

Purple Moorhen

A new foe to rice cultivation



ALL INDIA NETWORK PROJECT ON VERTEBRATE PEST MANAGEMENT

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Introduction

Purple moorhen, popularly known as the grey headed swamp hen (*Porphyrio poliocephalus*) has been emerging as a serious threat to paddy production in different parts of Kerala. They are migrant species of birds belongs to the avian family Rallidae. Through they are identical to domesticated hen in both size and shape but have characteristic purple blue plumages and possess long legs, beaks and for head which are in red colour. While walking, they move their tail both up and down wards, produce characteristic sound and are keen to perceive minute disturbances from the surroundings and move quickly to safer zone. This bird is common and widespread across much of the Indian subcontinent. They prefer to reside in fields which are adjacent to water bodies such as kole lands of Thrissur, Pokkali areas of Alappuzha and marshy areas in Kannur. Their populations vary locally in their habitat; some are bold and nearly indifferent to humans while others are secretive. Most readily observed in refuges where it becomes acclimated to people.

Distribution

The grey-headed swamphen is a swamphen species found from the Middle East and the Indian subcontinent to southern China and northern Thailand. This species was introduced to North America in the late 1990s as a result of avicultural escapes in the Pembroke Pines, Florida area. They have now spread and become established in many areas of southern Florida.

Taxonomy



Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Gruiformes
Family:	Rallidae
Genus:	<i>Porphyrio</i>

The grey-headed swamphen is one of 15 species in the genus *Porphyrio*. It was previously classified as a subspecies of *P. porphyrio* until 2015, when the purple swamphen species complex was divided into six species.

Subspecies

P. p. poliocephalus- Latham, 1801: The nominate subspecies found in India (including the Andaman and Nicobar Islands) Sri Lanka, southern China and northern Thailand.

P. p. seistanicus- Zarudny and Härms, 1911: Found in Iraq and southern Iran to Pakistan, Afghanistan, and North-Western India. There is also an introduced population in Florida.

P. p. caspius- Hartert, 1917: Found near the Caspian Sea, northwestern Iran, and Turkey.

Identification



Adult



Juvenile

The grey headed swamphen is a large, heavyset, chicken-like bird with long legs, long toes, a thick neck and head, a heavy bill, and a short tail that is often held cocked. Body patterns vary dramatically between and within populations. It has a heavy triangular bill and a ridged or horned triangular forehead shield in various shades of red, ranging from pale-pink to scarlet or brownish or blackish. Legs are pink with dark joints, knees, wrists, knuckles. Most individuals show a consistent pattern across most of its range, which can be either vivid or dull; turquoise on the back, wings, throat, and chest; sapphire-blue or purplish from the nape down to the mantle and continuously down along the sides of the chest to the belly; and pale, greyish (or even whitish) on the sides of the head—often extending up to the crown and down the sides of the neck. The grey-headed swamphen measures 28-29 cm in length, weighs between 505 and

850g, and has a wing span of 90-100cm. The grey-headed swamp hen is thus half the size of the common hen. When young, the underparts are brownish slate to dusky grey, with thin whitish or greyish mottling; the chin and throat are often paler greyish; and the lower vent and undertail coverts are white. Wings and tail are the same as in definitive basic plumage, but the coloration is duller, with less violet sheen; the outer primaries are narrower and more tapered at the tip. Most populations, particularly in South-East Asia, have a wide range of colour variations. The majority of these are darker overall, and the difference is usually visible on the head, which is usually blue rather than greyish (but rarely if ever black). Many of these individuals lack the turquoise tones on their wings and backs, which are predominantly black in some cases.

Habitat



Grey-headed swamp hens prefer wetlands with patches of vegetation that rise above the water level. They, like many other swamp hen species around the world, adapt well to human-modified environments. In Kerala, they live in fields near bodies of water, such as the Pokkali areas of Alappuzha and the marshy areas of Kannur. *Por-*

phyrio swampheens are generalists in terms of habitat preferences, preferring freshwater or brackish, slow-flowing or stagnant, marshes, lakes, ponds, rivers, dam margins, flood plains, and sewage farms throughout their range. They are sometimes found in pastures on the Indian subcontinent. The grey-headed swamphe (*P. poliocephalus*) species prefers this type of habitat to woods and forests. Populations differ depending on their habitat. The grey-headed swamphe does not migrate. Instead, it appears to content with their new environment. *P. poliocephalus* appears to enjoy the environment in the wildlife of Florida's freshwater marshes. They had been discovered in 30 different locations in Florida by 2011 and spread their range as far as Georgia, approximately 423 miles away from Pembroke Pines. *P. poliocephalus* does not migrate in its native range in Asia, but usually expands its range when the water level rises.

Diet

Porphyrio swampheens feed on soft shoots of paddy and rushes, and have been observed eating a variety of taxa such as birds, amphibians, reptiles, fish, eggs, insects, arthropods, and mollusks. The Grey-headed swamphe feeds



on aquatic tubers by grasping one stem and balancing on the other. At times, whole stems are eaten, while at others, the stem is opened up to reveal the soft inner core while the hard, outer shell is discarded. They use their bill to pull out plants and feet to grasp and manipulate food. The food is brought to the bill via the feet, and the bill is only used for pieces that cannot be grasped between the toes.

Swamphens also feed by carefully climbing (approximately 1 m tall) on reeds and then chewing and eating the reed from the top. Swims little, but will dabble near shallow margins like a Mallard picking insects from the water's surface. Feeds primarily in the early morning and late evening hours, and occasionally at night.



Breeding

Nesting facts

Clutch Size:	3-7 eggs
Egg Length:	1.9-2.4 in (4.7-6 cm)
Egg Width:	1.3-1.5 in (3.2-3.7 cm)
Incubation Period:	22-26 days
Nestling Period:	60 days
Egg Description:	Tan with brown speckles
Condition at Hatching:	Hatchlings are covered with black down, soon able to move around but needing to be fed by adults

The mating system of the grey-headed swamphen varies, ranging from monogamous to cooperative mating. In monogamous breeding, one male and one female form a breeding pair and may remain

together to reproduce throughout the breeding season. Multiple females and males share nests to copulate, and helpers from the previous clutch assist the male-female breeding pair. The *P. poliocephalus* breeds according to season. As a result, seasonal breeding differs depending on habitat. In many areas, they breed during the peak rainfall, or during the summer months in temperate areas.

Life stages of purple moorhen



Egg



Chick



Juvenile



Adult

Dominance hierarchy exists in these bird groups, with a dominant female breeding the most. The birds lay their eggs in a woven reed nest. A female can lay up to seven eggs, and her nest can hold up to twelve eggs.

Female *P. poliocephalus* lays three to seven eggs. Because multiple females lay in the same nest, a nest can contain up to 20 eggs. The eggs are typically tan or yellowish-beige with dark brown spots. For about 24 days, more than one female incubates the nest eggs. The adults feed the chicks for several weeks until they mature.

Behaviour



Grey-headed swamp hens have not been extensively studied, but in general, swamp hen species spend the majority of the day foraging, preening, and resting. They walk along the edges of wetlands, in shallow wetlands, or on land, looking for food (both plant and animal), occasionally swimming to reach a food source. Their long toes allow them to walk on floating vegetation like lily pads. When disturbed, they flee quickly, flapping their wings like a chicken. They fly well, despite the fact that their flight appears laboured and ungainly at first. Swamp hen mating systems differ from place to place. Some are socially monogamous, but the majority have a communal (group) breeding system in which several breeding females and males defend a territory collectively. Females in the group usually share a nest, and they may not have any breeding nest-helpers to help with nest construction, chick rearing, and possibly incubation. Because the weather in southern Florida is mild, Grey-headed swamp hen groups appear to nest multiple times per year, raising three broods in a single year. Bonds are maintained in these breeding groups by behaviours such as courtship feeding and mutual preen-

ing, which can be performed by any member of the group, regardless of sex. When members of one group come into contact with members of another (usually at territory borders), they frequently express their displeasure by rising up, hunching down, flicking the tail, raising the wings, or displaying the bill and frontal shield. If threat displays are insufficient, the birds may engage in combat by flying at each other feet first and attempting to peck.

Nature of damage

Grey-headed swamphens primarily consume plant matter, particularly the shoots and tubers of semi-aquatic and aquatic plants like reeds and rushes. In Kerala, they primarily consume rice plants and reeds. And they forage by slowly walking through shallow wetlands, picking at vegetation with their bills or grasping it and pulling it up. They use their enormous feet to balance themselves as well as to grasp plant food and bring it to the bill to eat. The occurrence of Purple moorhen has been reported from rice fields adjacent to bodies of water, and the extent of damage ranges from 10% to 50 per cent. They build their nests in paddy fields. They cut the seedlings at ground level and use their legs and beaks to extract the plant's inner soft parts. Their attacks are typically seen during the day, but they can also cause damage at night in some areas. The purple moor hen has emerged as the most serious threat to agriculture in kerala. They have caused enormous damage in the last five years, particularly in Thrissur. They attack rice crops in groups, and as a result, single fields vanish in days or even hours.



Management techniques

1. Habitat manipulation: Roosting site Clearance- Aquatic plants present in the roosting site of purple moorhen provide protection from natural enemies, thus helps in building up of their population. Hence, clearing the aquatic plants in the vicinity of the crop fields discourages their roosting in such premises.



2. Use of nets: The rice seedlings can be protected from the damage of purple moorhen by using net of various kinds viz., nylon, polythene, cotton and polythene coated iron with mesh size of $\frac{1}{4}$ to $\frac{3}{4}$ inches. Though, it require comparatively high initial investments, netting is durable and can be used for subsequent cropping periods also.

3. Reflective ribbons: Reflective ribbons works on the principle that sudden bright flashes of light produce startling response and drive the bird from an area. The reflective ribbon roll produced from the AINPVPM KAU-Thrissur can be used to scare off purple moorhen from the paddy fields. The ribbon has red color or yellow in one side

and silver color the other side or holographic surface on both side. Both the reflection of sun light and humming sound produced by the wind helps to get rid of birds from the field. The reflective ribbon should be erected in north south direction in the field



at a height of 45 cm above the crops on supports spaced at 1.5 to 2m. Twist the ribbon at every one meter give support at every 5m. This is highly effective during day time on bright sunny days.



4. Solar based flicker lights: It works on the same principle of reflective ribbon, but can be used also for deterring the birds during night hours. These equipment poses' miniature solar panel and battery units, which are getting charged during day time and produces intermittent flashes during the night hours.

5. Automatic cracker station: The automatic cracker station designed at AINPVPM, KAU Thrissur can be used for deterring the purple moorhen during both day and night hours. The sound produced from the crackers at regular interval from the equipment act as auditory repellents from the birds.



6. Rope grid over the canopy: Erecting rope grid over the canopy of rice plant minimizes the attack of purple moorhen. The level of rope grid needs to be raised as the height of rice plant increases is one of the limitation of this method.



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