

Dec. 20, 1930

Mr. John B. May  
- Director, Division of Ornithology  
Department of Agriculture  
State House, Boston, Mass.

Dear Mr. May:

I am sending, as per your request, a resume of my most reliable data on food habits of hawks. This was compiled rather hurriedly from my files, and is made up of original data gathered from July 1, 1929, to approximately November 15, 1930. All studies were conducted in south-central Wisconsin, mostly in Dane, Sauk, and Columbia counties, and incidentally, in areas of my heaviest quail populations.

Discussion by species follows.

Broadwinged Hawk. Material from one nest:

Meadowmouse ( <i>Microtus</i> )	1
Short-tailed shrew ( <i>Blarina</i> )	4
Chipmunk ( <i>Tamias</i> )	1
Red-winged blackbird	1
Garter snake	1
Large number of unidentified insects	

American Rough-legged Hawk. Material from 3 stomachs:

Meadow mice	4
Insects, mainly crickets	

Sparrow Hawk. Material from one nest and from field observations:

Juvenile striped ground-squirrels, <u><i>Citellus tridecemlineatus</i></u> , (mouse size)	10
English sparrows	5
Meadowmice ( <i>Microtus</i> )	4
<u><i>Peromyscus maniculatus bairdi</i></u>	7
Great number of grasshoppers, June beetles, etc.	

Cooper's Hawk. Prey brought to one nest, material squeezed by myself from gullets of nestlings. Also some Cooper's hawk kills recorded from field observations.

Flickers	4
Mourning dove	1
Robin	1
Quail	1
Part-grown domestic chicken	1
English sparrow	1
Small birds not yet identified	7
Striped ground-squirrels	3

Marsh Hawk. Quantitative data derived mainly from field observations, in which the prey was actually retrieved from the adult hawks or forced from the gullets of juveniles in nests.

Striped ground-squirrels	54
Franklin's ground-squirrel	1
Chipmunk	1
Meadowmice	104
Shrews (Blarina)	2
Frogs	10
Unidentified snakes	2
Very small cottontails (taken principally from a wild life refuge on which cottontails tend to become overly abundant)	15
Meadowlarks	5
Red-winged blackbirds	2
Cowbird	1
Small unidentified finch-like birds	7

I consider the above items in the proportion listed an accurate cross-section of the marsh hawk's food habits during the summer months (1929-30) in the Madison, Wis., area. I have little material for other seasons or from other localities. Mention might be made of references in my notes to kills by marsh hawks of 3 quail (by one hawk in two days), 1 juvenile ringnecked pheasant, a couple part-grown domestic chickens, and a number of small bird species, but such are isolated instances and do not belong among data intended to illustrate what might be termed the regular day-to-day diet of this raptor.

It is easy, for example, to find feathers of avian prey about some marsh hawk feeding post, but, bearing in mind that feathers may persist from a day to a month or so, how are we to determine the proportion of small mammal prey likewise eaten during the same period?

A marsh hawk might eat several mice on a single post and yet leave sign much less apparent than the few feathers that almost invariably mark the end of a bird victim. Hence, I make particular effort to differentiate between quantitative data, which show the approximate ratio of the different species of prey, and qualitative data which show only the species without regard to the frequency of their occurrence.

Red-tailed Hawk. Miscellaneous data (quantitative and qualitative mixed) from nests, gullets of juveniles, stomachs, and field observations. These data do not constitute an exact cross-section of the Red-tail's food habits in that the proportion of mice and ground-squirrels runs much higher, according to field observations and gullet content analysis. It is plain that juveniles in a nest have less trouble to clean up completely a mouse or a ground-squirrel than they would an animal the size of a rabbit. Consequently a mere count of items visible in a nest lays disproportionate stress upon that prey which is large, conspicuous, or possessed of heavy bones or feathers.

Cottontails	21
Ground-squirrels	50
Fox and grey squirrels	5
Meadow mice	45
<u>Peromyscus maniculatus</u>	
<u>bairdi</u>	2
Snakes	4
Norway rat	1
Florida gallinule	1
Domestic pigeon	1
Domestic chickens	8
(all sizes)	
Quail (two of which were	3
starving birds	
Small birds (juveniles)	4

It might be remarked that about 20 of the 50 ground-squirrels and 3 of the 5 arboreal squirrels were badly afflicted with a skin disease which may or may not have reduced the animal's vitality to the degree that they were more readily caught. My field observations all indicate that the Red-tail is especially apt to pick up game that is sick or in poor condition from some cause--probably for the simple reason that game like quail, etc., is, when in good shape, altogether too fast for him. This suggests a possibility that the Red-tail, despite the disfavor with which he is viewed by the poultryman, might be of extreme value to our wild life in culling out the unfit. Indeed, it is my opinion, as yet unsubstantiated by definite facts, that the Red-tail might prove the most effective insurance against the spread of contagious game diseases that we have.

Since you mentioned hawks only in your letter, I am not inclosing any data on owls. However, should you want a resume of my owl

food habits results similar to the one on the hawks, I would be glad to accomodate you in like manner.

You are permitted to use the material that I am forwarding, in your proposed Audubon Society publication on the hawks of North America, on condition that you give full credit to the Wisconsin Quail Investigation, which I represent. I would appreciate it also if you take care to use my summaries in a way that they will detract least from an article on food habits of birds of prey which I expect to publish next fall. Perhaps you might find it expedient to condense my listed data a bit more than I have done.

At any rate, please acquaint me with reasonable promptness as to what you do with my data, how much you use, if any, and anything else concerning the same that I ought to know.

Yours sincerely,

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& University of Wisconsin