

I am grateful to Kenneth C. Parkes, S. Dillon Ripley, and Peter Stettenheim for helpful comments and suggestions.—PHILIP S. HUMPHREY, *Peabody Museum of Natural History, Yale University, New Haven, Connecticut, April 22, 1958.*

**Food of the American Merganser in Unakwik Inlet, Alaska.**—The American Merganser (*Mergus merganser americanus*) is an abundant species which breeds in the vicinity of Unakwik Inlet in the northern part of Prince William Sound, Alaska. During the first 10 days in July, 1957, 13 broods, varying from 3 to 6 juveniles and attended by an adult female, were seen in nine tributary streams of Unakwik Inlet, including Cedar and Wells Bay, near 61° north latitude and 147° 35' west longitude. Additional broods were seen, but not recorded, subsequent to this date. Since these streams are important spawning areas for salmon, it is of value to know what effects the feeding of the American Merganser have on salmon. Consequently a study was conducted during July and early August, 1957, to determine the importance of salmonoid eggs and fry in the food of the merganser in this area.

The summer of 1957 was extremely dry in the region about Prince William Sound. Because not much snow fell during the previous winter, run-off was very restricted. Many streams that had a foot of water in 1956 had only a few inches of water at the same time in 1957. Although these conditions were probably detrimental to both spawning fish and fingerlings returning to the sea, the magnitude of their effects is unknown. The "run" of pink or humpback salmon (*Oncorhynchus gorbuscha*) in Prince William Sound was very late, and it was the smallest recorded in 47 years. Unlike the red salmon (*Oncorhynchus nerka*), the pink and the chum or dog salmon (*Oncorhynchus keta*) spawn in streams which are short in length or even in the "salt-chuck" near the mouths of the streams. Since the fry from these salmon return to the sea during the early spring run-off, it is likely that the bulk of the young salmon had migrated out of the sound before the study was initiated.

Forty adult and 15 juvenal mergansers were shot for study purposes between July 16 and August 5. The ducks were collected either near or within a short distance above the mouth of one of the nine tributary streams in Unakwik Inlet where adults and broods were seen most frequently. Only part of the birds from any area were collected, an entire brood was never killed, and a female with a brood was shot only if the juveniles appeared large enough to care for themselves. When a group of mergansers was approached with a skiff, the juveniles seldom dived but retreated in a compact group. After they were about three-fourths grown, they separated occasionally but dived very infrequently. Adult males in eclipse plumage became very wary after being shot at and occasionally left the water attempting to escape into timber and other cover on shore. After a bird was collected, its tail and bursa of Fabricius were examined to corroborate its age, and its gonads were examined to verify its sex. The bills of juvenal mergansers seemed rubbery, whereas those of adults were hard and would not bend. Also, the legs of adult females were pink; those of juveniles were dull yellow. The esophagus and gizzard of each bird was removed, labeled, placed in a cheese cloth sack which was tied shut and put into a container with 10 per cent formalin.

Upon completion of the field work, the food items from each preserved specimen were separated, and when feasible, these items were counted or measured by displacement of water to the nearest tenth of a cubic centimeter. All food items, tabulated in order of their most frequent occurrence in the 55 ducks, are presented in table 1.

Three hundred ninety-four otoliths, or ear stones of fish, occurred in 44 of the 55 mergansers. The otoliths were probably taken from the bottom of streams or the inlet, since they ranged from 8 to 12 millimeters in length and were probably from fish too large for a merganser to eat. The size and general appearance of the skeletal parts in the unidentified fish materials, which occurred in 32 different mergansers, suggested that most of these materials represented cottoids. Twenty spiny-headed worms (*Acanthocephala*) were found in six different ducks, 13 roundworms (*Nemathelminthes*) occurred in four ducks, and two tapeworms (*Platyhelminthes*) were found in two ducks. Since all of these worms occurred in gizzards and none was attached, they probably were in fish that had been eaten.

Although the availability of the foods taken by these mergansers was not determined, some of the mergansers collected were definitely feeding where salmon had spawned recently or were spawning. Since there were only 48 salmonoid eggs in seven different mergansers, and since only three mergansers had taken about three salmonoid fry, it must be concluded that the feeding habits of the American

Table 1  
Food of American Mergansers in Southeastern Alaska

Food items	Number of ducks in which item occurred	Total number of items	Total volume in c.c.
Grit	55	....	97.2
Otoliths or ear stones of fish	44	394	7.2
Unidentified fish materials, mostly skeletal parts	32	....	83.3
Unidentified plant materials, mostly decomposed	18	....	2.8
Crustaceans, unidentified	17	....	....
Feathers, mostly down	17	....	....
Cottidae, sculpins	13	....	69.0
<i>Spirontocaris</i> sp., shrimp	12	....	54.5
Algae	9	....	1.5
Salmonoid eggs	7	48	....
Gastropoda, snail	7	30	....
Bark or wood materials	7	....	....
Acanthocephala, spiny-headed worms	6	20	....
<i>Myoxocephalus polyacanthocephalus</i> , great sculpin	5	....	61.0
Lamellibranchia, clams	5	....	....
Lichens	5	....	2.3
Nemathelminthes, round worm	4	13	....
Salmonoid fry	3	....	....
<i>Gasterosteus</i> sp., stickleback	3	....	9.0
Chironomidae, fly larvae and adults	3	....	....
<i>Anoplorchus purpureus</i> , crested blenny	2	....	14.0
Platyhelminthes, tapeworm	2	2	....
Diptera, fly larvae and adults	2	10	....
Moss	2	....	....
Osmeridae, smelt	1	....	4.0
<i>Hemigrapsus</i> sp., shore crab	1	....	2.5
<i>Neosphaeroma</i> sp., sow-bug	1	1	....
Isopoda, sow-bug	1	1	....
Chilopoda, centipede	1	1	....
Coleoptera, beetle larva	1	1	....
<i>Antritrichia</i> sp., moss	1	....	1.5
<i>Picea sitchensis</i> , Sitka spruce needles	1	....	....
<i>Tsuga</i> sp., hemlock needles	1	17	....

Merganser were insignificant to salmon in Unakwik Inlet during the period in which they were studied.

Acknowledgment is made to the following people who helped identify the food items: Dan L. Campbell, Betty and Noe Higinbotham, Richard A. Parker, W. M. Walter, Charles W. McNeil, and Ronald H. Alvarado of the State College of Washington, Craig McFee of the University of Idaho, and Lauren R. Donaldson of the University of Washington.—LEE E. FRITSCH and IRVEN O. BUSS, *State College of Washington, Pullman, Washington, 1957.*

**An Ancient Cormorant from Nevada.**—In the summer of 1957, Phil C. Orr, Director of the Western Speleological Institute, asked me to examine a bird skeleton from Crypt Cave in Pershing County, Nevada, collected by the Institute on a joint expedition with the Nevada State Museum. According to Orr's mimeographed report of the Eighth Lake Lahontan Expedition of June-July, 1957, this skeleton and other bones (of small birds and rodents, and a large cat) were found in sediments of the ancient Lake Winnemucca that have been radiocarbon dated as older than 20,000 years.

On examination of the bird skeleton, it was found that, in addition to the disarticulated elements that apparently belong to one individual, there are two separate, unpaired tibiotarsi representing two other individuals. Although one of these tibiotarsi is too fragmentary for specific identification, it is obvious that all bones belong to the genus *Phalacrocorax*.

The elements that compose the one nearly complete skeleton include paired wing and leg elements