DUNLIN - CALIDRIS ALPINA

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Charadriiformes Family: Scolopacidae Genus: Calidris Species: C. alpina

Habitat:

Biomes: Dunlin nest in subarctic and arctic tundra, usually in wet areas with slight ridges and ponds. They feed on the edges of marshes and hummocks, usually not far from where they nest, as well as in coastal lagoons. In winter, Dunlin roost and forage in large flocks in saltwater areas such as estuaries and lagoons, but many forage in wet or flooded farm fields. When the tide is high, they gather on beaches, islands, or the upper edges of marsh. During migration, Dunlin stop over in sewage treatment ponds, moist harvested agricultural fields, and muddy edges of farm ponds, rivers, and lakes. Typically, they select areas where the water is less than 2 inches deep.

Distribution:

In US: It is a circumpolar breeder in Arctic or subarctic regions. Birds that breed in northern Europe and Asia are long-distance migrants, wintering south to Africa, southeast Asia and the Middle East. Birds that breed in Alaska and the Canadian Arctic migrate short distances to the Pacific and Atlantic coasts of North America, although those nesting in northern Alaska overwinter in Asia. Many dunlins winter along the Iberian south coast.

In Other Countries: Scandinavia, Iceland, Greenland, Great Britain, Russia, Baltic Sea Region, Siberia, Asia, Africa, Middle East, Europe

Holistic Description: Dazzling in its breeding finery, with vivid rusty back and black belly patch, the Dunlin was once called the Red-backed Sandpiper. It's now named for its nonbreeding plumage, a mousy gray-brown or "dun" color. Dunlin are an abundant species that nests around the world's arctic regions. They winter in large flocks along bays, estuaries, and coastlines. They have notably long, curved bills but they don't probe deeply into mud; instead they tend to feed on invertebrates just barely below the surface.

Species Richness: 9 SUBSPECIES, LISTED 10

Population Dynamic:

Evolution and Systematics:

Evolution: The antiquity of North American populations dates to the late Pleistocene. C. a. hudsonia is considered ancestral, having split about 223,000 yr ago; C. a. pacifica and other Beringian clades split as recently as 71,000 yr ago.

Systematics: Among the most polytypic of all shorebirds, with up to 9 subspecies recognized (others proposed), based on differences in plumage and morphometrics. Plumage variation most pronounced in dorsal color and pattern (degree of brightness), breast, neck, and undertail streaking, and amount of white on outer primaries.

Number of Species: 9 SUBSPECIES, LISTED 10

Number of Genera: 9 SUBSPECIES, LISTED 10

Physical Characteristics:

Size and Length: Length: 6.3-8.7 in (16-22 cm) Weight: 1.7-2.3 oz (48-64 g)

Wingspan: 14.2-15.0 in (36-38 cm)

Coloration: Breeding adult has bright rusty back and crown, black belly patch, and white underparts with dark stippling. Nonbreeding adults have grayish brown upperparts, head, and breast, and are pale below. Juveniles are browner, with a scaly black and rusty brown marbled pattern above, white below, with faint stippling and trace of dark belly patch. The legs are dark.

General Body Features: A chunky, small shorebird with medium-length legs, a short neck, and a long bill that is curved toward the tip.

Special Features of the Body: Shorebirds are designed, or adapted, to survive in open habitats. Their brown, rust, black, and white plumage makes them less conspicuous to predators. Their bi-coloration, dark on the back and lighter on the belly, further camouflages them from predators. Their light bellies blend in against the light sky when seen from below.

Special Features of the Head and Sensory Organs: Their bills are highly adapted tools for finding food. Some species will probe for invertebrates in mud or water, poking their bills up and down in rapid succession like a sewing machine until they feel something to eat. Others have bills perfectly adapted to swishing through the water to filter food from the water column.

Dentition: BEAK/LAMELLAE/GIZZARD

Special Features of the Limbs and Digits: Shorebirds have long legs for wading. Their long toes give them the stability they need for their seemingly endless walking and running along the water's edge and in soft mud.

Any Special Internal Anatomy: Not only used for finding food, bills are used for preening as well. A special oil gland located at the base of their tails helps to keep their feathers dry. The birds spread the oil from this gland with their bills or the backs of their heads when preening themselves. The oil repels water from the feathers, keeping them warm and dry.
Sexual Dimorphisms: Bill length varies between sexes, the females having longer bills than the males.
Differences Between Juvenile Stage and Adult: Juveniles are brown above with two whitish "V" shapes on the back. They usually have black marks on the flanks or belly and show a strong white wingbar in flight.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal
Activity: In spring, male Dunlin arrive on the breeding grounds ahead of females and set up nesting territories as the snow and ice melt from the tundra. They mark territories with flights and song, a burry, reverberating, descending trill unlike any other sound of the tundra. In display, they fly over the territory with rapid, fluttering wingbeats, punctuated by short glides on cupped wings. They also sometimes call and sing from the ground, raising one wing. Their territories range from 0.5 to 18 acres in size. Male Dunlin drive other males from their territories, usually by chasing them in flight, but they feed peaceably with other males in ponds outside the territory. Dunlin are largely monogamous, and both sexes incubate the eggs and defend the young. At all other times of year, they are gregarious, gathering in small to very large flocks.
Locomotion: Primarily terrestrial. When foraging, generally walks, occasionally runs. Often roosts and occasionally forages on 1 leg. On breeding grounds, occasionally perches on high objects such as driftwood, shrubs, bushes, tents, etc. Typically seen in flocks: distinctive tight, evasive, antipredator flocks. Flight swift and coordinated; average time for birds in a flock to change direction 196 ms. Occasionally swims across small body of water while foraging or to reach nest. Antipredator move includes diving underwater.
Communication and Perception: The song, heard mostly from males on the breeding grounds, often during display flights, is a remarkable series of highly modulated (burry) trills, beginning with a short set of lower notes that each rises in pitch, then finishing with a descending trill that recalls a movie sound-effect for a spaceship landing. The song can last 3.5 seconds.
Home Range: Sizes of defended nesting areas: C. a. arcticola, C. a. pacifica; small fluctuation in size among years, with high-density years resulting in smaller territories. Birds move off nesting territories to feed in communal ponds; after hatching, areas no longer defended.
Degree of Sociality: Highly gregarious on winter grounds and while migrating. On breeding grounds, in singles and pairs until breeding effort finished.
Level of Aggression: Aggressive birds known to Crouch-threat, where aggressor crouches, slightly elevates wings, ruffles feathers, and fans tail feathers downward and side to side; this behavior never observed on wintering grounds of C. a. pacifica. Threatened bird may tilt body downward, pointing head and bill close to ground. Aggressive interactions in C. a. pacifica include ground combat: birds jump on each other, peck at the head, and bill-fence, bill pokes, chest butts, minor bumps, and rushes without contact.
Migration: Intermediate- to short-distance migrant between breeding areas in coastal, low arctic and subarctic North America and wintering range in coastal, temperate North America and Central America and East Asia. Generally, one of the last shorebird species to leave the breeding grounds, with most adults and juveniles migrating together. C. a. pacifica thought to move gradually inland into Central Valley of California for rest of winter prior to northward migration.

Predators:

Predators: Peregrine Falcons, Merlins, Short-eared Owls, Northern Harriers, Accipiters, Sparrowhawks, Long-tailed jaegers, Parasitic Jaegers, Glaucous Gull, Arctic Fox, Mew Gull, Red Fox
Anti-Predator Defenses: LOCOMOTION. Evade raptors with tight, coordinated flocks zig-zagging through the air. Nocturnal roost sites may change due to owl predation. Vigilance by foraging birds decreases with increasing flock size; for preening birds, no increase. Avoidance of predators apparently learned by juveniles in their first winter. On wintering and breeding grounds, disturbed birds in foraging and roosting flocks will often lower head and stretch 1 or both wings up in air, exposing the white wing-stripes; perhaps a mechanism to coordinate escape behavior or to indicate awareness of changing situation.

Diet and Nutrition:

Adult Diet: Like other small sandpipers, Dunlin eat mostly invertebrates found in mud, fine sand, or soil. They forage by picking organisms they see or by probing into the substrate with their bills. Their sensitive bill tips enable them to detect prey by touch, allowing them to feed at night (which helps them take advantage of tidal cycles). They forage by repeatedly probing the area around them, then walking forward. Unlike similar-sized species such as the Curlew Sandpiper and Stilt Sandpiper, Dunlin normally does not insert the bill deeply into the substrate to find prey—in fact, most probe less than a quarter-inch deep. The prey they consume include earthworms, marine worms, midges, flies, craneflies, beetles, spiders, snails, blue mussels, small clams, and amphipods. Dunlin also eat small amounts of plant matter, mostly seeds. On rare

occasions they eat tiny fish. They consume their prey immediately, using rapid bill movements and water tension in the bill to carry prey up to the mouth.
Juvenile Diet: In mid-June, newly hatched birds eat about 70% small adult insects (mainly chironomids), 20% adult tipulids, and 10% other; by early to mid-July, arachnids, adult Coleoptera, and chironomid larvae; early to late August, >80% chironomid larvae.
Special Adaptations for Getting Prey: Tactile feeder that probes, jabs, and picks in substrate, often with open bill. Open bill may permit access to taste buds; species may surface tension feed as do Western Sandpiper, Least Sandpiper. Taste and visual cues used to find prey. Rarely probes deeper than 3.5 mm; rarely probes on breeding grounds in Alaska, instead jabs and pecks.
Reproduction:
Mode of Reproduction: Monogamous
Mating System: Generally monogamous. Few cases of simultaneous polygamy known. In the Americas, Dunlin attempt to raise no more than 1 brood/summer; arctic season probably too short; will renest if first nest is lost early. In Europe, females can successfully renest with new males after successful first nest.
Mating Season: Late-Feb to Early-June
Courtship: Males perform display flights on breeding grounds: short glides with stiff arched wings, interrupted by rapid, shallow flutters.
Territoriality: At Barrow, Ravi Bandaru observed Dunlin with territories close to Pectoral Sandpipers and suggested that in years with high Pectoral Sandpiper densities, aerial displays by Dunlin were inhibited, although few actual interactions were observed. **Manner of Establishing and Maintaining Territory:** By song and flight; patrol boundary from air. On ground will wing raise.
Mating: NONE
Nesting: Males normally select the nest site. Nests are set in tundra vegetation, often near clumps of grass. Males make several scrapes (depressions in the tundra vegetation) using their feet and breast, then sometimes line the scrape with willow leaves, sedges, and grasses. Females select the site that will serve as the actual nest. Nests average about 3.9 inches tall, with the interior 3.8 inches across and 2.5 inches deep.
Egg-Laying: Egg Shape: Oval Egg Length: 36.07mm Egg Width: 33.90-38.62mm Egg EMPTY Mass: 0.523g Egg Color:Background color generally olive to olive-brown, but may range from buff to blue-green; small splotches and swirls ranging from light brown to orange-brown to black over much of egg, especially heavy at the wide end of the egg. Egg Texture: Smooth and slightly glossy. Clutch Size: 4 eggs Incubation Period: 21-22 days
Hatching and Incubation/Gestation: Active and covered with down.
Development: Precocial. Young begin to wander from nest shortly after they are dry. Weigh approximately 7 g at hatching and reach adult weight of 50–60 g within 3–4 wk.
Parental Care: BROODING: Generally, both parents participate, although typically the male assumes more of this role as the chicks grow; sometimes only the male incubates. FEEDING: Adults lead young to areas with abundant insect populations, but young find their own food; are not fed directly by adults.
Lifespan: Around 8 years.
Conservation:
Official Federal Status: Least Concern
Special Statuses in Individual States: NONE
Threats: Partners in Flight estimates the global breeding population of Dunlin at 5.5 million (1.5 million in North America) and rates the species an 11 out of 20 on the Continental Concern Score, indicating a species of low conservation concern. Although Dunlin are still abundant, there is little information on population trends. Of the three breeding populations in North America, the one in northern Alaska appears to have declined by more than 30% since 2006 and now numbers around 500,000. The reasons for this decline are not known, but losses of wintering habitat could be involved.
Conservation Efforts: ^^^^^^^
Extra Facts:

1. The name Dunlin comes from dunling, the earliest known English name of the species, which dates back at least as far as 1531. Dunling is a compound of the English word dun (meaning gray-brown) and the diminutive -ling. So the name Dunlin essentially means “little brown job.”
2. Shorebird hybrids are very rare, but careful observation by birders have turned up hybrids between Dunlin and at least two other arctic-nesting species: White-rumped Sandpiper and Purple Sandpiper.

3. Dunlin breeding in northern Alaska apparently move westward, skipping the rest of North America and migrating down the eastern side of Siberia to Japan and China.
4. The oldest recorded Dunlin was at least 12 years, 5 months old when it was recaptured and rereleased during banding operations in California.

Notable Species:

1. C. a. arctica, (Schiøler, 1922), breeds in northeast Greenland.
2. C. a. schinzii, (Brehm & Schilling, 1822), breeds in southeast Greenland, Iceland, the British Isles, Scandinavia & the Baltic.
3. C. a. alpina, (Linnaeus, 1758), breeds in northern Europe and northwest Siberia.
4. C. a. centralis, (Buturlin, 1932), breeds in north-central and northeast Siberia.
5. C. a. sakhalina, (Vieillot, 1816), breeds in eastern Russia to the Chukchi Peninsula.
6. C. a. kistchinski, Tomkovich, 1986, breeds around the Sea of Okhotsk to Kuril Islands and Kamchatka.
7. C. a. actites, Nechaev & Tomkovich, 1988, breeds on Sakhalin.
8. C. a. arcticola, (Todd, 1953), breeds from northwest Alaska to northwest Canada.
9. C. a. pacifica, (Coues, 1861), breeds in western and southern Alaska.
10. C. a. hudsonia, (Todd, 1953), breeds in central Canada.