

Seasonal Abundance of Temora longicornis on the Northeast Continental Shelf of the United States Based on 24 Years of Ecosystem Monitoring Data

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INTRODUCTION

The copepod Temora longicornis is a key component of the zooplankton assemblage that resides on the U.S. northeast continental shelf (Bigelow 1926). Data from MARMAP decade cruises and subsequent Ecosystem Monitoring Cruises were used to ascertain the distribution and abundance of this species during the 24 year period of data collection.

METHODS

Data was collected from plankton tows made during 161 cruises in the 4 regions of the northeast continental shelf from 1977 to 2000 (Figure 1.). All samples were collected with standardized tows using 61 cm Bongo Samplers fitted with 333-micron mesh nets. The abundance of Temora longicornis expressed here is in numbers per 100 cubic meters of water filtered. Samples used for this study were collected within six survey periods which have been used by the Ecosystems Monitoring Program since 1996.

RESULTS

Figures 2 and 3 : 24 year means of Temora longicornis abundance for each season in each of the regions surveyed, plus a shelf-wide 24 year mean.

Figure 4 : Regional distribution of T. longicornis across the 4 regions of the survey area over a 24 year period during each of the 6 seasons of the Northeast Shelf Ecosystem.

SUMMARY

Temora longicornis abundance increases throughout the ecosystem with the northern progression of springtime conditions. The copepod's mean abundance peaks during late spring in the MAB and SNE regions, while further north density maximizes during late summer (Figure 3). Overall abundance decreases in all regions during early autumn to its annual low, except in the MAB where it continues to decrease through late autumn. Abundance remains low throughout the ecosystem during the winter months. The copepod concentrates in nearshore waters and in the shallow central shoals of GB (Figure 4). A strong decreasing inshore to offshore abundance gradient is usually found in all regions during the peak abundance periods. This gradient weakens during the autumn months and starts to strengthen again during the winter season. This pattern of growth and distribution suggests a correlation of this herbivore to phytoplankton density.

Patterns of chlorophyll a distribution (O'Reilly and Zetlin, 1998) bear a strong resemblance to *T. longicornis* distribution, suggesting the copepod's abundance is food dependent.

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FIGURE 1.



FIGURE 2.

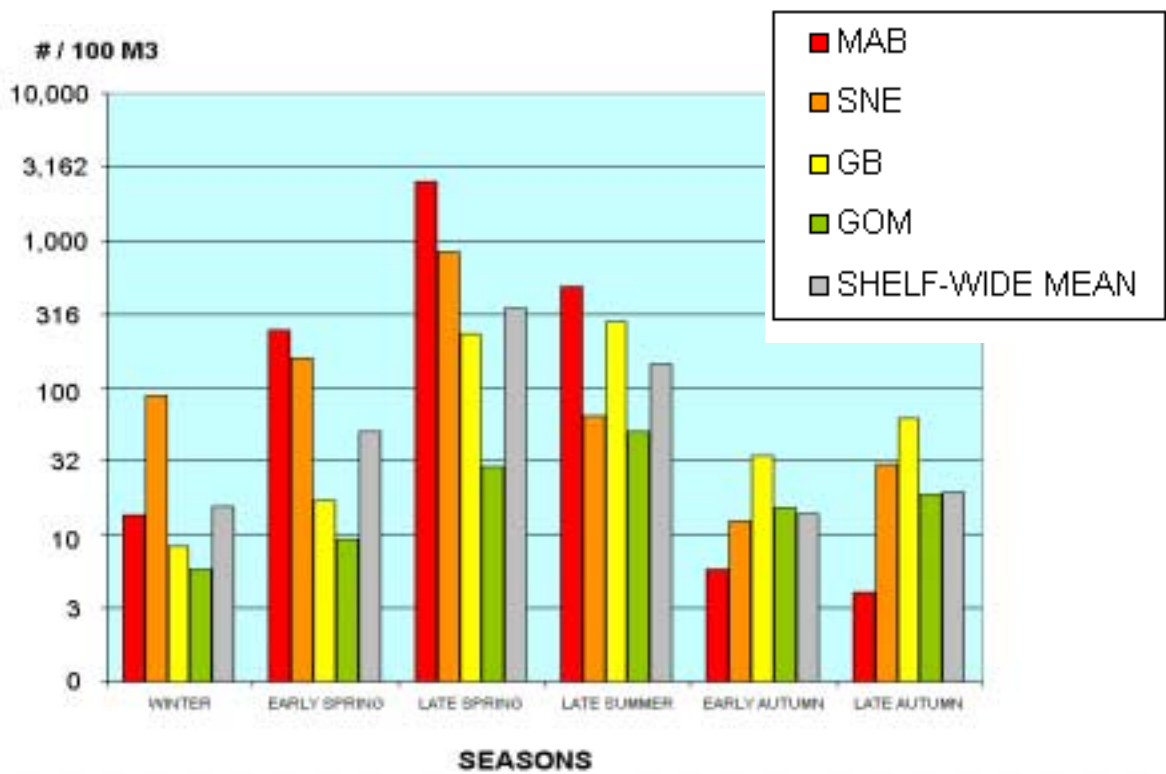


FIGURE 3.

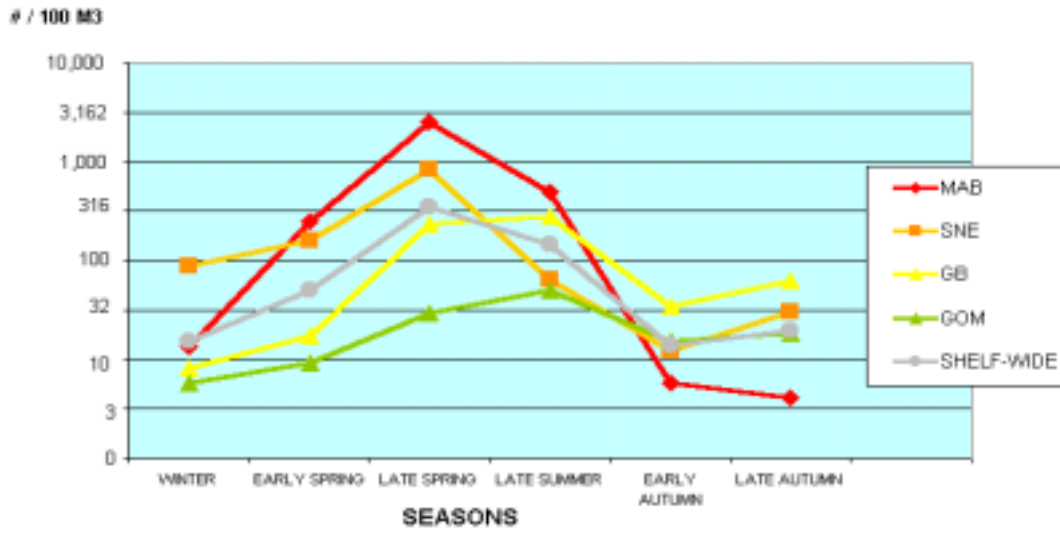


FIGURE 4. (6 Seasons)

