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## Food Habits of the Ouachita Dusky Salamander, *Desmognathus brimleyorum* (Caudata: Plethodontidae), in Arkansas

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*Desmognathus* is part of the family Plethodontidae of lungless salamanders. It is a large, multi-specific genus endemic to the eastern and southcentral United States and Canada. Members are characterized by a rigid lower jaw and a body that is usually more robust than slender. As adults they are often found in or very near permanent streams and fish-less ponds (Behler and King, 1992). The genus is represented in Arkansas by two species: *D. fuscus*, the most widespread member in North America, and *D. brimleyorum*, found only in the streams of southwestern Arkansas and southeastern Oklahoma (Conant and Collins, 1991). The food habits of several species of *Desmognathus* have been studied (Barbour and Lancaster, 1946; Hairston, 1949; Donovan and Folkerts, 1972; Sites, 1978; Keen, 1979; Jones, 1981; Kleeberger, 1982; Davic, 1991; Camp, 1997). However, nothing to our knowledge is known about the diet of *D. brimleyorum*.

Fifty-two adult Ouachita dusky salamanders (*D. brimleyorum*) were collected by hand from small streams on Rich Mountain in Polk County, Arkansas, in the spring and summer of 1980. Specimens were placed in plastic bags on ice following capture and processed within 24 hr in the laboratory at Arkansas State University (ASU). Salamanders were killed in a dilute chloretone solution and fixed in 10% formalin for 48 hr prior to examination. Stomachs were removed and stored in individual vials containing 70% ethanol. Food items were removed, counted, and identified using a binocular dissecting microscope and dichotomous keys provided by Merritt and Cummins (1984) and Borror et al. (1989). A food item consisted of a whole specimen or parts representing a whole specimen.

*Desmognathus brimleyorum* feeds predominately on arthropods (Table 1). Although *D. brimleyorum* is strongly aquatic as an adult (Conant and Collins, 1991), most of the food items (89%) were terrestrial in origin. The most commonly encountered food items were adult terrestrial beetles (Coleoptera), ants (Formicidae), and adult flies (Diptera). A similar study of adult *D. fuscus* from Tennessee revealed that species' diet to be as much as 85% terrestrial (Sites, 1978). Barbour and Lancaster (1946) and Bennett and Bellis (1972) reported similar findings from their food habits studies of *D. fuscus*. Davic (1991) reported a significant ontogenetic shift in the diet of the closely related blackbelly salamander, *D. quadramaculatus*, in North Carolina. The data indicated an abrupt shift from aquatic to aerial prey associated with meta-

Table 1. Stomach Contents of *Desmognathus brimleyorum*  
A=Adult, L=Larva, T=Terrestrial, Aq.=Aquatic

Taxa	% Occurrence in Stomachs N=52	Total Number of Individuals
Coleoptera (A)(T)	17.30	14
Coleoptera (L) (T=6, Aq.=2)	5.76	8
Hymenoptera Formicidae	17.30	9
Diptera (A) Chironomidae (L)	15.38 1.92	11 1
Orthoptera Gryllacrididae	9.60	5
Isopoda	7.69	4
Lepidoptera (A)	3.84	3
Ephemeroptera (L)	3.84	2
Oligochaeta	3.84	3
Dermaptera	1.92	1
Trichoptera (A)	1.92	1
Acari	1.92	1
Turbellaria	1.92	1
Ictaluridae <i>Noturus sp.</i>	1.92	1
Plethodontidae <i>Desmognathus sp.</i>	1.92	1
Nematoda (Parasitic)	28.84	38

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morphosis. It suggests that the aquatic items in the diet of *D. brimleyorum* may be consumed by younger aged adults which are less likely to leave the stream to forage. Further study is needed to better understand this potential behavior in *D. brimleyorum*. Future research should also focus on food preference, seasonal variation, and interspecific competition.

In addition, nematodes were present in 15 of the 52 (28.84%) stomachs examined. A total of 38 individuals were found. McAllister et al. (1995) did an extensive study of the parasites of *D. brimleyorum* and found four species of parasitic nematodes in the stomach or intestine of 41 specimens examined.

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#### Literature Cited

- Barbour, R. W.** and **L. Y. Lancaster.** 1946. Food habits of *Desmognathus fuscus* in Kentucky. *Copeia*, 1946: 48-49.
- Behler, J.** and **F. W. King.** 1992. The Audubon Society field guide to North American reptiles and amphibians. Knopf Publ., New York, 356 pp.
- Bennett, B. M.** and **E. D. Bellis.** 1972. Comparative food habits of *Desmognathus f. fuscus* and *Desmognathus o. ochrophaeus* along a Pennsylvania stream. *Proc. Pennsylvania Acad. Sci.* 46:57-58.
- Borror, D. J., C. A. Triplehorn,** and **N. F. Johnson.** 1989. An introduction to the study of insects. Saunders College Publ., Philadelphia, 875 pp.
- Camp, C. D.** 1997. The status of the black-bellied salamander (*Desmognathus quadramaculatus*) as a predator of heterospecific salamanders in Appalachian streams. *J. Herpetol.* 31:616-619.
- Conant, R.** and **J. T. Collins.** 1991. A field guide to reptiles and amphibians of eastern and central North America. Houghton Mifflin Co., Boston, 3rd ed., 450 pp.
- Davic, R. V.** 1991. Ontogenetic shift in the diet of *Desmognathus quadramaculatus*. *J. Herpetol.* 25:108-111.
- Donovan, L. A.** and **G. W. Folkerts.** 1972. Foods of the seepage salamander, *Desmognathus aeneus*. *Herpetologica* 28:35-37.
- Hairston, N. G., Sr.** 1949. The local distribution and ecology of the plethodontid salamanders of the southern Appalachians. *Ecol. Monog.*, 19:49-73.
- Jones, R. L.** 1981. Distribution and ecology of the seepage salamander *Desmognathus aeneus* Brown and Bishop (Amphibia: Plethodontidae), in Tennessee. *Brimleyana* 7:95-100.
- Keen, W. H.** 1979. Feeding and activity patterns in the salamander *Desmognathus ochrophaeus* (Urodela: Plethodontidae). *J. Herpetol.* 13:461-467.
- Kleeberger, S. R.** 1982. An empirical analysis of competition in the salamanders *Desmognathus monticola* and *D. quadramaculatus*. Unpublished Ph.D. Diss., Kent State University, Kent, Ohio. 157 pp.
- Merritt, R. W.** and **K. W. Cummins.** 1984. An introduction to the aquatic insects of North America 2nd Ed. Kendall-Hunt Publ. Co., Dubuque, IA. 441 pp.
- McAllister, C. T., C. R. Bursey, S. J. Upton, S. E. Trauth,** and **D. B. Conn.** 1995. Parasites of *Desmognathus brimleyorum* (Caudata: Plethodontidae) from the Ouachita Mountains of Arkansas and Oklahoma. *J. Helminthol. Soc. Wash.* 62:150-156.
- Sites, J. W., Jr.** 1978. The foraging strategy of the dusky salamander, *Desmognathus fuscus*, (Amphibia, Urodela, Plethodontidae): an empirical approach to predation theory. *J. Herpetol.* 12:373-383.