

Data Checklist Project *Limulus*



Instructions:

- 1) Please record the date, location, #of kids, #of adults and your tagging group/organization into the **Project Limulus Participant File**. Do this every time you go out whether it is tagging or surveying.
 - The Excel file is available on our website at www.projectlimulus.org
 - You should print it out to take to the beach and keep a running total in the Excel file to send in at the end of the summer (we need this for our final report to the granting agencies).
- 2) Measure the entire length of the beach where you are tagging, **in meters** and record it on the top of your data sheet (If it is easier, measure the length of your stride at home and then when you are on the beach, count the number of strides you take on the way back that covers the area you tagged in, or use Google Earth if you have easily recognizable features on your beach)
- 3) For each tagged crab please be sure to record the following:
 - Measure the **width** in centimeters (**cm**) by flipping the crab over and measuring the widest part of the prosoma.
 - Assign a **condition** number the crab using the condition guide (1, 2, or 3)
 - Record and note any **damage**
 - Denote **mating behavior**, single males, single females, pairs, triples etc.
 - For **SINGLE FEMALES**, please specify the condition (1, 2, or 3) and number of spines on the opithosoma, in the notes section (Figure 1)
 - Going from the “top” left the spines are numbered L1, L2, L3, L4, L5.
 - Going from the “top” right the spines are numbered R1, R2, R3, R4, R5
 - For example if the female was missing her top 2 left spines you would record, missing L1, L2
- 4) At the **END** of tagging please count the **Total number of untagged** crabs as you leave the beach and record this number on the top of your data sheet.

Anatomy of Limulus (Diagram):

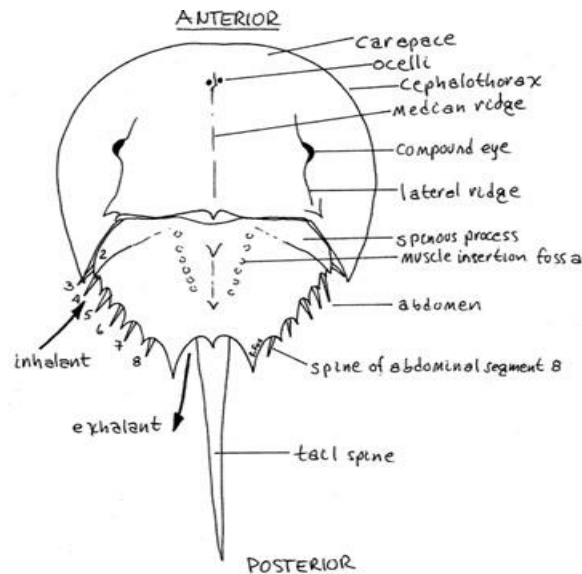


Figure 1: Anatomy of Limulus (Horseshoe Crab)

Anatomy of Limulus (Text Description):

"The horseshoe crab has a protective continuous cuticular body cover, or **carapace** that is separated into three main sections: **prosoma (cephalothorax)**, **opisthosoma (abdomen)**, and **telson (tail)**. The body is bilaterally symmetrical with a semicircular prosoma. Dorsally, there are two laterally located **compound eyes** and two medially anteriorly located **ocelli or median eyes**. The **carapace** has a midline keel that begins at the prosoma and continues to the **opisthosoma**, and **telson**. It is interrupted by the hinge joint that connects the prosoma to the opisthosoma. Laterally and parallel to the midline keel are two longitudinal furrows which start on the prosoma and continue on the opisthosoma, interrupted by the hinge joint. Within each longitudinal furrow on the opisthosoma are six entapophyseal pits that function as attachment points for the genital operculum and gill opercula. Centrally located on the hinge joint is the arthrodial membrane that is commonly used as the phlebotomy site for hemolymph withdrawal. Medially to both lateral **compound eyes** is the ophthalmic **ridge**. The outermost edge of the carapace, the flange, continues around the entire prosoma. The triangular edge of the prosoma is known as the genal angle. The opisthosoma has a **movable spine** that houses **six individual spines** on either side. These **spines** are not controlled voluntarily but are flexible at their attachment points and aid in protection to the opisthosoma. The space between the telson and the posterior triangular tip of the opisthosoma is known as the terminal bay or the **exhalant** channel. The space between the genal angle and the opisthosoma is known as the **inhalant** channel (Bergdale, 2017)."

Works Cited

Bergdale, Katie Joy (2017, March). Illustrations for Health Assessment Techniques of the Atlantic Horseshoe Crab, *Limulus Polyphemus*. A thesis submitted to Johns Hopkins University, 6. Baltimore, Maryland. Retrieved from <https://jscholarship.library.jhu.edu/bitstream/handle/1774.2/40736/BERGDALE-THESIS-2017.pdf>