

## **Bay scallop abundance estimates for determining opening of the 2010 harvest season**

### **Background**

The goal of the 2007 N.C. Bay Scallop Fishery Management Plan is to implement a management strategy that restores the stock, maintains sustainable harvest, maximizes social and economic value, and considers the needs of all user groups.

To achieve this goal the Marine Fisheries Commission prohibited harvest until an independent sampling indicator shows population levels are at historically sustainable levels. Further measures should also be in place to ensure spawning is complete and timing of the season ensures economic yield is at an optimum. Management measures to accomplish this strategy include:

- Prohibit harvest (started in January 2006) and evaluate population status annually.
- Conduct sampling during the prohibited harvest period to define an independent sampling indicator for reopening a harvest season.

A standardized target scallop population level indicator, or catch-per-unit-effort (lnCPUE), was selected by the commission at its January 2009 meeting based on DMF sampling in 1984 and 1985. A standardized CPUE is used to reduce bias in samples with different number of tows and smooth the data to reduce overestimating the average caused by only a few samples with large amounts of scallops in the catch.

For the 2009 season target levels allowing harvest were reached in Core Sound, but not in Bogue and Back sounds. Eastern Pamlico Sound was also opened because no historical data were available to determine a population level indicator and evidence showed scallops were relatively abundant in this region. In the past, bay scallop harvest in Pamlico Sound played a small role in overall landings.

### **2010 Harvest Indicators**

Bay scallop sampling in October 2009 in Core, Bogue and Back sounds did not meet the 1984 to 1985 target estimates as shown below in Figure 1. At the request of fishermen, division staff sampled five additional areas Bogue Sound during November where high scallop densities were known to occur. The combination of these five areas with the core stations also did not reach the target level of 2.33 scallops/minutes for Bogue Sound. However the additional areas alone were above the target. Although the target was exceeded within those additional areas without the core stations, use of that data would be statistically invalid. These sites were located mostly in one general area of Bogue Sound (Figure 2). Further expansion of the stock is still necessary to the western side and these highly concentrated areas will help increase the chances of expansion into more of Bogue Sound.

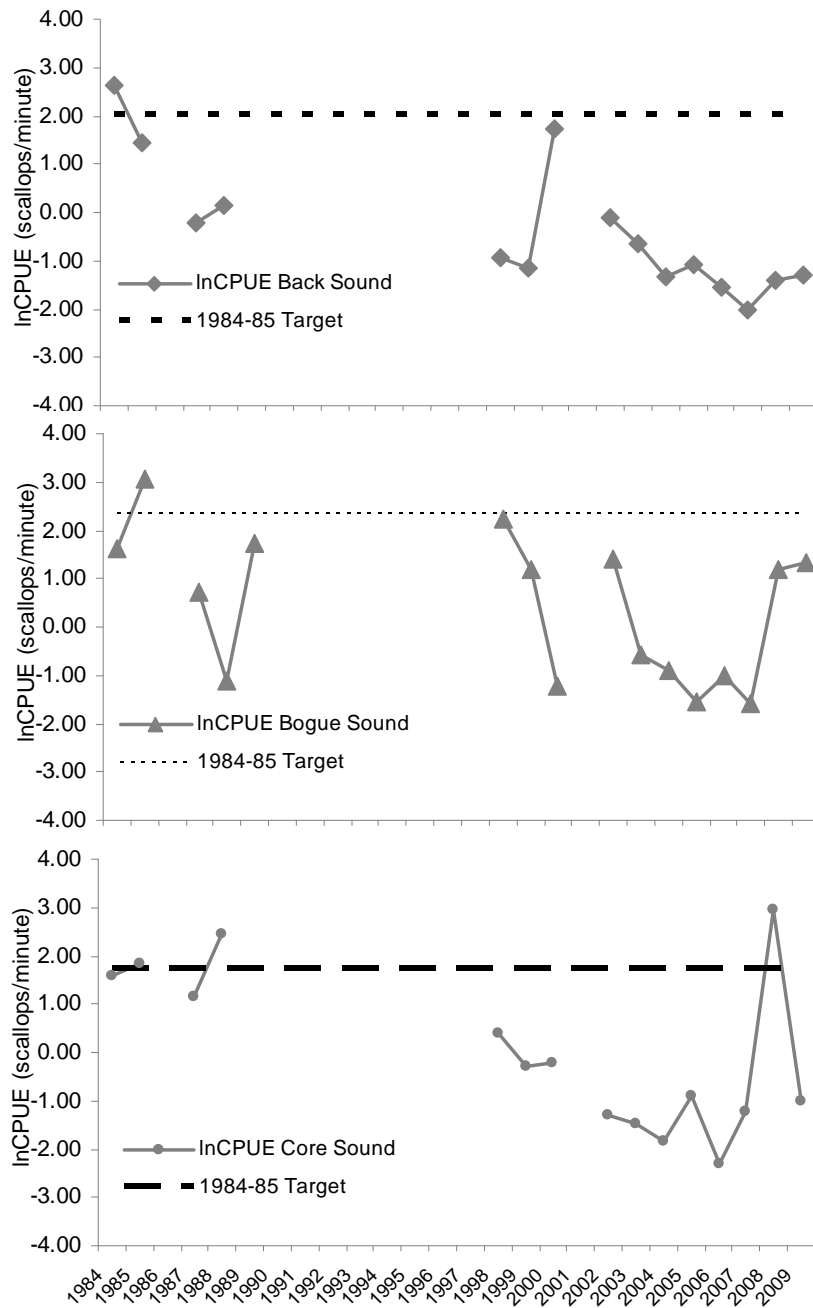


Figure 1. The annual standardized mean number of scallops (InCPUE)(scallops/minute) for Back, Bogue, and Core sounds and commission-selected 1984 to 1985 target.

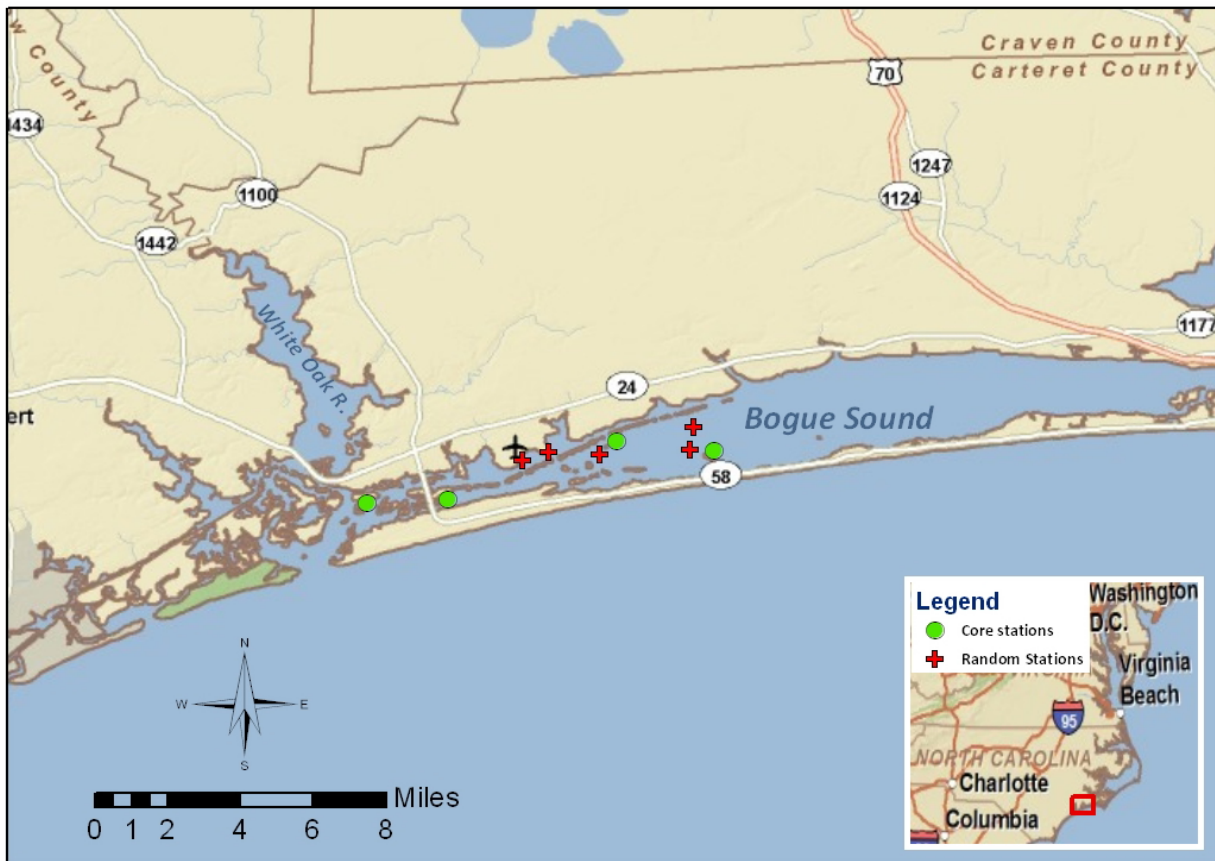


Figure 2. Core and random bay scallop sampling locations, fall 2009. Provided by the NCDMF GIS section.

Scallop abundance was also estimated for three consecutive years in Pamlico Sound at five set areas. Sampling was conducted using a square meter quadrat (sampling grid) at each station ten times to estimate the average number of scallops per square meter. Data from this sampling shows the January 2009 sampling period, just before opening Pamlico Sound to commercial and recreational harvest last season, had the highest number of scallops per square meter (Table 1). This season's estimate (2010) of bay scallop abundance is well below last year's level.

Table 1. Annual arithmetic (CPUE) and standardized catch-per-unit-effort (lnCPUE) of bay scallops sampled in areas of eastern Pamlico Sound 2008 to 2009.

	Arithmetic CPUE (Scallops/m <sup>2</sup> )	lnCPUE ln(Scallops/m <sup>2</sup> )
Feb 2008	2.68	-0.66
Jan 2009	6.04	1.18
Oct 2009	0.86	-1.2

Since the standardized CPUE falls below target levels in Core, Bogue, and Back sounds, there should be no bay scallop harvest season in these areas. Also, bay scallop harvest should not be allowed in eastern Pamlico Sound since the number of scallops declined from the 2009 season. Recruitment is still very much a concern for this species; therefore, harvest prohibitions should continue for 2010 to ensure some bay scallops remain for spawning activity.

The Division began sampling in Topsail sound and New River this fall. There were very low numbers of scallops found in Topsail sound but good indications of a population of scallops in New River. However, this population is small and therefore it is recommended that scallop harvest not occur in the southern area until more data can be collected to insure this population continues to expand.

Improving data collection on population dynamics, harvest, environment, and socioeconomic aspects relative to bay scallops is recommended throughout the fishery management plan to provide more comprehensive information for future management decisions.