

## AMERICAN RAPTORES AND THE STUDY OF THEIR ECONOMIC STATUS

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In a series of articles to which reference is given below<sup>1</sup> Major Allan Brooks criticizes the methods of study of hawks and owls that have been used in obtaining the results published by the Biological Survey. In effect this is propaganda against the entire group of hawks and owls, for it tends to weaken faith in the great bulk of what substantial evidence there is regarding the economic value of American Raptores. Undeniably there is profound public prejudice against these birds, and prejudice looks not to details of evidence against it, while accepting indiscriminately anything that confirms it. For this reason every one of the articles cited is a blow leading up to the finishing coup that seems not far off for the birds in question.

Major Brooks says that hawks are one of his chief interests in life and adds that he would not live in a country where he could not see hawks and eagles every day. Yet in the view of a number of fellow ornithologists, he is a most active propagandist against predatory birds and is doing much to hasten the time when these interesting forms will be only a memory.

These remarks are not begging the question, as we would not attempt to stifle constructive criticism of the methods that have been employed in the studies of our predatory birds. The fact is, however, that Major Brooks' articles contain various statements not supported by the facts and censure methods of stomach and pellet analysis and the results derived therefrom in a largely unwarranted way.

Taking up some of these points in order, we note the statement that "We know it [the Marsh Hawk] to be the prime factor in the near-extirmination of one of our finest game birds—the Heath Hen." It may well be asked who knows that? and how? Gross does not say so in his monograph, "The Heath Hen", nor does Forbush in his "Birds of Massachusetts". No, the statement is simply a lamentably loose one which comes as manna to gunners who are fanatical about birds of prey, but which is so surprising from an ornithologist of standing.

In this same article on the Marsh Hawk is quoted the following statement that is a good example of the lack of accuracy in natural history observations. "Mr. Harry Ferguson of New York tells me that out of some score of Marsh Hawks sent to the Biological Survey from his estate on Fisher's Island the great majority were stuffed with Pheasants." The truth: 249 Marsh Hawks from Fisher's Island were examined and 34 (less than one-eighth instead of a majority) of them had eaten pheasants.

"In all our ornithological journals", says Major Brooks, "there is a continuous and united plaint to save our hawks and owls; nothing else counts. The duck disease that is ravaging the waterfowl resorts of our arid west, the crude-oil menace which is daily killing thousands of sea birds, the increase in our large gulls which threatens the very existence of our most interesting sea birds, the alarming decrease of many of our eastern small birds, the pollution of our streams and the diminution of our marshes, all these mean nothing in comparison with the passing of useless or never-enforced laws to protect birds that are better able to protect themselves than any other class of birds living." This quotation can only be classed as a tirade. The

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<sup>1</sup>Should we protect the Marsh Hawk? *American Game*, 17, no. 6, Oct.-Nov., 1928, pp. 88 and 91.  
The Marsh Hawk—"Something Wrong Somewhere", *American Game*, June-July, 1929, p. 67.  
Pellets of Hawks and Owls are Misleading, *Canadian Field-Naturalist*, 43, no. 7, Oct., 1929, pp. 160-161.  
On Pellets of Hawks and Owls, *Condor*, 31, Sept., 1929, pp. 222-223.

phrases "nothing else counts" and "all these mean nothing" are simply untrue and the implications of the paragraph throughout are heedlessly distorted. The duck disease of the west has been an object of research for many years; federal and state investigations have been in active progress in the present and other recent seasons, and the subject is one of the liveliest in the realm of conservation. Oil pollution has received national and international consideration, but regardless of the gravity of the situation, it is not true that this type of pollution "is daily killing thousands of sea birds." "The alarming decrease of many of our eastern small birds" is very debatable; many think and with reason that small birds have never been so abundant in the east as now. Indeed they could have had nothing like their present abundance in the original densely forested condition of the country. Finally can any recent instances whatever be cited of the passing of laws to protect Raptores? The implication is that constant propaganda has resulted in frequent passage of such laws, but such is not the case. Reference to laws to protect birds of prey as "useless and never-enforced" it would seem should be accompanied by a realization of the almost hopeless position these birds have in public opinion. There is no prejudice stronger, save that about snakes, than the universal hatred of hawks and owls. Major Brooks according to his own statements should be the last to fan the flame.

References to the methods employed in the study of the food of hawks and owls are still more sweeping and reckless. The following are examples: "The value of pellets as a record of a raptor's diet is nil." That pellet study "is an entirely untrustworthy method of analysis anyone who has kept a hawk or owl in captivity and studied their feeding habits and reactions must know."

"The fact is that only where fur or other absolutely indigestible matter is swallowed is any pellet thrown up. Feed a hawk or owl a bird that it can pick or strip the skin from and no pellet results. So that only where bird-remains are involved in mammal fur in the captor's stomach is there as a rule any evidence of birds being eaten from pelletal examination.

"In other words, a raptor might be feeding almost entirely on poultry or game birds. Yet its pellets would only show evidence of this if it had eaten a mammal at the same time, while every mammal would surely yield the evidence in a pellet."

The foregoing statements fail to take into consideration the bones. These are indigestible and certainly identifiable. In how great a proportion of cases does a bird of prey kill something so large that it will not swallow some pieces containing bone? The point would seem to be largely settled by the probabilities of the situation. The size of the prey must usually be less than that of the predator so will not furnish any great amount of meat free from bones. On the other hand it is a habit with various raptors to bite or pull off the heads or feet of victims and swallow them first; positive identifications can always be made of these parts.

The thoroughness with which Raptores pluck their prey usually is overdrawn. Short feathers such as those along the edge of the wing are hard to pluck. Even some of the feathers plucked tend to adhere to the bill and to be swallowed with later mouthfuls. They have been observed in the field even to be swallowed in balls by themselves. The feeding of Raptores on clear meat without the taking of any feathers, hair, or bones certainly is the exception rather than the rule; and if any trace of body covering or skeleton is present it gives a clue sufficient in many cases even for close identification.

References to the Marsh Hawk studies carried on near Thomasville, Georgia, during the Cooperative Quail Investigation indicate lack of familiarity of our author

with the methods used, and with the results secured by this Investigation. For instance, in the article entitled "Should We Protect the Marsh Hawk?" is the following: "The foregoing article was returned to me by the editor of one of our prominent bird magazines as being likely to prejudice the public against really beneficial hawks. A comment made was that the investigations of Stoddard in Georgia, on pellets thrown up by Marsh Hawks, disclosed the fact that this hawk did not kill quail to any extent but lived almost exclusively on rodents (cotton rats).

"Anyone who has kept hawks in captivity should know that pellets are no criterion of a raptor's food, only fur or feathers that cannot be plucked make pellets; birds are carefully plucked and no recognizable remains can be found in the pellets as a rule. But every meal from a mammal is followed by the ejection of a pellet." Allusion is made to this study again in the same vein in the June-July, 1929, issue of the same magazine as follows: "The investigator chosen to work on the Bob-white situation in Georgia exonerated that deadly Quail-killer, the Marsh Hawk, *solely* (italics ours) on the evidence of one thousand or so pellets picked up at the hawks' roosting places."

Now the work on the marsh hawk in Georgia was neither superficial nor slipshod, and the word "solely" in the above article gives an entirely erroneous impression, for field observations were depended upon *mainly* in determining the status of hawks present in their relation to quail: the very method that our author apparently favors. Two men were almost constantly afield on typical southeastern quail ground the first four years of the study, ever on the alert for evidences of the quail-predator relationships. The "Report on the Cooperative Quail Investigation: 1925-1926", pp. 37-40, makes preliminary mention of the study of the relation of the marsh hawk to quail on the preserves of the Southeast. The final report of the Investigation, now nearing completion, will contain a complete list of all the birds, mammals, reptiles, and insects identified in one lot of 1098 pellets collected during the winter of 1925-26 and in another lot of 177 collected in the same area in February, 1927. The pellets used in this study were collected from roosting spots on one of the most heavily stocked quail preserves in the Thomasville-Tallahassee region. The spots were carefully cleaned in advance and additional pellets from the one to two dozen hawks present were picked up every few days, so that only fresh pellets of approximately known date were used. This was easy, as the hawks used the same spots night after night, going to roost just at dusk.

While the complete list of creatures eaten must await the full report, it may be of interest to note that 36 *species* of birds were identified as well as 9 species of mammals in the first lot of 1098 pellets. In 138 *instances* bird remains *alone* were recognized in these pellets. Song sparrows occurred most frequently among the birds with 64 occurrences, and cotton rats most frequently among the mammals, for one or more were found in 925 of the pellets. Duck remains were noted in 9 cases and coots in 2; but the presence of these larger birds was not surprising, for waterfowl shooting was heavy on near-by lakes where ducks crippled, or killed and not retrieved, were numerous. The whole pellet study checked closely with what would be expected from field observations, and from stomach examinations previously made by the Biological Survey.

As a further check on this work and to see whether the pellets were a reliable index to the general diet, an adult marsh hawk was trapped and confined in a clean-bottomed cage for a month. Cotton rats, house rats and mice, blue jays, English sparrows, dead bob-whites, and other animals, were fed, and the feeding of the hawk watched from concealment, the resulting pellets being gathered daily.

While birds were picked in part and mammals sometimes partly skinned, the work was not clean and in all cases liberal amounts of feathers, fur, bones, and other pellet-forming materials were swallowed. Feeding was so regulated that either birds or mammals, or both together, were fed after starving the bird a day, or two, so that the time required to form the pellets, and the characteristic types of pellets with different foods, could be ascertained. It was noted that mammal pellets were as a rule somewhat larger and less fragile than those composed entirely of bird remains, a fact that was considered in this food study, and one that should always be taken into consideration.

The fact that so many forms of life were *specifically* identified and so many pellets *with bird remains only* were noted, together with the experiments made, make us believe that this study gives a reasonably accurate picture of the relation of the marsh hawk to other wild life in this representative part of the Southeast during the only season of the year it is present, the winter months.

The raptorial birds have been favorites of one of the present writers (Stoddard) since boyhood, in the field rather than in the laboratory, and he believes that the pellets ejected by several species of the smaller owls, as well as by the marsh hawk and probably the duck hawk, will prove to be of very great value in all studies of their food habits that may be undertaken. Those of the Cooper, sharp-shinned, broad-winged, red-tail, red-shouldered and perhaps others are as a rule scattered and much less available for such studies. It is obvious that pellets from an *uncertain* source should *never* be depended upon.

Observations made on the feeding habits of the snowy owl and bald eagle do not necessarily furnish a clue as to the value of pellet records of other species, and each species should be studied and judged separately, as is the practice in the Biological Survey. The skilled economic ornithologist ordinarily takes all such matters into consideration when making a study of the economic position of any species. It would be a revelation to the uninitiated to see the technique employed in identifying the bits of fur, feather, bone, etc., found in pellets examined in the Division of Food Habits Research of the Biological Survey, or to go over the tremendously extensive reference collections used for comparison in these researches.

That "the examination of the food of raptors in America has been left almost entirely to the activities of laboratory experts" is another unfounded statement, as the individual who has studied the food of hawks and owls more than anyone else certainly has had a life-long and varied field experience, and all so-called "laboratory experts" of the Biological Survey have frequent assignments of field work. In fact the policy of the Survey is to have a man do both field and laboratory work so far as possible on every problem he investigates.

Major Brooks notes that "every hawk that I ever collect carries on its label a record of its stomach contents." He seems to think these examinations of some value, but he should realize they are crude compared to what can be accomplished in the laboratory. Field observers may report as unrepresented an item of food that they believe they have actually seen the bird take, while a laboratory worker by washing, decanting, filtering, and settling processes may bring to light an odd feather or bit of bone that may tell the story.

Experience from the beginning in the Biological Survey has pointed almost invariably to the greater reliability of stomach examination as compared with field observations. How many, many, times there have been received the stomachs of birds reported as feeding on this or that specific item, cherries, corn, ants, or what not, only to have them fail to yield any trace whatever of it. Are we to have

the argument of inadequacy of stomach examination invoked in all these cases? To do so would be ridiculous, but scarcely more so than the attempt to make out that the birds of prey constitute a special case that can not be studied by the usual methods. If the methods are good for ordinary birds, and this has never been challenged, they must be good for the highly insectivorous burrowing and screech owls and for the sparrow hawk. If good for these, why not also for the species which while insectivorous to a considerable degree are more inclined to vertebrate subsistence, such as the Swainson, broad-winged, and red-shouldered hawks; and if for these why not for the typical bird and mammal eaters? Where can a line be drawn in so graduated a series that will separate species that can be adequately studied by a certain method from those that can not? The impracticability of drawing such a line is proof in itself that the allegation of inadequate methods is unfounded. The whole basis of economic ornithology in this country is the method attacked, one that is just as valid for predatory as for other birds. Condemning it can have no other result than undermining the structure of bird protection, and this structure up to the present has been particularly weak as concerns hawks and owls. They have had practically no protection.

Major Brooks says "My whole effort is to try and protect our beneficial hawks and finer raptores . . . yet I am assailed on all sides as a hawk hater." We agree that he does have the reputation of being a hawk hater, even though it seems incompatible with his frequent use of these birds as subjects for some of the most striking and beautiful of his paintings. We may suggest, in view of his published utterances, some of which are reviewed here, that he should not be surprised at the reputation to which he refers. In a field where half truths are so prevalent, and his articles as we have shown are not free from them, and where they are ordinarily accepted as the whole truth, it is but adding fuel to the flame to attempt niceties of argument. Not enough is known of the subject by anyone to make this type of debate profitable, and while the quibbling goes on the Raptores are being steadily exterminated. They are becoming rare enough throughout most of the United States already to need the special treatment we should have available when required for the protection of any species of wild life actually threatend with extermination. Regrettably, it is probable that before we have attained that evidence of civilization, the hawks and owls will be too far gone to profit by it.

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