disturbance. The number of old and new shells, the feathers, and the liberal amount of excreta indicated that the spot was well used. The evidence showed that at least one Bald Eagle gathered abalones, just how and in what state is not known, and brought them to this spot to eat.

I would like to thank Dr. Arthur Staebler, Fresno State College, and Mr. Richard C. Banks, University of California, for checking the identification of the feathers, and Dr. Keith Woodwick, Fresno State College, for checking the identification of the shells.—ALBERT C. HAWBECKER, *Fresno State College, Fresno, California, March 25, 1958.*

American Redstart in Santa Barbara County, California.—On September 8, 1957, a female American Redstart (*Setophaga ruticilla*) was seen in Cold Spring Canyon (below Mountain Drive) near the city of Santa Barbara. It was actively feeding in California live oaks and was under binocular observation for about 20 minutes. Four days later, and about one-fourth mile from the site of the first observation, a male of the same species was observed feeding in live oaks with a flock of bushtits. A male, possibly the same one seen previously, was feeding in the same locality on the morning of September 16. Although these are sight records, acquaintance with the species in the eastern and midwestern states supports our belief in the correctness of the identification. The American Redstart has not previously been recorded from Santa Barbara County (Grinnell and Miller, Pac. Coast Avif. No. 27, 1944:419).—CHARLES H. RICHARDSON and ALICE I. RICHARDSON, *Santa Barbara, California, April 1, 1958.*

Indigo Bunting Breeding in Los Angeles County, California.—On June 10, 1956, while checking finches present in the *Adenostoma-Salvia* association in Soledad Canyon, I heard a strange song which proved to be that of a male Indigo Bunting (*Passerina cyanea*). Its mate and nest were located in black sage (*Salvia mellifera*). The nest contained two whitish eggs of the bunting and one of a cowbird (*Molothrus ater*) which was removed. One week later the male was observed periodically for two hours as it sang from various perches within six to twenty feet of the nest. The female, which was then incubating, was thought possibly to be a Lazuli Bunting (*Passerina amoena*). A few days later we were successful in capturing the female. We made measurements and photographed her. This evidence later conclusively identified her as a Lazuli Bunting. The eggs proved sterile, and both members of the pair had deserted the area by July 3. The nest and the two eggs were taken to the Los Angeles County Museum.

In 1957, on June 8, a male Indigo Bunting was again found in the same area several hundred feet distant, and on the opposite side of a butte, from the territory of 1956. There it proclaimed its territory from several perches. Six days before, a male Black-chinned Sparrow (*Spizella atrogularis*) had undisputed control over the same territory and had used three of the same song perches. On the 8th and 10th no Black-chinned Sparrow was present on the territory, nor even on that side of the butte. The Indigo Bunting had apparently arrived during the week and was unmated up to the 10th when it was netted, photographed and retained as a specimen. It was presented to the Los Angeles County Museum where it is now no. 29045 in the collection. This specimen is the second for the state of California (for the first, see Cardiff, Condor, 53, 1951:100); there is no previous breeding record. The westernmost breeding record appears to be that of the Dearings (Condor, 48, 1946:139) from Oak Creek Canyon, Arizona.—DON BLEITZ, *Bleitz Wildlife Foundation, Los Angeles, California, April 30, 1958.*

Diving of a Captive Common Eider.—Very little has been published on the method of underwater locomotion of the Common Eider (*Somateria mollissima*). Bent, in his "Life Histories of North American Wild Fowl" (1925:89), states that "in diving the wings are partially opened and used to a limited extent in swimming under water, but the wings are not wholly spread; progress seems to be made mainly by use of the feet, and there is nothing like the full subaqueous flight practiced by some of the Alcidae." Phillips (A Natural History of the Ducks, vol. 4, 1926:91) says "there is no question but that Eiders use their wings under water, whether or not they are wounded . . . . The Eider uses its wings just as does the Harlequin, held close to the sides and beaten with short jerks, not extended as in aerial flight." Schiøler (*in* Millais, British Diving Ducks, vol. 2, 1913:17) described the under-

water activities of the Common Eider as follows: "Several times I have succeeded in seeing them swimming deep down in the dark bright water; the white back was visible, but the position and the movements were not seen until these birds came nearer to the surface. The neck was slightly curved and inclined backwards, the wings were half opened, and the feet working alternately. I cannot say whether they fly under water using the wings in moving forward; in these cases a faint movement of the wings could be seen, but of course the birds were being pursued. The wings were not outstretched, only lifted away from the body, and the tips were pointed behind . . . ."

On January 23, 1958, Kenneth Parkes and I watched the diving activities of a pinioned female Common Eider in an outdoor pool at the Highland Park Zoo, Pittsburgh, Pennsylvania. This bird had hatched from an egg shipped from Iceland. The pool in which she was feeding was three to five feet in depth. Submergence was accomplished by throwing down the head and neck, paddling with the feet, and moving the half-folded wings. The eider invariably submerged with a stroke of the half-folded wings. As the bird disappeared beneath the surface of the water, the wing tip could be seen slightly away from the body. Mergansers, goldeneyes, pochards, and often scoters submerge by leaping forward and slightly upward in a graceful arc before disappearing beneath the surface; the wings are not used. I have never seen an eider submerge in this way. This eider—and others I have watched—dived from the surface without an initial leap forward and always used the wings.

Wings and feet were used for propulsion during submergence and while the bird was going obliquely down to the bottom. However, while it was searching for food on the bottom, the feet alone were used for propulsion. The half-folded wings during this time were held slightly away from the body; they probably served to increase the surface area of the bird, making it easier for the bird to resist the upward force of its own buoyancy. This resistance to the upward force of buoyancy is probably enhanced by the rapid forward movement of the bird as it twists and turns, propelled by swift strokes of its feet, searching out food on the bottom.

The return to the surface of the water was accomplished in a fashion similar to that described for the Surf Scoter (Humphrey, Auk, 1957:392–394). Buoyancy seemed to be the main cause of the bird's rise to the surface; the wings were held motionless, half-folded, and slightly away from the body. I could not see the feet but suspect that they too were motionless. The tip of the bird's beak was held near the breast. The eider varied in its return to the surface; this was perhaps because the water was only between three and five feet deep. Both the angle of the long axis of the bird's body and the angle of the bird's path to the surface varied. Sometimes the long axis of the body was almost horizontal; at other times it was perhaps 15 or 20 degrees from the vertical. The path of the bird's ascent varied from oblique to almost vertical. The head always surfaced first. On reaching the surface the bird tipped forward bringing its head up to its normal resting position and then folded the wings into the "wing-pouches," formed by feathers of the sides and flanks.

Eiders are able to forage on the bottom efficiently at depths as great as 40 feet or more. Describing the feeding habits of the Common Eider, Bent (*op. cit.*: 87–88) says "Eiders obtain their food . . . by diving to moderate depths . . . . They prefer to feed at low tide when the food supply is only a few fathoms below the surface; they often dive to depths of 6 or 8 fathoms and sometimes 10 fathoms . . . ." Madsen (Danish Review of Game Biology, 1954:166) says that the Common Eider probably does not dive much deeper than 10 to 15 meters.

Eiders—and possibly other birds which can dive deeply—seem to be adapted to making efficient use of their limited time under water by budgeting the various energy-consuming locomotor movements in the most economical fashion. The trip from the surface to the bottom is made as rapidly as possible, using wings and feet for locomotion; this is expensive from the standpoint of the energy required. Foraging on the bottom requires finding food as rapidly as possible; but the longer the bird is able to stay at the bottom the more likely it is that each dive will be successful. Finding and capturing food, then, requires covering as much territory as possible as economically as possible from the standpoint of energy consumption. The eiders apparently accomplish this by using only the feet for forward movement and efficiently counteracting the upward force of buoyancy with the half-folded, motionless wings which act as hydroplanes. The return to the surface of the water seems to be accomplished without active use of either wings or feet. The upward force of buoyancy lifts the bird to the surface with the motionless wings and feet acting as hydroplanes. This last phase of the dive requires the least amount of energy and hence allows maximum use of energy for foraging on the bottom.

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