

wings (secondaries, lesser, and underwing coverts), tail, neck, and breast. Sufficient details are apparent in these feathers to allow their certain identification as *G. rueppellii*, using comparative material in the U.S. National Museum of Natural History.

The previous record altitude for a bird-aircraft collision was of a Mallard (*Anas platyrhynchos*) at 21,000 ft (Manville, *Wilson Bull.*, 75:92, 1963), based on feathers that I identified from the strike. That collision occurred between Battle Mountain and Elko, Nevada, on 9 July 1962. Other high-altitude records of birds include sightings of migrating geese at 29,000 ft, over the Himalayas (Griffin, *Bird Migration*, Natural History Press, Garden City, N.Y., 1964), and soaring Bearded Vultures (*Gypaetus barbatus*) at over 24,000 ft (Ali, *Birds of Sikkim*, Oxford University Press, London, 1962).—ROXIE C. LAYBOURNE, *National Fish and Wildlife Laboratory, Bureau of Sport Fisheries and Wildlife, National Museum of Natural History, Washington, D.C. 20560. Accepted 7 June 1974.*

American Coots feeding in association with Canvasbacks.—Commensal feeding associations between different species of waterbirds have been reported by several authors in recent years. Such associations have been described between Wilson's Phalaropes (*Steganopus tricolor*) and Northern Shovelers (*Anas clypeata*) (Siegfried and Batt, 1972), grebes (*Podiceps* spp.) and Cape Shovelers (*A. smithii*) (Siegfried, 1971), Little Grebes (*P. ruficollis*) and European Coots (*Fulica atra*) (Ashmole, Brown, and Tinbergen, 1956), Little Grebes and Northern Shovelers (King, 1963), Least Grebes (*P. dominicus*) and Mallards (*A. platyrhynchos*) (Paulson, 1969), and between several species of ducks and geese and Whistling Swans (*Cygnus columbianus*) (Sherwood, 1960; Bailey and Batt, 1974). Increased feeding rates by one of the participants in these associations have been reported for grebes (Siegfried, 1971; Paulson, 1969) and for phalaropes (Siegfried and Batt, 1972).

In Utah, Ryder (1959) described American Coots (*F. americana*) as "attending" feeding Whistling Swans in the spring. This behavior consisted of one to four coots circling around swans and picking up debris churned up by the latter's feeding activity. Coots were seen defending this food source from Redheads (*Aythya americana*). Ryder also observed coots attending Mallards, Pintails (*Anas acuta*), and Redheads in a similar manner.

During observations of waterfowl feeding activity on the Delta Marsh, Manitoba, in 1973, I observed an obvious and quite common feeding association between American Coots and Canvasbacks (*Aythya valisineria*). The association was observed at five different locations on the marsh between 25 August and 14 October.

Feeding Canvasbacks stirred up a great deal of debris with their feeding and rooting activity. One or two coots would commonly associate with single, or occasionally with two, Canvasbacks. In contrast to their normal feeding behavior, attending coots swam tightly around the diving Canvasbacks, turning and often spinning phalarope-like, plucking at the surface. At least 18 different coots and 16 Canvasbacks were observed feeding in this manner. Both adult and immature coots associated with Canvasbacks. On two occasions individual adult coots defended their feeding areas, once driving away another adult and once an immature coot.

Attending coots stayed very close to their companion Canvasbacks, always within a circle around a duck of approximately one m in diameter. On seven separate occasions, Canvasbacks even surfaced directly under the attending coot. Twice on these occasions the Canvasback threatened the coot; the latter quickly flapped away, but soon returned. On all other occasions the duck did not react at all, and the coot retreated briefly before

returning again in a few seconds. Canvasbacks generally displayed total indifference toward attending coots.

All feeding associations noted occurred over beds of sago pondweed (*Potamogeton pectinatus*), in water 30 to 70 cm deep. Close observations with a spotting scope revealed that the coots were primarily eating the slender, white rootstocks of the pondweed. Identification of this item was made possible by the frequent habit of the coots of plucking rootstocks from the water and shaking them before ingestion. Coots may also have been feeding to a lesser extent on disturbed invertebrates floating to the surface. Chironomid (spp.) larvae were the most abundant invertebrates present.

Coots nearly doubled their feeding rates while associating with Canvasbacks. Associating coots were defined as those feeding within a one-m-diameter circle around a feeding Canvasback. Coots pecked at a mean rate of 31.9 (S.D. 3.7, range 24-48; 51 one min timings) per min while associating with Canvasbacks, versus a mean rate of 16.7 (S.D. 5.3, range 12-29—once 49; 66 one min timings) per min while feeding alone or in conspecific groups on the same area. These rates are significantly different ($P < 0.01$). Successful and unsuccessful pecks could not be distinguished in all cases, but the ratio did not seem to differ in attending and non-attending coots.

This feeding association appears to be beneficial to coots, and several observations indicate that these birds actively seek out feeding Canvasbacks. For example, a coot that had been feeding alone for some time swam directly (at least 50 m in just over one min) to join two Canvasbacks that had been loafing but began actively feeding. Other coots soon joined in.

Coots associated only with Canvasbacks, although other ducks were feeding in the same area, i.e., Mallards, Pintails, Redheads, Lesser Scaup (*Aythya affinis*), Gadwall (*Anas strepera*), American Wigeon (*A. americana*), Blue-winged Teal (*A. discors*), and Green-winged Teal (*A. crecca carolinensis*). Two American Wigeon and two Mallards were seen briefly associating with Canvasbacks in much the same way as the coots.

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