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# Eco Biology and Behavior of Purple Swamphen (*Porphyrio porphyria*): A Review

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***Abstract:*** ***Purple swamphen is a member of the Rallied family and is widely spread around wetlands and aquatic habitats. They are usually preferred undistributed habitat and thick vegetation areas near by the marshy and lagoons areas. Purple swamphen spreads widely in several regions of the world, such as southwest Asia, southwest Europe, Africa, Australia, New Zealand, Iran and some islands in the Pacific Ocean. They are usually constructed nests around the thick and dense vegetation and grassy areas present in and around water bodies. During the nest construction, they utilized aquatic plant matter. The breeding season and clutch size vary according to geographically. Generally, breeding season ranges from January to June. The clutch size ranges from three to six eggs per nest. Incubation period ranges from 19 days to lasts up to 27 days. Various factors such as small clutch size, egg predation by predators and high wind velocity influence the hatchling success and failure rate among purple swamphen. Habitat disturbance and hunting reduced the population and posed major threats to the survival of purple swamphens.***

***Key Words: Purple Swamphen, Habitat, Breeding, Clutch Size, Incubation, Hatchling, Threat***

## INTRODUCTION

Purple swamphen is a member of the Rallidae family and the Gruiformes order. Coots, rails and gallinules are members of the rallidae family. Purple Swamphen is a medium-sized water bird and lives in and around water habitat, mainly marshes and lagoons with sufficient vegetation cover and water depth (Ali, 1981). They generally prefer undisturbed habitat with thick vegetation cover (Cramp and Simmons, 1980; Sanchez-Lafuente *et al.,* 1998). The purple swamphen has a widespread distribution throughout the world, including in South and South-West Asia, South-West Europe, Africa, Australia, New Zealand, Iran and some islands in the Pacific Ocean (Craig, 1980; del Hoyo *et al.*, 1996; Sanchez-Lafuente, 2004; Doss *et al.*, 2009; Najafi *et al.,* 2012). Remarkable morphological and ecological variations were also observed between geographically isolated populations of the purple swamphen. These variations may be occurs due to genetically (Sangster *et al.*, 1998). But these different subspecies are not followed by BirdLife International (2012) because more detailed analysis of different characters is required to determine levels of variation and subspecies. Purple swamphen is widely distributed in India (Manakadan and Pittie, 2001). Several studies have been conducted on the behavioral aspects of purple swamphen in various regions of the world. Grussu (1999) conducted studies on the foraging behavior of purple swamphen and water depth relationships, whereas Craig (1980) investigated the breeding success rate of purple swamphen (*P.p. melanotus*) in New Zealand. Sanchez-Lafuente (1993, 2004) and Sanchez-Lafuente *et al.* (1998) carried out studies on the population status, egg clutch size and egg mass, breeding biology and nest site selection behavior of purple swamphens in Spain. Doss *et al.* (2009) studied the breeding biology of purple swamphen in south India and Najafi *et al.* (2012) also studied the breeding biology of purple swamphen in Iran. In this review study, I discuss distribution, nesting ecology, breeding biology and the threat of purple swamphen survival in the world.

### 1. Distribution and Subspecies of Purple Swamphen

The purple swamphen is distributed in tropical and subtropical regions with several subspecies. It is distributed from Africa to New Zealand and Europe (Urban *et al.,* 1986; Marchant and Higgins, 1990). Its taxonomy is intricate and less studied; approximately 13 subspecies are now recognized and three could be promoted to species status (Taylor and van Perlo, 1998). *Porphyrio porphyrio policephalus* occurs in southern Asia, mainly in the Indian subcontinent to Burma and south-central China regions, while the *Porphyrio porphyria melanotus* subspecies is distributed in Australia, New Zealand and New Guinea (Taylor and Van-Perlo, 1998). The purple swamphen is a sexually monomorphic wader bird; male and female look similar and show large-spectrum mating strategies (Craig, 1980; Craig and Jamieson, 1985; Sanchez-Lafuente, 1993)

### 2. Nesting Ecology of Purple Swamphen

Nests are usually constructed in the thick and dense vegetation present in and around water bodies. The average diameter of swamphen nests ranged from 30.20±1.33 cm (Sanchez-Lafuente *et al.*, 1998) to 37.7±3.9 cm (Doss *et al.*, 2009). According to

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Cramp (1980) the size, structure and shape of nests depend on the availability of plant species. The nests are generally constructed by aquatic plant species present near the nesting site. Leaves and young stems of *Phragmites* spp., *Scirpus* spp., and *Typha spp.* species were utilized in the nest construction in Dona Aldonza laggon (Sanchez-Lafuente *et al.*, 1998). In other studies, Doss *et al.* (2009) observed that purple swamphens generally construct nests with the help of water hyacinth in the Tirunelveli district of Tamilnadu, India.

**3. Breeding Biology of Purple Swamphen**

According to various studies, the breeding season of purple swamphen varies according to geographic location. In Spain, the breeding season of *P. p. porphyria* started in January (Grussu, 1999), while in Portugal, egg laying started in March and clutch initiation ended in mid-June. Doss *et al.* (2009) observed the breeding season of purple swamphen from January to the end of April. According to these, purple swamphens started nest construction activity in the first week of January. Peak breeding season for purple swamphens ranges from the second week of January to the first week of March in India (Doss *et al.*, 2009). Generally, purple swamphen nests are constructed in dense floating vegetation, particularly in *Eichornia crassipes* (Doss *et al.*,2009). Water depths also act as a limiting factor for the start of nesting for several water birds (Walkinshaw 1973). The clutch size of the purple swamp hen varies according to geographically, usually decreases with latitude (Doss *et al.*, 2009).

Doss *et al.* (2009) reported clutch sizes ranging from three to seven eggs per nest in the Tirunelveli district of south India. They observed a 4.5 mean clutch size, which was higher than for *P. porphyria* in the Mediterranean region. Craig (1980) observed two to ten eggs per nest of a purple swamp hen. Schenk (1993) observed a clutch size of four to six eggs per nest in Italy; Manez (1997) observed a clutch size of three to five eggs per nest; and Moali and Isenmann (2000) observed a clutch size of three to six eggs per nest of purple swamphen in Algeria. Doss *et al.* (2009) observed a 4.5 mean clutch size in India, while Craig (1980) observed a mean clutch size of 5.6. Doss *et al.* (2009) observed average 19.8 ± 1.2 days incubation periods in Triunelveli district, south India.They observed shortened incubation periods according to previous studies and subspecies of purple swamphen.

The incubation period of *P. p. melanotus* in New Zealand was 23–27 days (Craig and Jamieson, 1990), while the incubation period of *P. porphyrio* in the Mediterranean region was 24-27 days (Schenk, 1993), 23–25 days (Manez, 1997) and 22–26 days (Moali and Isenmann, 2000). These variations possibly occur due to asynchronous hatchlings in different regions. Purple swamphen hatchling success ranges from 45.2 to 57.9% in southern Spain (Sanchez-Lafuente *et al.*, 1998) and 61% in Tamilnadu's Tirunelveli district (Doss *et al.*, 2009), while Craig (1980) observed 73% hatchling success in the subspecies *P. p. melanotus* in New Zealand. Various factors, such as small clutch size, egg predation by predators and high wind velocity, destroyed eggs, reduced hatchling success, and increased hatchling failure in Purple Swamphen (Doss *et al.*, 2009). Raptor also reduces hatchling success among purple swamphen (Najafi *et al.*, 2012).

**4. Threat of Survival**

In some regions of the world, the population of purple swamphen has declined due to the destruction of reed-bed habitats and uncontrolled hunting (Mansoori, 2008). Human movement and disturbance around the wetland also influenced the nesting and breeding activities of purple swamphen (Junhua *et al.*, 2010).

**Figure 1- Purple swamphen in aquatic habitat**



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**Figure 2- Purple swamphen nesting habitat**

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