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Breeding of a mixed pair of white-shielded and red-shielded American Coots in Michigan.—American Coots (*Fulica americana*) and Caribbean Coots (*F. caribaea*), the latter a problematic species, are mainly allopatric. American Coots breed throughout most of North and Andean South America, and the latter form breeds entirely in the Antilles and locally in northwestern Venezuela and Trinidad. American Coots from North America winter south into the Antilles, and it is unknown whether they breed sympatrically with the Caribbean Coots in the Caribbean or whether Caribbean Coots are a color morph of the widespread American Coot (Ripley, *Rails of the World*, David R. Godine, Boston, Massachusetts, 1977; Blake, *Manual of Neotropical Birds*, Vol. 1, Univ. Chicago Press, Chicago, Illinois, 1977; Bond, *Twentieth and Twenty-second Supplements to the Check-list of Birds of the West Indies* [1956], Acad. Nat. Sci. Philadelphia, 1976, 1980). In the absence of information on the reproductive behavior of the two forms in the same locality, systematists have conservatively and tentatively listed the two as distinct species. In recent years, Caribbean Coots have been reported in Florida (Bolte, *Am. Birds* 28:734-735, 1974; Edscorn, *Florida Nat.* 48:25, 1975), in Tennessee (Hall, *Am. Birds* 36:177, 1982), and in Michigan (Powell, *Jack-Pine Warbler* 60:126, 1982).

A white-shielded coot was first noted by Alan Ryff (pers. comm.) in the marsh by the nature trail in Metrobeach Metropark near the shore of Lake St. Clair, Macomb Co., Michigan, on 20 April 1982. The bird had an all-white bill with a maroon ring near the tip, but lacked a red callus, typical of shields of American Coots in North America. The swollen frontal shield was textured with grooves and pits and was broad at the base (Fig. 1) and was slightly yellowish in color in subtle contrast to the distal white portion of the bill. In the field and in color photographs we noted a narrow (2-3 mm wide) band of red or reddish-brown at the base of the shield not at the site of the callus in the typical local *F. americana*. In plumage the bird resembled other local coots and had white under tail coverts, and in flight the whitish tips of the secondaries were revealed. This set of plumage characters applies both to North American and Caribbean coots (Voous, *Studies on the Fauna of Curaçao and other Caribbean Islands*, Vol. 7, Martinus Nijhoff, The Hague, The Netherlands, 1957).

We observed the white-shielded coot over several weeks and determined that it was mated with a red-shielded American Coot. On 24 April the white-shielded bird fought in a territorial skirmish with a neighboring red-shielded coot, and it repeatedly carried nest material as it flew to a nest-site in the marsh. On 26 April it copulated with a red-shielded coot (the white-shielded bird was on the top, so was a male), and on 2 May it patrolled a territory of about 40 × 50 m in the open cattail marsh. On 18 May we photographed a red-shielded bird incubating at least four eggs in the nest in the center of the territory still controlled by the white-shielded bird, at the site where it had flown down into the marsh with nesting material. On 29 May the white-shielded coot and a red-shielded coot were observed over an hour 10-15 m from the nest with both adults attending and feeding at least three newly-hatched, downy coot young, each no larger than about 80 mm. The nest was empty except for one addled egg, and the center was dry in early morning when the cattails around it were wet with dew, suggesting that the young were brooded on the nest the night before. Neighboring coot territories were searched to compare the timing of nesting in other coots in the local population. One territory had a brood of eight young of similar size to the first brood, and another had a nest with 10 warm eggs. All local coots except the apparent male in the focal territory had a red callus on the frontal shield.

We saw that the white-shielded coot was aggressive and territorial, it was accepted by a local female as a mate early in the local breeding season, it was successful in breeding, and it provided parental care to the young. Female American Coots in North America apparently

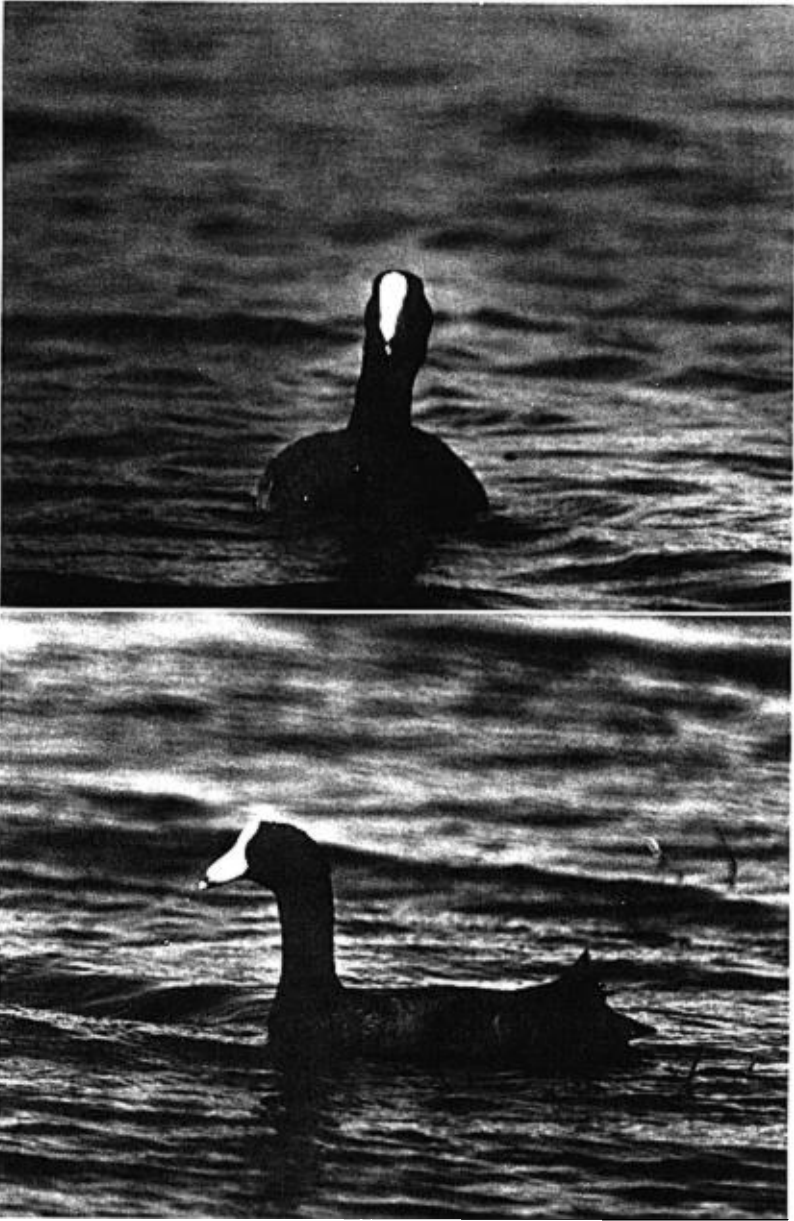


FIG. 1. A white-shielded American Coot (frontal [top] and side [bottom] views) at Metrobeach Metropark, Macomb Co., Michigan, on 2 May 1982.

do not require their mates to have red frontal shields, and red-shielded males respect the territories of a male lacking this signal character.

Coots in Andean populations of *F. americana* vary with some birds having a red callus on the shield and others lacking it (Gill, *Condor* 66:209-211, 1964). In one population Gill found six mated pairs with one member having a white shield and the other a red shield; some of these mixed pairs had young. Prior to this field observation the two forms of coots were considered distinct species; they now appear to be a single species (and subspecies, *F. a. ardesiaca*). Gill suggested that the red-shielded and white-shielded coots of the West Indies (the former considered inseparable from North American *F. a. americana* by Bond [1976] and Ripley [1977], and the latter being the "Caribbean Coot") might be conspecific as well. Apparently the white-shielded individuals resembling those more common in the Antilles rarely occur also as breeding birds in North America. Florida observations of "Caribbean Coots" may have been of northern wintering coots insofar as the white-shielded birds in Florida are seen in winter but not in the northern breeding season when the wintering migrants have departed (Stevenson, *Am. Birds* 30:709, 1976; 36:288, 1982; LeGrand, *Am. Birds* 33:170, 1979).

The shield of American Coots varies by swelling in the breeding season, remaining large while the birds hold breeding territories and are paired, then regressing to a more flattened condition after territorial and breeding behavior has ceased. Experimental implants of testosterone result in growth of the shield, and shield size varies with testis size in wild coots (Gullion, *Wilson Bull.* 63:157-166, 1951). Gullion (1951:163) noted that "no two birds have identically the same callus shape." Thus, the callus and shield are developmentally labile within a bird and also vary among birds. While the individual variability and seasonal development suggest that variation in the shield of coots is not due simply to a genetic dimorphism, a dimorphism may be involved. Whatever the developmental explanation of differences in coots, the observations and experiments document a considerable variation in the shields of American Coots.

Populations of coots in North America, in the Caribbean, and in parts of South America may have different frequencies of red- and white-shielded birds. A white-shielded bird at Tallahassee, Florida, formed a pair bond with a red-shielded bird and behaved aggressively towards other coots (Stevenson, *Am. Birds* 36:288, 1982). White-shielded coots were not widely reported in North America before they were illustrated as a "species" in a popular field guide (Peterson, *A Field Guide to the Birds*, 4th ed., Houghton Mifflin, Boston, Massachusetts, 1980), and the form may have been overlooked. However, coots with "all white" and coots with some "yellow" and no dark on the shield have been seen near Arcada, Los Angeles Co., and at San Francisco, Marin Co., California (Luis F. Baptista, in litt.), so the form may be rare but widespread in North America. Censuses of the different morphs in natural populations are needed.

Observations of the white-shielded coot in Michigan do not confirm that the bird was Caribbean in origin nor do they establish that Caribbean Coots are morphs of the American Coot within the Caribbean. The fact that white- and red-shielded coots in populations in eastern North America and in Andean South America interbreed successfully and behave as a single species do point, however, in that direction for coots in the Caribbean.

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