Food Habits of the White-Throated Slimy Salamander in Central Texas

GEORGE V. OLIVER, JR., Senior, Ponca City High School, Ponca City

(Mary Metscher, Teacher)

Natural History and Range—Since it was described by Grobman (1944), practically nothing has been written about the White-throated slimy salamander, *Plethodon glutinosus albagula* Grobman. Little is known about its natural history and apparently nothing has been written concerning its food habits.

It is restricted to the Balcones Escarpment region of Central Texas, which marks the boundary between the Edwards Plateau and the West Gulf Coast Plain, inhabiting the wooded canyons and limestone caves which are abundant there. The salamander is found under rocks and logs in moist shaded situations. In the collection of this animal on the Lowe Ranch, Travis County, numerous individuals were found along the south side of a small canyon running east and west and none along the north side. This preference for the south wall may be correlated with the degree of shading.

Methods and Materials—Thirty-three salamanders were used in this investigation, some from my personal collection, others from a museum collection and two private collections of others. Specimens from four localities were examined, nine from Fern Bank Springs, Hays County; two from Cherry Springs, Bexar Co.; two from Austin, Travis Co.; and 20 from Pedernales River, Lowe Ranch, Travis Co. The left side of each preserved salamander was cut open so that the stomach was exposed.

Each stomach was opened and its contents removed. These were placed in vials of 70% alcohol and later examined with a hand lens or a dissecting microscope. Data on stomach contents were recorded. The mouth of each specimen was examined for unswallowed food and the intestines for undigested chitinous remains of prey.

Identified food items are shown in Table I. Column *A* lists by taxa the numbers of food items identified. Column *B* indicates the number of individual specimens from which the food items in Column *A* were removed. Column *C* shows the frequency of occurrence of the food items in the taxon in per cent of total number of food items identified (entry from Column *A*/total of Column *A*). Column *D* shows the frequency of occurrence of the taxon in individual salamanders in per cent of the total number of salamanders examined (entry from Column *B*/33).

Discussion—The per cent of total number of items is an indication of the abundance of a food taxon in the diet of the individual salamander. The per cent of frequency shows the frequency with which a given food was eaten by all of the salamanders studied. Whereas per cent of total

TABLE I. INCIDENCE AND FREQUENCY OF FOOD ITEMS TAKEN FROM 33 ADULT *P. g. albagula*.

Taxa	*A*	*B*	*C*	*D*
Mollusca				
Gastropoda				
Stylommatophora	1	1	0.57	3.03
Zonitidae	1	1	0.57	3.03
Pupillidae	1	1	0.57	3.03
Endodontidae				
Helicodiscus sp.	1	1	0.57	3.03
Arthropoda				
Crustacea				
Isopoda	21	10	11.93	30.30
Arachnida				
Araneida	7	5	3.98	15.15
Acarina	1	1	0.57	3.03
Scorpionida	1	1	0.57	3.03
Diplopoda	3	3	1.70	9.09
Chilopoda	2	2	1.14	6.06
Insecta				
Diptera (larvae)	5	4	2.84	12.12
Blephariceratidae (larva)	1	1	0.57	3.03
Stratiomyidae (larva)	1	1	0.57	3.03
Lepidoptera (larvae)	3	3	1.70	9.09
Coleoptera (adults)	3	3	1.70	9.09
(larvae)	3	3	1.70	9.09
Elateridae (larva)	1	1	0.57	3.03
Pselaphidae	1	1	0.57	3.03
Staphylinidae	3	2	1.70	6.06
Scydmaenidae	1	1	0.57	3.03
Carabidae	1	1	0.57	3.03
Omophronidae	1	1	0.57	3.03
Hymenoptera				
Formicidae	112	13	63.64	39.39
Chordata				
Amphibia				
Urodela				
Plethodontidae				
Plethodon glutinosus	1	1	0.57	3.03

number of items (Column *C*) may indicate the abundance of a given food in the habitat, the per cent of frequency (Column *D*) shows more nearly the preference of the species for a certain food. To determine definite preference, a collection of all food items *available* in the habitat must be compared with the stomach content data.

Data were arranged by locality and by season to determine whether there were any regularities. There was little variation in types or frequencies of foods eaten at different localities. Seasonal variation in diet would be expected, simply because of variations in seasonal abundance of prey; however, no correlation between season and food type was found. This does not mean that there is no seasonal variation in habits. The size of the food sample was probably too small for such seasonal variation to be apparent.

P. g. albagula appears to be a rather opportunistic feeder, eating a wide variety of small invertebrates. Insects (70%), especially small beetles and ants, and sowbugs (30%) were the primary food items in the diet. Spiders (15%), snails (12%), millipedes (9%), and centipedes (6%) were less abundant. Most of the kinds of prey are those which are found in the same situations as *P. g. albagula*. The snails were all terrestrial, woodland forms, as were most of the arthropods.

The Blephariceratidae (netwinged midges) larvae live in swift-flowing streams. The Stratiomyidae (soldier flies) larvae are also aquatic. The Omophronidae (round sand beetles) are found in holes in moist soil along streams. The situations which these insects inhabit tend to suggest that the terrestrial but lungless *P. g. albagula* may forage in or near streams.

Ants formed a large part of the diet. Several kinds of beetles found in the stomachs were perhaps eaten along with the ants. Both the Scydmaenidae (ant-like stone beetles) and the Pselaphidae (ant-loving stone beetles) are commonly associated with ants and occupy ant nests. Both families of beetles are small and ant-like in appearance.

One stomach contained unidentifiable material. Soil was found in three stomachs and plant material was found in three. The soil and plant material were probably accidentally ingested along with the prey; in fact, in one case, the head of an ant was firmly attached to a piece of leaf. There was one case of cannibalism, a small *P. g. albagula* eaten by a large specimen.

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