

LEATHERBACK SEA TURTLES AND OFFSHORE SHRIMP TRAWLING ACTIVITY
IN NORTH CAROLINA

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We examined data from the South Atlantic Shrimp File collected under the North Carolina State/Federal Cooperative Statistics Agreement to evaluate potential shrimp trawling interactions with leatherback sea turtles (*Dermochelys coriacea*) in North Carolina. The regional data file contains information for states to the south, also.

The majority of shrimp trawling activity in North Carolina occurs within inshore waters (85% based on over 13,474 days of trawling effort from 1980 to 1991), but 15% of trawling activity occurs in offshore waters. Virtually all of this offshore trawling activity occurs from Ocracoke Inlet (35°04'N) to the North Carolina/South Carolina line (33°51'N) (Fig. 1), and is mostly (95%) within 12 miles of shore. Trawling activity increases in mid-April, peaks late June (about week 28) and declines early fall (Fig. 2). If weather conditions favor overwintering by pink shrimp (*Penaeus duorarum*) (Hettler and Chester, 1982; Hettler, 1992), there may be increased activity early in the season. For example, in 1989 the average water temperature of the two coldest consecutive weeks of the preceding winter was 8.1° C (Hettler, 1992), and shrimping activity was higher that year during mid-May

than other years (Fig. 2).

The National Marine Fisheries Service (NMFS) Beaufort Laboratory has been investigating the occurrence of sea turtles within North Carolina's inshore and offshore waters since 1989 utilizing several methodologies (Epperly et al., in review). One method is based on sightings of sea turtles reported by the public (commercial and recreational fishermen, boaters, etc). Leatherbacks were reported in offshore and inshore waters of North Carolina and were most abundant from late April - early June (Table 1). During May - June, 1989-1992, 344 leatherback sightings were reported. Sightings in ocean waters, from Ocracoke Inlet to the North Carolina/South Carolina line, represented nearly 85% of all offshore leatherback sightings. Three aerial surveys, conducted by Coastal Carolina Community College within one kilometer of the beach off Topsail Island (Fig. 1) in 1992 (23 May, 2 June, and 7 June), recorded 45 leatherback sightings (Grant, unpublished manuscript). While sightings reported by the public are not an absolute measure of abundance, they document presence and indicate relative abundance. Leatherback strandings occur infrequently in North Carolina (44 from 1980-91). However, leatherback strandings are coincident with a seasonal peak in observed abundance and a period of increasing shrimp trawling activity (Fig. 3).

LITERATURE CITED

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- Hettler, W.F. 1992. Correlation of winter temperature and landings of pink shrimp *Penaeus duorarum* in North Carolina. Fish. Bull. 90:405-406.
- Hettler, W. F. and A. J. Chester. 1982. The relationship of winter temperature and spring landings of pink shrimp, *Penaeus duorarum*, in North Carolina. Fish. Bull. 80:761-768.

Table 1. Reported sightings of leatherback sea turtles (Dermodochelys coriacea) in North Carolina, 1989-1992.

| Month | Inshore | Atlantic Ocean | Total |
|-------|---------|----------------|-------|
| Jan. | 0 | 2 | 2 |
| Feb. | 0 | 0 | 0 |
| Mar. | 0 | 0 | 0 |
| Apr. | 0 | 9 | 9 |
| May | 28 | 223 | 251 |
| Jun. | 24 | 69 | 93 |
| Jul. | 1 | 15 | 16 |
| Aug. | 2 | 9 | 11 |
| Sep. | 1 | 7 | 8 |
| Oct. | 0 | 7 | 7 |
| Nov. | 0 | 8 | 8 |
| Dec. | 3 | 0 | 3 |
| Total | 59 | 349 | 408 |

FIGURE 1. NORTH CAROLINA COAST

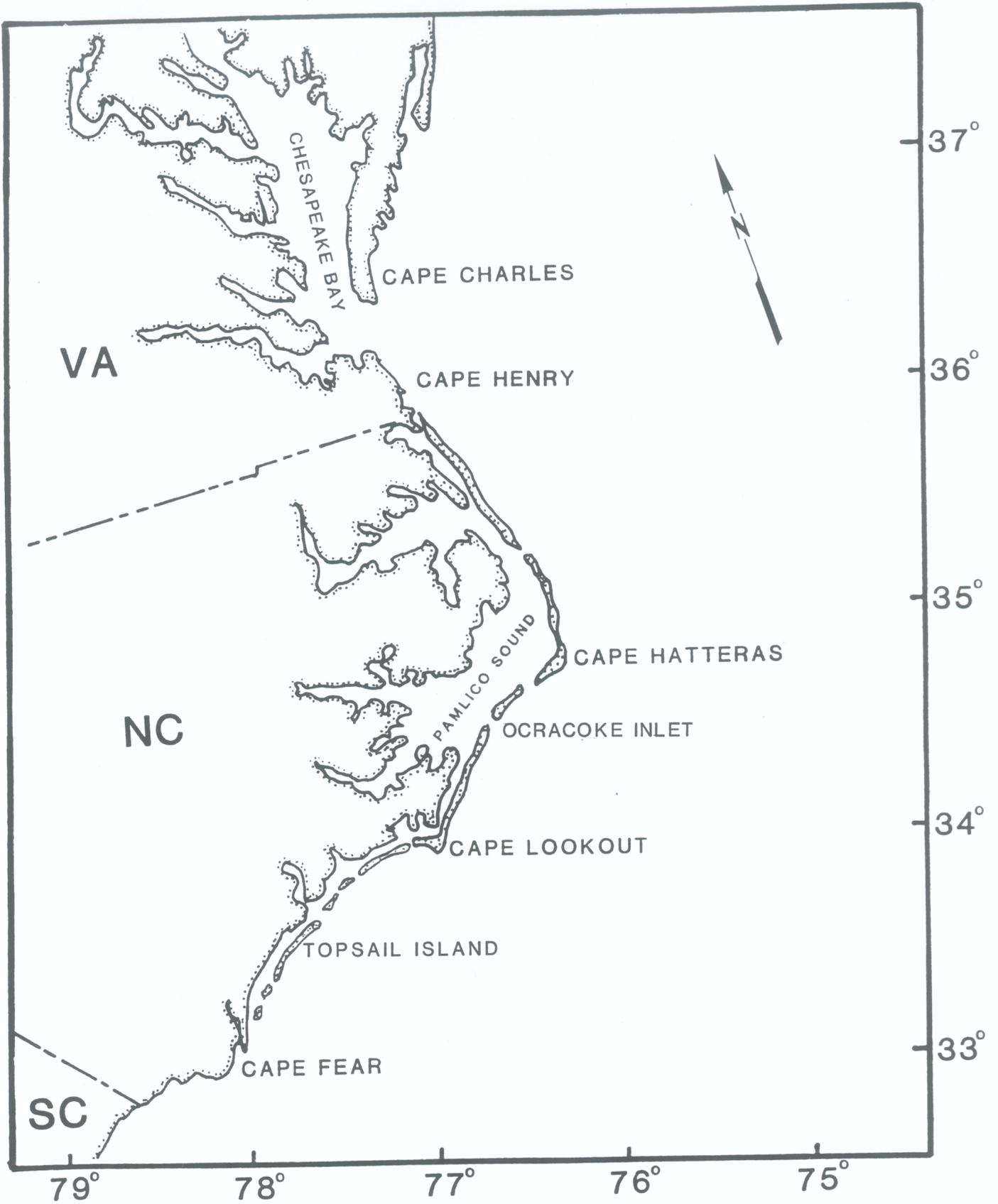


FIGURE 2. ANNUAL OFFSHORE TRAWLING EFFORT, 1980-1991. COMPOSITE LEATHERBACK SIGHTINGS FOR 1989-1992 ARE OVERLAYED.

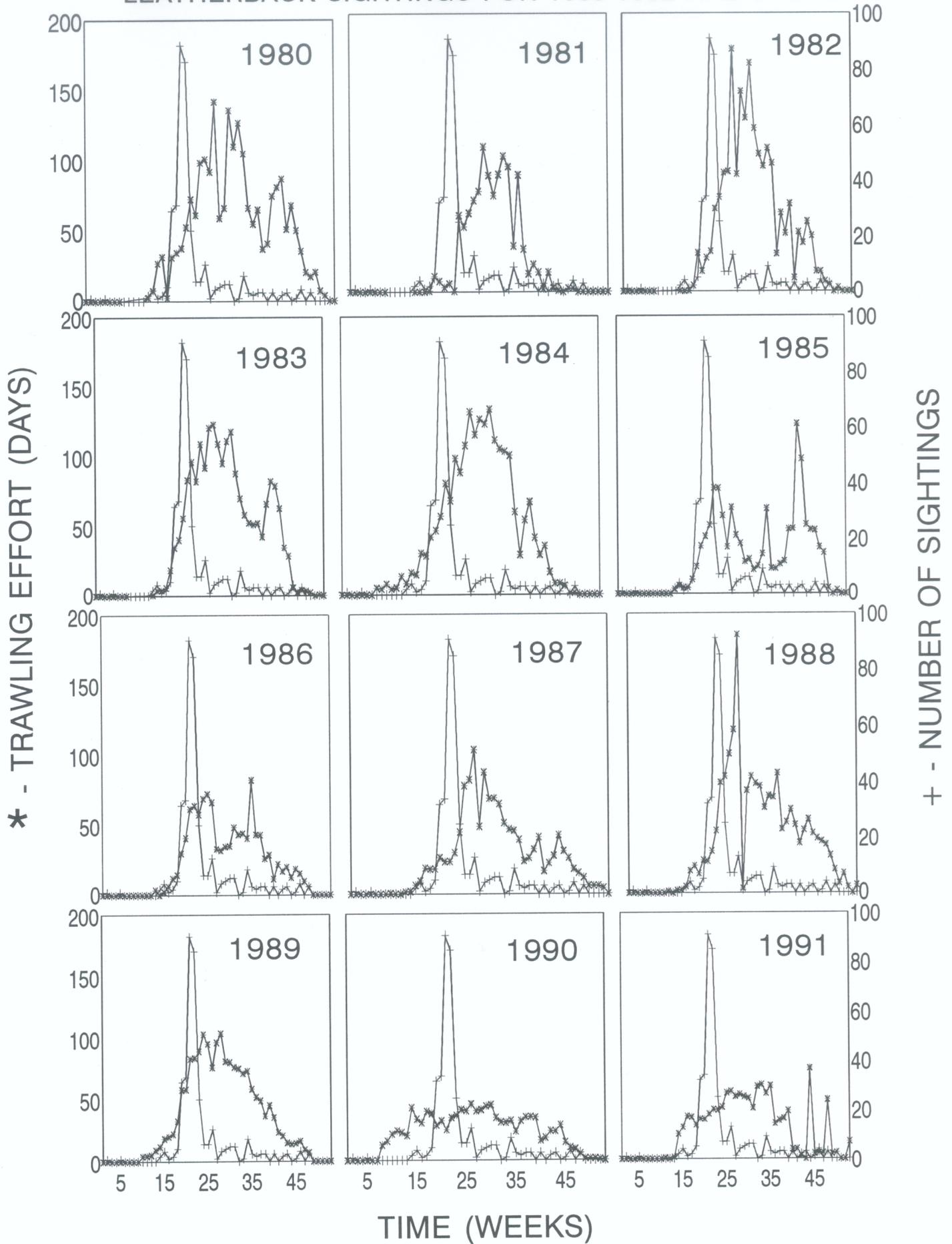


FIGURE 3. COMPOSITE OF OFFSHORE TRAWLING EFFORT (1980-1991) AND LEATHERBACK SIGHTINGS (1989-1992) AND CUMULATIVE STRANDINGS (1980-1991)

