

Mengel. My field work in Mexico was supported by the Edward O'Neil Fund of Carnegie Museum and the Frank M. Chapman Memorial Fund of the American Museum of Natural History. Permits to collect birds in México were obtained through the kindness of Rodolfo Hernández Corzo of the Departamento de Conservación de la Fauna Silvestre.—KENNETH C. PARKES, *Carnegie Museum, Pittsburgh, Pennsylvania, 5 December 1968.*

**High density Mallard nesting on a South Dakota island.**—In May 1967, commercial fishermen reported large numbers of Mallards (*Anas platyrhynchos*) nesting on a 19-acre island located in the southeastern portion of 4,360-acre Lake Albert in Kingsbury and Hamlin Counties, eastern South Dakota. We visited the island on 18 and 27 May 1967 and confirmed the presence of numerous nesting Mallard hens.

Lake Albert is a large, open-water lake which supports fish populations. Emergent aquatic vegetation is scarce, and is confined to a few protected shore areas. The island lies about 450 yards northwest of the southeast shore of the lake. On the western half of the island is a 9-acre flat, while the eastern half contains a slightly sloping open area of about 2 acres surrounded by trees and shrubs. The 9-acre flat was dominated by a dense growth of tall nettles (*Urtica procera*) about 6 to 18 inches high during May. Patches of figwort (*Scrophularia* sp.), snowberry (*Symphoricarpos occidentalis*), wild black current (*Ribes americanum*), Missouri gooseberry (*R. missourienses*), chokecherry (*Prunus virginiana*), and rose (*Rosa* sp.), also grow on the 9-acre flat and other portions of the island. Indian hemp (*Apocynum sibiricum*), common milkweed (*Asclepias syriaca*), and sunflower (*Helianthus annuus*) are also found in open areas, while bluegrass (*Poa* sp.) was common in the more wooded eastern portion of the island. The entire island is ringed by trees, including box-elder (*Acer negundo*), American elm (*Ulmus americana*), hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), and willow (*Salix* sp.).

In 1967 and 1968 we searched approximately 50 per cent of the 9-acre flat after preliminary investigation disclosed that nearly all nests were confined to this area. In 1967, 39 Mallard nests were found, including 36 active and 3 abandoned. In addition, three hens were flushed from cover and their nests were not located. The same area was searched on 27 May 1968; 28 active nests were found, two hens were flushed from cover and their nests were not located. Of 67 nests observed during the two years, placement in various cover types was as follows: tall nettle, 91 per cent; gooseberry, 5 per cent; snowberry, 3 per cent; and bluegrass, 1 per cent. Based upon our sample of about 50 per cent of the preferred nesting cover, we estimated that there was a minimum of 78 and 60 nests in 1967 and 1968, respectively on the island.

Within the area sampled in 1967, the average distance between nests was 34 feet (range 7–150 feet). Measurements were not made in 1968. Clutch sizes averaged 10.4 eggs in 1967 and 8.8 eggs in 1968. Clutch sizes ranged from 6 eggs to 18 during both years with larger clutches more common in 1967 when a higher nest density was found. In 1967, six clutches contained 14 or more eggs while only one clutch contained 14 or more eggs in 1968.

No evidence of activity by egg predators was observed during the two years, except for the occurrence of a large garter snake (*Thamnophis* sp.) in 1967. Of 67 nests observed, none had been destroyed by predators although three nests had been abandoned. A Great Horned Owl (*Bubo virginianus*) nest containing two young was on the island in 1967; however, there was no evidence that the owls had been preying on Mallards.

During our visits to the island, pairs were continually observed moving between the

island and wetlands on the adjacent mainland. Numerous aerial pursuit flights were observed, but these intraspecific conflicts did not prevent the establishment of a high nest density, nor interfere with an apparently high hatching success. Lone and grouped drakes utilized waiting sites on waters surrounding the island while hens were laying or incubating. Several males were observed waiting for hens on land in close proximity to nests. On 27 May 1967 about 30 drakes were observed loafing together on an exposed, elevated site in the 9-acre flat. Many of the nesting hens in surrounding cover were in mid to late stages of incubation during this period.

The wind-swept, open water lake surrounding the island provided poor brood rearing habitat. Apparently, most hens moved their broods about 450 yards to the southeast shore where a large permanent marsh was located. We observed several newly hatched Mallard broods on this marsh on 27 May 1967.

Other ground nests found on the 9-acre flat included Mourning Doves (*Zenaidura macroura*), and one Ring-necked Pheasant (*Phasianus colchicus*). One Mourning Dove ground nest in nettles was located within 3 feet of an active Mallard nest.

The island was purchased by the South Dakota Department of Game, Fish and Parks in February 1944. During the mid-1950's adjacent landowners complained of the noxious weeds on the island, since they felt it to be a seed source that contaminated their fields. Consequently, the Department sprayed and cultivated the 9-acre flat for two consecutive years. This disturbance may have been responsible for increases in nettles since the mid-1950's.

This extremely high nest density contrasts with the usual widely-dispersed nest placement of Mallards in other portions of the prairie pothole habitat in North America. Such a concentration of nesting Mallards is probably a result of high nesting success and a high rate of migrational homing of both adult and first-year nesting hens. This high island nesting density of Mallards is similar to that described by Duebbert (Wilson Bull., 78:12-25, 1966) for Gadwall (*Anas strepera*) nesting mainly in nettles on an island at Lower Souris National Wildlife Refuge, North Dakota. Boyd and Campbell (The Wildfowl Trust, 18th Ann. Rept. 36-42, 1967) reported finding 268 Mallard nests on an 105-acre island in central Scotland in 1966.

We wish to thank Harold F. Duebbert for his suggestions and helpful criticism of the manuscript.—ROD C. DREWEN AND LARRY F. FREDRICKSON, *South Dakota Department of Game, Fish and Parks, Aberdeen, South Dakota (RCD) and Brookings, South Dakota (LFF), 17 March 1969.*

**Courtship display observed between two species of buteos.**—The following details of courtship behavior between two species of *Buteo* were recorded by Frank Kish, Associate Curator at the Topeka Zoo.

The two flight cages for raptors at the Topeka Zoo are made of two regulation baseball backstops which have been joined together. The interior of each has several perches and two shelter boxes  $2\frac{1}{2} \times 2 \times 2$  feet which are open in front and have no bottom. A perch is located within each box. In the cage concerned in the observations, one of these boxes is located beneath an oak tree growing outside of the enclosure. The tree would make the box more desirable as a nest site offering "concealment" and protection from the elements. On 2 January 1968 two adult Red-tailed Hawks (*Buteo jamaicensis*), a male and a female, one adult male Swainson's Hawk (*Buteo swainsoni*), and an adult male Harlan's Hawk (*Buteo harlani*) were in this enclosure. The male Red-tail had suffered a broken wing and could not fly at all well. Both Redtails were