



Use of a Traditional Harvest Method to Sample Diamondback Terrapins in Winter in Chesapeake Bay

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We used a modified crab scrape made of cold-rolled steel stock to dredge for terrapins in Chesapeake Bay. The scrape bar was 1.7 m wide and equipped with 30 15 cm downward facing teeth to help remove terrapins from bottom sediments. The scrape trailed an 8 cm-mesh knotted nylon bag to retain terrapins. Entrance to the bag measured 1.7m x 0.4 m.



The scrape was dragged (left) in a circular pattern over known hibernacula and retrieved with the assistance of a hydraulic winch (right). The length of the tow rope adjusted the drag or "bite" of the scrape in bottom sediment.



Captured terrapins were typically covered in mud (above) and were washed prior to processing. Most terrapins remained dormant and easy to handle in the cold temperatures (below and right). Sex, age, weight, and shell measurements were taken on all terrapins.



Abstract: Harvest of diamondback terrapins (*Malaclemys terrapin terrapin*) in Chesapeake Bay historically took place in the winter months using dredges of various configurations. We worked with Dwight Marshall, an experienced terrapin harvester from Smith Island to document these methods first-hand, to assess the effects of commercial harvest on local populations, and potentially adapt the methods for scientific study. In the winters of 2003 through 2005, we used a modified crab scrape to dredge 1220 terrapins at 7 hibernacula, 6 of which were located in the Tangier Sound area. The scrape was framed from cold-rolled steel stock, was 1.7 m wide and trailed an 8-cm mesh nylon bag to retain terrapins. The scraping bar was equipped with 30 15-cm long downward facing teeth to help remove terrapins from soft bottom sediments. Hibernacula were located in semi-protected estuarine bays normally within 300 m from nearby marsh. These sites were characterized by water depths of 2 to 4 m and bottoms of moderately soft mud. These conditions provided for good tidal circulation, even under ice cover, while at the same time protecting against dewatering at extreme low storm tides. The cold winters of 2003 through 2005 (<7°C February water temperatures) produced well-populated hibernacula of primarily adult terrapins. The dredge did not injure terrapins and proved to be an efficient capture method capable of landing 200 terrapins/hr in some circumstances. We found terrapins abundant at most sites and site-specific sex ratios to vary widely. Most importantly, our sampling revealed the relative ease of harvest of large numbers of adult females from estuarine bay hibernacula. Removal of large numbers of breeding-age females could have long-term effects on local terrapin populations.

Summary of Diamondback Terrapin Captures from Winter Hibernacula in the Tangier Sound Region of Chesapeake Bay, 2003 - 2005.

Location	Total Captures			Sex Ratio (% Female)		
	2003	2004	2005	2003	2004	2005
Smith Island - North	18	210	167	72	95	70
Smith Island - South	64	2*	8*	80	—*	75
Bloodsworth Island	49	60	55	73	50	58
South Marsh Island	2*	65	95	—*	65	77
Jane's Island	57	107	60	91	70	63
Nanticoke River	58	54	57	40	33	33
St. Jerome's Creek**	15	6	11	100	100	91
TOTALS	263	504	453	73	63	65
GRAND TOTALS			1220			66%

*Seasonal appearance of submerged aquatic vegetation precluded sampling.

**Site on western shore of Chesapeake Bay



The fewest but the largest terrapins were captured in St. Jerome's Creek on the western shore of Chesapeake Bay. The largest individual captured (right) weighed 3022 grams and had a 228mm plastron.



Waterman Dwight Marshall with a morning's catch of Tangier Sound terrapins.



Pit tags were used as a primary permanent mark for all terrapins. Tags are being injected with a special needle (left) and a bar code number is being confirmed with a special reader (right).



We also marked all terrapins externally to easily identify recaptures. We drilled a small hole in a perimeter scute (left) to apply serially numbered monel tags (right).



SUMMARY FINDINGS

CHARACTERISTICS OF HIBERNACULA

- Estuarine bay hibernacula were found to be well defined, relatively limited areas containing large numbers of aestivating terrapins.
- Well populated hibernacula were in relative proximity (300m) to saltmarsh habitat and typically in protective coves with good tidal circulation. Water depth of 2-4 meters was sufficient to protect against dewatering during extreme storm tides.
- Bottom types ranged from moderately firm to moderately soft muds; terrapins typically buried in soft muds but remained unburied on firmer substrates.
- All sites were populated with primarily adult terrapins (>10 years old) and were poorly represented of juveniles (<5 years old).
- Numbers of terrapin and sex ratios varied widely from location to location and overall both sexes were well represented in Tangier Sound.

HARVEST METHODS

- Chesapeake Bay watermen use simple modified crab scrapes, or dredges, to harvest terrapins in winter.
- Harvest is most efficient in cold winters (water temps ca. 5 C) that produce well formed and densely populated hibernacula. Capture success can be as high as 200 terrapins/hr.
- The key to successful harvest is knowledge of the location of hibernacula. Since sites seem to have traditional use, this knowledge is readily passed down from generation to generation of watermen.

CONCLUSIONS

- The Tangier Sound area has a relatively large and robust diamondback terrapin population.
- Watermen have ready access to and the ability to efficiently remove large portions of local adult female stock from winter hibernacula.
- Harvest of a large portion of breeding age females obviously can have long-term effects on local populations.
- Commercial harvest in Maryland is regulated by market demand which is presently perceived as low.