

RED CROSSBILL - LOXIA CURVIROSTRA

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Passeriformes Family: Fringillidae Subfamily: Carduelinae Genus: Loxia Species: L. curvirostra

Habitat:

Biomes: Red Crossbills favor mature coniferous forests, especially spruce, pine, Douglas-fir, hemlock, or larch with recent cone crops. Although Red Crossbills mostly breed south of the forests of spruce, fir, and larch where White-winged Crossbills breed most abundantly, the two species forage together in white spruce and Engelmann spruce forests in late summer, when cone crops are extensive. In North America, Red Crossbill comprises at least 11 different “types”, many of which specialize on particular species of conifer. For example, the small-billed type 3 favors western hemlock, which has very small cones, whereas the largest-billed type 6, found in the Southwest, feeds on larger-coned pine species. Birders have begun to make audio and video recordings of Red Crossbill, both to identify the type involved and to identify the species of conifer in which they feed.

Distribution:

In US: The red crossbill breeds in the spruce forests of North America, as well as Europe and Asia. Some populations breed in pine forests in certain areas of all three continents, and in North America, also in Douglas-fir.

In Other Countries: ^^^^^

Holistic Description: A fascinating finch of coniferous woodlands, the Red Crossbill forages on nutritious seeds in pine, hemlock, Douglas-fir, and spruce cones. Their specialized bills allow them to break into unopened cones, giving them an advantage over other finch species. Because conifers produce seeds unpredictably, Red Crossbills sometimes wander (or “irrupt”) far beyond their usual range. They nest wherever and whenever they find abundant food, sometimes even in winter. Several types of Red Crossbill exist; they each have different calls, feed on particular conifer species, and might represent distinct species.

Species Richness: 17 SUBSPECIES

Population Dynamic: CHECK THREATS

Evolution and Systematics:

Evolution: Red Crossbill fossils have been reported from the Late Pleistocene of Carpinteria, California; Coconino County, Arizona; and Eddy County, New Mexico. Fossil crossbills from > 9,000 years ago that were found on Abaco Island, Bahamas.

Systematics: North American Red Crossbills show much local and regional variation in bill and body size. This size variation was categorized into subspecies by numerous authors on the assumption that each has a nonoverlapping breeding range.

Number of Species: 17 SUBSPECIES

Number of Genera: 17 SUBSPECIES

Physical Characteristics:

Size and Length: Total length 14–20 cm; mass 23.7–42.4 g (females), 23.8–45.4 g (males)

Wingspan: 81.1 mm

Coloration: Adult males are brick red overall, with darker wings and tail. Females are mostly yellowish below, brownish or olive brown above. Immatures are brownish above, pale with brownish streaking below.

General Body Features: A stocky, medium-sized songbird with short, notched tail and an unusual, twisted bill that crosses when closed.

Special Features of the Body: NONE

Special Features of the Head and Sensory Organs: Using their crossed mandibles for leverage, crossbills are able to efficiently separate the scales of conifer cones and extract the seeds on which they feed.

Dentition: BEAK/LAMELLAE/GIZZARD

Special Features of the Limbs and Digits: NONE

Any Special Internal Anatomy: NONE

Sexual Dimorphisms: Adult male deep brick-red to reddish yellow (some even greenish) with uniformly dark brown flight feathers, and short, deeply notched dark brown tail. Male coloration depends partly on molt timing. Female is uniformly olive to grayish with greenish or greenish yellow breast and rump; typically with pale grayish to whitish throat, which may be more or less mottled.

Differences Between Juvenile Stage and Adult: Immature male may resemble adult male or adult female, or exhibit plumage intermediate between male and female. Immature of both sexes is generally distinguished from adults by buffy edgings on

wing coverts. Underparts of juvenile are heavily streaked dark brown. No regular seasonal changes in plumage, although males may replace red feathers with yellow or greenish feathers or the reverse during annual molt.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal

Activity: Red Crossbills are social throughout the year, even during the nesting season, when pairs often nest close to each other in areas where cone crops are heavy. Nesting can commence at any time, but in North America, most Red Crossbills breed in late summer through early autumn and/or in late winter through early spring. In spring, when most songbirds begin to nest, many conifer seeds have not yet developed or become available, and so the later timing of Red Crossbill nesting seasons coincides with periods of greatest food availability. Males do not defend large territories, but they do have favored perches for singing and for making flapping-gliding flight displays, and they do chase other males that approach too closely. Between adult males, conflicts over cones, including threat displays, chases, and attacks, are not uncommon. Males often chase females when in search of a partner, and billing (touching bills together rapidly) and courtship feeding by the male help establish the pair bond. Males stay close to their partners during the nesting season, and partners select the nest site together. Red Crossbills appear to be monogamous in their mating system, and pairs sometimes raise two broods in a single nesting season when food is abundant. Both parents incubate the eggs and feed the young. When feeding, flocks of Red Crossbills move through woodlands with what seems a “nervous” energy, flying and calling as they go from tree to tree. Some scientists have speculated that their contact calls convey information about the quality of feeding conditions in each tree—perhaps the accessibility of seeds, seed size, or other information. Calling in such contexts would improve the flock’s feeding efficiency, allowing them to pass over the inferior cones quickly for the better ones. During irruption periods, when flocks migrate long distances, observers often report this apparently restless behavior, as the crossbills try to locate food in unfamiliar environments.

Locomotion: Hops on ground. Uses bill to grab branches, cones, and needles in parrot-like fashion when climbing in trees. Flight is rapid and powerful; undulations are more pronounced in short flights than for flights over longer distances. Long-distance flights are usually high above canopy.

Communication and Perception: Males (and rarely females) sing a variably sweet, loose trill or warble, usually preceded by several notes or paired notes that resemble flight calls.

Home Range: Little evidence for territories. Fighting between apparently breeding males has been interpreted as territoriality; 7 of 16 breeding males had a song perch located in top of tree about 60 m from nest. More careful study of banded individuals is needed. Like other cardueline finches, several pairs often nest semi-colonially in a small area, separated from other clusters of nests.

Degree of Sociality: Red Crossbill occurs in flocks year-round, like other crossbill species, with flock size being positively correlated with crossbill density. Flocking aids in food finding and assessment.

Level of Aggression: Conflicts over cones, roost, and perch sites, and mates lead to chases, and occasionally to fighting, including aerial, tumbling fighting. Ross stated that males fight only males, females only females, but this is not true of White-winged Crossbill. Perhaps, since males are usually dominant to females, actual fighting between males and females is rare, and hence not readily observed; more careful observation of agonistic behavior is needed.

Migration: Resident or nomadic. Erratic dispersals (irruptions) often occur during years with poor cone crops, but not a true migrant.

Predators:

Predators: Sharp-shinned Hawk, Cooper’s Hawk, Merlin, Peregrine Falcon, Northern Shrike, American Kestrel, Northern Pygmy Owl, Sparrowhawk, Squirrel, Jay

Anti-Predator Defenses: Red Crossbill gives Alarm Call to Clark’s Nutcracker (*Nucifraga columbiana*), Canada Jay, and even a Great Gray Owl. Flies away from trees when attacked by Sharp-shinned Hawk; power-dives into forest under attack from Merlin.

Diet and Nutrition:

Adult Diet: Red Crossbills eat seeds of spruce, pine, Douglas-fir, hemlock, or larch. To obtain these seeds, they first grasp the cone with one foot (normally, the foot that is on the side opposite to which the lower mandible crosses). They insert the partly open bill between two of the cone’s scales, then close the bill, which widens the space between the scales, exposing the seed. They use the tongue and bill together to remove the seed. When feeding on closed cones of spruce, hemlock, and Douglas-fir, crossbills usually remove the cone from the branch, but if these cones are open, they leave them attached to the branch, as they do with almost all pine cones. Occasionally, they forage on fallen cones on the ground. Before swallowing the seed, they remove the seed coat. Important tree species for Red Crossbill include eastern white pine, pitch pine, Table Mountain pine, loblolly pine, lodgepole pine, red pine, ponderosa pine, Sitka spruce, Engelmann spruce, red spruce, black spruce, white

spruce, western hemlock, eastern hemlock, Douglas-fir, and western larch. They sometimes eat seeds of birch and alder species, as well as box elder, along with many kinds of insects in early summer.

Juvenile Diet: ^^SEED KERNELS^^

Special Adaptations for Getting Prey: Red Crossbill usually forages for seeds in cones still attached to branches, although in spring and summer especially may forage on fallen cones. Closed cones of spruce, hemlock, and douglas-fir are usually removed from the branches, whereas closed cones of most pines and open cones of all conifers are generally left attached to the branch.

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Strongly monogamous.

Mating Season: April to June

Courtship: Courtship feeding and billing (touching or grabbing each other by the bill, “bill to bill”) are common. Courtship feeding is potentially an important source of food for female during nest-building and egg formation, although her own feeding rate remains high. Male constantly accompanies female after pairing. Paired birds often have matching calls.

Territoriality: HOME RANGE

Mating: NONE

Nest Placement: Nests, built mostly by the female, are usually sited in open rather than dense woodlands; nests are built inside dense foliage, on branches, next to or near the trunk, up to about 70 feet above the ground.

Nest Description: Bulky cup nests are built largely of conifer twigs, with the cup lined with grasses, weeds, seed-pod fibers, lichens, conifer needles, feathers, bark, or hair. Nests average about 9 inches across, and 2 inches tall, with the inner cup 2.4 inches across and 1 inch deep.

Egg-Laying: Clutch Size: 2-6 eggs Egg Description: Whitish, with reddish streaks and splotches concentrated around large end.

Hatching and Incubation/Gestation: Helpless with sparse down.

Development: Eyes closed. Hatchlings naked, except for some downy feathers on head and back. ALTRICIAL.

Parental Care: Parents regurgitate kernels and fluids from the crop that provide both food and moisture. This slurry has been noted to be “dark and viscid” early in nestling life, suggesting incorporation of insect matter, even in winter. Whole kernels found in crops of 5-d-old young in eastern Cascades of Washington.

Lifespan: Up to 8 years old.

Conservation:

Official Federal Status: Least Concern

Special Statuses in Individual States: NONE

Threats: Red Crossbill populations have declined by an estimated 12% since 1970, according to Partners in Flight. The group estimates a global breeding population of 26 million, with a U.S./Canada breeding population of 7.8 million, and rates the species an 8 out of 20 on the Continental Concern Score, indicating it is a species of low conservation concern. In Newfoundland, Canada, the species has become quite scarce (possibly as a result of the introduction of red squirrels to the island), and populations in the Pacific Northwest have also declined between 1966 and 2015, according to the North American Breeding Bird Survey, probably as a result of deforestation associated with development and logging. Crossbills gather grit on roadsides, making them vulnerable to vehicle strikes, and to possible ill effects from ingesting salt and other chemicals used to treat roads in winter. Logging of older-growth forest reduces food available to Red Crossbills, as many conifer species reach maximum productivity in their seventh decade or later. Extensive forest fires and outbreaks of pine beetles may temporarily reduce habitat and food available to Red Crossbills. In the early years after forest fires, crossbills can be common in burns because many of the dead trees (especially lodgepole pine) still have cones on them.

Conservation Efforts: ^^^^^

Extra Facts:

1. One of the great puzzles of bird classification is where to draw the line between species. Red Crossbills of the many “types” now described are especially puzzling because these birds do not conform well to the usual concepts of “species” and “subspecies.” Unlike many subspecies, the different types of Red Crossbills wander widely, sometimes joining up with other crossbill types. Even so, interbreeding between types appears to be very limited, suggesting that the types may be on their way to becoming full species.
2. The Red Crossbill is so dependent upon conifer seeds it even feeds them to its young. Consequently, it can breed anytime it finds a sufficiently large cone crop, even in the depths of winter.

3. A crossbill's odd bill shape helps it get into tightly closed cones. A bird's biting muscles are stronger than the muscles used to open the bill, so the Red Crossbill places the tips of its slightly open bill under a cone scale and bites down. The crossed tips of the bill push the scale up, exposing the seed inside.
4. The oldest recorded Red Crossbill was a male, and at least 8 years old when he was recaptured and rereleased during banding operations in Idaho in 2014. He had been banded in the same state in 2007.

Notable Species: 17, USE NOMINATE.