

Horseshoe Crab Spawning Surveying

Clothing and accessories

- Wear appropriate clothing for weather and wet conditions at the water's edge. Consider using sunscreen during the day.
If thunderstorms are present do not go onto the beach.
- Shoes are a necessity. We recommend boots, water shoes or old sneakers.
Do not go barefoot.
- For night surveys bring a headlamp or a flashlight. Headlamps are most useful because they free up both hands.
- Bring a clipboard or hard surface to write on. Also, bring a few pencils and pens.
- An accurate wristwatch is needed for recording arrival time, as well as start and stop times of the survey.
- Thermometer. If you have a thermometer, record both air and water temperature.

SURVEY PROTOCOL:

Surveys should be conducted within 2 days of the FULL or NEW moon at high tide.

This gives a 5-day (2 days prior, the day of, and 2 days after the moon) window to complete the surveys for each moon period. It is desirable to survey each location 2 to 3 times during each moon, preferably both day AND night (4 to 6 surveys) surveys at each location.

Priority for surveys should be given to those dates closer to or on the full or new moon. The minimum number of surveys for a location and moon is 1 DAY and 1 NIGHT survey. If it is logistically impossible to conduct night surveys that the minimum is 2 DAY surveys per moon.

START

Arrive at the beach before high tide. When you get to the beach, push the stick into the sand at the tide line. Move the stick up the beach as the water reaches higher on the beach. The tide line is the highest point on the beach that the water reaches.

Begin the survey when the tide begins to recede and the water no longer reaches the stick. Record your starting time on the Beach Site Sheet where it says START TIME OF SURVEY.

Fill out the Survey Data sheet as completely as possible.

If you have a thermometer record both air and water temperature.

To survey the horseshoe crabs, you will start at one end of a section of beach, walk to the other end.

Salem Sound Coastwatch, 201 Washington St #9, Salem MA 01970.

978-741-7900. Email: barbara.warren@salemsound.org Fax: 978-741-0458

Counting Horseshoe Crabs

Count all crabs observed. When there are numerous animals, you may have to lift some up to assure you've counted all of those underneath. Heavy work gloves are useful for this.

DO NOT disturb spawning horseshoe crabs.

Spawning females will be partially buried in the sand while laying eggs.

DO NOT LIFT UP A PARTIALLY BURIED HORSESHOE CRAB.

Count the animals of each sex separately. If a horseshoe crab is not buried, the two most common ways to determine its sex are its size and position.

Males are, for the most part, smaller and 'clasped' or crowding on top of females. There also tends to be more males than females.

Fill in the data sheet with the number of male and female crabs and tally by total number of males & females separately. You can record also the count of pairs, satellites, and singles. This information is used to estimate population size on the spawning beach.

If you see a horseshoe crab with a tag, record the tag number and color of the tag. Tags are attached to the right rear point (although some animals were tagged on the left point). Record the tag numbers in the TAG #'S OF TAGGED CRABS space.

DO NOT remove the TAG.

Rapid Protocol for Surveying Spawning Horseshoe Crabs

This protocol is used to rapidly assess the spawning densities of horseshoe crabs in place of the standard quadrat method. The purpose of the rapid assessment is to estimate spawning densities quickly to determine when peak spawning occurs or to determine if the beach should be surveyed using the standard quadrat protocol in the future.

There are 4 necessary items that must be recorded for the rapid assessment:

1. Location, date, and time of day of the survey. Time of high tide if known.
2. Length of the beach that is observed.
3. Width of area that is searched for crabs (preferably 2 meters wide)
4. Number of female and male crabs observed – It is important to identify the sex of the crabs observed so that spawning indices (number of spawning females) and spawning sex ratios can be calculated.

Protocol:

1. Record beach location (include town & state), date, and time of survey.
2. Identify the length of beach that will be surveyed. Preferably use easily identifiable start and end points so that the total beach length can be estimated.
3. Walk the beach at the water line/swash zone
4. Count all male and female crabs within 1 meter of the water line. Tally as you go, then circle the total number. eg.: 1111 1111 1111 (12) Otherwise we don't know if 11 is two or eleven.
5. Return survey sheet to Barbara Warren (address below)

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Spawning Horseshoe Crabs Rapid Survey Data Sheet

Date _____ Start Time of Survey _____

End Time of Survey _____

Day or Night Time of high tide _____

Temperature: AIR _____ WATER _____ degrees C or F

Person(s) conducting survey & contact phone number / email

Beach Name _____

Town & State _____

Length of beach walked _____ *(please include the unit of measurement (feet or meters))*

Tally horseshoe crabs as you go, then circle the total number. eg.: 1111 1111 1111 (12)

Otherwise, we don't know if 11 is two or eleven.

Number of male crabs _____

Number of female crabs _____

Comments:

RETURN Data Sheet to Barbara Warren at Salem Sound Coastwatch

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