

does the evaluation and weighting of characters in the light of the systematic "climate" of the day. In this connection, it is interesting to note that Salvin and Godman in 1901, in the *Biologia Centrali-Americana, Aves*, vol. 3, p. 185, wrote that while Mr. Sharpe considered the boatbill to be an exaggerated form of night heron, they preferred to follow Mr. Ridgway and consider it a distinct family. Most American writers have followed this course, but the trend today seems to be the other way (see W. J. Bock, *Amer. Mus. Novit.*, no. 1779, 1956). It will probably take several more decades for a nearly complete reversal of usage. If so, the family Cochleariidae will have had about a century of active life.—A. L. RAND, *Chicago Natural History Museum, Chicago, Illinois.*

Subspecies of Recent and fossil birds.—It is commonly accepted that the temporal range of a living species may be extended into the past on the basis of fossil evidence. Reproductive isolation cannot be used as a measure of species validity in allochronic forms; hence, determination of species limits in closely similar forms may be difficult, but not necessarily more so than in contemporaneous, allopatric forms.

A problem arises if the remains of fossil forms differ only slightly from skeletons of living animals. Howard (1964: 235–237) and Simpson (1961: 175–176) have argued that forms with minor differences are often best treated as temporal, or successional, subspecies. In avian paleontology, the use of temporal subspecies has been confined to Pleistocene birds, and forms of greater antiquity have been referred to fossil species. Some workers, however, have allocated Pleistocene fossils to extant subspecies, and it is on this procedure that I wish to comment. Wetmore (1956: 3) considered it "extremely doubtful procedure in most cases to assume that Pleistocene subspecies were the same as those encountered in the region today." In my opinion, this assumption is never valid.

The problem of carrying modern *subspecies* backward in time differs somewhat from extending the temporal range of a species. Modern subspecies are populations that exhibit some degree of difference as compared with other extant populations of that species, and which breed in definite geographic areas. The characteristics of each subspecies are usually assumed to be adaptive to *present* conditions, and thus they bear no necessary relationship to similar characters found in fossil forms. Furthermore, since breeding range is rarely demonstrable from fossil material, and since breeding range is an essential component of the definition of modern subspecies, the use of the names of extant races for fossil material is clearly unwarranted.

The commonest allocation of fossil remains to modern subspecies has been in the Canada Geese. Because the range of variation in fossil elements of *Branta canadensis* is similar to that found in the modern species, and because of the comparatively slight age of the fossils, a few writers have relegated fossil and subfossil material to modern subspecies, for example *B. c. canadensis* (Howard, 1962: 7; Wetmore, 1940: 20), *B. c. hutchinsii* (McCoy, 1963: 340; Wetmore, 1931: 19–20), and *B. c. minima* (Friedmann, 1934: 89). Considering only *B. c. hutchinsii*, it is evident that the allocation of a fossil to this subspecies is based on four assumptions: (1) that the range of *hutchinsii* today approximates its Pleistocene distribution, (2) that no other small Canada Geese fall within the size range of *hutchinsii*, (3) that no modern races of small Canada Geese have evolved since the Pleistocene, and (4) that no populations of small Canada Geese have become extinct since the Pleistocene. The first two assumptions are invalid, and the third and fourth are untestable.

In the case of *hutchinsii*, the impropriety of allocating fossil material to this sub-

species is, in effect, the result of equating "*B. c. hutchinsii*" with "small Canada Goose." These terms are not synonyms. Populations of small geese have evolved, apparently independently, in different parts of the species' range, but *B. c. hutchinsii*, as defined by Delacour (1954), refers only to the population of small, light-colored Canada Geese that breeds in the northeastern Canadian arctic and on the west coast of Greenland. By allocating a fossil to this race, one imputes a specific breeding range to the populations represented by that fossil. A more meaningful and accurate designation for such remains would be "*B. canadensis*, similar in size to *hutchinsii*." If fossil forms warrant trinomial recognition, the temporal subspecies concept, which makes no assumptions except that of average difference, should be utilized.

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Cannibalism at a Broad-winged Hawk nest.—On 20 July 1958 Alexander C. Nagy and I climbed to the nest of a Broad-winged Hawk (*Buteo platypterus*) placed about 65 feet above the ground in a white pine (*Pinus strobus*). The nest site was located along the base of the Kittatinny Ridge about three miles northeast of Hawk Mountain Sanctuary, Berks County, Pennsylvania. We discovered two nestlings each about three weeks old. Both birds appeared healthy. On 27 July 1958 we revisited the nest and found one well-developed nestling standing beside its dead nest mate. The dead nestling was completely decapitated and appeared to have died recently. The victim's head presumably served as food for the surviving nestling.

This appears to be a case of cannibalism, and almost certainly fratricide although the cause of the victim's death was undetermined. Ingram (*Auk*, 76: 218-226, 1959) does not include *B. platypterus* in his list of raptors known to engage in cannibalism. However, four other North American species of *Buteo* are included in his list.—DONALD S. HEINTZELMAN, 629 Green St., Allentown, Pennsylvania.