

# PURPLE GALLINULE - PORPHYRIO MARTINICA

**Taxonomy:** Kingdom: Animalia Phylum: Chordata Class: Aves Order: Gruiformes Family: Rallidae Genus: Porphyrio  
Species: P. martinicus

## **Habitat:**

**Biomes:** Purple Gallinules inhabit freshwater marshes, mostly places that hold water year-round and that have sedges, grasses, and rushes and especially also dense stands of emergent floating vegetation such as American lotus, water shield, spatterdock, pickerel weed, arrowhead, water pennywort, and various water lilies. These floating plants provide habitat both for foraging and nesting. Nonbreeding birds are often seen in more open environments than breeding birds, which require more extensive aquatic vegetation for suitable nest sites. Purple Gallinules use lakes, ponds, impoundments, reservoirs, and wet rice fields to varying extents, so long as there is food and adequate vegetation for cover and foraging. In South America, migrants have been found in Andean wetlands at elevations as high as 13,385 feet. Migrating individuals crossing the Gulf of Mexico often appear on oil drilling platforms, on barrier island beaches, and in gardens.

## **Distribution:**

**In US:** These birds are found in the southeastern states of the United States during the breeding season. They are resident species in southern Florida, the Gulf and Pacific coast of Mexico, parts of Central America, and the Caribbean. During the non-breeding season, they are found more inland in parts of Central America. They can also be found within South America during migration, and sometimes strays can be found as far north as Canada. The species' habitat is freshwater marsh with dense stands of vegetation.

**In Other Countries:** The species has the greatest pattern of vagrancy amongst rails, with individuals recorded as far west as California and the Galápagos Islands, as far north as Iceland and Labrador, as far south as Tierra del Fuego, and as far east as Great Britain, Portugal and Cape Verde. This species has been recorded in the Cape Province of South Africa twenty-one times. Most of the birds were juveniles, so it is very unlikely that a breeding ground will be established there.

**Holistic Description:** Lurking in the marshes of the extreme southeastern U.S. lives one of the most vividly colored birds in all of North America. Purple Gallinules combine cherry red, sky blue, moss green, aquamarine, indigo, violet, and school-bus yellow, a color palette that blends surprisingly well with tropical and subtropical wetlands. Watch for these long-legged, long-toed birds stepping gingerly across water lilies and other floating vegetation as they hunt frogs and invertebrates or pick at tubers.

**Species Richness:** NO SUBSPECIES

**Population Dynamic:** Species has apparently increased wherever rice is cultivated, but fast-ripening rice may provide unsuitable habitat.

## **Evolution and Systematics:**

**Evolution:** Purple Gallinules did not appear until the Pleistocene. Late Pleistocene fossil specimens known from Haile and Arredondo, Alachua Co., and Itchtucknee River, FL, and from Cerro de San Francisco in the Dominican Republic. Other fossil sites reported from Brazil and other locations in Florida.

**Systematics:** Appears to form a superspecies with Allen's Gallinule, which uses similar habitats in Africa. None noted; no subspecies recognized despite broad range. Extensive vagrancy may contribute to the lack of speciation.

**Number of Species:** NO SUBSPECIES

**Number of Genera:** NO SUBSPECIES

## **Physical Characteristics:**

**Size and Length:** Length: 13.0-14.6 in (33-37 cm) Weight: 7.2-10.3 oz (203-291 g)

**Wingspan:** 21.6-22.1 in (55-56 cm)

**Coloration:** Adults are a medley of purplish head and body, greenish wings and back, a yellow-tipped red bill, baby-blue frontal shield, and bright yellow legs and feet. Juveniles show very little hint of these colors, being mostly brown above, khaki below, with much duller bill and legs. Immatures acquire their colors gradually in their first year.

**General Body Features:** A chicken-sized rail with a heavy conical bill, short tail (often cocked), a compact body, and very long legs and toes.

**Special Features of the Body:** They are opportunistic feeders raiding cultivated gardens and picking up food discarded by humans.

**Special Features of the Head and Sensory Organs:** The purple gallinule walks across floating vegetation to feed, turning over lily pads to find food underneath

**Dentition:** BEAK/LAMELLAE/GIZZARD

*Special Features of the Limbs and Digits:* This bird swims and dives easily but stays away from open water in fear of predators. They climb without difficulty into bushes and trees quite high off the ground and have an affinity for rice fields.

*Any Special Internal Anatomy:* NONE

*Sexual Dimorphisms:* Males, averaging 257 g (9.1 oz) in mass, are slightly larger than females, at 215 g (7.6 oz) on average.

*Differences Between Juvenile Stage and Adult:* Juvenile birds are light brown with hints of green-bronze on the wings and back, and white under-tail coverts.

### **Behavior:**

*Diurnal, Nocturnal, or Crepuscular:* Diurnal

*Activity:* Foraging Purple Gallinules recall a chicken, albeit one with very long legs; they usually walk slowly and carefully, placing the feet gingerly as they survey marsh vegetation for edible plants and animals. As they walk, they often flick the tail up and down like a chicken does. When disturbed they run, swim, or fly away, legs dangling, sometimes landing in trees or shrubs, where they readily climb, balancing with their wings as they move about. Swimming birds jerk the head forward rhythmically as they proceed. They can also dive underwater, remaining hidden except for the bill for long periods. Young birds learning to walk on floating vegetation often appear comical, holding their wings high in the air and racing across the pads quickly when called by a parent. Adults sometimes clash over territories, first posing in erect posture, then chasing and, rarely, striking each other with feet and bills unless one bird assumes a submissive posture. During such fights, birds call loudly. Rival males also sometimes strike a bowing pose during or after conflict, with lowered neck and head, raised body and tail, with wingtips touching over the back. Nesting pairs appear to be seasonally monogamous in the United States and defend territories of about 2.5 acres. Nonbreeding birds are usually found in areas less suitable for nesting, and they are not territorial. Purple Gallinules often nest in the same areas as Common Gallinules, which appear to be dominant over them.

*Locomotion:* Long toes and light weight enable species to walk freely on water lilies and other floating vegetation, on uneven surfaces of tangled masses of grass stems, and along muddy margins. Climbs easily through bushes and trees up to nearly 20 m from ground. Typical flight over breeding marshes is weak, slow, with yellow legs hanging down, and not long and protracted; hovers feebly along, just clearing tops of vegetation, and then suddenly drops down out of sight. When taking flight, capable of rising directly, but not far, out of water. Legs dangle at first, then trail behind, held together with feet crossed as smooth flight is attained; held bent and drawn close to body in a short flutter. Alights with legs held far forward and can come to a sudden stop on lily pads or reed stems. Swims and dives readily. When swimming in full security, it throws its head forward at every propelling motion of its feet. In escape, dives and can remain underwater, rising with only point of its bill out of water.

*Communication and Perception:* Purple Gallinules, like other rails, have a remarkable repertoire of vocalizations, most of them rather loud henlike cackling, laughing, or clucking similar to Common Gallinule but usually higher in pitch. Reedy calls are heard from nesting birds: a tinny, hornlike chip, an abrupt gheek! that sounds like a Limpkin, and piu! recalling Smooth-billed Ani and apparently used by parents to call young birds. Lower, more guttural or muttering calls that sound like ka or kerr are also described.

*Home Range:* Territories established after pair formation and prior to nesting, and maintained throughout brood-rearing. Pairs highly territorial during breeding season, but territories break down in midwinter in central Florida, at which time residential birds from several territories will share same feeding station.

*Degree of Sociality:* Social structure of migratory Purple Gallinules in North America usually limited to a breeding pair and their hatch-year young. These family units are maintained through breeding season. Under ideal conditions, >1 brood may be attempted/yr. Nonmigratory groups of Purple Gallinules in Costa Rica and Panama have a more elaborate social structure where adult helpers and old and young juvenile helpers aid mated pair with feeding and defending chicks and territories.

*Level of Aggression:* Territorial interactions involve adults of both sexes and sometimes juveniles. When neighbors of either sex clashed at ill-defined borders, confrontations sometimes escalated into physical combat in which one would fly up and strike the other with its feet; also pecks. Sometimes a fight began when an adult attacked a neighboring juvenile. Juvenile would run to center of its territory and older birds would chase intruder away.

*Migration:* Short-distance migrant or resident. Most of the Purple Gallinules that breed in the U.S. migrate as far as Central America for the winter, but some remain in Florida year-round. Typically migrates at night.

### **Predators:**

*Predators:* Cooper's Hawk, Boat-tailed Grackles, Common Moorhen, Great Blue Heron, American Alligators, Raccoons, Snapping Turtles, Marsh Rice Rats

*Anti-Predator Defenses:* When startled, usually tries to reach safety by running and beating its wings. Swims easily, usually in partial cover; presence of alligators in some favored waters tends to inhibit excursions into exposed situations. Adept from earliest age at taking cover quickly and insistent on keeping within immediate reach of it. When Black Vultures flew over

low, gallinules flattened their bodies as close to ground as possible, holding that position until vultures had passed. An incubating gallinule slipped off nest quietly and pursued a chicken snake, climbing into bushes and attacking snake vigorously until it made off.

#### **Diet and Nutrition:**

Adult Diet: Like most rails, Purple Gallinules eat a great variety of foods; typically more plants than animals. The water-lily family, including American lotus, produces flowers and fruits that gallinules consume readily, and they also eat flowers, leaves, and tubers of invasive exotic plants such as water hyacinth and hydrilla, as well as rice. Seeds of many different sedges and other aquatic plants such as buttonbush, water willow, sawgrass, smartweed, and pickerel weed are also important food items. Purple Gallinules also prey on spiders, mollusks, beetles, bees, worms, snails, dragonflies, leeches, ants, grasshoppers, and moth larvae, as well as frogs, small fish, and eggs and nestlings of other birds.

Juvenile Diet: CHECK ADAPTATIONS

Special Adaptations for Getting Prey: CHECK FEATURES

#### **Reproduction:**

Mode of Reproduction: Monogamous

Mating System: In U.S., monogamous without adult helpers. In Costa Rica, where  $\geq 2$  adults are often present in families, species apparently monogamous (families start with just 2 adults), but possibility of simultaneous polyandry as exhibited by Tasmanian Native-hen.

Mating Season: May to June

Courtship: Following an early unreceptive period, Swaying display usually followed by Squat Arch or Heart Posture display (see above) and male mounting. If mate approaches within 3 m, swaying bird crouches lower and tucks wings closer into its body—a Squat Arch. Arching female sometimes runs out from under male after one foot is placed on her back. Following early unreceptive period, Swaying display is usually followed by Squat Arch and male mounting. Sequences that eventually lead to coition sometimes initiated by the 2 birds swaying simultaneously.

Territoriality: HOME RANGE

Mating: Coition requires 3–5 s; male crouches on its tarsi on female's back, flaps its wings, moves its feet, and extends its head forward to maintain balance, as it lowers its tail to one side of female's elevated tail to achieve cloacal contact; then dismounts with a wing flap. Male normally Sways following coition as female preens. Reverse copulations sometimes attempted but do not lead to coition. Fertilization displays and copulation sometimes occur during incubation or after young have hatched. Multiple coitions not reported.

Nesting: Nests and their placement vary tremendously: some are loose collections of vegetation made of, and on, floating vegetation, and these move around during windy periods. Others are anchored in reeds or other emergent vegetation, placed near water level or in vegetation as high as 2.6 feet above the water. Purple Gallinules build up to 4 different nests, though only one is used for egg-laying and incubation. Because the sexes are similar, it is not known which sex selects the nest, but both male and female apparently participate in construction. The nest is a roughly cup-shaped platform of rushes, sedges, and grasses, normally fixed into a crotch of standing marsh vegetation or onto floating vegetation. Nests are roughly 11 inches across and 3.5 inches deep. Some nests have a half-roof, to conceal the incubating parent and provide some protection from the elements. Others have a small ramp of vegetation leading to the nest. When young hatch, a parent sometimes moves them to one of the additional nests.

Egg-Laying: Clutch Size: 6-8 eggs Number of Broods: 1 brood Egg Length: 1.3-1.7 in (3.3-4.4 cm) Egg Width: 0.9-1.3 in (2.2-3.3 cm) Incubation Period: 20-23 days Egg Description: Creamy white with small, irregular brown spots.

Hatching and Incubation/Gestation: Covered with black down, able to leave nest within one day. Fed by parents.

Development: Chicks are subprecocial, belonging to a group fed from adult's bill, at least until they are some weeks old. Typical of this category are rails and coots (*Fulica* spp.). Brightly colored bill of young gallinule may makes it a more conspicuous target for feeding. Chicks are open-eyed and slip from nest within a day or 2 after hatching, sooner if disturbed. They do not feed themselves but are capable of following parent to food.

Parental Care: Adults share concurrent brooding and incubating duties (Helm 1982). Brooding period not firmly established but primarily at night after first week; chicks brooded for short periods during day and rain showers. For 1–4 d after hatch, precocial young become excited when an adult peers over edge of nest, peeping and waving their heads, jumping up and grasping adult's bill. Adult offers small insects and spiders, reaching into nest with neck outstretched; food held before eldest chick, which snatches at it. First day after hatch, adults may present some inappropriate food: nest material, a too-large spider, or a water beetle too tough for small chicks. Food items delivered to Louisiana nests included mollusks, crayfish (*Procambarus clarkii*), dragonflies, grasshoppers, garter snakes (*Thamnophis* sp.), water beetles, spiders, and insect larva.

Lifespan: Around 7 years.

**Conservation:**

Official Federal Status: Least Concern

Special Statutes in Individual States: NONE

Threats: Purple Gallinule populations in the U.S. declined by about 2.8% per year from 1966–2015, indicating a cumulative decline of 76% over that period, according to the North American Breeding Bird Survey. Partners in Flight estimates the global breeding population at 370,000 and rates it 11 out of 20 on the Continental Concern Score, indicating it is a species of low conservation concern. The U.S. Fish and Wildlife Service carefully monitors waterfowl hunting from year to year, and hunted species include Purple Gallinules and Common Gallinules (although most Purple Gallinules migrate out of their breeding habitat before the beginning of hunting season). Records indicate that each year hunters take a total of about 10,000 of the two species combined. Because they're wetland birds, Purple Gallinules are vulnerable to declines in water quality including changes in water levels, pollution, and runoff. Loss of wetland habitat from draining or conversion to other uses is also a problem. Clearing of vegetation from wetlands to create more open water may make habitat less suitable for Purple Gallinules. Faster-maturing varieties of rice may not give Purple Gallinules enough time to raise their young before harvest. On the other hand, invasive plants such as water hyacinth and hydrilla, which have created serious problems for some wetland species, may actually improve food supplies for Purple Gallinules.

Conservation Efforts: ^^^^

**Extra Facts:**

1. Purple Gallinules are remarkable fliers and turn up far out of their normal range surprisingly often. They've even shown up in Iceland, Switzerland, South Georgia island, the Galápagos, and South Africa. A recent study noted that these may not be mere accidents: years with severe drought in the gallinule's core range tended to produce more so-called vagrants in autumn and winter. In other words, these wanderers may not be lost but perhaps seeking places to feed because their usual haunts do not have adequate food.
2. In the tropics, such as Panama and Costa Rica, Purple Gallinules often have multiple broods per year. In an unusual behavior for rails, the juvenile and immature birds from earlier nestings often assist parents with feeding and defending the new chicks and defending the family's territory as well.
3. Purple Gallinule chicks are "sub-precocial," meaning they can walk around soon after hatching but cannot feed themselves for the first few weeks of life. The chicks are equipped with a tiny claw at the end of their pollex (innermost digit, corresponding to a human thumb), which helps them grip vegetation as they move around their environment.
4. The oldest recorded Purple Gallinule was at least 7 years, 4 months old when it was found in Florida in 1956. It had been banded there in 1950.

**Notable Species:** NONE