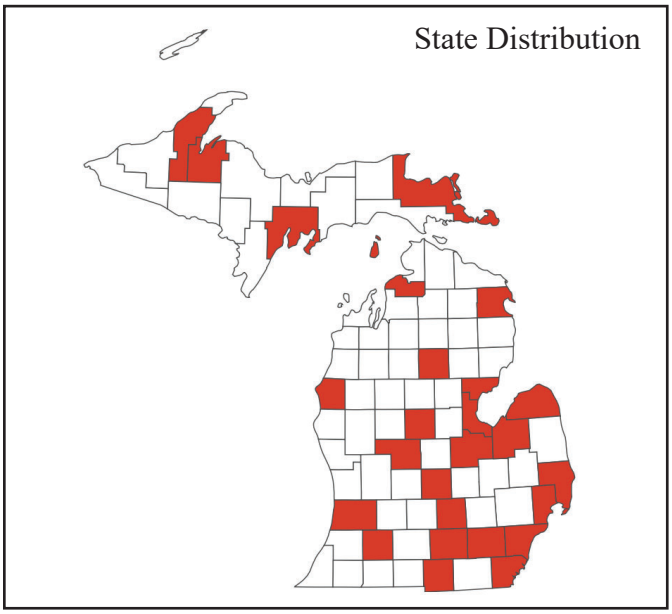
Gallinula galeata Common Gallinule


Photo by U.S. Fish and Wildlife Service



Best Survey Period

Status: State threatened

Global and state rank: G5/S3

Other common names: Common Moorhen, Florida Gallinule, Black Gallinule, Water Hen, Mud Hen.

Family: Rallidae - Rails, coots, and gallinules

Total range: This species has a wide distribution but is not abundant anywhere in its range. In the Western Hemisphere, breeds from Central America north through much of the eastern United States and Ontario (Bannor and Kiviat 2020, Brewer et al. 1991), with rare and localized breeding occurring in much of the western United States (Sibley 2000, Bannor and Kiviat 2020). A short- to medium-distance migrant, common gallinule leaves the northern parts of its' range in the fall for ice free areas farther south. Extralimital records in British Columbia, central Ontario, eastern Quebec, Newfoundland, and Prince Edward Island suggest that the range is expanding northward (Sullivan et al. 2016, Bannor and Kiviat 2020). The species winters in central and south America (Brewer et al 1991).

State distribution: Barrows (1912) suggests that common gallinules were common in Michigan in the late 1800s, being found in "suitable habitat throughout the entire Lower Peninsula," and especially in those marshes along the southeastern shore of Saginaw Bay's "Great Marsh Region," the St. Clair River Delta, and the lower Detroit River. Wood (1951) knew it as a common summer resident, ranging from Grand Rapids east to Saginaw and extending north to the Indian River near Cheboygan as well as a Beaver Island record on May 7, 1929. Payne (1983) reported it as a common summer resident south of the Saginaw Bay area, being especially abundant in the St Clair Flats and Lake Erie marshes. This species has been documented in over 30 counties in Michigan, including six in the Upper Peninsula with the largest concentrations at managed sites along the shorelines of the Great Lakes (MNFI 2023, MMBS data, Sullivan et al. 2016).

During Wood's time there were no observations reported from the Upper Peninsula (Wood 1951). This species was not recorded from the Upper Peninsula in either Michigan Breeding Bird atlas efforts (Sanders 2013), nor from MNFI's four-year

study of Michigan's coastal wetlands (Sanders et al. 2007). There were some scattered occurrences across the Upper Peninsula, including a Keweenaw Peninsula observation (Sullivan et al. 2016, MNFI 2023). Although continuing to be uncommon, common gallinules appear to be widely distributed across the Upper Peninsula from locations in Chippewa County (e.g., Munuscong State Wildlife Management Area) and Mackinac County (Epoufette Bay) in the Eastern Upper Peninsula westward to the Sturgeon River Sloughs in Houghton County. It is also found at interior locations like Seny National Wildlife Refuge in Schoolcraft County (MMBS data, Sullivan et al. 2016). The species is known to breed in Chippewa County (Sullivan et al. 2016).

Recognition: This medium-sized marsh bird was known as the common moorhen (*Gallinula choloropus*) prior to 2011 when it was separated from the European subspecies of G. *choloropus* and considered a separate species (Chesser et al. 2011). At least 37 other common or local names have been recorded for the species in the United States and Canada (Bannor and Kiviat 2020). The overall length (bill to tail) is 35-38 cm (12-15 in) and wingspan is 53 cm (21 in) (Sibley 2000, Black and Kennedy 2003). Adults are dark slaty blackish-blue with a bright red bill and forehead shield and have a distinguishing white stripe down the side and white outer tail feathers. This species has long, greenish-yellow legs, with the half-inch closest to the body being orange (Bent 1926, Bannor and Kiviat 2020). The scientific name *chloropus* is Greek for "green foot." Sexes are similar. Immature birds lack the adult's red bill and shield, but still have the distinguishing white stripe down the side (Bent 1926, Black and Kennedy 2003).

Bent (1926) believed the vocalizations to be so varied that it was hopeless to give a full description; knowing of "no other bird which uttered so many different sounds." Black and Kennedy (2003) describe the vocalizations as "chicken-like clucks, screams, squeaks and a loud cup; breeding males give a harsh ticket, ticket, ticket." Sibley (2000) describes the vocalization as a "slowing series of clucks ending with distinctive long, whining notes, with the quality varying from low and nasal to higher and creaking."

Black and Kennedy (2003) describe the common gallinule as a "strange-looking creature that appears to have been assembled from parts of other birds, having the body of a duck, a chicken-like bill, and the large feet of a heron." Easily distinguished from the American coot (*Fulica americana*) which has a white bill and forehead shield but lacks the white streak on the side (Sibley 2000, Black and Kennedy 2003). American coots are more gregarious (seen in flocks), short-necked and stockier (Peterson 1980, Sibley 2000).

Best survey time/phenology: Visual scans and call playbacks from early May to mid-July during the daytime. Used responsibly call playbacks are effective in eliciting a vocal response from birds that may be hidden in dense vegetation (MNFI 2023, Sibley 2011, M.J. Monfils, MNFI, personal communication). This species can be surveyed by scanning edges of open areas in marshes from boat, kayak, or canoe or from the shore (MNFI 2023). Although generally secretive and solitary, common gallinules are relatively easy to find during the breeding season when the courtship calls can be heard during early morning and evening hours (Brewer et al 1991, M.J. Monfils, MNFI, personal communication).

Habitat: This species uses a wide variety of emergent marshes but prefers permanent marshes with dense, emergent vegetation (Peterjohn and Rice 1991). They will also use artificial aquaculture ponds, lakes, canals, rivers, rice fields, sewage lagoons, and urban stormwater retention ponds (Floyd 2008, Bannor and Kiviat 2020). Unlike rails that normally use shallow water wetlands, common gallinule are typically found in deep water conditions with depths up to several feet (Peterjohn and Rice 1991). In their study of habitat preferences along Lake Erie's western shoreline, Brackney and Bookhout (1982) found the common gallinules in semi-permanently flooded marshes with persistent emergent vegetation, with greatest densities occur-

ring in hemi-marshes (i.e., marshes with 50:50 mix of open water and emergent vegetation); wetlands with 10% or less of vegetative cover were normally avoided. Monfils et al. (2014) reported that common gallinule detectability was negatively associated with percent of vegetation cover.

Biology: Common gallinules arrive in Michigan from late March to late April and by late May occur statewide (Sullivan et al. 2009, MMBS 2023, MNFI 2023). The common gallinule is unique among marsh birds because they can swim like a duck but can also walk on vegetation like a rail (Sibley 2000). Generally, plant food predominates, but animal foods increase in spring and summer as the food comes available. Bannor and Kiviat (2020) described plant foods consisting of seeds and vegetative material from emergent, floating, and submersed species, with seeds of sedges, grasses, smartweeds, and pondweeds being important, along with duckweeds and flowers, seeds, and plant material from water lilies. A variety of animal groups are eaten, such as snails, beetles, true bugs, ants and wasps, true flies, spiders, crustaceans, dragonflies and damselflies, leeches, and Bryozoa, but beetles, true bugs, and Odonata are the orders most often referenced in the literature (Bannor and Kiviat 2020).

In Michigan, common gallinules typically build platform nests over water or a wide-shallow cup of rushes, cattails, and reeds in shallow water or along a shoreline. Oftentimes they will construct a ramp leading from the nest down to the water (Black and Kennedy 2003; Cornell Lab of Ornithology 2023; NatureServe 2023). Both sexes participate in nest building. Most of the egg laying occurs in May or June (Brewer et al 1991). Clutch size ranges from 6-17, but typically 10-12; larger clutches may be from two females occupying the same nest (Harrison 1975). The eggs are oval shaped with little or no gloss, described as cinnamon to buff, with irregular brownish spots and fine dots. Eggs are laid on consecutive days (Baicich and Harrison 1997). Incubation is done by both sexes, beginning with the first eggs and lasting 21 days (Harrison 1975). Downy young have been found from early June to mid-August (Wood 1951). Precocial young may hatch together over a period of several days and are tended by both sexes. Young can feed alone in 3 weeks and can fly in 6-7 weeks (Baicich and Harrison 1997). Fall migration is chiefly from first week of September to late November and has been observed at Pointe Mouillee State Game Area (Monroe County) and at Lake St Clair Metropark (Macomb County) in December (Sullivan et al. 2009, Wood 1951, MNFI 2023). Common gallinule is an infrequent flyer that migrates at night (Bannor and Kiviat 2020).

Conservation and Management: Barrows (1912) identified five factors that have effectively reduced bird numbers in Michigan – axe, fire, gun, drain, and plow, so we can infer that habitat loss was an important factor in the decline of common gallinule populations. Draining the vast swamps and marshes across Michigan changed the conditions and availability of the habitat in which the birds live. As with many marsh-dependent species, common gallinule numbers appeared to have declined in Michigan and throughout its range (Brewer et al. 1991). During a four-year study of Michigan's coastal wetlands, common gallinules were reported at only seven percent (8/108) of the survey sites (Sanders et al. 2007), which suggests a decline in numbers or speaks to the secretive nature of this bird. Observations significantly declined from Michigan Breeding Bird Atlas I (survey period 1983-1988) to Michigan Breeding Bird Atlas II (survey period 2022-2008), with common gallinule being reported in only 2.5% (49) of the townships compared to 6.2% (117) during the first atlas. There were no observations from the Upper Peninsula during either atlas period (Sanders 2013). In addition to habitat loss, chemicals and pesticides, collisions with objects, and hunting could affect common gallinule numbers (Bannor and Kiviat 2020).

Studies measuring the effects of chemicals and pesticides on common gallinules are mixed. Galluzzi (1981) reported that mercury levels in common gallinule tissues were much lower than severe mercury levels in bottom substrate and had minimal effects on egg laying. Both Causey et al.,

(1968) and Fowler et al. (1971) found that eggs from aldrin-treated rice fields did not significantly affect clutch size and hatchability. One of Michigan's most concerning environmental problems is the state's widespread Polyfluoroalkyl substances (PFAS) contamination. These "forever chemicals" are highly persistent and are known to have effects on humans and fish (Odegard et al. 2023). However, the distribution and movement of PFAS in avian food webs and the subsequent effects on avian reproduction are poorly understood (Odegard et al. 2023). In the Great Lakes region, PFAS contamination has been found in gulls, terns, great blue herons (*Ardea herodias*), bald eagles (*Haliaeetus leucocephalus*), and tree swallows (*Tachycineta bicolor*) (Murray and Slim 2019).

One of the many obstacles facing migratory birds are stationary objects like communication towers and wind turbines. Most avian deaths at telecommunication towers occur with nocturnal migrants that are attracted to tower lights. Although common gallinules migrate at night, collisions with stationary objects appear to have little impact on this species (Longacre et al. 2013). At a mereological tower in Michigan monitored for bird collisions over a two year period, no common gallinule mortalities were reported (Gehring 2010). A television tower in Florida reported only 11 common gallinule mortalities over three fall migrations (Taylor and Anderson 1973). Not all communications towers pose equal threats to birds, and tower mortality is highly variable across species (Longacre et al. 2013). Electromagnetic radiation emitted from antennas does not cause bird die offs (Rousseau 2020). In a study of 116 wind farms across the United States and Canada, rails and coots comprised only 1.1 % of fatalities (Erickson et al. 2014). Gehring (2008) reported no common gallinule fatalities during a 4-year study of wind energy facilities and bird collisions in Michigan. Of the tens of millions of birds killed annually by vehicle collisions, it is uncertain how this species is impacted (Loss et al. 2014).

Common gallinules are hunted in Michigan and several other states; the impacts due to hunting are unclear because available hunting data lump purple gallinule (*Porphyrio martinica*) and common gallinule together. Nationwide, gallinule hunters (about 8,000 in 2021 and 2,600 in 2022) harvested 5,700 (± 106 %) in 2021 and 24,000 (±130 %) in 2022. The total Michigan harvest from 2019-2022 was 100 birds. The only other Great Lakes states with gallinule harvest estimates from that period were Minnesota, Wisconsin, and Ohio, and the estimates were either zero or <50 for the 2021 and 2022 hunting seasons (Raftovich et al. 2023). Even though common gallinule is a threatened species in Michigan, the take from hunting is unlikely to represent a significant source of mortality.

The North American Breeding Bird Survey (BBS) is a long-term monitoring program that tracks the status and trends of North American bird populations (Ziolkowski et al. 2010). Biologists have long understood that BBS data do not provide accurate trends for secretive marsh birds, mainly because of the limited accessibility to wetland habitats by the road-based survey and the crepuscular nature of marsh birds (Bart et al. 2004, Rich et al. 2004). Common gallinules were reported from only 20 out of 56 (36%) BBS routes in Michigan from 1966-2021, averaging only 0.6 individuals/count (BBS 2023). Years of BBS data showed that secretive marsh birds like common gallinule are grossly under surveyed, and a specialized/tailored program was needed (Ziolkowski et al. 2010). Surveys were developed in the Great Lakes region to fill this data gap, such as the Great Lakes Marsh Monitoring Program and state marsh bird surveys implementing the Standardized North American Marsh Bird Monitoring Protocol (Conway 2011), with common gallinule being a target species of these efforts.

Research indicates common gallinules benefit from active management. Using data from Bird Studies Canada's Great Lakes Marsh Monitoring Program, Tozier et al. (2018) suggest that standard waterfowl management techniques (e.g., water level manipulation, cattle exclusion) also benefit non-waterfowl marsh breeding species including common gallinule and that occupancy was significantly greater at managed sites compared to unmanaged or natural sites. These techniques also benefitted other at-risk

species such as black tern (*Chlidonias niger*), least bittern (*Ixobrychus exilis*) and several rare frog species (Tozier et al 2018). Monfils et al. (2018) compared marsh bird use of impounded and unimpounded wetlands using data from marsh bird surveys in Michigan, Ohio, and Wisconsin and found that common gallinule, as well as several other marsh birds, were more likely to occur at impounded wetlands.

Research needs: Conservation of this species will require working with private and public landowners on management and protection. Greij (1994) suggested that measures taken by governmental agencies and private organizations to preserve quality wetlands on behalf of waterfowl and other wildlife will benefit common gallinule and other marsh birds. In Michigan, the largest concentrations of common gallinules are found in large wetland complexes along the Great Lakes. Research suggests common gallinules respond to active management (Tozier et al. 2018, Monfils et al. 2018) and opportunities exist at these sites for resource managers to improve marshland habitat along the Great Lakes. Migration routes, duration, and timing are poorly understand and warrant further study (Bannor and Kiviat 2020).

More research is needed to study the effects of PFAS on a broader suite of bird (to include marsh birds), reptile, amphibian, and mammalian species to determine potential impacts of PFAS. Common gallinules are hunted in the conterminous 48 states; little is known about how this affects populations. More studies on the effects of hunting are needed.

The Michigan Marsh Bird Survey generated 10 years of baseline data that needs to be further analyzed. The data have already shown expansion of common gallinule's range into two Upper Peninsula counties. Additional long-term monitoring is need, especially in the Upper Peninsula. Continued monitoring will give resource managers the information needed to effectively manage common gallinule and other secretive marsh birds. For effective monitoring the number of birds recorded is directly related to the number of good observers in the field (Barrows 1912). Using data from online databases like eBird and iNaturalist, to monitor birds can save on time and resources. Ebird data have been used to determine species distributions, manage habitat, and help implement environmental policy (Sullivan et al. 2016). E-bird data was instrumental in listing the *rufa* Red Knot (*Calidris canutus rufa*) as a threatened subspecies (Campbell 2016). Continued long-term monitoring can also track the effects of climate change like higher lake levels and range expansion (National Audubon Society 2023).

Secretive marsh birds serve as excellent indicators of wetland quality because of their low tolerance for pollution, flooding, and invasive species. More than two thirds of the original coastal wetlands in the Great Lakes have been lost to agriculture, industry, or human residence (Audubon 2021). The wetlands remaining are under serious threat from invasive species and altered hydrology. A regionwide effort led by the National Audubon Society (NAS) to restore the Great Lakes seems to be paying off. With the goal of improving "water quality and stabilizing declining bird populations," NAS has partnered with other conservation-minded groups to identify priority coastal wetlands, gather baseline data through landscape-scale bird monitoring, and restore coastal wetland habitat through active management (Audubon 2021). Recognizing the need for more marsh bird monitoring, Great Lakes Audubon partnered with Ottawa County Parks and Recreation Commission to establish standardized surveys in the Grand River Coastal Corridor where in 2019 common gallinule was found at three new locations (Audubon Great Lakes 2021) that would have been overlooked otherwise.

Related abstracts: coastal plain marsh, emergent marsh, Great Lakes marsh, American bittern, least bittern, king rail, black tern, marsh wren

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