

Food items of larvae of *Rimanella arcana* (Needham, 1933) (Odonata: Amphipterygidae) in Central Amazonia, Brazil

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Abstract

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The objective of the present study was to determine the prey of *R. arcana* larvae by means of stomach content analyses. A total of 39 larvae were dissected; three of them (7.7%) had empty stomachs. The following taxa were present in the stomach content of *R. arcana*: Diptera: Simuliidae (83.3%), Chironomidae (61.1%), Empididae (5.6%); Trichoptera: Hydroptilidae (19.4%), Hydropsychidae (8.3%); Ephemeroptera: Baetidae (8.3%); Lepidoptera: Crambidae (2.8%) and Acarina (5.6%). Simuliidae and Chironomidae were the most frequent food items of *R. arcana* larvae, and both families also were the most abundant in the riffles and waterfalls of the study area.

Additional key words: Aquatic insects, Chironomidae, Simuliidae.

Resumo

HAMADA N, DE OLIVEIRA SJ. 2003. Itens alimentares de larvas de *Rimanella arcana* (Needham, 1933) (Odonata: Amphipterygidae) na Amazônia Central, Brasil. Entomotropica 18(2):153-155.

O objetivo do presente estudo foi determinar as presas de larvas de *R. arcana* por meio da análise de conteúdo estomacal. Foram dissecadas 39 larvas, três das quais (7,7%) estavam com o estômago vazio. O conteúdo estomacal de larvas de *R. arcana* apresentava os seguintes taxa: Diptera: Simuliidae (83,3%), Chironomidae (61,1%), Empididae (5,6%); Trichoptera: Hydroptilidae (19,4%), Hydropsychidae (8,3%); Ephemeroptera: Baetidae (8,3%); Lepidoptera: Crambidae (2,8%) e Acarina (5,6%). Simuliidae e Chironomidae foram os itens alimentares mais frequentes de larvas de *R. arcana* e, essas duas famílias, também foram as mais abundantes nas áreas de correnteza e cachoeiras da área de estudo.

Palavras chave adicionais: Chironomidae, insetos aquáticos, Simuliidae.

The odonatofauna of the Neotropics is highly diverse; however, little information exists on the immature stages, especially regarding their habitats and habits. Few studies concerning larval predatory habits have been done with Odonata in the Central Amazonia region (Alencar et al. 1999). Information on this subject is important to understanding community structure and the factors that control population dynamics of aquatic insects.

Rimanella arcana (Needham, 1933) is the only species of the family Amphipterygidae present in South America, where it is known from Guyana, Surinam and Venezuela (De Marmels 1989). The objectives of the present study were to report for the first time this family in Brazil and to determine the prey of this

damselfly species by analyzing larval stomach contents in Central Amazonia, Brazil.

The present study was conducted mainly in six streams in Presidente Figueiredo County, Amazonas state, at an altitude of 122 m. We only found *R. arcana* in streams with bedrock, hanged on root mats, trunks and branches in riffle or waterfall areas. Larvae were collected from the natural substrates either with a D-net or picked with forceps from trunks or branches.

Larvae of different sizes were dissected with scissors and forceps, and the stomach contents were analyzed under a dissecting microscope. Organisms in the stomach contents were identified by the presence of the head capsule and gill fragments; usually the whole body of the prey was found in the anterior portion of

TABLE 1. Food items in the stomach contents of *Rimanella arcana* (Odonata: Amphipterygidae) collected in Presidente Figueiredo County, Amazonas, Brazil.

Collection Sites Presidente Figueiredo County	Chironomidae		Simuliidae		Empididae		Hydropsy		Hydroptili		Philo		Baetidae		Crambidae		Hydraca		Insects		Pla r
	n	T	M±S	n	T	M±S	n	T	M±S	n	T	M±S	n	T	n	T	n	T	n	T	
Lajes stream tributary 01°59'S, 60°01'W 21/06/1996 (N=11)	6	44	7±5.4	7	35	5±2.9	-	-	-	3	3	-	-	2	2	-	-	-	-	2	-
Lajes stream tributary 09/08/1996 (N=11)	10	43	4.3±3.1	9	88	9.8±7.8	2	3	1.5±0.7	5	6	1.2±0.4	1	4	-	-	1	2	1	1	1
Urubui river Iracema falls 01°59'S, 60°03'W 19/07/1995 (N=1)	1	18	-	1	4	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
UHE Balbina Aeroporto falls 01°53'S, 59°24'W 18/07/1995 (N=8)	4	26	6.5±9.0	8	76	9.5±4.6	-	-	-	3	4	1.3±0.6	-	-	-	-	-	-	-	-	1
UHE Balbina Boto falls 02°05'S, 59°20'W 10/08/1996 (N=7)	2	5	2.5±0.7	4	11	2.7±2.1	1	1	-	1	1	-	1	2	-	-	-	-	-	2	-
Santuario falls 02°03'S, 59°55'W 28/03/1996 (N=1)	-	-	-	1	15	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-

Note: (N) = number of *R. arcana* examined; (n) = number of *R. arcana* with specified food items; (T) = total and (M±S) = mean number plus or minus the standard deviation of prey in the stomach contents. Hydropsy = Hydropsychidae; Hydroptili = Hydroptilidae; Philo = Philopotamidae; Hydraca = Hydracarina; Insect = Insect remains; Plant = plant material; Empty = empty stomach. UHE = Hydroelectric dam.

the digestive tract. Identification was made to the lowest level possible using the organisms collected in the environment as a reference, together with the available literature (e.g. Merritt & Cummins 1996). When needed, as in the case of Chironomidae, the specimens were mounted on slides, using Euparal as the mounting medium, for identification to the genus level. Voucher specimens of *R. arcana* and stomach-content items are deposited at the Invertebrate Collection of INPA, Manaus, AM, Brazil.

Thirty-nine larvae were dissected; three of them (7.7%) had empty stomachs. *Rimanella arcana* that did not have empty stomachs preyed on the following taxa: Simuliidae (Diptera), found in 83.3% of the specimens examined; Chironomidae (Diptera), in 61.1%; Hydroptilidae (Trichoptera), in 19.4%; Hydropsychidae (Trichoptera), in 8.3%; Baetidae (Ephemeroptera), in 8.3%; Crambidae (Lepidoptera), in 2.8%, Empididae (Diptera), in 5.6% and Acari (Acarina) in 5.6%.

Simuliidae and Chironomidae were the most frequent prey items in the larval stomach contents of *R. arcana*, and they were also the most abundant taxa in the riffle and waterfall habitats in the study area, representing 63.4% and 26.7%, respectively, of the total aquatic-insect specimens found in these habitats (Bobot et al. 1999). The genera of Chironomidae found were: *Corynoneura*, *Thienemanniella* and *Chironomus*. The species of Simuliidae found were: *Simulium goeldii* Cerqueira & Nunes de Mello, *S. ulyssei* (Py-Daniel & Coscarón), *S. trombetense* Hamada, Py-Daniel & Adler and *S. rorotaense* Floch & Abonnenc.

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