## COMMON MOORHEN *Gallinula chloropus*

Other: *'Alae'ula*, *Koki* mudhen, Hawaiian Moorhen, Hawaiian Gallinule *G.c. sandvichensis*

**native resident, endemic subspecies, endangered**

The "Hawaiian Moorhen" is considered a weakly differentiated subspecies, *G.c. sandvichensis*, of the widespread and successful Common Moorhen (*cf.* Streets 1877a, 1877b; Stejneger 1887a, Rothschild 1900; Synonymies), which is found at tropical and temperate latitudes throughout the world (Dement'ev and Gladkov 1952, Cramp and Simmons 1980, AOU 1998, Taylor 1998, Bannor and Kiviat 2002, Wiles 2005). In the Pacific, Common Moorhens are found along the Asian coast from s. Siberia to the Philippines and the North American coast from n. California to n. Chile, with insular populations occurring on the Ryukyu, Bonin, Volcano, w. Micronesia, Clipperton, and Galapagos Is. It is possible that *sandvichensis* colonized Hawaii only after the settlement of Polynesians, who brought taro (*Colocasia esculenta*) during the first millennium, increasing habitat preferred by moorhens. The Hawaiian name, *'Alae 'ula*, means "burnt forehead" (*cf.* Munro 1944), and the species was considered the keeper of fire in Hawaiian mythology (Dibben-Young 2009).

In the *Southeastern Hawaiian Islands* the Hawaiian Moorhen was found during the 2000s only on Kaua'i and O'ahu, although it formerly occurred throughout most of the Southeastern Islands. Early ornithologists also recorded moorhens in suitable habitat throughout all islands except Kaho'olawe and Lana'i (e.g., Finsch 1880, Wilson and Evans 1899); reasons for its disappearance from Ni'ihau, Molok'ai, Maui, and Hawai'i are unknown, but may relate to a combination of hunting pressures, sparse and deteriorating breeding habitat, and predation from non-native mammals. Assessments during the 1970s-2000s put the total population at 750 birds (Shallenberger 1977a; USFWS 1985, 2005; Banko 1987b), although numbers show wide inter-annual fluctuation (see Christmas Bird Count data), and are difficult to use for population estimates. Statewide, DOFAW Waterbird Surveys show peaks in 1986 (290), 1996 (410), and 2005 (430). It was listed by the USFWS as a Federally Endangered Species in March 1967, with predation on chicks by introduced bullfrogs (*E* 55:37), and perhaps mammalian predation during molting (Desrochers et al. 2008) presenting primary threats. They currently breed on Kaua'i and O'ahu year-round, peaking in Mar-Aug and with a lull in activity in Dec-Jan (Berger 1972, 1981; Shallenberger 1977a, Byrd and Zeillemaker 1981b).

On ***Ni'ihau***, Ida E. Knudsen von Holt (1953), the collector Valdemar Knudsen's daughter, reported that Hawaiian Moorhen's were numerous among inland wetlands during the 1870s. They apparently died out shortly thereafter, as G. Munro considered it almost unknown there (*E* 1:[2]:4, 59:20), Fisher (1951) does not include it in his summary of island birds, and Banko (1987b) reported no solid evidence that it ever occurred there. The Hawaiian Moorhen is perhaps most populous on ***Kaua'i***, although numbers there appear to fluctuate widely, with reduced counts in the 1940-1950s (Schwartz and Schwartz 1949, Dibben-Young unpubl. ms.) and recent peaks during the late 1970s-early 1980s, the mid 1990s, and the mid-2000s around both Kapa'a (Graph) and Lihue (Graph). High counts for a single locale on Kaua'i are all at Hanalei NWR and include 65-72 in 1976-1977 (*E* 37:64; 38:6, 57) and >200 during 1995-1996, and 50-125 in 1997. DOFAW Waterbird Surveys also show a broad island-wide increase from 40-50 birds in the early 1980s, to a peak of 345 in Aug 1996, a decline to 60 in 2002, and an

increase to over 200 in the mid-2000s. Declines are perhaps due to outbreaks of diseases such as avian cholera. Longer-term time-series analyses by Reed et al. (2007) indicated that moorhens increased on Kaua'i between 1957 and 2004.

On ***O'ahu***, Dixon (1789), Freycinet (1819), Bloxam (1827a, 1827b) and Meyen (1832) all noted "mud-hens" or moorhens. Since these early observations they have typically been described as uncommon throughout wetlands of the island, with most counts < 10 individuals. As on Kaua'i, occasional higher counts in single locales were noted; e.g., 97-108 along the N Shore in 1981-1983 (most at a lotus farm near Hale'iwa), 75 at Waipi'o 12 Aug 1985, and ~100 at the Ki'i Unit of JCNWR in fall 1991. High counts on both Kaua'i and O'ahu are correlated with years of increased rainfall (Engilis and Pratt 1993), and seasonal movements are suspected (Banko 1987b). DOFAW Waterbird Surveys on O'ahu show long-term island-wide cycles, from a high of 230 in Aug 1986 to a low of 55 in 1995-1996 (concurrent with a large peak on Kaua'i) to a high of 230 again in Aug 2006. Time-series analyses by Reed et al. (2007) indicated that moorhens declined on O'ahu between 1957 and 2004.

Moorhens were formerly common on ***Moloka'i*** (Rothschild 1900, Shauinsland 1906, Bryan 1908; *E* 5:84, 24:46; see Dibben-Young 2009 for a summary), primarily in wetlands along the s. coast; reports from Halawa Valley in 1958 (*E* 18:68) appear to be the last reports of ancestral stock. In 1960-1969 HDFG released 31 moorhens on Moloka'i in hopes of revitalizing the population (Dibben-Young 2009), but 9 at Kalua'apuhi Pond 3 Sep 1969 (*E* 30:65) and a few other observations through 1973 appear to be the last evidence of these propagation attempts (Shallenberger 1977a, Banko 1987b, Dibben-Young 2009). In 1983 the USFWS again attempted reintroduction, of 6 birds at Kakahaia NWR (USFWS 1999, 2005); two of these were still present in January 1984 and one through 5 Feb 1986, but none have subsequently been recorded on Moloka'i. On ***Hawai'i I***, W. Ellis sketched one during Cook's visit to Kealakekua in 1779 (Wilson 1977) and several specimens were collected during the 1850s (BPBM). By the turn of the 19th century, however, numbers were beginning to dwindle both here (Henshaw 1902a) and on ***Maui*** (McGregor 1902), affected by draining of wetlands and severe hunting pressure. There appear to be no reliable reports of the native population after about 1910 on either island, although Bryan (1958) indicated that they "probably" still existed on these islands and Schwartz and Schwartz (1949) mentioned continued occurrence on Maui. Attempted re-establishment of populations through small releases on Hawai'i (1938 and 1959) and Maui (1956-1959) were unsuccessful (Breese 1980, Banko 1987b, Dibben-Young 2009); subsequently, there are unsubstantiated reports of single birds from Keanae Peninsula, Maui, in the early 1970s (Shallenberger 1977a), from Opaeula Pond, Hawai'i 8 Aug 1982, and from DOFAW Waterbird Surveys on Maui in Jan 1987, Jan 1997, and Aug 2001 (2-3 individuals each). Banko (1979) summarizes 61 specimens known at the time, including 2-3 each from Moloka'i, Maui, and Hawai'i.

There is one report of Common Moorhen in the *Northwestern Hawaiian Islands*: an individual turned up on ***Midway*** 12-18 August 1988 where it became oiled and presumably perished. Photographs were taken but these, along with the potential to ascertain the origin (subspecies) of this individual, have been lost.

Acronyms and Abbreviations
Literature cited

Citation: Pyle, R.L., and P. Pyle. 2009. The Birds of the Hawaiian Islands: Occurrence, History, Distribution, and Status. B.P. Bishop Museum, Honolulu, HI, U.S.A. Version 1 (31 December 2009) http://hbs.bishopmuseum.org/birds/rlp-monograph/