

Cooperative feeding behavior in Red-breasted Mergansers.—Mergansers are well known for their fishing behavior (see A. C. Bent, "Life histories of North American wild fowl," part 1, *U. S. Natl. Mus., Bull.* 126, 1923) and recently several cases of other birds joining in or benefiting from the fishing activity of mergansers have been reported (G. M. Christman, *Condor*, 59: 343, 1957; J. M. Parks and S. L. Bressler, *Auk*, 80: 198–199, 1963), yet there has been no mention of cooperative feeding behavior in mergansers such as G. A. Bartholomew (*Condor*, 44: 13–14, 1942) has described for cormorants.

On the morning of 10 April 1963, at San Carlos Bay, near Guaymas, Sonora, Mexico, we saw seven Red-breasted Mergansers (*Mergus serrator*) behaving in a manner that suggested they were fishing cooperatively. The seven birds were feeding in a shallow arm of the bay in water less than 24 inches deep on an incoming tide. They swam in a loose line (Figure 1, A), moving slowly, more or less in the

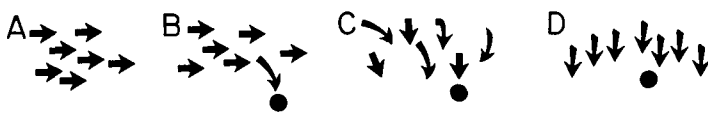


Figure 1. Diagrams of sequences leading to cooperative feeding in Red-breasted Mergansers. Birds are indicated by arrows; fish by dot.

same direction with their faces either under the surface (hunting?) or above it for short periods of preening. When a hunting bird discovered a fish, it immediately gave chase, flapping its wings and running on the surface. The positions of the fish were apparently determined by the birds peering under the water at frequent intervals. As soon as one bird began a chase (Figure 1, B), the others joined in the pursuit (Figure 1, C), the nearby birds flapping and running along the surface, those more distant flying. In the few seconds it took the last bird to arrive, a semicircle was formed by the birds with the pursued fish in the center of the arc (Figure 1, D). As the birds chased the fish, one or another of them dived under the surface in pursuit, surfacing at about the time the others reached that spot. This diving continued in each case until one of the birds caught the fish. Immediately upon surfacing that bird would eat the fish. As soon as a fish was caught, the rest of the birds would begin to disperse and to hunt again.

Occasionally, in the course of a chase, one or two of the trailing birds would be distracted by the discovery of another fish, which they then chased. These secondary pursuits did not seem to be very successful. We saw no fish caught under these circumstances, while the cooperating group captured at least 10 fish in 15 minutes.

The following morning, we saw the same type of behavior in a similar group of mergansers in the same shallow water, but about 30 minutes later than the previous day. The local tide is about 45 minutes later each day and this presumably accounts for the difference in time of feeding.

Presumably greater efficiency in fishing results from this type of cooperative feeding behavior, since a chased fish has a reduced number of escape routes, and more than one bird has the fish in view at any given time.—JAMES R. DES LAURIERS and BAYARD H. BRATTSTROM, *Department of Biology, California State College at Fullerton, California.*