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Science Update
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Terrapin Traversal Aids Eelgrass Seed Dispersal

Date: August 7, 2014
Source: Virginia Institute of Marine Science

Summary: The discovery of eelgrass seeds in the feces of diamondback terrapins suggested that this species might function as dispersers for eelgrass. Tracking terrapins' seed-eating tendencies and territory size for 2 years revealed that small terrapins do ingest viable seeds regularly and travel distances sufficient to carry seeds beyond their natal bed. Terrapins thus could play a role in expanding eelgrass coverage of the bay floor and also increasing genetic diversity by transporting seeds between beds.

Although animals in general play an important role in dispersing plant seeds (along with abiotic factors like wind or water currents), up until recently diamondback terrapins were not thought to spend much time in eelgrass beds, nor ingest the seeds with any consistency. Understandably, they were off the radar as a serious contender for a substantial role in the dispersal of seeds out of and between eelgrass beds. However, a study by Diane Tulipani and Romuald Lipcius of the Virginia Institute of Marine Science recently published in PLOS One has overturned that perspective. After a surprising discovery of eelgrass seeds in terrapin feces in 2009, the research team systematically sampled terrapins in the lower Chesapeake Bay for the presence of the seeds in their feces for a 2-year period. Smaller individuals (males and immature females) with heads less than 30 mm wide were significantly more likely to have seeds in their systems. Laboratory tests of the seeds harvested from fecal samples showed that about 14% germinated. That may not sound like many seeds survived their trip through the terrapin digestive tract, but it is actually slightly better than the rate of approximately 10% germination of seeds that simply dropped on the Bay floor without animal transport. Ultrasonic telemetry studies also revealed that terrapins travel further than previously reported, which confirmed that they do readily travel between separate isolated eelgrass meadows in their movements within their territory. Although the overall number of seeds eaten, transported, and successfully germinated is a small fraction of the vast quantity of seeds generated by an eelgrass meadow, the impact of the tiny terrapins carrying seeds to other meadows is now recognized as an important element of how the ecosystem as a whole maintains genetic diversity in the eelgrass populations.

Story Source: Material provided by Virginia Institute of Marine Science. Original written by Alexali Brubaker. (Content may be edited for length and style).

Citation: Tulipani, Diane C. & Lipcius, Romuald N (2014) Evidence of Eelgrass (*Zostera marina*) Seed Dispersal by Northern Diamondback Terrapin (*Malaclemys terrapin terrapin*) in Lower Chesapeake Bay. PLOS One http://dx.doi.org/10.1371/journal.pone.0103346