

TUFTED PUFFIN - FRATERCULA CIRRHATA

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Charadriiformes Family: Alcidae Genus: Fratercula
Species: F. cirrhata

Habitat:

Biomes: Breeds on coastal slopes in ground burrows, sometimes under boulders and piles of rocks, occasionally under dense vegetation. Winters at sea. Tufted puffins typically select islands or cliffs that are relatively inaccessible to predators, close to productive waters, and high enough that they can take to the air successfully. Ideal habitat is steep but with a relatively soft soil substrate and grass for the creation of burrows. During the winter feeding season, they spend their time almost exclusively at sea, extending their range throughout the North Pacific and south to Japan and California.

Distribution:

In US: Tufted puffins typically select islands or cliffs that are relatively inaccessible to predators, close to productive waters, and high enough that they can take to the air successfully. Ideal habitat is steep but with a relatively soft soil substrate and grass for the creation of burrows. During the winter feeding season, they spend their time almost exclusively at sea, extending their range throughout the North Pacific and south to Japan and California. **Found throughout the North Pacific Ocean.**

In Other Countries: Asia, Russia, Japan, Hawaiian Islands, Sweden.

Holistic Description: The Tufted Puffin is a seabird of the open waters, islands, and coastal cliffs of the north Pacific. It is larger than other puffin species and distinctive in appearance, with a bold white "face-mask" and golden head plumes in the breeding season.

Species Richness: NO SUBSPECIES

Population Dynamic: CHECK THREATS

Evolution and Systematics:

Evolution: Same as for Horned Puffin. In Pacific, only known puffin fossils are those of Cerorhinca, which Chandler synonymized into Fratercula.

Systematics: Monotypic. No geographic variation described. Classification of Alcidae has changed repeatedly during past 2 centuries. Tufted Puffin currently classified in tribe Fraterculini, which includes all puffins and Rhinoceros Auklet; Tufted Puffin formerly placed in monotypic genus Lunda.

Number of Species: NO SUBSPECIES

Number of Genera: NO SUBSPECIES

Physical Characteristics:

Size and Length: Length: 14.2-15.8 in (36-40 cm) Weight: 18.3-35.3 oz (520-1000 g)

Wingspan: 35 cm (14 in)

Coloration: Breeding adult all black except for white face and long golden plumes curling over back of head and neck. Bill large and red-orange, with a bright-orange yellow plate over the base. Nonbreeding adult has dark gray face with no head plumes or bill plate.

General Body Features: Stocky, large-headed, dark seabird.

Special Features of the Body: NONE

Special Features of the Head and Sensory Organs: With "denticles" on the roof of their mouths and a locking tongue, the birds are able grab and hold 5 to 20 small fish crosswise for delivery to chicks at the nest.

Dentition: BEAK/LAMELLAE/GIZZARD

Special Features of the Limbs and Digits: Tufted Puffins nest in dense breeding colonies, forming long-term pair bonds to care for their young. The birds dig burrows up to five feet deep into cliff edges and slopes; their beaks and feet are specialized for this excavation work.

Any Special Internal Anatomy: Heavy bones, allows the Tufted Puffin to dive up to 200 feet in pursuit of prey, mostly fish and squid; the birds can stay underwater for more than a minute.

Sexual Dimorphisms: Male birds tend to be slightly larger than females.

Differences Between Juvenile Stage and Adult: Resembles nonbreeding adult, with dusky eyes instead of yellow.

Behavior:

Diurnal, Nocturnal, or Crepuscular: During daylight, breeding individuals sleep and roost in nest, in roosting areas at breeding colony, and on water close to colony. At night, spends time in nest or on water in vicinity of breeding colony.

Activity: The nest is usually a simple burrow dug with the bill and feet, but sometimes a crevice between rocks is used instead. Tufted puffins feed on a variety of fish and marine invertebrates, which they catch by diving from the surface.

Locomotion: Walks upright with ease over rocks, clinging to surface with claws. Capable of hopping. Reclines with tarsus pressed flat, but walks on its toes. Flight is direct and powerful, and probably more maneuverable than other puffins. Swims on surface by paddling with feet. Powerful underwater swimmer and diver.

Communication and Perception: A low, growling "errrr." as a primary function threat or warning.

Home Range: Territorial behavior not well known. Pairs defend nest entrances. Male defends female at colony and on water. Burrow densities at colonies can be high.

Degree of Sociality: Less social and more dispersed at sea than other species of puffins. Nests solitarily, as well as in large mono and multispecies colonies. Social and territorial displays include Landing Displays and Fly-Bys; latter common throughout breeding season. Puffins make repeated circular flights above breeding colony before landing at colony or on water in rafts near shore; may involve a few individuals or almost entire breeding population.

Level of Aggression: Territorial species that protects nesting burrow and close surroundings from conspecifics and other birds. Fights among individuals common upon arrival at breeding colonies. Sometimes both members of a pair attack an intruder. Aggression occurs by locking bills, scratching with nails, and beating wings. Aggressive encounters might continue for 2–3 min and end when one participant runs away while other chases it for 2–3 m and occasionally up to 30 m.

Migration: As in other alcids, migration not complete. In Bering Sea and Sea of Okhotsk, birds are pushed south by advancing ice in winter. Some remain near breeding colonies in Aleutians and Gulf of Alaska, but most undergo general post-breeding dispersal to overwintering grounds in North Central Pacific.

Predators:

Predators: Tufted puffins are preyed upon by various avian raptors such as snowy owls, bald eagles and peregrine falcons, and mammals like the Arctic fox. Foxes seem to prefer the puffin over other birds, making the bird a main target. Choosing inaccessible cliffs and entirely mammal-free islands protects them from terrestrial predators while laying eggs in burrows is effective in protecting them from egg-scavengers like gulls and ravens.

Anti-Predator Defenses: Puffins are helpless against mammalian predators, which is why they breed almost exclusively on offshore islands free of those predators. CHECK LAST SENTENCE OF PREDATORS.

Diet and Nutrition:

Adult Diet: Tufted puffins feed on a variety of fish and marine invertebrates, which they catch by diving from the surface. However, their diet varies greatly with age and location. Adult puffins largely depend on invertebrates, especially squid and krill. **Nestlings** at coastal colonies are fed primarily fish such as rockfish and sand lance, while nestlings at colonies closer to pelagic habitats are more dependent on invertebrates. Demersal fish are consumed in some quantity by most nestlings, suggesting that puffins feed to some extent on the ocean bottom.

Juvenile Diet: ^^^^^

Special Adaptations for Getting Prey: Feeding areas can be located far offshore from the nesting areas. Puffins can store large quantities of small fish in their bills and carry them to their chicks. Prey captured underwater using wing-propelled "flight" at possible speeds of 1-2 m/s.

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Probably socially monogamous, as in Atlantic Puffin.

Mating Season: February to May

Courtship: Courtship begins shortly after arrival at breeding colonies. Prior to copulation, male follows female at a distance of several meters. During chase, he stretches and lifts neck, directing bill straight up, opens and closes bill in a slow manner, and "jerks" head in a fast motion. Sometimes male bends neck and puts head back. Behavior continues for about 1 min. By opening and closing his bill, a male is thought to expose to a female the bright mouth-lining and expanded pink rosettes in corners of mouth. Eventually a female assumes a hunched, low-to-the-water posture with head and neck held close to body. On approaching a female, male increases frequency of "jerking" and exaggerates it. Male demonstrations followed by billing, when male and female face each other and repeatedly rub their bills together.

Territoriality: HOME RANGE

Mating: During copulation, male raises off water, flaps its wings, and may or may not continue jerking its head, while female sinks so that only her head remains above water. After mating, female dives and surfaces within a few meters of male and finally flies 2–5 m away. At end, both mates flap their wings.

Nesting: Most common nesting habitat is earthen burrows. Burrow densities appear highest along cliff edges, steep sea slopes covered with dense vegetation and deep layer of soil. Lower densities in rock-crevice habitats, among beach boulders, and in cracks and crevices of sea cliffs. Occasionally nests on open ground under bushes. Using feet and occasionally bill, excavates

crevices or burrows or clears area of soil, debris, feces, or mud. Collects nesting materials in vicinity of nests or at sea. Brings nest materials to nest held crosswise in bill.

Egg-Laying: Egg Shape: Elliptical Egg Length: 73 mm Egg Width: 48.5 mm Egg Volume: 84 ml Egg Mass: 90 g Egg Color: Dull white, dirty white, or creamy white. Clutch Size: 1 egg Incubation Period: 43.9 d

Hatching and Incubation/Gestation: Semiprecocial chick, covered with long downy feathers, eyes open, white egg tooth usually present on upper bill until 15–20 d posthatch.

Development: Chick growth and development highly variable, reflecting intermittent provisioning by parents.

Parental Care: After hatch, chick brooded constantly during first 1–4 d. Both parents participate. Brooding during day terminated after chicks can thermoregulate, but one parent usually spends night in nesting burrow until chick is about 6 wk old. Both sexes feed young during daylight hours. Adults delivering food spend little time in burrow and leave within 1 min after arrival.

Lifespan: Around 3 years, up to 6 years old.

Conservation:

Official Federal Status: Least Concern

Special Statuses in Individual States: NONE

Threats: There is not a lot of information on Tufted Puffin population trends. The North American Waterbird Conservation Plan estimates a continental breeding population of 2,750,000–3,000,000 birds, rates the species a 9 out of 20 on the Continental Concern Score, and lists it as a Species of Low Concern. Tufted Puffin is not on the 2014 State of the Birds Watch List. Bycatch in fishing nets killed tens of thousands of Tufted Puffins each year into the 1980s. The elimination of drift-nets on the high seas has reduced mortality, although bycatch in coastal fishing nets still kills large numbers of puffins. In addition, nesting Tufted Puffins are highly vulnerable to red and arctic foxes, river otters, brown bears, and other mammals. Such predators were once absent from most islands in the northeast Pacific, but were introduced in the 1800s and early 1900s. Where present, mammalian predators have devastated or eliminated Tufted Puffins from many islands, but programs to eradicate the introduced species have led to dramatic recovery of puffin populations.

Conservation Efforts: ^^^^^

Extra Facts:

1. The Tufted Puffin nests mostly in deep burrows that it digs into cliff edges and slopes. These burrows can be more than 1.5 meters (5 feet) deep.
2. The Tufted Puffin can capture and hold multiple small fish crosswise in its bill, routinely 5 to 20 fish at a time, for delivery to chicks at the nest. Adults eat their own food while still under water.
3. The oldest recorded Tufted Puffin was at least 6 years old when it was found in Alaska, the same state where it had been banded.

Notable Species: NONE