

Project Update: September 2017

In this study, we focused on investigating trophic interactions of sympatric stream anurans by feeding niche analysis to provide insight on the ecological role of anurans on Taguibo River Watershed Forest Reserve (Figure 1).

Four out of 6 months (April to July 2017) of stomach content analysis data revealed that four of the nine sympatric stream anurans – *Ansonia muelleri*, *Limnonectes magnus*, *Pulchrana grandocula*, and *Sanguirana mearnsi* showed significant dietary variation (Figure 2).

On dietary composition of these four anurans, Arthropoda (Araneae and Insecta) occupied more than 95% (N% and V%). Insect prey types – Hymenoptera: Formicidae, Isoptera, and Coleoptera are encountered more frequently (>20% F%) and are the most important prey based on index of relative importance. Niche overlap index is the highest ($O_{jk} = 0.88$) between bufonid *A. muelleri* and dicroglossid *L. magnus*. Overall niche breadth values is low and ranges from 0.04 to 0.35 (BA) for four sympatric stream anurans (Table 1 and 2).



Figure 1. Characteristic appearance of riparian habitat where anurans are documented. © Jeszianlenn L. Plaza



Figure 2. Four of the nine species of sympatric stream anurans from low and mid elevation sites in Taguibo River Watershed Forest Reserve that showed significant dietary variation. © Jeszianlenn L. Plaza

Table 1. Standardized niche breadth and overlap between diets of four sympatric anurans documented on Taguibo River Watershed Forest Reserve.

Species	Niche Overlap O_{jk}				Niche Breadth B_A
	<i>Ansonia muelleri</i>	<i>Limnonectes magnus</i>	<i>Pulchrana grandocula</i>	<i>Sanguirana mearnsi</i>	
<i>A. muelleri</i>	-				0.04
<i>L. magnus</i>	0.88	-			0.27
<i>P. grandocula</i>	0.49	0.78	-		0.35
<i>S. mearnsi</i>	0.49	0.08	0.00	-	0.07

Table 1. Standardized niche breadth and overlap between diets of four sympatric stream anurans documented on Taguibo River Watershed Forest Reserve.

Table 2. Dietary composition of sympatric stream anurans (*Ansonia muelleri*, *Limnonectes magnus*, *Pulchrana grandocula*, *Sanguirana mearnsi*) documented on Taguibo River Watershed Forest Reserve, showing Numeric Proportion, Frequency of Occurrence, Volumetric Proportion, and Index of Relative Importance (IRI).

Prey Category	Numeric Proportion (%)				Frequency Occurrence			
	A.	L.	P.	S.	A.	L.	P.	S.
	<i>muelleri</i> (n=61)	<i>magnus</i> (n=119)	<i>grandocula</i> (n=115)	<i>mearnsi</i> (n=19)	<i>muelleri</i> (n=61)	<i>magnus</i> (n=119)	<i>grandocula</i> (n=115)	<i>mearnsi</i> (n=19)
Arachnida - Araneae	3.64	3.69	14.81	-	3.28	6.72	3.48	-
Insecta - Blattodea	-	4.15	-	-	-	7.56	-	-
Insecta - Coleoptera	12.73	17.97	29.63	-	11.48	32.77	1.74	-
Insecta - Diptera	1.82	2.76	7.41	-	1.64	5.04	1.74	-
Insecta - Hemiptera	-	4.15	7.41	-	-	7.56	1.74	-
Insecta - Hymenoptera - Formicidae	78.18	37.33	14.81	-	70.49	68.07	3.48	-
Insecta - Hymenoptera - non Formicidae	1.82	0.46	-	50.00	1.64	0.84	-	5.26
Insecta - Isoptera	-	15.67	14.81	-	-	28.57	3.48	-
Insecta - Odonata	-	0.92	-	-	-	1.68	0	-
Insecta - Orthoptera	1.82	6.45	7.41	-	1.64	11.76	1.74	-
Insecta - Tricoptera	-	0.46	-	-	-	0.84	-	-
Insect larvae	-	4.61	-	50.00	-	8.40	-	5.26
Annelida - Oligochaeta	-	0.46	3.70	-	-	0.84	0.87	-
Gastropoda - Thiaridae	-	0.46	-	-	-	0.84	-	-
Reptilia - Serpentes	-	0.46	-	-	-	0.84	-	-

Table 2. continued

Prey Category	Volumetric Proportion (%)				IRI			
	A.	L.	P.	S.	A.	L.	P.	S.
	<i>muelleri</i> (n=61)	<i>magnus</i> (n=119)	<i>grandocula</i> (n=115)	<i>mearnsi</i> (n=19)	<i>muelleri</i> (n=61)	<i>magnus</i> (n=119)	<i>grandocula</i> (n=115)	<i>mearnsi</i> (n=19)
Arachnida - Araneae	0.00	0.12	8.01	-	11.92	25.61	79.40	-
Insecta - Blattodea	-	2.56	-	-	-	50.69	-	-
Insecta - Coleoptera	0.04	35.63	68.46	-	146.49	1756.80	170.60	-
Insecta - Diptera	0.00	0.00	0.09	-	2.98	13.94	13.04	-
Insecta - Hemiptera	-	0.07	0.52	-	-	31.92	13.79	-
Insecta - Hymenoptera - Formicidae	99.96	36.37	7.73	-	12557.61	5016.58	78.43	-
Insecta - Hymenoptera - non Formicidae	0.00	0.00	-	0.00	2.98	0.39	-	263.17
Insecta - Isoptera	-	21.85	14.84	-	-	1071.90	103.14	-
Insecta - Odonata	-	0.00	-	-	-	1.55	-	-
Insecta - Orthoptera	0.00	2.76	0.33	-	2.98	108.39	13.46	-
Insecta - Tricoptera	-	0.00	-	-	-	0.39	-	-
Insect larvae	-	0.62	-	100.00	-	43.97	-	789.46
Annelida - Oligochaeta	-	0.01	0.01	-	-	0.39	3.23	-
Gastropoda - Thiaridae	-	0.00	-	-	-	0.39	-	-
Reptilia - Serpentes	-	0.00	-	-	-	0.39	-	-

Table 2. Dietary composition of sympatric stream anurans (*Ansonia muelleri*, *Limnonectes magnus*, *Pulchrana grandocula*, *Sanguirana mearnsi*) documented on Taguibo River Watershed Forest Reserve showing Numeric Proportion, Frequency of Occurrence, Volumetric Proportion, and Index of Relative Importance.