



Friends of Taunton Bay

Newsletter

No. 40

Keeping an eye on the bay

Winter 2011

Taunton Bay Horseshoe Crab Tagging Study: The 10 Year Report

By Sue Schaller & Frank Dorsey

The horseshoe crab study at Shipyard Point concluded its tenth year in 2010. Goals of this study were to use a tag-release-recapture technique to: 1) attempt to determine if the population is stable, 2) investigate survival and life expectancy of horseshoe crabs, 3) determine what triggers spawning behavior, and 4) determine the male-female ratio. The latter may sound odd, but elsewhere there are as many as 3-4 males per female because many females were taken for bait over decades. To the best of our knowledge, there is no history of horseshoe crab harvest here and they do

not leave the bay.

Annual surveys were conducted daily from late May through June. Usually, surveys started with the onset of spawning in late May. Animals were tagged, measured and released. From 2001 to 2010 we logged 14,513 observations on 6964 individuals, with a ratio of 1.8 males per female. Males comprised 65% of the observations and 64% of the individuals, possibly because males loiter along the shorelines waiting for females to approach the beach for mating.

Most interesting among the findings of this study is that 57% of the individual horseshoe crabs were seen more than once and some many times: 9 males on 9 different dates; 16 females and 24 males



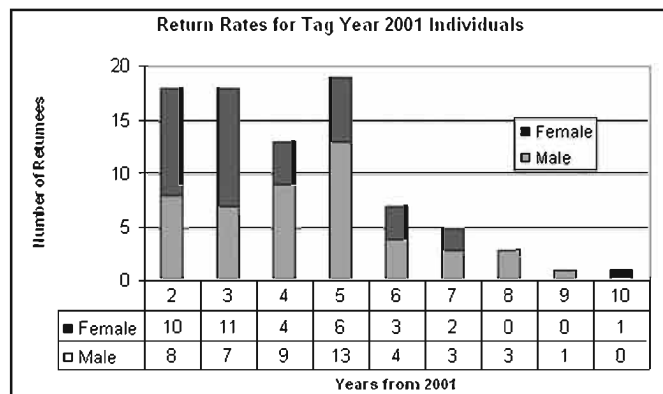
Photo by Steve Perrin

Horseshoe Crabs mating in Taunton Bay.

seen on 8 different dates. The 43% that were never seen again suggests there may be some randomness in whether horseshoe crabs repeatedly spawn at the same site.

Many animals were seen over multiple years: 24% returned in as many as 6 other years and the return rates were high for this type of study. A study from New York to Virginia by Swan (2005) spanned 17 years, tagged over 30,400 horseshoe crabs and saw only 7% of their animals again. Swan's results were influenced by the fact that south of New England some (but not all) horseshoe crabs migrate offshore for the winter. By comparison, the Taunton Bay population is resident (not migratory), and we surveyed daily for a full month each year while other studies sampled more sites for fewer days.

Return rates for animals tagged in 2001 are useful for understanding the life span of adult horseshoe crabs and the intervals between growth molts. Horseshoe crabs mature at 9-10 years for males and 10-11 years for females, after molting 15-17 times. Molt frequency declines with age and size and although some literature states that horseshoes do not molt as adults, researchers agree that molted adult shells are occasionally found. As many as 19.5% of animals tagged in 2001 returned yearly through 2005. Returns declined in years 6 through 8 to average 5.3%, and dropped to 0.5% in 2009 and 2010. These data and observations in 2010 suggest adults molt at intervals ranging from 5-8 years. However, it is also certain that some animals died,



and some may have moved to other parts of the bay over the intervening decade. In 2010 a few animals with clean, shiny, new shells were slightly asymmetrical on the point where we attach the tag—as if they had molted out of a tagged shell—shedding their original tag with their old shell. While many tagged horseshoe crabs have been seen multiple times at Shipyard Point, other work by Sue in New Hampshire documented that a number of horseshoe crabs migrated 7-9 km within Great Bay—some in one year, and some over a period of 2-3 years. Shoreline searches outside Hog Bay could be useful to answer this question during spawning season. Tags get overgrown with algae, making them difficult to spot casually, so specific searches would be necessary.

We also learned through this study that the annual onset of spawning in Maine correlates to a combination of water temperatures reaching 130C and a full moon or new moon. Daily counts were highest when there were multiple consecutive days of clear, sunny weather. Because weather influences the counts, the answer is cautiously optimistic as to whether the Taunton Bay horseshoe crab population is stable. The number of individuals observed from year to year has varied, but so have the conditions, with spring being early some years and later in others. In 2009 June was unusually rainy which created depths that were routinely 1-2 vertical feet higher than usual and may have reduced spawning counts. Counts were low in 2010 because the season began much earlier than normal and the largest count was logged on the first day indicating that the peak may have already occurred. Reported mortalities were very low with only 33 tagged shells reported and one of these was an adult molt. By comparison, Sue's sonar-tagging work in New Hampshire identified 6 of 37 animals as having

Mike Briggs Seeking New Aquaculture Lease

The Department of Marine Resources (DMR) and Mike have held a scoping session for the public in Franklin. DMR divers have surveyed the proposed site in upper Taunton Bay. Mike is now awaiting a formal hearing date from DMR.

He requested the new area because of severe shellfish predation on maturing oysters at his previous site southeast of Burying Island.

His application can be viewed at Taunton Bay Oyster Co. Inc., Taunton and Hog Bays, Franklin (oysters) - 2 MB pdf on DMR's website at www.maine.gov/dmr/



Photo by Sue Schaller

Note the small tag above the male horseshoe just right of center who is amplexed to the larger female partially hidden in the rockweed.

either died or molted over three years. Estimated life spans of 20-25 years would lead us to expect ~5% of the horseshoe crab population to die of old age in any one year. In the New Hampshire study five of the six mortalities occurred over the winter when cold water temperatures prevent this cold-blooded species from feeding itself.

Among the findings of this study is evidence that horseshoe crabs may live 18-26 years. If they are roughly 10 years old when they start spawning, and appear to molt around age 18, they may live another 8 years in that new shell—or molt again. The presence of some large individuals indicates longer life spans and is important information for species management. This is an ongoing area of interest and any tagged shells you might find on the shoreline will provide additional helpful data.

The project also contributed DNA samples for genetic analysis. Tim King of the U.S.G.S. determined that both the Taunton Bay and Yucatan Peninsula populations are the most genetically isolated within the species.

This study was initiated at the request of the Friends of Taunton Bay in 2000, although admittedly none of us knew it would last 10 years. Sue's goals for the next year are additional data analyses and formal publication of the results. This project has ended but options of future monitoring are worthy of consideration. Options might include surveys for 10-14 days from the onset of spawning. Another option might be a coordinated effort at 2-year intervals to conduct daily quick-counts

for a 10 day period at multiple sites on the bay. In any case, for data to be useful in comparing one decade to another, a standard scientific protocol is key—who, what, where, when and some way to calculate a density of animals observed over a measured distance of shoreline.

Based on these 10 years of study we believe this northernmost horseshoe crab population is stable, that their life expectancy is as great as 28 years, and a combination of water temperature and weather conditions triggers spawning behaviors.

Acknowledgements

Thank you to the many people who contributed to the success of this project over the decade. Hospitality was provided by Frank and Mary Beth Dorsey; Lisa, Mark, Henry and Phoebe Herrington, Shep and Linette Erhart and Pat Flagg. Shari LaTulippe logged the most days of field work, followed by Sue who was detained in New Hampshire by studies there. Gary Blazon moved the data into a database and provided technical computer support. Frank Dorsey provided statistical consulting and reviewed this and other projects. Dave Smith (U.S.G.S) consulted on the methodology, Linda-Lee Barton, DVM, provided veterinary review of the methods, and M.J. James-Pirri coordinated tag numbers throughout New England. Liz Solet, Tricia Brauner, Chris Wiebusch, Gary Blazon, Deb Boswell and Henry Herrington held down the A team with Sue Schaller, assuring that data collection happened every day. Phoebe Herrington, Pat Flagg, Frank Dorsey, Steve Perrin, Ross Lane, Heath Hudson, Lee Hudson, Mark Herrington, Lisa Herrington, Mary Ellen Lasalle, Larry Davis, Laura Davis Koenig, Debbie Boerger, Cynthia Perkins, Mary Lou Barker, Shep and Linette Erhart, Sue Cole Kelly, Anita TeHenepe, Donna Jason, and Dave Klim helped cover the transect on days when we were busy or short-handed, as well as a number of other people who helped for a day or two and whose names are not listed here. A grant from the Maine Outdoor Heritage Fund helped initiate this study in 2001. John Sowles and Pete Thayer at Maine DMR also provided partial funding during the early years of this work. Dave Smith obtained USGS funding of tags for two years of this study and the Friends of Taunton Bay paid stipends during part of this work and out of pocket expenses for several seasons. Pete Thayer and Laurice Churchill helped with permitting throughout the study. Everyone involved with field work, data entry and data analysis on this project contributed the majority of their time on a volunteer basis. Data analysis, report writing, errors and omissions all were contributed by Sue.



Photo by Sheila Karlson

One of Sheila's many wildlife photos.

Point of View: Sheila Karlson Looks Over the Bay

By Steve Perrin and Sheila Karlson

Sheila Karlson recently retired from the Executive Committee of Friends of Taunton Bay, having ably handled membership and the newsletter for many years. She has been active with FTB since its formation in 1990. Asked how she got involved, she said a tall, thin, bearded man showed up at her door one day when net pens appeared in the bay, and invited her to help discover what was going on. She has been sharing her discoveries ever since.

Sheila was born in Nottingham, England, near the beginning of World War II. Her father had just died of tuberculosis, and her mother, with five children already, decided she couldn't handle another, so placed her in a Nottingham orphanage, where she stayed for three-and-a-half years. Two spinster sisters were drawn to the child in the corner, so one of them legally adopted her and the other became her "Mum."

WANTED!

Talented, willing volunteer to edit this Newsletter.

Layout is competently handled by Ashley Johnson.

The Editor needs to:

collect and edit articles; solicit and select photographs; and supply Ashley with computerized files in almost any format.

If interested, call Frank Dorsey at 565-3575.

In the orphanage she'd been Sheila Webb; with the sisters she took on their family name to become Sheila New. The family moved to Ware in Hertfordshire during the war and adopted a simple lifestyle. Sheila remembers a large vegetable garden, fruit trees and bushes, rabbits and chickens. They scouted the lanes for greens to feed the rabbits, dandelions being their favorite. Food items were rationed even after the war, a coupon book was needed to obtain basics such as butter, milk, eggs. Those were times of "very little money but lots of love." Sheila grew up loving nature and the outdoors.

In grammar school, her favorite subject was art. She graduated at sixteen, then worked at a nursery school, saving enough each year to take a summer holiday in Europe with a best friend, Jennifer. On one trip to Paris in 1961 she met Dick Karlson, an American also vacationing with a friend. A year later, Sheila and Jennifer traveled to the U.S., "supposedly for a year," but she married Dick in 1962, and has been here ever since.

In their travels from Pittsford, New York, where Dick worked for Eastman Kodak, Sheila, Dick, and their two sons several times made the thirteen-hour drive to Acadia. They enjoyed the combination of water, mountains, and the open, uncrowded feel of the place. On one trip in October 1984, they noticed a "house for sale" sign, triggering the thought, "What would it be like to live here?" They started looking around, and at the end of two weeks, came across a house on Taunton Bay they both knew had been built for them. The sale was finalized in December. Owner then of two houses, Dick one day remarked, "This is crazy." He took early retirement in 1986, and the Karlsons moved to Franklin, Maine. Wondering what

NEEDED !

Talented, IT-knowledgeable volunteer

Friends of Taunton Bay is reviewing:

- The websites for FTB and the Taunton Bay Education Center
- How we manage our membership list
- How best to communicate with our members and the broader community.

If you have expertise in this area, please contact Frank Dorsey at (207) – 565-3575 or frankstat1@myfairpoint.net.

to call their new place overlooking the bay, Dick had a brainstorm: “Point of View,” “What else could you call it?”

As a photographer, Sheila has been attracted to anything wild—birds in particular, foxes, otters, scenic landscapes, mountains, sky, snow—all lit by natural sunlight. She is drawn to the inconspicuous, and enjoys discovering nature on a small scale—flowers, butterflies, spiders, bugs. In addition to photography, she carves wooden birds, her living room being a kind of sanctuary for groups of chickadees and plovers, a blue jay, kingfisher, and goshawk. She also enjoys gardening, cooking, hiking, kayaking, tennis, and dancing. Sometimes she even has time to read a book of particular interest. Too, she watches over the bay, paying attention to storms and weather, changing tides, ducks, gulls, cormorants, herons, eagles, ospreys—all passers-by. As she says, she “never gets used to it,” to all things changing with the seasons and under the sun.

Sheila got out the first mailing from Friends of Taunton Bay in 1990, and continued to publish the newsletter until last Spring’s issue. As newsletter editor, she’d meet with the Executive Committee to identify topics for an upcoming issue, assign topics to those most knowledgeable and involved, prompt writers as deadlines neared, go over articles with Pat Flagg



Photo by Sheila Karlson
Sheila and Dick on a Maine rock.

(an experienced newspaper writer) until Pat’s death in 2006, edit submissions for clarity and accuracy. Then once the text was firm, decide what photos to include, and where to put them. Going over the finished layout for an issue was “extremely satisfying” when she knew she’d gotten the balance right between different elements. Putting out a newsletter for a small non-profit was a lot of work, especially coming both spring and fall as it did, when the Karlsons scheduled their travels. But she enjoyed putting each issue together, even if articles sometimes came in the day before she was scheduled to leave.

In April, Sheila and Dick celebrated their forty-eighth wedding anniversary, proof that even an unlikely meeting in Paris of two people from two different worlds can withstand the test of time.

2010 Taunton Bay Education Center Summer Lectures

By Frank Dorsey

On seven Friday evenings in June, July and August, Steve Perrin arranged lectures at the Education Center by experts on a variety of Taunton Bay-related topics.

The series opened on June 25 with a lecture by Sue Schaller on Yardscaping: Better yards for people, pets, wildlife, and fisheries of Taunton Bay using native plants. Sue showed photographs of her previous work, offered samples of sea-weed compost and answered a range of audience questions. Next, Steve Perrin presented Taunton Bay in a Clam Shell: The big picture of the bay in a small presentation. Steve’s maps and photographs spanned the length, breadth and history



Photo by Sheila Karlson
Feisty Blue Jay carving by Sheila.

of Taunton Bay. On July 16, Franklin resident and sculptor, Mark Herrington presented *Sculpture in This Place: History, geology, and nature as my master teachers*. Mark discussed the variety of local stone with which he works, how it was formed and where he finds it. He also brought some small examples of his work and photographs of larger pieces in process and in final form. One highlight of the series was a discussion with Helen Gordon, *Lobstering in Taunton Bay* by a woman who has lived the life for forty years.

In August, Cornell faculty member Robin Hadlock Seeley presented *Periwinkle Snails and Rockweed in Maine: An intimate relationship based on her work in Cobscook Bay and other parts of Maine*. The talk covered the arrival and eventual distribution of the three types of periwinkles based, in part, on examination of the mix of shells in old concrete foundations along the coast. Sue Schaller returned on August 6 to summarize

Ten Years of Tagging Horseshoe Crabs in Taunton Bay: What we have learned from 15,000 observations. Sue's work appears as the lead article in this Newsletter. On August 13, Steve Perrin concluded the series with *Skill & Dignity: Granite quarrying and stonework around Taunton Bay, 1830 to 2010*, a photographic and historical look at the granite quarries and their products including some 100 year-old distant buildings made from local granite.

The series was well-received and well-attended and the audiences asked for more lectures next summer and at other times of the year.

2010 TBEC Summer Child and Family Programs

By Beverly Johnston – Summer Program Director

The summer of 2010 saw the Taunton Bay Education Center (TBEC) expanding its children's and family environmental programming from one session of environmental day camp to two and from two family events to three.

Separate three-day camp sessions were offered for children in grades K-2 and for students in grades 3-5. Each had 7-10 students including two seventh graders who asked to be included in the session for older students.

Our focus this year was on the native tribes of our region and how they used the Taunton Bay watershed and its flora and fauna as part of their daily lives. The Abbe Museum did a presentation for our younger

children on the uses of birch bark and the animals associated with the bay through an engaging storytelling activity with stuffed animals.

The older children were challenged to understand the differences between the use of the watershed long ago and the uses now. The Marine Environmental Resource Center in Blue Hill (MERI) staff demonstrated with hands on activities how the native tribes once used the bay's resources gently compared to the impact modern day stressors place on the bay, its fisheries, plants and animals from pesticides, population growth and overuse of the bay's resources. The children were actively engaged in very thoughtful dialogue during this presentation.

Throughout the two sessions, we also had art activities presented by Jane Snider of Milbridge. Ms. Snider had the children make Passamaquoddy dream catchers, necklaces, "birch bark" baskets, and with the inspiration of Joanne Brown, talking sticks. Ms. Snider had brought her own talking stick made especially for her by a Passamaquoddy elder which was used at the end of every session day to give our campers a chance to express their thoughts about what

Ashley Ehrlenbach Johnson Graphic Designer

In the Fall of 2009 Ashley volunteered as our newest designer for the Friends of Taunton Bay Newsletter.

Ashley has a Bachelors degree in Graphic Design and Business Administration from the University of Maine at Augusta. She currently works at Downeast Horizons in Ellsworth as their Resource Coordinator. Prior to that, Ashley worked at *The Ellsworth American* for 7 years as a graphic designer. She also has her own business, AJ Graphic Designs.

Community service has always been an important priority for Ashley. She is a member of the Ellsworth Rotary Club. She served on the Board of Directors of the Ellsworth High School Alumni Association and volunteered as a mentor for Big Brothers Big Sisters of Eastern Maine. Ashley was a deacon for many years at the UCC of Hancock.

She enjoys hiking and skiing and lives in Hancock with her husband Aaron.

they had learned or what they would still like to learn. Ms. Snider also brought her friend, Elizabeth, who lives on the Passamaquoddy reservation for part of each summer. She shared much information about native culture and presented us with a braid of sweet grass for the TBEC.

We also had a fine collection of native baskets, deer antlers, turkey feathers, grasses and even a native dress loaned to us by the Hancock Historical Society, which were much admired by students and families alike. The Passamaquoddy Kit we borrowed from Acadia National Park was very helpful in guiding our instruction and making sure we were accurate in our discussions on the use of the bay by the Passamaquoddy tribe, in particular. Many fine children's books with native tribe themes were shared with the campers.

Once again, the program could not have been as productive as it was without the volunteer efforts and enthusiasm of Mary Turner and Joanne Brown. Both were actively engaged with students and both helped prepare for the sessions and provided support in daily preparation and organizing.

Our "Family Fun Events" were also well-received. Our first one at the end of June was attended by approximately 15 people, up from last year. We had many activities and displays that went along with our theme of native tribes of Maine.



Photo by Steve Perrin

Gordon's Wharf, near Route 1, will be publically available through its purchase by the Town of Sullivan with grants from Land for Maine's Future and Frenchman Bay Conservancy. The house nearest the Wharf is being considered as a future site for the Taunton Bay Education Center, possibly sharing the space with other organizations.

Our second family event was held in conjunction with the Hancock Woman's Club chicken barbecue at the end of July. It was very well-attended, upwards of 50 people, as Tony Sohns put on two high-energy workshops one on insects and bugs in the Taunton Bay watershed and another on lizards, snakes and spiders. Families enjoyed the hands-on activities and genuine enthusiasm displayed by Mr. Sohns.

The third session was held in mid-August at Tidal Falls prior to the Hancock Woman's Club Lobster dinner. We had exhibits by the Abbe Museum, the University of Maine's Franklin Aquaculture Research facility and music provided by Carl Kaursh and Friends, to the delight of everyone present. Steve Perrin offered a PowerPoint presentation and informal discussions about horseshoe crabs while Frank Dorsey provided instruction on knot-tying. Though we did not get the turnout we had hoped for (about 25), there were visitors to the Frenchman Bay Conservancy site that enjoyed our exhibits, as well. It was a lovely day and setting and worth consideration for another event.

The summer programs could not have happened without the support of the Friends of Taunton Bay membership. The donations solicited and received provided us with the resources to offer expanded educational programs for the children and families of this area. I hope this summer outreach program will be able to continue. I deeply appreciate the support extended to me, as well.

**Friends of Taunton Bay Annual Meeting
7:00 p.m. July 8, 2010**

Officers elected:

President – Frank Dorsey (Franklin)

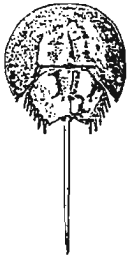
Vice-president - Lois Johnson (Hancock)

Secretary – Mary Turner (Hancock)

At-large members of the Executive Committee
- Johanna Bazzolo (Sullivan), Lee Hudson (Hancock), Steve Perrin (Bar Harbor), Steve Sjoberg (Sullivan)

Attendance: 40

Program: Granite Quarrying and Stonework around Taunton Bay, 1830 to 2010 by Steve Perrin



Friends of Taunton Bay - Newsletter
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Ice on Taunton Bay with Schoodic Mountain in the background.

Photo by Steve Perrin