

or more seasons only, the latest is indicated. This number would undoubtedly have been larger had it been possible to visit the banding sites in 1975-76. Although two of the original 214 birds banded in 1971-72 were recaptured the fifth season after banding, none was recaptured during each intervening season.

Two recoveries from the Chiapas banding are worth noting. An Ovenbird (*Seiurus aurocapillus*) banded 26 km north of Ocozocoautla on 26 December 1973 was found dead at Garden (Farm) Lake, near Ely, Minnesota on 25 May 1974. Tom Michels reported that the bird died from flying into the glass front of his A-frame cabin. A Black-throated Green Warbler banded 26 km north of Ocozocoautla on 27 December 1973 returned there on 15 March 1975 and was then found dead at the same locality on 26 March 1976. Sr. Miguel Alvarez del Toro reported that the bird was suspended from a branch by a "spina" between the leg and band.

The above return data from relatively small samples indicate the marked fidelity of some North American species to their wintering areas and suggest results that might be obtained from a long-range study at a stable, protected and more permanent site.

Banding was authorized by the U.S. Bird Banding Laboratory and the Dirección General de la Fauna Silvestre. Persons assisting on one or more trips since 1973 were: David Ely, Jan Ely, Richard Hill, Jerry Johnson, Eulalia Lewis, Arthur Nonhoff, Tom Shane, Jerry Wilson and Craig Winter. We also thank Nich Anderson and Sr. Miguel Alvarez del Toro for assistance and hospitality in Chiapas.—CHARLES A. ELY, PATRICIA J. LATAS, AND RENNE R. LOHOEFENER, *Department of Biology, Fort Hays Kansas State College, Hays, Kansas 67601*. Received 16 April 1977, accepted 2 May 1977.

Close Nesting, a Result of Polygyny in Herring Gulls.—During censuses in two Michigan Herring Gull (*Larus argentatus*) colonies in 1975 and 1976, we recorded 13 pairs of nests that were unusually close together. The rims of these nests either were united on one side, touching, or almost touching. Distance between centers of each pair of juxtaposed nests ranged from 0.3 to 0.5 m, whereas the mean distance between single nests in these colonies was 4.9 m. Each of the immediately adjacent nests contained eggs, but clutches were of unequal size (three or four eggs in one; two in the other). Adult-plumaged gulls attended all of the paired nests.

Our observations of marked birds documented that polygyny occurred in at least one and probably in the remaining 12 instances. In 1975, four "double nests" were found at the Calcite Colony (Rogers City, Presque Isle Co.). Six territories in this colony contained double nests in 1976 and three others were recorded on Hat Island (Charlevoix Co.). Three adults (two females and one male) attending a double nest on Hat Island were captured, color-marked and sexed by a measurement formula developed by Shugart (in prep.). One nest contained three medium brown eggs and one light brown egg; the other had two light brown eggs. This suggests that both females laid eggs. All three gulls participated in incubation. One medium brown egg hatched on 21 May and the other two hatched on 22 May. The three adults continued incubating the remaining light brown eggs and brooded chicks at either nest until 24 May.

Behavior of the two females and one male attending this double nest was observed and photographed for 33.25 hrs from 20 to 24 May. The trio was present on territory for 66.9% (22.25 hrs) of the total observation time, during which all three birds participated in incubation and parental care at both nests. The respective proportion of the 22.25 hrs spent by each of the three gulls (Female 1, Female 2, and Male 1) incubating at each nest (E or W) and loafing on territory was as follows: Female 1—36.1% (482 min) at Nest E, 12.6% (168 min) at Nest W, and 51.3% (685 min) on territory; Female 2—29.6% (395 min), 28.5% (380 min), and 41.9% (560 min); Male 1—6.8% (91 min), 38.0% (507 min), and 55.2% (737 min). Chicks begged an equal number of times from each adult. Females 1 and 2 each fed chicks 13 times but the male fed them only six times. Long Calls were given on 30 occasions during observations. In 28 of these instances, all three gulls called synchronously.

By 30 May, the three light brown eggs were no longer incubated and pipping had not occurred. Shugart opened the three eggs and found no sign of development, which suggests that fertilization had not occurred.

Only one of the three hatched chicks survived, possibly because of frequent human disturbance in the colony. This juvenile was able to fly by 2 July. It remained on territory with the three adults until at least 11 July when Shugart left the Island. All three adults were still feeding the juvenile at this time. Female 2 regularly was chased off the territory by the male from 29 June on, but she returned and fed the juvenile or loafed when the male was not present.

The number of double nests was 13 (0.07%) as compared to 1,690 single nests for the two years at the Calcite Colony and one year at Hat Island. If we assume that the mating pattern is under genetic control and the birds are not resource limited, polygyny could increase a male's productivity and thus confer a selective advantage. This appears unlikely at this time as hatching success was only 29.4% (five of 17 eggs) for undisturbed double nests. Two of the five chicks lived to the flying stage. This low hatching success apparently resulted from three eggs not being fertilized and the remaining eight eggs adding during incubation.

It is conceivable that environmental circumstances (e.g. inadequate nesting space, shortage of males, contamination by toxic chemicals, or death of a neighboring male during pair formation) might influence the frequency of polygynous matings. However, none of these potential effects were apparent in these colonies during 1975 or 1976.

The occurrence of mating strategies other than monogamy in this gull population probably indicates that variability exists in the genetic determiners of the mating pattern; however, the alternate options are not favored by natural selection at this time.—GARY W. SHUGART AND WILLIAM E. SOUTHERN, *Dept. of Biological Sciences, Northern Illinois University, DeKalb, Ill. 60115*. Received 18 December 1976, accepted 3 May 1977.

The Role of Flock Feeding in Olivaceous Cormorants.—Cormorants of several species engage in flock feeding. Formation of feeding flocks was briefly noted in Cape (*Phalacrocorax capensis*) and Guanay (*P. bougainvillii*) by Murphy (1936), Great (*P. carbo*) by van Dobben (1952), and Brandt's (*P. penicillatus*) cormorants by Hubbs et al. (1970). Serventy (1938) found that of four Australian species studied, only Little Black Cormorants (*P. sulcirostris*) utilized feeding flocks. Bartholomew (1942) gave the only detailed account of flock feeding in the Double-crested Cormorant (*P. auritus*). We noted the feeding behavior of Olivaceous Cormorants (*P. olivaceus*) in Texas between 13 March 1976 and 8 February 1977. Study sites were varied, and included coastal and inland marshes, ponds, lakes, bays, and a power plant cooling pond. Group feeding was noted only on marsh ponds characterized by shallow (≤ 50 cm) water levels. Flocks were small ($\bar{x} = 6.1$, range = 3-8, $n = 10$), and flocking was seldom utilized as a feeding method. During 50 hrs of observation at a site where an individual's sequential activities could often be followed (Galveston Island), flock feeding accounted for only 3% of total feeding time. Depending upon several factors (e.g., adult vs. immature, weather conditions, food availability, ability of observer to follow an individual), a cormorant seldom flock-fed more than once per day (Table 1); most birds never joined these feeding groups. Nelson (1903) and Weller (1967) also noted the formation of feeding flocks in Olivaceous Cormorants, but did not describe their sightings in detail.

Groups formed when a solitary feeder encountered a concentration of fish during low tide (≤ 50 cm water level). The surface splashing of prey in shallow water trying to escape a cormorant apparently attracted nearby birds. Flocks formed in less than one min by birds that were perched on posts within 50 m of the initial (solitary) feeder; not all birds within the immediate vicinity of the newly formed flock would join. Dives (and pauses between dives) were more frequent compared to solitary feeders (Table 1). A group would dive frequently until the fish dispersed (approx. 30 sec), then swim about, diving infrequently, until another prey concentration was encountered (usually 30-60 sec). This behavior continued for short periods of time (Table 1), after which the group broke. The majority of cormorants then flew to perches. One or two individuals would normally continue feeding alone, suggesting that these individuals (both adults and/or immatures) were less successful than the others during flock feeding.