

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.

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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

with girdles, and most of the axial skeleton, with the skull. All of these bones, and the one complete, unpaired tibiotarsus agree in conformation with Recent specimens of *Phalacrocorax auritus*, the species of cormorant now found in Nevada, and I have no hesitation in assigning the cave bones to this species. However, I find that they do not agree precisely with bones of Recent *P. auritus albociliatus*, the race that is recorded from Nevada today. The tarsometatarsus and tibiotarsus are longer, both actually and relatively to wing bones than in any specimens of Recent *P. a. albociliatus* in the collections of the Los Angeles County Museum, California Museum of Vertebrate Zoology, United States National Museum, or the Zoology Department of the University of California at Los Angeles. In this connection, I extend my thanks to Dr. Loye Miller and Dr. A. Wetmore for their cooperation in carefully checking and measuring the cormorant specimens in the Museum of Vertebrate Zoology and the U. S. National Museum, respectively. Some Recent specimens equal or exceed the paired cave bones in length of humerus, femur, carpometacarpus and ulna, but none equals in length the tarsometatarsi or tibiotarsi. The unpaired tibiotarsus from the cave is even longer than the paired specimens. It might be noted that the tibiotarsus in *P. penicillatus* is a very large element, but, as stated above, the characters of the cave bones are clearly those of *P. auritus*.

In view of the age of the Nevada sediments in which the cave bones were found, it is not surprising to find a difference between the ancient representative of *P. auritus* and the subspecific form known in the area today. The racial divisions of *P. auritus* would be expected to have undergone some change or shifting during a period of 20,000 years, and those recognized today may not have been distinguishable, as such, 20,000 years ago.

As a possible clue to previous distribution and racial differentiation, I felt it advisable to make comparison with two neighboring races, namely, *P. a. auritus* (recorded as far west as Great Salt Lake, Utah) and *P. a. cincinatus* which meets the range of *albociliatus* in the state of Washington (see Jewett *et al.*, Birds of Washington State, 1953:81-83). Two skeletons of *P. a. auritus*, from Minnesota

Table 1

Skeleton Measurements (in Millimeters) and Proportions (in Per Cent) for *Phalacrocorax auritus*

	Nevada cave skeleton	<i>P. a. albo- ciliatus</i> ¹ min.	max.	<i>P. a. auritus</i> U.S. Nat. Mus. nos. 19262	290156	<i>P. a. cin- cinatus</i> ²
Measurements of greatest length (except as indicated)						
Femur	61.9	57.1	62.3	57.0	62.7	.....
Tibiotarsus (to articulations)	112.4 ³	103.3	107.2	100.2	105.0	112.4
Tarsometatarsus (to articulations)	68.8	61.7	65.8	62.0	64.0	67.7-73.2
Humerus	155.4	148.0	157.3	148.0	154.5	.....
Ulna	164.8	159.0	165.0	155.0	162.0	165.0
Carpometacarpus	75.8	70.3	75.5	71.2	73.0	80.7
Ratios of lengths						
Tarsometatarsus to humerus	44.2	40.5	43.5	41.3	41.4	.....
Tibiotarsus to humerus	72.2	67.3	70.9	67.7	67.9	.....
Tibiotarsus to ulna	68.2	64.2	65.7	64.6	64.1	68.1
Tarsometatarsus to ulna	41.7	38.8	40.3	40.0	39.5	41.0(?)

¹ Maximum and minimum measurements and ratios from a series of 8 individuals; measurements of ulna and carpometacarpus for only 3 in the series.

² Measurements are from different individuals; tibiotarsus and ulna, bones from L.A. Co. Mus. skin no. 20735; carpometacarpus, bone from Mus. Vert. Zool. skin no. 69974; tarsometatarsi measured on skins, L.A. Co. Mus. nos. 20733 to 20735 (minimum) inclusive, and Mus. Vert. Zool. skin no. 69974 (maximum).

³ Length of unpaired tibiotarsus, 116.1 mm.; estimated length of tarsometatarsus for this individual, 71 mm.

and Missouri, were borrowed from the U. S. National Museum. In spite of the fact that Dr. Herbert Friedmann very kindly selected the two largest specimens of this race from the collections, neither equals the cave bones in length of tarsometatarsus or tibiotarsus. In fact, one of the skeletons is generally smaller throughout than those of *P. a. albociliatus*.

Examination of five Alaskan skins of the northwestern race, *P. a. cincinatus* in the collections of the Los Angeles County Museum, compared with skins of *P. a. albociliatus* showed that the tarsometatarsi are longer in *P. a. cincinatus*. However, measurements of wing elements from the same skins were necessary to determine whether *cincinatus* exceeds *albociliatus* in length of all skeletal elements or whether the leg bones are longer in proportion to the wing bones as in the cave skeleton. Fortunately, one of the skins (no. 20735), from Prince of Wales Island, Alaska, was found to have a complete ulna and complete tibiotarsus that could be removed. These were compared with the cave specimens. They proved to be essentially identical in length with the comparable elements from the cave, and therefore to agree in proportion of tibiotarsus to ulna. The ulna from the skin, however, was found to be stouter than that of the cave specimen, particularly in breadth of the proximal cotylae and depth of the external condyle, distally. After several inquiries to other institutions, the only other skeletal specimen of *cincinatus* found to be available was procured from the Museum of Vertebrate Zoology. This is a carpometacarpus from skin no. 69974, collected near Vancouver Island, British Columbia. Mr. Richard C. Banks, who sent the specimen, kindly measured the tarsometatarsus from the same skin. In this instance, both carpometacarpus and tarsometatarsus are considerably longer than the paired elements of the cave skeleton, and slightly exceed the lengths that might be anticipated for the skeleton represented by the large, unpaired tibiotarsus.

These comparisons suggest that the ancient *Phalacrocorax auritus* of Nevada was more similar to the present northwestern population of the species than to that of either the west or central United States today. I would hesitate, however, to establish a Nevada record for *P. a. cincinatus* on the basis of the cave skeleton, particularly in view of the very scant Recent comparative material of that race that is now available.—HILDEGARDE HOWARD, *Los Angeles County Museum, Los Angeles, California, March 21, 1958.*