

PURPLE MARTIN - PROGNE SUBIS

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Passeriformes Family: Hirundinidae Genus: Progne
Species: P. subis

Habitat:

Biomes: Purple Martins forage over towns, cities, parks, open fields, dunes, streams, wet meadows, beaver ponds, and other open areas. In eastern North America they used to breed along forest edges and rivers, where dead snags offered woodpecker holes to nest in. But since humans began supplying nest boxes for them, eastern martins have become urbanites, living almost exclusively near cities and towns. In the West, martins have stuck with woodpecker holes in mountain forests or Pacific lowlands. Purple Martin wintering grounds are savannas and agricultural fields in Bolivia, Brazil, and elsewhere in South America. At night, wintering martins flock into cities and towns to roost, often in the trees of village plazas.

Distribution:

In US: Purple martins' breeding range is throughout temperate North America. Their breeding habitat is open areas across eastern North America, and also some locations on the west coast from British Columbia to Mexico. The purple martin migrates to the Amazon basin in winter. Its winter range extends into Ecuador but does not seem to ascend far up the Andean foothills.

In Other Countries: [CHECK DISTRIBUTION MAPS]

Holistic Description: Putting up a Purple Martin house is like installing a miniature neighborhood in your backyard. In the East, dark, glossy-blue males and brown females will peer from the entrances and chirp from the rooftops all summer. In the West, martins mainly still nest the old-fashioned way—in woodpecker holes. Our largest swallows, Purple Martins perform aerial acrobatics to snap up flying insects. At the end of the breeding season they gather in big flocks and make their way to South America.

Species Richness: 3 SUBSPECIES

Population Dynamic: Purple martins suffered a severe population crash in the 20th century widely linked to the release and spread of European starlings in North America. Starlings and house sparrows compete with martins for nest cavities. Where purple martins once gathered by the thousands, by the 1980s they had all but disappeared.

Evolution and Systematics:

Evolution: NONE

Systematics: Across e. North America neither body size nor plumage color varies to a great extent, but in w. North America body size varies considerably. Birds in the Rocky Mts. and Pacific Northwest average larger than birds in the East and are markedly larger than birds in the arid Southwest and nw. Mexico.

Number of Species: 3 SUBSPECIES

Number of Genera: 3 SUBSPECIES

Physical Characteristics:

Size and Length: Length: 7.5-7.9 in (19-20 cm) Weight: 1.6-2.1 oz (45-60 g)

Wingspan: 15.3-16.1 in (39-41 cm)

Coloration: Adult males are iridescent, dark blue-purple overall with brown-black wings and tail. Females and immature are duller, with variable amounts of gray on the head and chest and a whitish lower belly.

General Body Features: Purple Martins are very large, broad-chested swallows. They have stout, slightly hooked bills, short, forked tails, and long, tapered wings.

Special Features of the Body: NONE

Special Features of the Head and Sensory Organs: The beak of the Purple Martin is shiny black in color and has a shape typical of those species adapted to catching flying insects (i.e., broad and flattened).

Dentition: BEAK/LAMELLAE/GIZZARD

Special Features of the Limbs and Digits: The somewhat-stiffened tail and long curved toenails of Purple Martins are structural adaptations enabling them to cling vertically to the trunks of trees, just as woodpeckers do.

Any Special Internal Anatomy: One of the adaptations permitting birds the lightness of weight necessary for flight, is their hollow bones. In contrast, mammals have solid bones. But, the hollow bones of birds are also filled with air sacs that are connected to the respiratory system.

Sexual Dimorphisms: Adult male is the only dark-bellied swallow in North America. Adult male entirely glossy blue black; female resembles other swallows in color pattern but can be distinguished by its large size and pronounced brownish or grayish collar around its nape.

Differences Between Juvenile Stage and Adult: Yearling male resembles female in color pattern but shows variable amounts of blue black feathering on head and underparts, and its nuchal collar is usually less distinct than that of female. Yearling female generally lighter below and more brownish above than adult female; also may be distinguished by absence of dusky centers on undertail-coverts.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal

Activity: Purple Martins fly with quick flaps and glides, outlining big circles in the sky as they hunt insects. They rarely land on the ground except to collect nesting material and pick up grit to aid their digestion. Males defend small nesting (but not foraging) territories from other males and females do the same with other females. In eastern populations, each territory includes several compartments within a bird house (and occasionally several bird houses), but most birds gradually give up portions of their territory as more and more males arrive. The female usually defends a smaller territory, which usually shrinks down to the size of its own nest compartment by egg-laying time. Physical fights usually only break out if one bird goes into another bird's nest compartment. Martins pair up with one male and one female per nest, but sometimes two females may settle into different compartments of one male's territory. Both sexes frequently mate outside of their pair bond. Adults form flocks as soon as nestlings fledge, and congregate in large roosts throughout the winter.

Locomotion: When on ground, walks exclusively. Goes to ground only to collect nesting material, to attempt forced copulations, or to pick up grit. Commonly walks along porches below entrance holes of birdhouses. Occasionally sidles along wire or tree branch using sideways walk. Flies at various heights, from just above the ground to ≥ 165 m. No estimates of typical flight speed, although a martin in a homing experiment averaged 43.5 km/h during a nocturnal homing flight. Martins sail in circles estimated to be 10–20 m across, with regular alteration between quick flapping and gliding. Glides are mostly short, < 7 s and usually 3–4 but occasionally up to 26 s. Holds wings horizontal during glides. Changes altitude usually slowly, although descends rapidly from high altitudes by closing wings completely and hurtling downward in almost vertical dive or fall, pulling out just before reaching the nest site. Has more speed and power but less maneuverability than the smaller swallows.

Communication and Perception: Purple Martins sing with boisterous, throaty chirps and creaky rattles. During courtship, males make a croak song that can be 4 seconds long; he only does this when a female is nearby, often before dawn and from inside the nest cavity. Females make a chortle song. The loudest song is the dawn song, which males sing before daylight, possibly to attract other martins to the colonial nest site.

Home Range: In eastern populations, individuals defend territories that often consist of multiple compartments within a birdhouse, and occasionally multiple birdhouses or gourds. A single male may defend up to 36 compartments early in the season; typically, it defends the compartments themselves and adjoining porches, but not the tops of birdhouses. Males tend to defend more rooms early in season; for males arriving in Feb in n. Texas, mean territory size early in season was 12.5 compartments. Territory owners win all fights with intruders, but eventually some owners appear to tire of fighting a particular male and relinquish one or more compartments to him. Nonresidents seem to win through a "war of attrition"

Degree of Sociality: Highly social during the nonbreeding season, concentrating in enormous premigratory roosts and assembling in huge groups to sleep at night in town squares of Brazilian cities.

Level of Aggression: Usually limited to instances when an intruder enters the nest compartment that is claimed by a bird already resident. Fights inside the compartment can be violent, with combatants pecking each other with their beaks, beating each other with their wings, and holding on to each other with their feet. Intruders are usually ousted from a compartment quickly; defeated bird struggles to exit while territorial resident holds on to its back or tail with its beak and continues to peck it. If a particular intruder is persistent at trying to claim part of resident's territory, the resident soon seems to recognize that bird, and fights may develop even before the intruder enters a compartment. Birds are occasionally injured seriously in these repeated fights.

Migration: Long-distance migrant. Most Purple Martins that breed in eastern North American probably migrate across the Gulf of Mexico. They form huge roosts (of several hundred thousand birds) in late summer along the Gulf Coast from Texas to Florida. Others may fly over Mexico and through Central America. Purple Martins are probably leisurely migrants that fly only during the day and forage as they go. Nonetheless, they are one of the earliest South American migrants to arrive in the spring, reaching Florida as early as mid-January and New England in mid-April.

Predators:

Predators: Birds, Snakes, House Cats, Raccoons, Squirrels, Owls, Roadrunners, Blue Jays, Hawks, Great Blue Herons.

Anti-Predator Defenses: Typical response to most predators is alarm-calling with Zweet or Zwack Calls, while usually milling or perching above predator. If predators approach a nest closely, owners of threatened nest dive at predator, sometimes swooping within a few centimeters. These close dives are risky.

Diet and Nutrition:

Adult Diet: A year-round insectivore, the Purple Martin eats flying insects at altitudes higher than other swallows, often exceeding 150 feet and sometimes 500 feet or more off the ground. When they encounter prey, they turn suddenly sideways or upward, speed up, and then flare their tails as they trap the insect. Their menu includes beetles, flies, dragonflies, damselflies, leafhoppers, grasshoppers, crickets, butterflies, moths, wasps, bees, caddisflies, spiders, cicadas, termites, and mayflies. They feed during the day, rarely in groups but often in pairs (probably so the male can guard the female from mating with other males). Martins pick up small bits of gravel to help them digest insect exoskeletons.

Juvenile Diet: ^^

Special Adaptations for Getting Prey: Diurnal forager, pursuing and catching insects in flight. Very rarely may glean insects off foliage or alight on ground to take caterpillars, or skim insects off water surface. Does not generally feed in groups. Paired male and female often feed together, although this behavior probably reflects only mate-guarding by the male.

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Usually socially monogamous—1 male and 1 female tending a nest. Social polygyny occurs at low frequency (<5% of nestings), both in eastern populations.

Mating Season: January to April

Courtship: Unpaired males advertise territory ownership to prospective females through the Claiming-Reclaiming Display: male flies from birdhouse or tree/cactus containing a nest cavity, sails in a wide arc as much as 0.8 km in radius, and abruptly returns to the nest site, terminating flight in a steep dive. As it lands, the bird enters the nest compartment, turns around, projects its head from the hole, and sings. Often, this behavior attracts the notice of a passing female, who follows the male to a nest site. This Claiming-Reclaiming Display is used only in mate attraction, and males engage in it only if a female is present. **ALSO MATE-GUARDS.**

Territoriality: HOME RANGE

Mating: Within-pair copulation probably occurs inside nest cavities, as in other swallows, and often may happen at night.

Nest Placement: Both males and females visit several cavities before choosing a site (a female chooses her mate largely based on the nest site he occupies). The cavity is usually in a birdhouse, gourd, dead tree, saguaro cactus, building, or cliff, but sometimes in other structures like traffic lights, street lamps, dock pilings, or oil pumps. Birdhouses are variable but most are made of wood or aluminum, contain 8–12 rooms, and hang from wires or sit atop poles in open areas.

Nest Description: Nests in birdhouses, hole in tree, hole in cactus, or crevice in cliff or building. Nest made of twigs, plant stems, mud, and grass.

Egg-Laying: Clutch Size: 3-6 eggs Number of Broods: 1-2 broods Egg Length: 0.8-1.1 in (2.1-2.7 cm) Egg Width: 0.6-0.8 in (1.6-1.9 cm) Incubation Period: 15-18 days Nestling Period: 27-36 days Egg Description: Pure white and smooth.

Hatching and Incubation/Gestation: Weak, with completely bare pink skin.

Development: Most young at hatching have no natal down and are reddish pink. Rectrices and remiges are visible beneath skin—tips protrude about 0.5 mm—and one bird weighed 2.8 g immediately after hatching. **ALTRICIAL.**

Parental Care: Videocamera recordings showed that feeding begins within a few hours of hatching; parents may regurgitate food to very small young and move among all nestlings of brood, feeding each one on a single visit. Feeding increases each day, peaking at about the time of maximum nestling mass gain on days 17–21. Parents sometimes bring prey too large for small young to swallow; they quickly pull the food out of a nestling's mouth if not immediately swallowed.

Lifespan: About 5 to 7 years

Conservation:

Official Federal Status: Least Concern

Special Statuses in Individual States: NONE

Threats: Purple Martins are fairly common birds (especially in the Southeast), but their numbers declined by almost 1% per year between 1966 and 2015, resulting in a cumulative decline of 37%, according to the North American Breeding Bird Survey. Partners in Flight estimates the global breeding population at 7 million with 90% breeding in or migrating through the U.S., 7 % in Mexico, and 3% breeding in Canada. The species rates an 9 out of 20 on the Continental Concern Score. Purple Martin is not on the 2016 State of North America's Birds Watch List. Humans have helped counteract declines somewhat by putting up nest boxes, and people now provide virtually all nest sites for Purple Martins in the East. However, introduced species such as European Starlings and House Sparrows often take over martin houses and injure or kill eggs and nestlings. Purple Martins are also sensitive to cold snaps; bad weather kills more birds than all other sources of mortality combined. When unseasonably cold temperatures last more than three or four days, the birds starve for lack of insects. In the West, logging practices that remove dead trees can reduce nesting habitat for martins. Reduction of pesticide use on South

American wintering grounds and protection of large winter roosts in Brazil is also important to the conservation of this species.

Conservation Efforts: ^^^^^^

Extra Facts:

1. Despite the term "scout" used for the first returning Purple Martins, the first arriving individuals are not checking out the area to make sure it is safe for the rest of the group. They are the older martins returning to areas where they nested before. Martins returning north to breed for their first time come back several weeks later. The earlier return of older individuals is a common occurrence in species of migratory birds.
2. The Purple Martin not only gets all its food in flight, it gets all its water that way too. It skims the surface of a pond and scoops up the water with its lower bill.
3. The Purple Martin Conservation Association supports the study of the Purple Martin and provides information on its website. The Purple Martin Society of North America also provides information on martins and martin houses.
4. Putting up martin houses used to be so common that John James Audubon used them to choose his lodgings for the night. In 1831, he remarked, "Almost every country tavern has a martin box on the upper part of its sign-board; and I have observed that the handsomer the box, the better does the inn generally prove to be."
5. Native Americans hung up empty gourds for the Purple Martin before Europeans arrived in North America. Purple Martins in eastern North America now nest almost exclusively in birdhouses, but those in the West use mostly natural cavities.
6. European Starlings and House Sparrows often push Purple Martins out of local areas by taking over all of the nest sites, including houses that people put up specifically for the martins.
7. Purple Martins roost together by the thousands in late summer, as soon as the chicks leave the nest. They form such dense gatherings that you can easily see them on weather radar. It's particularly noticeable in the early morning as the birds leave their roosts for the day, and looks like an expanding donut on the radar map.
8. The oldest Purple Martin on record was at least 13 years, 9 months old, banded in 1933 and found in 1947. It lived in Illinois.

Notable Species:

1. *P. s. subis* (Linnaeus, 1758). - Breeds across e. North America west to the Rocky Mts. and south, locally, to Mexico's transvolcanic belt.
2. *P. s. arboricola* Behle, 1968. - Breeds throughout the Rocky Mts., south to w. Texas and s. Nuevo León, and probably in the Pacific Northwest.
3. *P. s. hesperia* Brewster, 1889. - Breeds in deserts of s. Baja California peninsula and s. Arizona south to at least s.-central Sonora.