# Draft Study Plan
# Patuxent River Diamondback Terrapin Project

Dr. Roger Wood
The Wetlands Institute and Richard Stockton College of New Jersey

## Objective

The objective of the diamondback terrapin injury assessment is to evaluate the hatching success of terrapins at nesting beaches that were oiled compared to those unaffected by the oil spill. Data from this study will be used to assess the likelihood that injury to the eggs or hatching levels occurred, and to assess the magnitude and extent of potential injury to the year 2000 cohort that would have hatched in the spill zone.

## Background

Terrapins nest on narrow, isolated sandy beaches found along the fringes of salt marsh of the Patuxent River. The nesting season starts between mid-May to early June and continues until late July. Females repeatedly use the same nesting sites and deposit eggs above the high tide line. Egg incubation lasts between 60 and 120 days. Average clutch size is 13 eggs. Females may lay as many as three clutches per nesting season. Once hatchlings emerge from the nest (end of first week of August through October/November), they enter the water of the adjacent salt marshes. Hatchlings from some nests do not emerge until the following spring.

## Study Approach

Terrapin hatching will be investigated on beaches in the area of the spill, from Swanson Creek to Jack Bay, about 8 miles south. This region was selected because it contains the beaches where historical studies have been conducted, (Roosenburg 1992), and offers other potential nesting beaches for study (Mountford 2000). Study sites will include both oiled and unoiled beaches.

### Selection of Study Sites

Oiling level indices for beaches based on SCAT data (April 2000) and observations by Mountford (2000) were recorded and entered into a GIS database. In addition, the 22 known turtle nesting beaches in spill area (Mountford 2000) were recorded and mapped.

Based on this map and field observations, a total of nine terrapin nesting beaches were selected as either “heavily oiled”, “moderately oiled”, or “unoiled” sites. Information received subsequent to study initiation has led to the reclassification of some of the beaches in terms of their oiling levels:

1. Caney Creek-heavy oiling

2. Golden Beach Playground- heavy oiling
3. Long Point- heavy oiling
4. Hoyer property- moderate oiling
5. Trent Hall- moderate oiling
6. Golden Beach Grandfather's Pond- moderate oiling
7. Sheridan Point- no oiling
8. Prison Point- no oiling
9. Jack Bay- no oiling

Field Program

A. Exclosure study

Terrapin hatching will be evaluated in beach areas from the beginning of September through the end of the fall hatching season (determined by seven consecutive days with no hatchlings observed). Plastic fence exclosures will be installed in typical nesting habitat to capture emerging hatchlings. Exclosure size is 5 m by 10 m, and about one foot in height. Two exclosures will be installed per site in open, sparsely vegetated beaches above the mean high tide line (Roosenburg 1992). Each exclosure will be photographed showing its proximity to mean high water, mapped using Global Positioning System, and entered into GIS database.

Exclosures will be checked daily for emerging hatchlings through the fall hatching season. Hatchlings will be counted, removed from collection devices, and released.

B. Beach reconnaissance

Teams of three people will walk beaches with suitable habitat (including those without exclosures), and record signs of nesting (i.e., scattered egg shells from successful nests or nests destroyed by predators). Signs of predators (tracks, scat, etc.) will be identified to species when possible and recorded.

Analysis

Nesting beach use will be assessed to determine if terrapins continue to nest successfully in the study area (number of successful nests, number of hatchlings).

Terrapin nesting success will be compared between oiled and unoiled beaches (number of successful nests, number of hatchlings).

Interpreting Data/Key Results of Damage Assessment

Overall impacts of the oil spill on the use and success of nesting on selected oiled beaches will be assessed.

Estimate of impact of spill on year 2000 cohort based on nesting distribution, abundance, and nesting success results.

Issues associated with potential levels of hatchling/juvenile mortality related to the spill will be addressed to the extent possible based on the results of the study.