COMMENTARIES

On Sightings and Specimens

F. GARY STILES[1]

Recent issues of *The Auk* have aired the controversies between museum-oriented ornithologists and avian ecologists on the one hand and the value of sight versus specimen records on the other. Here, I hope to strike a balance between opposing viewpoints, as well as to raise several important but seldom considered points concerning the nature of ornithological specimens themselves.

The relative value of sight versus specimen distributional records might be expressed in terms of the "residual uncertainty"—the extent to which the record is not independently verifiable by other competent ornithologists. For a sight record, one must take the reporter's word on all points (identification, date, locality, etc.): no independent verification is possible. Even when the bird in question is seen by many qualified observers, no permanent documentation is available such that the record can be restudied in the light of new taxonomic arrangements, plumage criteria, etc. Because the identity of a specimen can be checked independently, the residual uncertainty of such a record is much less (although one must still trust the data on the specimen label!). It thus seems hardly scientific to object to collecting specimens or to fail to collect a potentially important specimen should the opportunity arise. Other forms of permanent documentation like photographs and voice recordings share with specimens the property of independent verifiability, but they cannot be measured, dissected, or compared with series of comparable specimens to determine subspecies, and the breeding population that produced a given specimen is sometimes a datum of interest.

A related question involves the value of voucher specimens in regional and community studies. Such specimens are routinely collected by botanists, herpetologists, entomologists, mammalogists (especially when studying small rodents or bats), and many others. I can see no valid scientific reason why vouchers of other than threatened species should not be collected by those working with birds as well, at least in difficult groups like *Empidonax* or in many poorly known tropical groups. Whether or not its practitioners call themselves ornithologists, there is no reason why good avian ecology should not also be dependable ornithology.

One common justification for not collecting is that it is redundant—museums already have a surfeit of specimens. To me this implies ignorance of the current contents and potential usefulness of museum skin collections. Most specimens in major museums were collected before 1920, mainly for studies of alpha taxonomy and broad aspects of distribution. A sizeable proportion was also collected in the period when subspecies taxonomy was at its height, roughly 1920–1950. The labels of these specimens typically give the date (sometimes only the year), locality (sometimes only the country or general region), collector (or expedition), and sex (with no indication of how determined). Such specimens are increasingly inadequate for answering current ecological and physiological questions. I would put at less than 5% the proportion of skins in major museums that carry data on weight, gonad development, skull ossification, fat deposits, soft-part colors, stomach contents, exact habitat and elevation, or ectoparasites. Most or all of these could be taken whenever a specimen is collected and prepared. Specimens with such data could throw much light on breeding and molting seasons in relation to changes in soft part colors, weight, and various environmental parameters; the physiological relations among breeding, molt, and food supply; possible competitive interactions; plumage sequences in relation to gonadal development; and many other basic ecological and physiological questions. The frustration of not a few ecologists trying to work with museum specimens is in reality frustration with the inadequate data they carry. There is thus a real need for specimens with good data in virtually every major museum.

This problem could be a giant step closer to solution if all avian biologists would routinely salvage the dead birds they encounter or receive each year, collect vouchers, prepare all specimens with full data, and place them in major museums where they would be accessible to the greatest possible number of workers. The lamentable lack of contact with, and understanding of, museum collections on the part of many avian biologists would largely disappear if more of them made such contributions. The collections themselves would gain a far broader data base for a wide variety of studies within a very few years. After all, museum collections exist for the benefit of all avian biology; their continued growth and quality should not be entirely dependent upon the efforts of the very small proportion of ornithologists employed by the museums themselves.

General collecting will probably remain the province of the museums themselves, for the most part. The role of the museum should include the training

[1] Escuela de Biología, Universidad de Costa Rica, Ciudad Universitaria, Costa Rica.

of collectors in the taking of full data (and their responsibility to do so) and in educating the general public in the potential scientific value of the dead bird found outside the picture window and of bird specimens in general. There are also situations in which a general collection can (and often should) be made, in which the bird populations will not be affected by the collecting per se. For instance, if a woodland is slated to be turned into a shopping center, the future of its bird populations will hardly be affected by judicious sampling, which among other things will provide future documentation for populations locally extirpated by habitat destruction. Such situations are especially common in the tropics where forest destruction is rampant. Here, it is particularly vital that each specimen be accompanied by full data, for entire populations are often wiped out by chainsaw and fire from one year to the next—only the specimens (if any) remain. More museum curators must become so in fact as well as in name and must take a more active part in the museum's collecting efforts than simply collecting specimens for the revision of genus X or family Y. By actively accumulating not only more but better (in terms of data) specimens, museums could broaden their scientific clientele and provide an important service to a far wider variety of scientists than is now the case. Only museums are in a position to make such a contribution; they should be given every encouragement to do so. *Received 18 January 1982, accepted 5 July 1982.*

Do Darwin's Finches Lay Small Eggs?

D. M. Scott[1] and C. Davison Ankney[1]

We have just finished reading Grant's (1982) thought-provoking paper on egg weights of Darwin's finches. Unfortunately, his calculations contain two serious errors that profoundly affect his interpretation of the data and his speculative conclusions. The first error is the statement that a fringillid, scaled to a 30-g bird, lays an egg weighing 20% of body weight. The second error involves the *y*-intercept of the regression of egg weight on body weight in Darwin's finches.

Grant's statement that a 30-g fringillid lays a 6-g egg perpetuates an error presented by Rahn et al. (1975). They used data summarized by Amadon (1943), believing that Amadon's regression equation related egg weight to body weight. It did not; it related an egg volume index, called "egg value" (LB^2 where L and B are the length and breadth of an egg), to body weight. Amadon stated (p. 224):

> "For the purposes of the present study the volume or weight of eggs is not of interest *per se*. The value of the expression LB^2, which is based directly on the egg measurements, has been used without alteration."

and on p. 225:

> "For the eggs, the average value of the expression LB^2 (called "egg value" in this paper) is given."

We have done some calculations to see how this error affects Grant's conclusion that Darwin's finches have proportionately smaller eggs than those of other fringillids. We used Amadon's LB^2 values to calculate egg weights for the 13 species and subspecies of fringillids (all emberizines) for which Amadon analyzed data. We used Schoenwetter's equation, as modified by Amadon (1943):

$$W = 0.5128LB^2,$$

where W is egg weight in grams. The egg-weight data were used to calculate the power function equation:

$$W = a \cdot B^b,$$

where W is egg weight in grams, a is a constant (the

Table 1. Body weights and proportional egg weights for several finch species.

Species	Body weight (g)	Proportional egg weight (%)
Darwin's finches (Grant 1982)		
Certhidea olivacea	~9	17.4
Geospiza difficilis	~12	17.1
G. conirostris	~25	10.7
G. magnirostris	~35	8.9
Other fringillids (Amadon 1943)		
Spizella passerina	~12	12.8
S. pusilla	~13	12.5
Zonotrichia albicollis	~25	11.0
Pipilo erythrophthalmus	~41	9.5

[1] Ecology and Evolution Group, Department of Zoology, University of Western Ontario, London, Ontario N6A 5B7, Canada.