

**Quick-Reference Pictorial Key to the
Prawns of the Check Hall River**

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Abstract

This key to prawns of the Check Hall River was constructed to create a simple, step-by-step, pictorial guide to show the characteristics that differentiate one prawn species from another. There are certain body parts that one needs to inspect when identifying prawns, and these have been pictured and labeled in this key. Descriptive behavioral characteristics are also mentioned for the three genera of prawns, along with other general observations about their location and activity in the river.

Introduction

Prawns are freshwater decapods that are found in rivers and streams. They can easily be compared to the well-known saltwater shrimp when discussing general morphology. Unlike saltwater shrimp, prawns have two pair of pinchers, with some species possessing very long, large pinchers on the second pereopod. This adaptive trait allows prawns to reach into deep cracks and holes between rocks (Elovaara, 2002). The pinchers also provide an effective means of defense towards predators. Prawns do not exit the water and can be found at all times of the day. However, prawns can be more easily spotted after dark when they swim out from behind rocks and other organic matter, which provides them protection from light throughout the day. Prawns are scavengers that feed on many things that float through the river, such as coconut, smaller prawns, worms, insect larva, etc (Elovaara, 2002).

Kingdom: Animalia

Phylum: Arthropoda

Class: Crustacea

Order: Decapoda

The Check Hall River is located on the southwest side of the West Indies Island of Dominica. The prawn species collected for this pictorial key were gathered in a small pool and a riffle located near Springfield, which is situated at 1,150 feet above sea level. The temperature of the water in the Check Hall River is on average between 69 and 71 degrees Fahrenheit. It is postulated that the freshwater prawns possibly first came to Dominica from South America via the ocean. The adult prawns or their larva could have possessed the ability to survive in the salt water long enough to reach Dominica (Food and Agriculture Organization, 2002). Augustine et al. (2000) provided a pictorial guide to the prawns found in the Check Hall River. Here I expand on their results by illustrating diagnostic characters for each species.

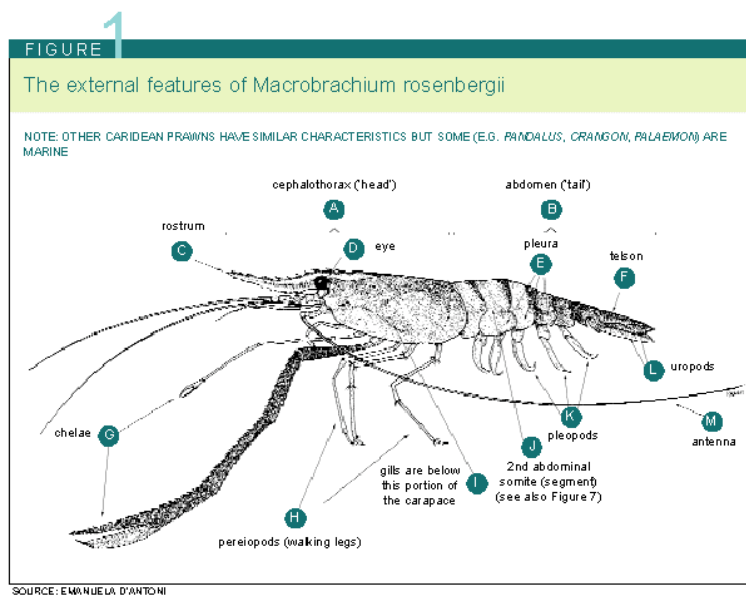


Figure 1. Diagram of prawn features (Food and Agriculture Organization, 2002)

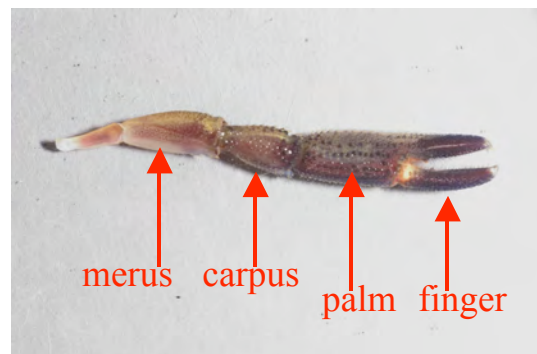


Figure 2. Diagram of prawn cheliped

Materials & Methods

Head lamp (white, blue, & red lights)
Two small hand nets
One large net
Sticks
Small containers (10)
Waders & boots

The best time of day and weather conditions for capturing prawns is after dark when it is not raining. By shining any color light on the water, one can see the reflections of hundreds of eyes, which reveal the prawns' locations. It is difficult to approach the prawns because they are frightened by both light and movement, so they usually flee when one gets too close. Prawns were identified using the keys, diagnoses, and illustrations in Chace and Hobbs (1969).

Three methods of capture (in order of effectiveness):

1) *Old Fashioned Net Trap*: This method is only effective when the prawn is out in the open and not around any big rocks, and works well when capturing the slower *Atya* species. (At times a large insect net can be helpful to use due to the increased probability of trapping the prawn.) Slowly move the net closer to the prawn and place one side of the net on the ground. Then, in one quick motion, drop the rest of the net to the river bottom and entrap the species. When ensnaring the prawn in a large net, coax it farther up into the net, pinch the net closed, and remove it from the water.

2) *Hee Kim's Stick & Grab* (see Kim, 2000): This method utilizes the prawns' familiarity with floating debris in the water. It can be hard if you are dealing with fast-moving species, such as *Macrobrachium*, and when prawns are deep in the water. First take a stick and slowly move it towards the prawn. When the stick is almost touching the prawn, quickly force the stick down and apply pressure to pin the species. Then simply pick up the prawn.

3) *Small Net & Stick Scoop*: This method is effective when the prawn is hidden between rocks. Place the net in front of the main opening from which the prawn could escape and use the stick to forcefully push it into the net.

Family Atyidae

Atya innocuous

- 1) Color pattern characterized by mottled straw brown with short dark brown lines or spots, taking on a camouflage appearance
- 2) Orbital and ventral margins unarmed
- 3) Last three pereiopods bearing depressed horny scales
- 4) Pleuron of second abdominal somite without blunt marginal spines
- 5) Third through fifth somites may bear a row of small, sharp denticles

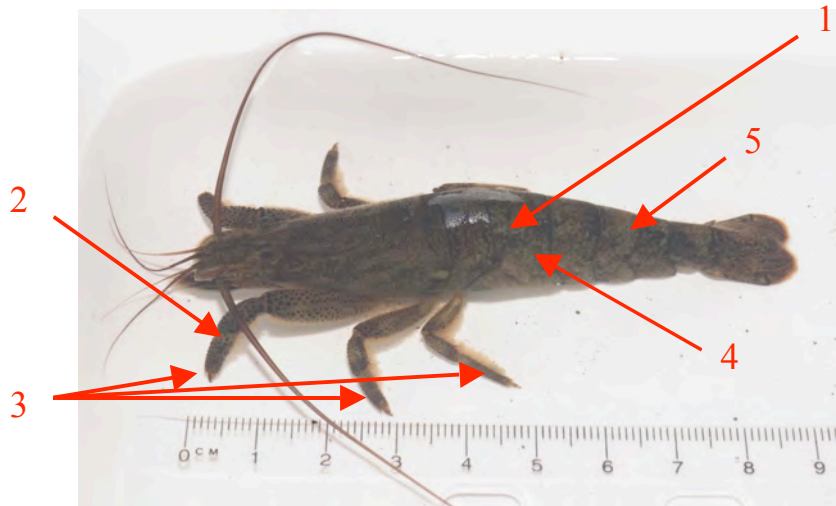


Figure 3. Adult *Atya innocuous*

- 6) Body without distinct dark-colored transverse bands near anterior and posterior ends of abdomen
- 7) Juvenile species possesses a brown longitudinal stripe extending from the base of rostrum to posterior margin

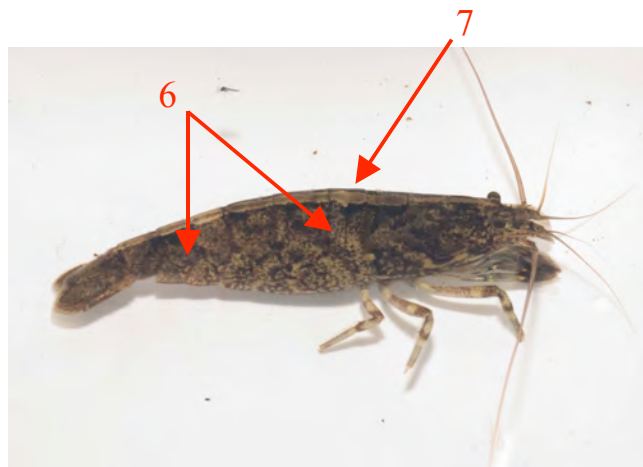


Figure 4. Juvenile *Atya innocuous*



Figure 5. Juvenile *Atya innocous*

- 8) Carpus of second pereiopod broader than long
- 9) Fingers of chelae of first and second pereiopods bearing terminal tufts of long hair

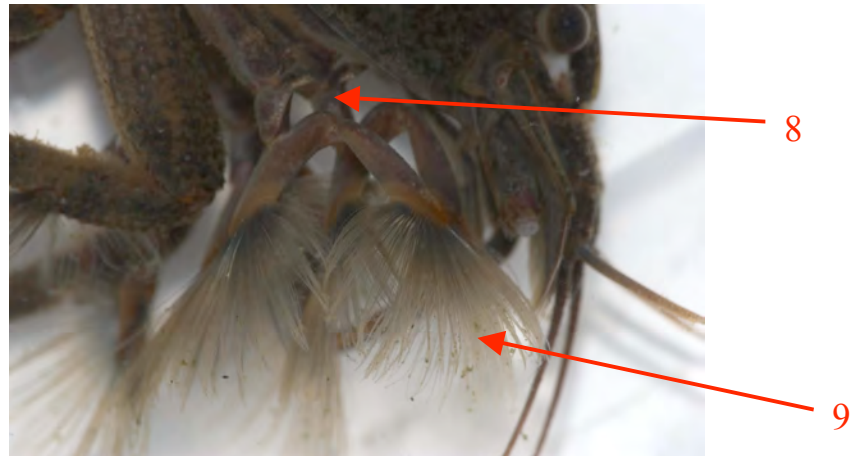


Figure 6. First two pereiopods on adult *Atya innocous*

- 10) Lateral lobes obtuse
- 11) Rostrum without dorsal teeth
- 12) Eyes not reduced

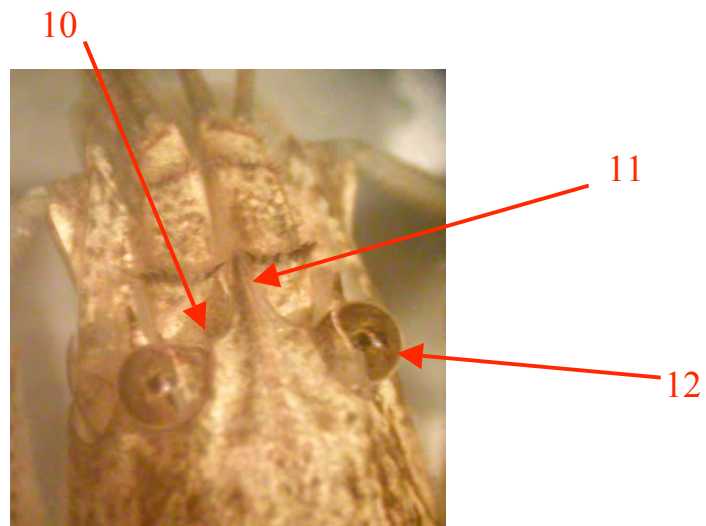


Figure 7. Rostrum of adult *Atya innocuous*

Family Atyidae

Xiphocaris elongata

- 1) Color pattern characterized as greenish but translucent, with internal organs visible
- 2) Orbital and ventral margins unarmed



Figure 8. Adult *Xiphocaris elongata*

- 3) Eyes well developed
- 4) Rostrum armed with series of subequal, close-set, small teeth
- 5) Fingers of chelae of first and second pereopods without terminal tufts of long hair
- 6) Last three pereopods without horny scales or tubercles

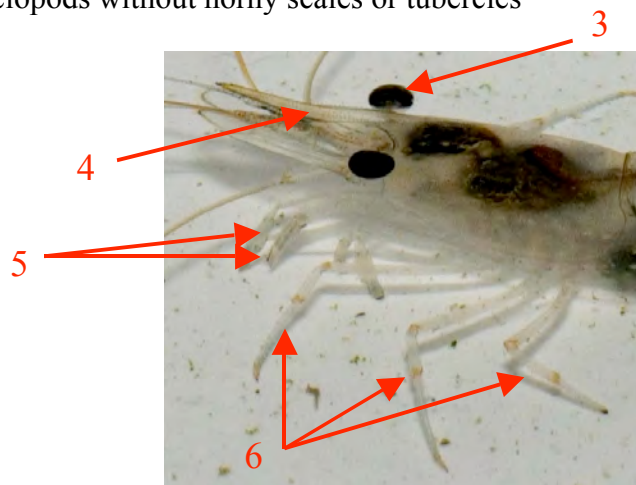


Figure 9. Rostrum and pereopods of adult *Xiphocaris elongata*

Family Palaemonidae
Macrobrachium carcinus

1) Color pattern characterized by longitudinal dark and light stripes on carapace and abdomen

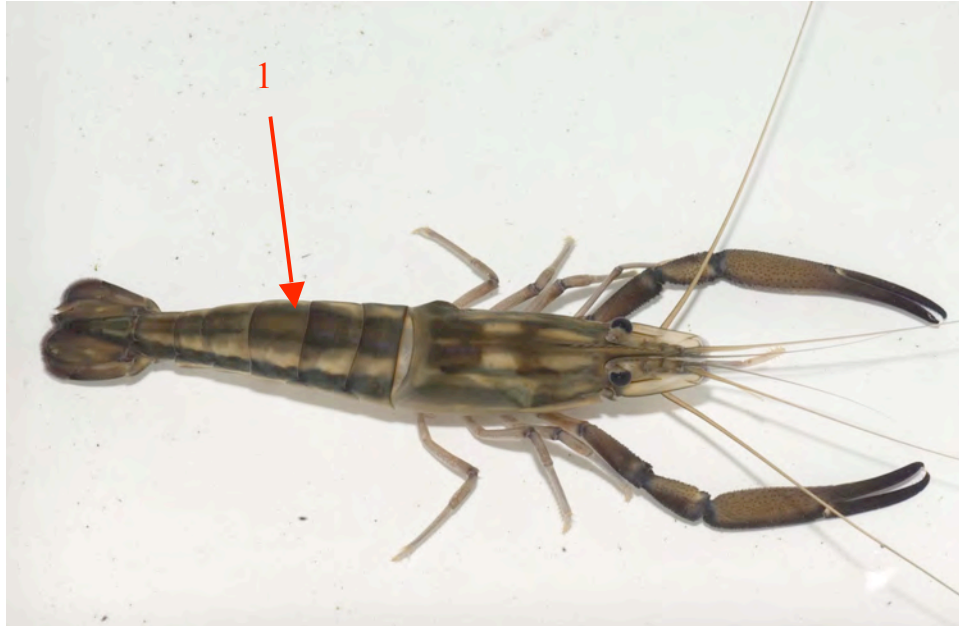


Figure 10. Adult female *Macrobrachium carcinus*

- 2) Fingers slender, very slightly shorter than palm
- 3) Male chelae possess a large tooth in the proximal third of each finger
- 4) Carpus about half as long as palm and slightly shorter than merus

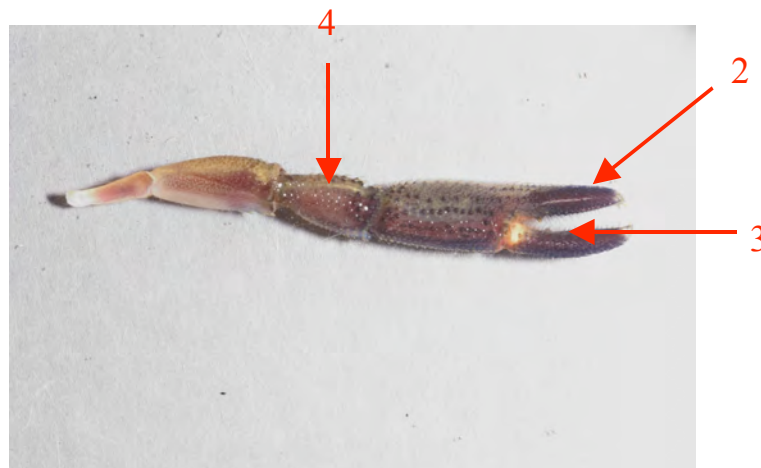


Figure 11. Cheliped of adult male *Macrobrachium carcinus*

5) Female fingers lack teeth



Figure 12. Cheliped of adult female *Macrobrachium carcinus*

6) Rostrum usually reaching to or slightly beyond end of antennular peduncle, tip slightly upturned

7) Rostrum armed with 11 to 16 rather regularly spaced dorsal and 3 or 4 ventral teeth

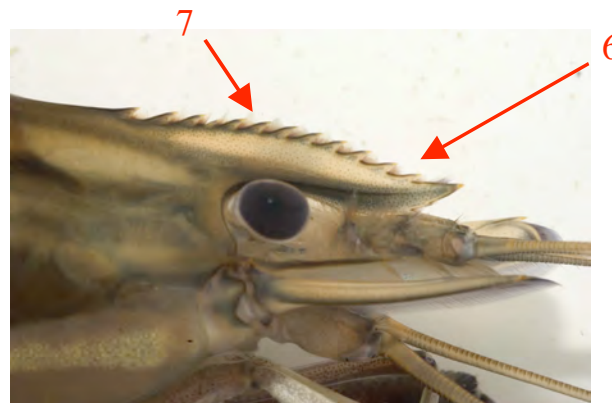


Figure 13. Rostrum of adult *Macrobrachium carcinus*

8) Eyes large, cornea well pigmented

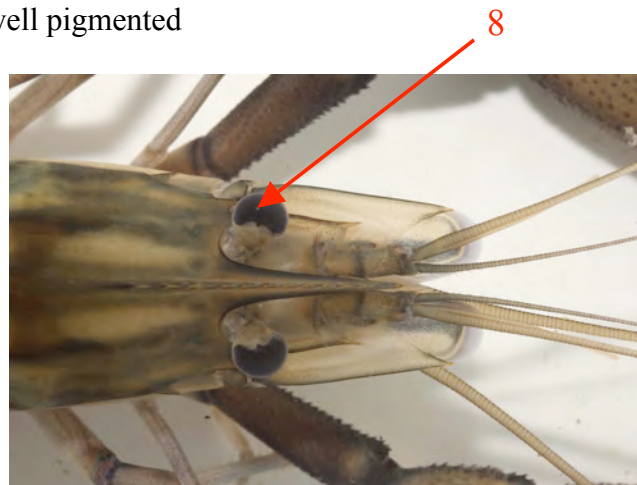


Figure 14. Carapace and rostrum of adult *Macrobrachium carcinus*

Family Palaemonidae
Macrobrachium crenulatum

- 1) Color pattern usually characterized by light transverse patch on posterior part of third abdominal tergum
- 2) Carapace with antennal and hepatic spines
- 3) Rostrum reaching about as far as end of antennular peduncle, dorsal margin faintly convex, tip not upturned
- 4) Eyes large, cornea well pigmented
- 5) Second pereiopods of adult male very dissimilar and unequal

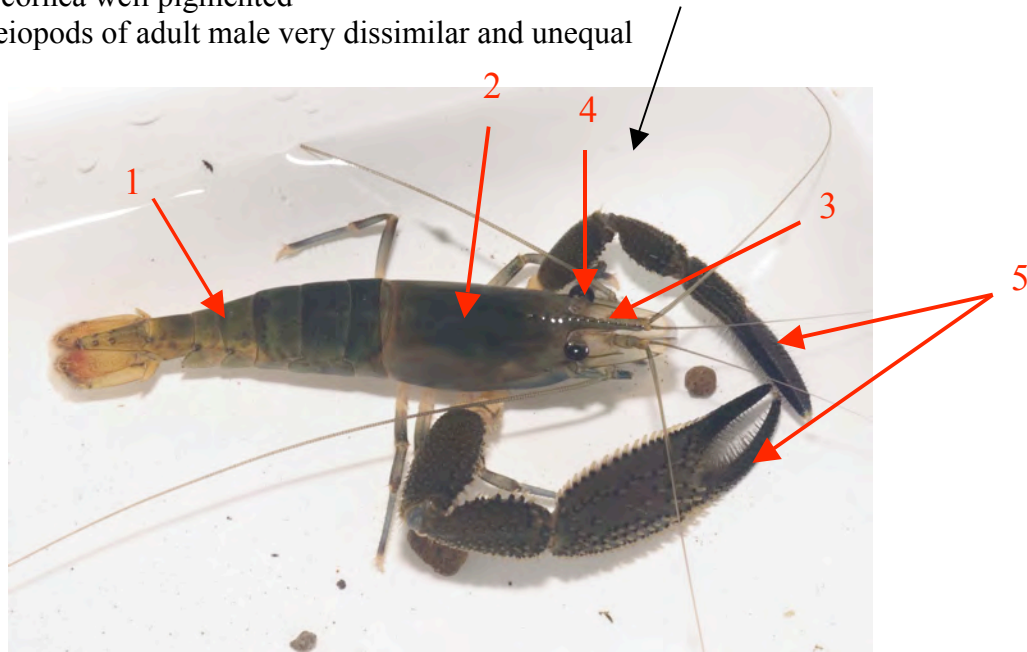


Figure 15. Adult male *Macrobrachium crenulatum*

- 6) Second pereiopods dark colored
- 7) Each finger covered with spinules and bearing numerous tufts of long, stiff hairs
- 8) Carpus is shorter than either palm or merus, but much more than half as long as palm
- 9) Chelae armed with longitudinal rows of strong spines



Figure 16. Cheliped of adult male *Macrobrachium crenulatum*

Family Palaemonidae

Macrobrachium heterochirus

- 1) Color pattern characterized by dark transverse bands on abdominal tergites
- 2) Carapace with antennal and hepatic spines

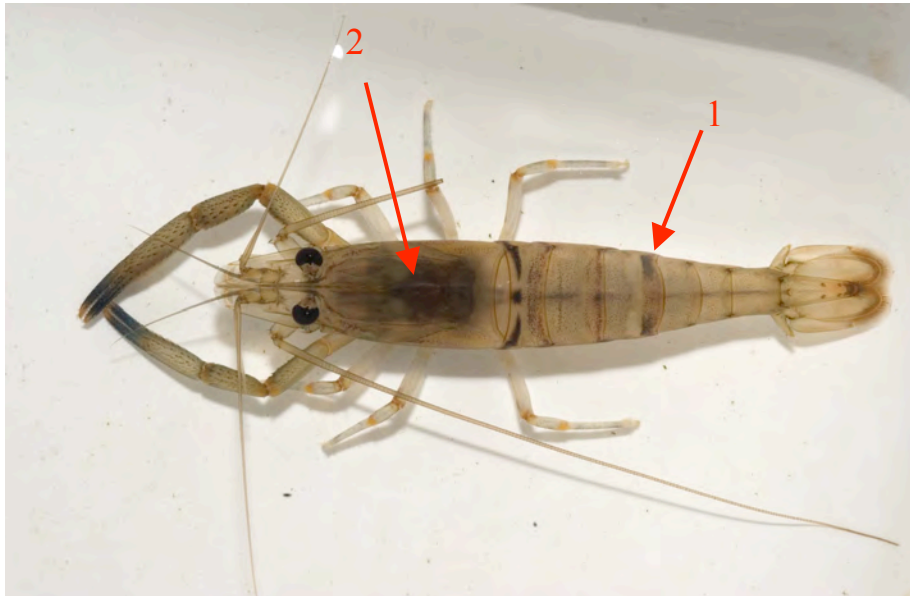


Figure 17. Juvenile *Macrobrachium heterochirus*

- 3) Eyes large, cornea well pigmented
- 4) Fingers about two-thirds as long as palm
- 5) Each finger bears numerous scattered spinules
- 6) Carpus about three-fourths as long as palm and as long as or longer than merus

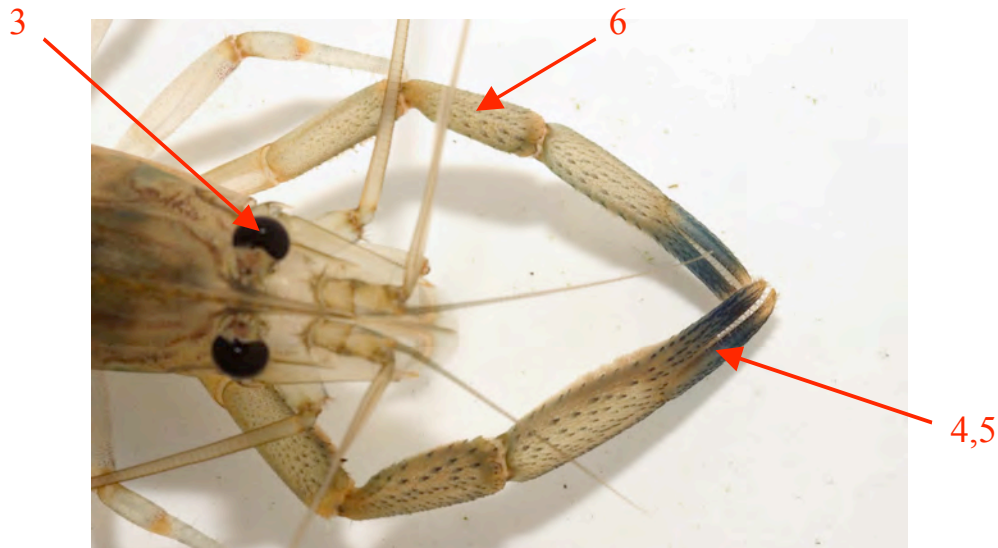


Figure 18. Chelae of juvenile *Macrobrachium heterochirus*

- 7) Rostrum reaching anteriorly nearly or just as far as end of antennular peduncle, tip slightly upturned
- 8) Armed with 10 to 13 dorsal and 2 to 4 ventral teeth
- 9) Posterior 4 to 6 teeth of dorsal series placed on carapace behind level of orbital margin, posterior 3 or 4 more erect and more widely spaced

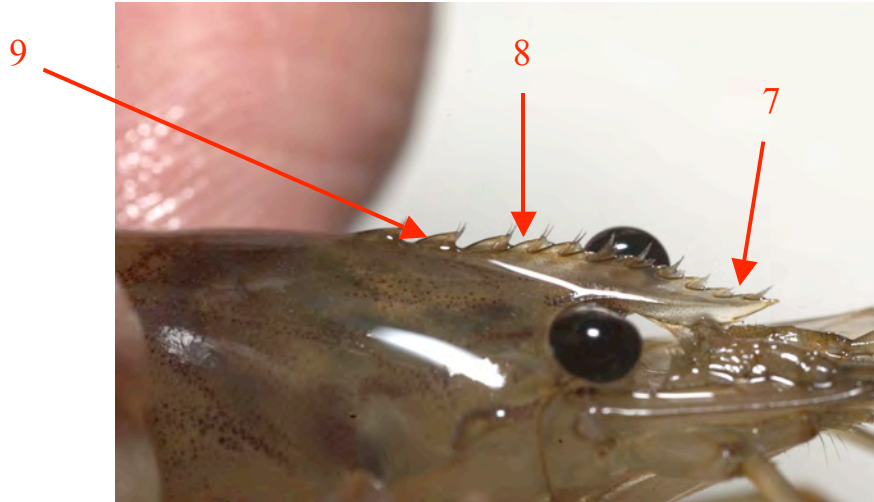


Figure 19. Rostrum of juvenile *Macrobrachium heterochirus*

Description

All of the prawns dislike light at night when they are exposed and more out in the open. I found that when using red (LED), blue (LED), and white (incandescent) lights, the prawns were not as frightened by the red light. Therefore, it is better to scan the river with the red beam, pinpoint the prawns' eyes, and then switch to the white light. The white beam focuses in very well on one spot and provides enough light to assist in capturing the prawn.

Atya:

Most *Atya* can be located cowering around larger rocks in the areas of the stream that are less than 1/3 meter deep. *Atya* are generally found near other *Atya* and do not mind being in close proximity with one another. When a different species comes near them, the *Atya* become very skittish and make every attempt to flee.

Atya are slower moving prawns which can be captured easily. Their main line of defense is to swim away from harm, most likely because they do not have very large pinchers on their second pereopods to protect themselves. Although *Atya innocuous* possesses a greenish/brown camouflage color, they stand out the most when underwater. This is caused by their quick movement whenever a light is placed in their direction and because they do not blend in with the light-colored rocks that make up the matrix of the river bottom.

Xiphocaris:

These very plentiful, translucent prawns can be found everywhere up and down the river, mainly in water less than 1/3 meter deep. They do not inhabit the bottoms of the stream, but instead they are constantly floating, swimming, or clinging to the sides or tops of larger rocks. These

prawns tend to not be disturbed or afraid of other *Xiphocaris* or different species around them. They do not grow to be as big as *Atya* or *Macrobrachium*, which may account for their ability to move quickly through the water to evade predators.

Macrobrachium:

The three *Macrobrachium* species all exhibit very defensive, territorial behavior towards prawns of their own species and other species. They possess large pinchers on their second pereopods, which allows them to take a more offensive role when confronted by other prawns or foreign objects. *Macrobrachium*, although generally large in size, are very quick and evasive. They inhabit deeper and more swiftly moving waters than *Atya* and *Xiphocaris*, which allows them to escape detection from the surface of the water because their location is blurred by the movement of the current.

Macrobrachium also tend to be very well camouflaged with their surroundings. All three species in their juvenile stages are found away from the larger rocks and more out in the open amongst the smaller, lighter colored rocks. This, however, is effective because the *Macrobrachium* in their juvenile stages all possess a very light coloration. As they grow into the mature adult phase, the different species gain their respective darker colorations. The larger *Macrobrachium* can be located between and around the larger, darker rocks, which serve to camouflage their darker body coloration.

Conclusion

This prawn key, summarizing the different species' visual and behavioral characteristics, can be used as an effective tool to quickly identify prawns in the Check Hall River. Another useful

resource for prawn identification is the 2000 Texas A&M field study entitled *Field Guide to Prawns of the Check Hall River*.

Although only five species have been described in this key, there is a large possibility that more species exist in the river. There are many very large species that inhabit the Check Hall River that are thought to possibly be unidentified, but they have only been viewed underwater and have not been captured. Therefore, a further combing of the river may reveal even more species that could be added to this prawn key.

References

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