

A Natural History of the Purple Swamphen (*Porphyrio porphyrio*)¹

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Figure 1. Purple Swamphen in a filter marsh south of Lake Okeechobee.

Background

Purple Swamphens, *Porphyrio porphyrio* (Figure 1), are non-native gallinaceous birds introduced to Florida as a captive species. There are 13 subspecies worldwide but the only American subspecies has a distribution limited to American Samoa and nearby islands. The most likely origin of the Florida birds is the grey-headed subspecies *P. porphyrio polionotus* that naturally occurs from the Caspian Sea in an arc through the Indian subcontinent to Sumatra.

However, a few blue-headed individuals have also been seen and may represent another subspecies. In their native range Purple Swamphens are habitat generalists and are found in a variety of wetlands and wetland-associated habitats. They are often found in disturbed lands. They are aggressive and may have potential to compete with native species and negatively impact plant life in wetlands where they are found.

Description

Purple Swamphens are large to very large rails (Rallidae), noticeably larger than their Florida native relatives, American Coots (*Fulica americana*), Common Moorhens (*Gallinula chloropus*) and similarly-plumaged Purple Gallinules (*Porphyrio martinica*). Purple Swamphens' body lengths vary between 38–50 cm, and their wingspans are 90–100 cm. They have a very large triangular bill and a prominent frontal shield, both of which are scarlet or dark blood-red (Figure 2); their irises are carmine or orange-red. Their long legs and feet are fleshy-red to pink-red shaded slightly darker at the joints, and they have slender toes. Purple Swamphen plumage,

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although variable in color, is mostly deep blue, violet or purple on the head and body with blackish or greenish on the back and upperwing. In all plumages the birds have pure white undertail coverts. Both sexes are similar, with females just slightly smaller; females also possess a smaller frontal shield. Juveniles are both duller-colored and paler than adults and may easily be confused with young of other related species, especially just after hatching, when all rails look like little black or brown fluffballs. Purple Swampghens have a clumsy gait when running and somewhat resemble large, purple, very thin chickens. With an ample and complex repertoire, Purple Swampghens are very vocal in their native range. Personal observations in rice fields in Florida (Pearlstone 2009) indicate the birds may be fairly secretive, but both males and females seem to use a low resonant call as well as a variety of contact calls ranging from soft to harsh as has been described in other countries. When displayed, their long and powerful song consists of nasal rattles that crescendo and may be territorial in nature. Purple Swampghens are quite terrestrial and will walk and climb readily but don't usually swim. They can be seen flying between areas in rice fields where groups are present.

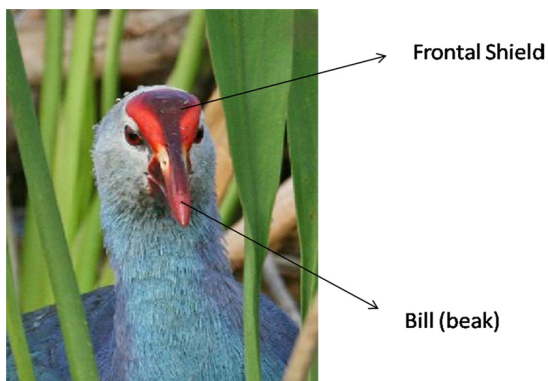


Figure 2. Close-up of a Purple Swampghen from Palm Beach County showing the red shield and bill. Photo by John Schwarz, birdspix.com.

Similar Species

In southern Florida, there are only three related species that may be confused with Purple Swampghens. These are Common Moorghens (Figure 3), Purple Gallinules (Figure 4), and American Coots (Figure 5). Purple Swampghens are noticeably larger than all three (Figure 6) and are more terrestrial than American Coots. Like Purple Swampghens, Purple

Gallinules are blue/purple with green or grey on the back, but Purple Gallinules lack the Purple Swampghens' grey heads. Head color may not be diagnostic, however, since some Purple Swampghens do have blue heads. Purple Gallinules' bills are red with a yellow tip and blue shield. Common Moorghens are grey/black with brown on the back and their bills are red with a yellow tip and a red shield. A white lateral stripe along the side of Common Moorghens is diagnostic. American Coots are large, mostly aquatic, and black/dark grey in color with a white bill. In comparison with all three species, Purple Swampghens' bills are noticeably larger and sturdier. The combination of red bill and red shield with no yellow tip is diagnostic.



Figure 3. A Common Moorghen showing the red bill with yellow tip and red shield. Also note the yellow legs and grey/brown overall color.



Figure 4. A Purple Gallinule showing the overall blue-purple color, red bill with yellow tip and blue frontal shield. Notice the yellow legs and compact size.



Figure 5. American Coot showing the solid black color, red eyes and white bill.



Figure 6. The Purple Swamphen in front is noticeably larger and taller than the Common Moorhen in the back. Also, notice the yellow tip on the moorhen's bill. The upright stature and long pinkish-red legs are characteristic of Purple Swamphens.

Habits

From information gathered in their native habitat, we know that Purple Swamphens are mainly diurnal (active in the daytime); however, they are mostly active at dawn and dusk. They are usually very shy, tending to inhabit wetlands away from human activity, and very secretive when harassed or hunted. On some occasions, individuals have become tame after continuous proximity to humans. When disturbed, Purple Swamphens run to cover by

flapping their wings and/or paddling over the water surface. They can run very fast through dense vegetation. They may also take fast flights, and dive under water to escape. Purple Swamphens build platforms from surrounding vegetation to feed and roost. Occasionally they may roost in trees. They sunbathe in the early morning and evening by climbing onto their platforms or perching on the tops of tall plants. They may be territorial but may also live in communal groups (Figure 7). This can vary with the size of the group and type of habitat; in their native range pairs are more common in pastures and communal groups in swamps. Males usually defend their territory but females will also help, and young from the previous year may remain with the group and act as helpers. Good habitat is highly desired and where a population is large there is often group defense of territories. Mate sharing, homosexuality and incest are common. A genetic study showed that polyandrous, polygynous and polygynandrous breeding groups were present in New Zealand and Australian subspecies. In a group, all members care for young and defend territories. Purple Swamphens in New Zealand (commonly known there as Pukeko) will attack mustelids (stoats, weasels and the like) near their nests and are able to thrive in areas where introduced predators are present. Changes in local habitat conditions may cause local seasonal movements. Purple Swamphen numbers may fall as marshes dry out and increase in response to rainfall. Long distance migrations do not commonly take place. However, in Spain it was found that high densities may trigger dispersal, even over long distances.

Habitat

In their native range, Purple Swamphens are habitat generalists and may be present in areas with waters that are sheltered, fresh or brackish, slow-flowing or stagnant, overgrown or surrounded by dense vegetation. They are primarily found in waters that contain waterlilies or other floating vegetation, but they can live nearly anywhere wet, including marshes, lakes, ponds, rivers, dam margins, floodplains, artesian and seismic bores, sewage farms, rice and cane fields and even burned grass areas. They are also present in open habitats such as grasslands, parks, agricultural areas, sports fields,



Figure 7. This Purple Swamphen group spent the summer in a rice field in Palm Beach County.

forest margins, golf courses, and hedgerows as long as these areas are close to wetlands. In areas with plenty of green grasses and water, reproductive success is very high. In Spain and Portugal, Purple Swamphens recovered from low population numbers after being afforded protection and began using artificial wetlands, which were considered important in the recovery of the species. It seems likely that rainfall was positively related to reproductive success in Spain.

The distribution of Purple Swamphens in Florida includes Broward, Palm Beach, Miami Dade (non-breeding) and Hendry counties. They were first observed in the city of Pembroke Pines, Broward County during the 1990s when a population of over 100 individuals that were initially kept as domestic pets was allowed to roam freely. Swamphens were also kept at the Miami Metro Zoo but that group is likely not the source of the Pembroke Pines population. The distribution of the Purple Swamphen has expanded and now includes wetlands and agricultural areas of Palm Beach County as well as Water Conservation Areas and Stormwater Treatment Areas Managed by the South Florida Water Management District. They have been observed occasionally in the marshes of Lake Okeechobee (see Figure 8 for map). In south Florida, Purple Swamphens have been found at artificial lakes in residential areas, in natural and created marshes with both submerged and emergent aquatic vegetation, and in rice fields surrounded by sugarcane where they may be a pest of both types of crop (see also Johnson

and McGarrity 2009, "Florida's Introduced Birds: Purple Swamphen (*Porphyrio porphyrio*)" <http://edis.ifas.ufl.edu/UW315>).

Food

Purple Swamphens are omnivorous but primarily herbivorous and rely almost exclusively on aquatic and semi-aquatic plants; they consume the shoots, roots, leaves, stems, flowers, and seeds and use their feet to grab and manipulate food items. Some food species include *Typha*, *Eleocharis*, and *Scirpus* species: grasses, rice, sedges, waterlilies and clover. They will also eat agricultural crops such as bananas, tapioca roots and yams. Small animals make up a small part of the birds' diet. They eat earthworms, mollusks, leeches, crustaceans, insects, lizards, water snakes, small rodents, spiders, fish and frogs and their eggs. Purple Swamphens may also prey on Cattle Egret (*Bulculus ibis*) and Yellow-Billed Egret (*Egretta intermedia*) eggs, and the ducklings of different waterfowl. Young Purple Swamphens up to one and a half months old feed mainly on invertebrates. Parents feed their chicks with the lower soft parts of *Typha*, and the tender shoots of other plants. In large numbers Purple Swamphens might impact wetlands through trampling and consumption of vegetation.

Nesting and Reproduction

Purple Swamphens construct nests in shallow water (30–120 cm deep) among thick emergent vegetation. In Spain, they build several nests and

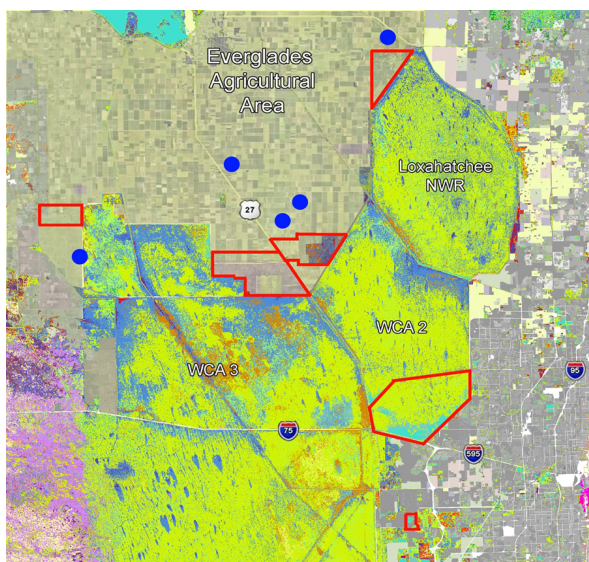


Figure 8. Locations in southern Florida where Purple Swampphen have been seen. Red outlines are natural areas with swampphen populations, blue dots indicate points in agriculture where individuals were observed.

select one for laying eggs; they usually choose the most concealed nest for laying eggs. Purple Swampphen usually build their shallow, bowl-shaped nests on platforms (up to 180 cm high) of beaten and manipulated vegetation, although they may also build floating nests. The stems and leaves of dead water plants are interwoven to form the nests, which are sometimes lined with ferns, grass blades and papyrus heads. Purple Swampphen may also build a canopy covering the nest by pulling surrounding vegetation. They generally include a couple of access ramps. The sitting bird adds some material to the nest during incubation.

The outside diameter of a Purple Swampphen nest is approximately 30 cm with a depth of about 10–20 cm; the cavity diameter is 19–30 cm and depth is 3–10 cm. Both sexes build nests and are sometimes aided by helpers. Breeding females typically lay a clutch of 2–7 eggs, each a day apart. Egg-laying in communal breeders is highly synchronized between females. They usually lay one egg a day at the same time of day. When second clutches are laid, there is a lapse of time of 56 days between the first and second clutch.

Purple Swampphen eggs vary in shape, texture, and color and may be confused with the eggs of Florida native rail species due to similar appearance. They may be long, oval, or elliptical. The surface

may be smooth, glossy, or slightly rough. Eggs come in a large array of colors such as pale green, yellow-stone, creamy-white, pink, spotted, blotched, maroon, purple, and violet. Eggs found in south Florida have been tan with brown spots. Both parents participate in the incubation of the eggs, which begins when the clutch is complete and lasts 23–27 days.

Potential Ecological Impacts

Purple Swampphen may compete with native species for desirable habitat in agricultural areas and wetlands. Many of Florida's wetland-dependent birds are state-listed species of concern due to the disappearance of many of the area's natural wetlands. Purple Swampphen may also compete with native birds for food such as aquatic and emergent vegetation, arthropods, small mammals, reptiles and amphibians. They are aggressive, territorial birds and may deprive breeding individuals of other species of suitable nesting habitat and may even prey upon the eggs and young of other birds nesting in the same area. Purple Swampphen may also adversely impact wetlands by consuming and pulling up vegetation as well as trampling large areas for nests and platforms.

Legal Aspects

Most species of introduced birds enjoy no protection under the law. However, as a native of American Samoa, a U.S. Territory, Purple Swampphen are afforded protection under the Migratory Bird Treaty Act. This protection only applies in areas where Purple Swampphen occur naturally. In U.S. territories where they do not naturally occur, it is proposed that removal is allowed in keeping with the policy to reduce the spread of introduced species that may harm habitats or compete with native species. These other areas include the contiguous United States, Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands.

Suggested Reading

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Florida Fish and Wildlife Conservation Commission

Non-native species:

http://www.myfwc.com/WILDLIFEHABITATS/Nonnative_PurpleSwamphen.htm

Websites

Johnson, S. and M. McGarrity. 2009. "Florida's Introduced Birds: Purple Swamphen (*Porphyrio porphyrio*)" <http://edis.ifas.ufl.edu/UW315>