

FOOD HABITS OF BIRDS IN AGUSAN DEL NORTE: A PRELIMINARY REPORT

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As early as the studies made by Newstead (1908) on "The Food of Some British Birds" and Macatees' (1912) "Methods of Estimating the Contents of Birds Stomachs," many authors have been recommending various methods of assessing the food of birds. An astonishing variety of techniques have been presented although no single method, so far, has been adopted to fit every research situation considering the time, place and material constraints.

Several publications have already been made regarding the food habits of some Philippine birds such as those undertaken by Delacour and Mayr (1946), Ripley and Rabor (1958), Rand and Rabor (1960), Gonzales et al. (1968), Alviola et al. (1973) and Rabor (1977). These studies, like the present one dealt mainly on the qualitative aspect of the food habits of birds. However, an insight to their quantitative occurrence is also presented here.

Materials and Methods

The birds were caught on various times of the day by means of mist nets or air rifles. They were then identified, weighed, skinned and their gastro-intestinal tract were preserved in 10% formalin after proper labelling. These were then transported to the Natural Science Museum workroom for dissection and analysis of stomach contents. A standard stereoscope with a magnification of 10 x 150 x was used in the gut analysis starting from the buccal

cavity to the cloaca. Specific identification of contents were limited to those which were found in the buccal cavity, esophagus and crop or those which have escaped digestion from the gizzard to the cloaca. Completely digested food items were listed as such.

Partially digested food items, however, were described as to their color, texture, shape and relative sizes. Identifiable insects were classified up to their order level only. Numerical occurrences of food items were listed down following the method first used by Newstead (1908) and later on by various authors.

Results and Discussions

Because of technical difficulties, only 70 out of the 84 birds collected were examined for their stomach contents. The qualitative and quantitative breakdown of food items are given in Table 1. This Table gives us by no means a definite conclusion regarding the food materials eaten predominantly by each species of birds. Nevertheless, it gives us an idea of the kind of food materials and the number taken in by each bird caught within the vicinity of Mt. Hilong-hilong during the entire duration of the expedition. The plant contents of the stomachs are described as they are found in their preserved state and allowance should be made by the reader regarding any possible discoloration and shrinkage brought about by the formalin preservative used. Moreover, the sizes of seeds are based on chosen standards (refer to Table 1) and are uniform throughout. Insect contents, on the other hand, are classified whenever possible to their order level following Hegner and Engemann (1968) and unidentifiable insects were listed as such.

In Table 2, birds are listed according to their stomach contents (i.e., plants, insects or both). Seven of the specimens analyzed had unidentifiable, completely digested food materials. Again, no attempt is being made here to categorize the birds according to the kind of food item they would normally consume (i.e., carnivorous, if they take in animal food; herbivorous, if they eat plant food; and omnivorous, if they take both animal and plant

food). The reasons for this are, firstly, the inadequacy of sample size except in the case of *Hypsipetes Philippinus* (16 samples) where the analysis showed an omnivorous tendency with a predominantly plant intake; and probably for *Stachyris plateni* (6 samples) and *Zosterops everetti* (5 samples) where the analysis showed an herbivorous tendency.

Secondly, the seasonal variation is not taken into account. It is very possible, as some authors like Evershed (1918), Middleton and Chitty (1937) have long since known, that the food intake of birds is dependent on the availability of food materials which fluctuates on various times of the year. Thus, in times when wild fruits and berries are most abundant, omnivorous birds may exhibit a completely plant diet and likewise in times when insects are proliferating especially during summer, the same bird species may exhibit a carnivorous tendency.

And lastly, we must also consider the geographical variation. Two areas far apart may be ecologically similar, and the confines of a single parish may include very diverse habitats (White, 1789). In past studies, Middleton and Chitty (1937), Campbell (1946), and Baldwin (1947) have correlated their findings with the feeding localities of the birds. That is, the food habits of birds are also dependent on the availability of food materials on a certain locality. Thus, an omnivorous bird may exhibit a carnivorous tendency in one place where insects are abounding and the same bird species may show an herbivorous diet on another place where wild fruits and berries are abundant.

This report therefore serves as a preliminary study on the food habits of several Philippine Birds and further collections made on various localities is encouraged in order to yield a more adequate sample size so that conclusions can justifiably be made.

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Table I — Analysis of Stomach Contents

<i>Birds species</i>	Weight In Grams	Site Found	Food Item	Number
1. <i>Rhinomyias Ruficauda</i>	20.07	gizzard gizzard and intestine	hymenopteran	1
			small* round black corrugated seeds	40
			other unidentifiable insects	—
	18.25	gizzard and intestine	small round black corrugated seed	19
			orthopteran	1
			other unidentifiable insects	—

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2. <i>Chrysocolaptes Lucidus</i>	145.95	Gizzard and intestine	unidentifiable insects	—
	89.00	intestines	insect larvae	5
3. <i>Hypsipetes philippinus</i>	41.2	stomach intestines	yellow fruit mesocarp	—
			small yellow seeds	10
			fruit fibers	—
			insect larvae	1
	40.44	gizzard and intestines	small yellow seeds	33
			small red round seeds	41
			red fruit ectocarp	—
			black fruit ectocarp	—
			yellow fruit ectocarp	—
			fruit fibers	—
	33.55	gizzard and intestine	unidentifiable completely digested food	—
	33.65	gizzard and intestines	fruit fibers	—
unidentifiable, completely digested food			—	
47.32	gizzard	round black seeds	11	
		yellow fruit mesocarp	—	
		brown plant fibers	—	
—	gizzard and intestines	small yellow seeds	13	
		small ribbed, brown spindle shaped seed	26	
		—	—	
31.90	intestines	red fruit ectocarp	—	
		unidentifiable, completely digested food	—	
36.75	gizzard and intestines	round black corrugated seeds	21	
36.02	intestines	unidentifiable completely digested food materials	—	

 *approximately 1-2 mm in diameter

4.	<i>Rhabdomis mysticales</i>	29.26	gizzard intestines	small round red seeds	34
				spined, disk-shaped yellow seed	1
		28.01	gizzard	small, ribbed spindle shaped seed	21
5.	<i>Phapitreron leucotis</i>	119.56	gizzard	black and white pebbles	9
				small round black corrugated seeds	9
				yellow fruit mesocarp	—
	<i>brevirostris</i>		gizzard and intestine intestine	small yellow seeds fruit fibers insect larvae	41 — 3
6.	<i>Phapitreron amethystina mindanensis</i>	129.55	crop	white fruit mesocarp	—
			crop, gizzard and intestine	small yellow seeds	33
			gizzard and intestine	fruit fiber	—
			gizzard	black and white pebbles small black round corrugated seeds	10 6
			intestines	hymenopteran	1
7.	<i>Orthotomus sepium</i>	9.05	gizzard and intestines	coleopterans	5
8.	<i>Dicaeum hypoleucum</i>	8.01	gizzard intestines	unidentifiable insects araneidan	— 1
9.	<i>Dicaeum trigonostigma</i>	7.07	gizzard	unidentifiable insects	—
		7.92	gizzard and intestines	unidentifiable insects	—

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10.	<i>Arachnothem clarae</i>	26.90	intestines	unidentifiable completely digested food	—
11.	<i>Dendrocopus maculatus</i>	28.75	gizzard and intestine intestines	unidentifiable insects insect larvae	— 1
12.	<i>Rhipidura superciliaris</i>	16.2	gizzard	medium-sized ovoid white seeds unidentifiable insects	11 —
		15.34	gizzard	coleopteran orthopteran unidentifiable insects	3 2 —
		14.82	gizzard and intestines	coleopteran unidentifiable insects	2 —
		14.82	gizzard and intestines	coleopteran unidentifiable insects	2 —
		15.62	gizzard and intestines	orthopteran small yellow seeds	1 4
13.	<i>Irena cyanogaster</i>	82.60	esophagus, gizzard and intestines gizzard and intestines intestines	small yellow seeds yellow fruit mesocarp large*, brown, ovoid seeds medium-sized angular red seeds red fruit ectocarp white fruit mesocarp fruit fibers	35 1 9 6 — — —
		77.05	gizzard and intestines	small yellow seeds yellow fruit ectocarp fruit fibers	66 — —
		76.85	gizzard intestines	yellow fruit mesocarp big, brownish ovoid	—

			seeds	10	
			white fruit mesocarp	—	
			fruit fibers	—	
14.	<i>Hemiprocne comata</i>	23.01	gizzard and intestines	odonatan unidentifiable insect	1 —
15.	<i>Stachyris plateni</i>	10.07	gizzard and intestines	medium-sized angular red seeds small black round corrugated seeds maroon fruit ectocarp hard fruit ectocarp	25 6 — —
		10.05	esophagus, small, ribbed, spindle gizzard and shaped intestines gizzards and intestines	small round black corrugated seeds yellow fruit mesocarp	41 8 —
		10.58	gizzard and intestines	small round black seeds brown fruit ectocarp fruit fibers	22 — —
		9.63	gizzard and intestine	small, ribbed, brown spindle shaped seeds small round black corrugated seeds medium-sized angular red seeds brown fruit ectocarp fruit fibers	17 8 3 — —
		9.7	gizzard and intestines	red fruit ectocarp small yellow seeds small round black, corrugated seeds	— 25 15

*approximately 3-6 mm

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	10.14	gizzard and intestines	small round black corrugated seeds medium sized angular red seeds red fruit ectocarp	20 7 —
16. <i>Ptilocicbla mindanensis</i>	23.06	gizzard intestines	orthopteran coleopteran unidentifiable insects	4 1 —
	32.06	gizzard and intestines	orthopteran coleopteran odonatan unidentifiable insects	4 2 1 —
17. <i>Phylloscopus olivaceus</i>	11.46	gizzard	orthopteran unidentifiable insects	1 —
18. <i>Nectarinia sperata</i>	7.92	gizzard	unidentifiable insects	—
19. <i>Centropus melanops</i>	198.86	gizzard	orthopteran coleopteran	2 2
20. <i>Pachycephala philippinensis</i>	21.82	gizzard intestines	coleopteran unidentifiable insects	1 —
21. <i>Macronous striaticeps</i>	21.02	gizzard and intestines	small round, black, corrugated seeds medium sized angular red seeds red fruit ectocarp	25 18 —
	20.00	intestines	orthopteran	1
22. <i>Lonchura leucogastra</i>	9.5	gizzard intestines	black and white pebbles fruit fibers	20 —
23. <i>Hypothymis azurea</i>		intestines	unidentifiable	

			—	completely digested food	—
24. <i>Aethopyga pulcherrima</i>	6.7	intestines	q	unidentifiable completely digested food	—
25. <i>Zosterops everetti</i>	11.52	gizzard intestines		small round, black corrugated seeds	26
				small, ribbed brown spindle shaped seeds	18
				red fruit ectocarp	—
				fruit fibers	—
	11.37	gizzard intestines		small, ribbed brown spindle shaped brown seeds	26
				white fruit mesocarp	—
				fruit fibers	—
		intestines		small round black corrugated seeds	2
	11.45	gizzard and intestines		small, ribbed, spindle shaped brown seeds	33
				fruit fibers	—
	11.9	gizzard and intestines		small, ribbed, brown spindle shaped seeds	55
				white fruit mesocarp	—
				fruit fibers	—
	11.60	gizzard and intestines		small red membrane-covered black corrugated seeds	7
				unidentifiable completely digested food	—
26. <i>Pycnonotus goiavier</i>	25.26	intestines		fruit fibers	—
27. <i>Pycnonotus urostictus</i>	23.92	gizzard		small yellow seeds	19
				unidentifiable insect	—
				fruit fibers	—
	26.15	gizzard intestines		round black corrugated seeds	18
	22.36	gizzard		coleopteran	3

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			orthopteran	1
	33.37	gizzard and intestines	small, round black corrugated seeds	15
			medium sized angular red seeds	8 8
			small yellow seeds	11
			hymemopteran	1
			yellow fruit mesocarp	—
			unidentifiable insects	—
28. <i>Harpactes ardens</i>	100.07	gizzard	small yellow seeds	69
			medium sized flack shaped seeds	11
			unidentifiable insects	—
			yellow fruit mesocarp	—
			fruit fibers	—
29. <i>Muscicapa</i> sp.	11.43	esophagus gizzard	hymenopteran	1
			coleopteran	3
			orthopteran	2
30. <i>Sitta frontalis</i>	15.58	gizzard	coleopteran	3
			orthopteran	2
			hymenopteran	1

Table 2 : NUMBER OF BIRDS According to their Stomach Contents

SPECIES	PLANTS (seeds, fruit fibers fruit peelings etc.		ANIMALS (insects, insect larvae etc.	PLANTS and ANIMALS	UNIDENTIFIABLE FOOD ITEMS
1. <i>Rhinomyias ruficauda</i>	—	—	—	2	—
2. <i>Chrysocolaptes lucidus</i>	—	2	—	—	—
3. <i>Hypsipetes philippinus</i>	10	—	—	2	4
4. <i>Rhabdornis mysticiles</i>	2	—	—	—	—
5. <i>Phapitreron leucotis brevirostris</i>	—	—	—	1	—
6. <i>Phapitreron amethystina mindanaoensis</i>	—	—	—	1	—
7. <i>Orthotomus sepium</i>	—	—	1	—	—
8. <i>Dicaeum hypooleucum</i>	—	—	2	—	—

9. <i>Dicaeum trigonosigma</i>	-	2	-	-
10. <i>Arachnothera clarae</i>	-	2	-	1
11. <i>Dendrocopus maculatus</i>	-	1	-	-
12. <i>Rhipidura supercilians</i>	-	2	2	-
13. <i>Irena cyanogaster</i>	3	-	-	-
14. <i>Hemiprocne comata</i>	-	2	-	-
15. <i>Stachyris plateni</i>	6	-	-	-
16. <i>Ptilocichla mindanensis</i>	-	2	-	-
17. <i>Phylloscopus olivaceus</i>	-	1	-	-
18. <i>Nectarinia sperata</i>	-	1	-	-
19. <i>Centropus melanops</i>	-	1	-	-

20. <i>Pachycephala philippinensis</i>	1	1	1	1
21. <i>Macronous striaticeps</i>	1	1	1	1
22. <i>Lonchura leucogastra</i>	1	1	1	1
23. <i>Hypothymis æurea</i>	1	1	1	1
24. <i>Actbopyga pulcherrima</i>	1	1	1	1
25. <i>Zosterops everetti</i>	5	5	5	5
26. <i>Pycnonotus</i>	1	2	1	1
27. <i>Pycnonotus urosictus</i>	1	2	1	1
28. <i>Harpactes goiavier</i>	1	1	1	1
29. <i>Muscicapa sp.</i>	1	1	1	1
30. <i>Sitta frontalis</i>	1	1	1	1
Total	30	11	22	7