeding islands remain a significant threat; also susceptible to marine pollution and potential changes in food supply as a result of climatic changes.

## DISTRIBUTION AND ABUNDANCE

**Range:**

**Global range:**

Widespread; various forms occur in all three oceans.

*Breeding:* Western Pacific population: Russia, Japan (Daikoku I.), and Brazil. Eastern Pacific population: Southern Alaska and British Columbia, Washington, Oregon and California, to Baja California (Los Coronados, San Benito, and Guadalupe Islands).

Western Atlantic population: south from southern Labrador to Maine (Casco Bay) and Massachusetts (Penikese Islands). Eastern Atlantic population: Iceland, Faeroe I., Norway, Scotland and Ireland (AOU 1998).

Southern Hemisphere: Potential for colonizing Southern Hemisphere: New Zealand and South Africa. Whittington et al. (2001) reported the first confirmed breeding of Leach's Storm-Petrels (20 pairs) on Dyer Island off the coast of South Africa (AOU 1998).

*Non-breeding:* Pacific Ocean: In summer, common near U.S., Canadian and Mexican nesting colonies, and off Pacific coasts of Nicaragua, Costa Rica, Panama and near the Galapagos Islands. Winters in central and east Pacific waters (to Okinawa Island); the most common storm-petrel in the Hawaiian area during northern hemisphere fall, winter and spring months (Huntington et al. 1996).

In Atlantic Ocean, primarily winters in tropical Atlantic, especially off West Africa. Also, common in Caribbean and from Venezuela east to eastern Brazil. Casual to west coast of Greenland and eastern Atlantic islands, Mediterranean Sea and western Europe (Huntington et al. 1996, AOU 1998).

**State range:**

*Breeding:* On islands from the western Aleutians east along the Alaska Peninsula and the northern Gulf of Alaska (e.g., Wooded Island in Prince William Sound), south to Petrel Island. Many colonies have not been precisely delineated and even some large colonies may still be undiscovered (Sowls et al. 1978, Huntington et al. 1996).

*Nonbreeding:* Rare north of the Aleutian Islands in any season. Found year-round in the Gulf of Alaska, mostly seaward of the continental shelf (Huntington et al. 1996).

**Abundance:**

**Global abundance:**

The most widespread tubenose bird breeding in the Northern Hemisphere (Huntington et al. 1996). Conservative global population estimate is between 10 and 15 million (Boersma and Groom 1993). The most abundant seabird breeding in the northwest Atlantic (Montevecchi et al. 1992). The largest colony is on Baccalieu Island, off Newfoundland, with an estimated 3.36 million breeding pairs (Sklepkovych and Montevecchi 1989). In contiguous U.S., breeding population is about 450,000; most breeders occur in Oregon (350,000). In 1977, Maine breeding population was estimated at 19,000 birds (Buckley and Buckley 1984). Total estimated population in Alaska is 3.5 million breeding pairs (Boersma and Groom 1993). More than 1.1 million at over 40 sites in British Columbia, Canada (Rodway 1991). On Saint-Pierre and Miquelon archipelago (North Atlantic Ocean) about 100,000 pairs (Desbrosse and Etcheberry 1990). Approximately 500,000 in Hokkaido, Japan during the 1980s (Watanuki et al. 1988).

**State abundance:**

In Alaska there are 94 colonies with a breeding population of 3.5 million pairs (Boersma and Groom 1993, USFWS 2006).

**Trends:**

**Global trend:**

*Short term trend:* Increasing in Gulf of St. Lawrence (Hyslop and Kennedy 1992). Increased significantly during 1987-1994 in California Current system (Veit et al. 1996). Also increased around Gaspé Peninsula, Quebec 1979-1989 (Chapdelaine and Brousseau 1992). See Spindel and Patton (1988) and Buckley and Buckley (1984) for further details.

*Long term trend:* Along north and mid-Atlantic coast, population declines recorded between 1900 and the early 1970s (Buckley and Buckley 1984), largely due to introductions of cats, dogs and sheep (Huntington et al. 1996). Declines in the Aleutians partially mitigated by recolonization after predators removed; stable to increasing after fox removal (Lensink 1984). May be expanding its breeding range within southern hemisphere (Whittington et al. 2001).

**State trend:**

Trend data from Buldir Island in the western Aleutians, Aiktak in the eastern Aleutians, and St. Lazaria in southeastern Alaska suggest numbers are stable or increasing over the last several decades (Dragoo et al. 2003, 2004).

## **EXISTING PROTECTION**

**Global protection:**

Under treaties with Canada, Mexico, Japan, and Russia, seabirds of the U.S. are protected from exploitation (Lensink 1984). Some nesting areas protected by U.S. National Wildlife Refuge System. Significant Newfoundland colonies (Baccalieu Island and Witless Bay Islands) are legally protected (Huntington et al. 1996).

**State protection:**

Many breeding colonies protected within Alaska Maritime National Wildlife Refuge.

## CHALLENGES

**Global challenges:**

*Predation:* Introduction (accidental or intentional) of predatory mammals to islands is the most significant threat. Storm-petrels have suffered from introductions of domestic cats and dogs, rats, mongoose and other ground predators on many offshore nesting islands (Brown and Nettleship 1984). Even mice can kill adult storm-petrels (Sibley 2001). Introduced foxes and rats exterminated colonies on some islands in Alaska (Lensink 1984). Cattle, sheep and horses trample burrows and erode hillsides. Known prey of Short-eared Owl (*Asio flammeus*; Holt 1987) and Slaty-backed Gull (*Larus schistosagus*; Watanuki 1986). Increasing presence of predatory gulls and some raptors near landfills and dumps in the last century has probably impacted storm-petrel populations (Sibley 2001).

*Pesticides:* Pesticides and contaminants such as DDE and polychlorinated biphenyls (PCBs) were present in tissue samples collected in eastern Canada from 1968 to 1984 (Pearce et al. 1989). Long-term data from this study, however, showed decreasing levels of contaminants in seabird tissue samples.

*Pollution:* Plastics commonly ingested but may be expelled when birds regurgitate (Boersma 1981). Ingested plastic particles may impede digestion (Blight and Burger 1997). Reproductive success reduced by exposure to crude oil or oil emulsion (Butler et al. 1988).

*Disturbance at colonies:* May be disturbed by picnickers, researchers, aircraft bombing/testing (Buckley and Buckley 1984), as well as fires, livestock grazing and introduced predators.

*Climate change:* Shifts in oceanic circulation patterns that alter seabird food supplies and distribution have been tied to climatic changes; a recent example of this impact may be the 90% reduction of Sooty Shearwaters (*Puffinus griseus*) in the eastern North Pacific over the last 20 years (Sibley 2001).

**State challenges:**

Predation at breeding colonies is probably the main source of mortality and is the most significant threat in Alaska. Intentional or accidental introduction of predators such as Norway rats, red fox, or Arctic fox, and domestic dogs, cats, and cattle can have devastating effects on populations (Brown and Nettleship 1984). Also threatened by artificial increases in avian predators (e.g., gulls and raptors) as a result of supplemental food from fish processing plants and landfills located near colonies (Sibley 2001, ADFG 2005). Disturbance of nest sites, even during nonbreeding season, may break up mated pairs and lower reproductive success (Morse and Kress 1984). Climate change and oceanographic regime changes have the potential to impact habitat quality and

distribution and abundance of food supply (Meehan et al. 1998); although the overall effects of these changes to Storm-petrel populations are currently unknown. Oil pollution (e.g., bilge dumping and light oiling from fishing vessels anchored near colonies) and spills are threats in many parts of this species' range in the state (ADFG 2005). Exposure of adults to crude oil and oil-dispersant emulsion significantly reduced short-term (one season) hatching and fledging success (Butler et al. 1988).

## **RESEARCH AND INVENTORY NEEDS**

### **Global research needs:**

Information needed on survival, food habits, habitat use and site fidelity in winter range. Research needed to determine genetic differences between populations, and differences between central and peripheral colonies in reproductive success (Huntington et al. 1996).

### **State research needs:**

Evaluate level of re-establishment on islands where predators have been removed and continue predator removal on remaining islands.

### **Global inventory needs:**

Populations are sparsely monitored; standardized protocols and population monitoring at index sites throughout species' range needed. Location and extent of winter range needs to be defined, including an inventory of Southern Hemisphere islands that may support breeding colonies.

### **State inventory needs:**

Surveys are needed to better define the poorly known breeding range in Alaska. Given the size and inaccessibility of much of Alaska's coastline, large colonies may still be undiscovered (Sowls et al. 1978). More frequent monitoring of populations, especially at index locations (e.g., at least every 3 years for 20 years) needed. Complete a nesting inventory (ADFG 2005).

## **CONSERVATION AND MANAGEMENT NEEDS**

### **Global conservation and management needs:**

Utilize careful predator management; prevent introduction of predatory or grazing mammals to nesting islands. Continue regular monitoring of breeding and non-breeding populations as well as important habitats.

### **State conservation and management needs:**

Colonies should be monitored regularly to detect inadvertent predator introductions and to establish baseline and long-term estimates of population size and trends (Huntington et al. 1996). Utilize careful predator management; prevent introduction of predatory or grazing animals to nesting islands. Re-establish colonies on islands where introduced predators have been removed. Prevent artificial concentrations of predatory gulls and corvids (at garbage dumps) as well as rat introductions (from vessels). Continue regular

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monitoring of breeding and non-breeding populations as well as important habitats.  
Evaluate disturbance at index colonies (ADFG 2005).

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Life history and global level information were obtained from the on-line database, NatureServe Explorer ([www.natureserve.org/explorer](http://www.natureserve.org/explorer)). In many cases, life history and global information were updated for this species account by Alaska Natural Heritage Program zoologist, Tracey Gotthardt. All global level modifications will be sent to NatureServe to update the on-line version.

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