Feeding Preferences of Prawns in the Check Hall River

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Abstract

The purpose of this project was to determine the feeding preferences of prawns in the Check Hall River. Both fruit and insect baits were used, but no significant differences were observed. Daytime and nighttime tests were also conducted, confirming conclusions from previous projects that the prawns are mostly active at night.

Introduction

Previous studies have shown that there are five different species of prawn in the Check Hall River at Springfield Plantation, Dominica: *Atya innocous, Xiphocaris elongata, Macrobrachium carcinus, Macrobrachium crenulatum,* and *Macrobrachium heterochinus* (Augustine et al. 2000). Although several surveys of these prawns have been conducted, most have only addressed the habitat use. One previous study examined attractiveness to bait (Morrison 2002), but failed to note the types of baits used. The purpose of the present study is to provide more detailed information on feeding habits of the prawn of the Check Hall River by addressing attractiveness to various types of baits.

The following hypotheses were tested: 1) prawns are more active at night than the afternoon; 2) larger prawns will be attracted to the bait first; 3) fruit baits will be more attractive than insect baits; 4) juicy fruits will be more attractive than dry fruits.

Materials and Methods

All work was conducted in the Check Hall River whose GPS location is 15° 20'N, 061° 22'10W; the altitude is 1080 feet above sea level (Augustine et al. 2000). Tests were conducted in the afternoon hours of 4:30-5:00pm, and then at night from 8:30-9:00pm. After the baits were set out and the prawns were observed, the different species were analyzed.

By observing past study abroad projects, the decision of what pool would be the most uniform, ideal testing site was obvious. Pool #3 (see Figure 1 in Augustine et al. 2000) was the largest and most accessible for nighttime work, and was therefore selected. Tests were run over the days of May 25th, May 27th, May 28th, June 1st, June 2nd, and June 4th.

Four types of bait were initially selected based on availability in the surrounding area. One of these (figs) was eliminated from the study when it was observed that large numbers were falling into the pool but were not eaten by the prawns. The mango was chosen because of its juiciness, just as the banana was chosen for its dryness in character. The cricket was used to make a comparison against the two fruits. After speaking with several locals it was noted that coconut is most commonly used to catch prawns. Therefore, the present research tested plant verses animal bait and juicy verses dry bait rather than the commonly used bait.

Three pieces of string were cut to an approximate length of 1.5 feet. A slice of banana, mango, and a single cricket were each tied to its individual string. Following one trial, it was observed that neither the banana nor the cricket sank; therefore, the prawns were not able to approach the bait. Consequently, a rock was then tied to the end of the two strings to anchor these baits.

The baits were placed equidistant from each other towards the middle of the pool, in an area that facilitated direct observations. Baits were observed for 30 minutes, and rotated after each ten-minute interval. A stopwatch was used to record the amount of time it took the prawns to come to each bait. A small fish net was used to catch the prawns if the species were not readily identifiable.

Results

Over a total of two daytime tests, no prawns were recorded coming to the bait (as seen in Table 1). There was not a noticeable pattern of bait preferences during the nighttime interval (Table 2).

The different species of prawns that approached the bait varied. However, due to the inefficient methods of capturing the prawns, species identification was sometimes difficult. Species attracted to the baits included *Macrobrachium carcinus*, *Macrobrachium heterochirus*, and *Macrobrachium crenulatum* (see Augustine et al. 2000 for further descriptions).

Discussion

Having planned to conduct research on *Leptodactylus fallax* and then realizing upon arrival that these frogs had been nearly eliminated by a bacterium, the original project was changed. The point of study was then converted to an observation of the five different species of prawns. Previous study abroad students have observed the various species of prawn in addition to interspecies competition. Once these reports were reviewed, it was concluded that they left opportunities open for future research. Morrison et al. (2000), in a report titled "Interspecies Competition of Prawns in the Check Hall River," observed the trend of varying species and how size played a part in the willingness to approach the bait; however, the type of bait was never discussed.

After observing the area to be tested, it was detected that the chosen baits would need to be placed in a small area of the pool for subsequent viewing. Observations also concluded that the large fig tree dropped an abundance of figs in pool #3 that were not eaten by the prawns (many were seen rotting in the pool); hence, the researcher did not use the figs as bait.

The researcher detected no noticeable patterns of prawn activity during the six nighttime observations. This could be due to several varying factors. These factors may include lack of human activity to entice the prawns out into open areas, overabundance of human activity during daylight hours, or increase in rainfall (beginning of the rainy season).

After reviewing the complete set of data it was noticed that the prawns had no preference in bait. Therefore, it is concluded that the prawns of the Check Hall River are omnivorous.

References

Augustine, S.; Griffith, A.; Johnson, C.; Kim, H. 2000. "Field Guide to the Prawns of the Check Hall River." Dominica Study Abroad Project 2000.

Morrison, Will. 2002. "Interspecies Competition of Prawns in the Check Hall River." Dominica Study Abroad Project 2002.

Tables

Table 1: Average times for prawns to approach baits

	DAY-TIME *	**NIGHT-TIME ****
MANGO	-	2.5 min
BANANA	-	8.6 min
CRICKETT	-	9.0 min

***** - = no activity at baits during daytime surveys

****** nighttime observations with no sightings were excluded from the mean

Table 2: Nighttime observations in regard to time(min)

	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**	**DAY 5**	**DAY 6**
MANGO	2	3	-	-	-	-
BANANA	1	-	20	5	-	-
CRICKETT	1	-	15	12	-	8