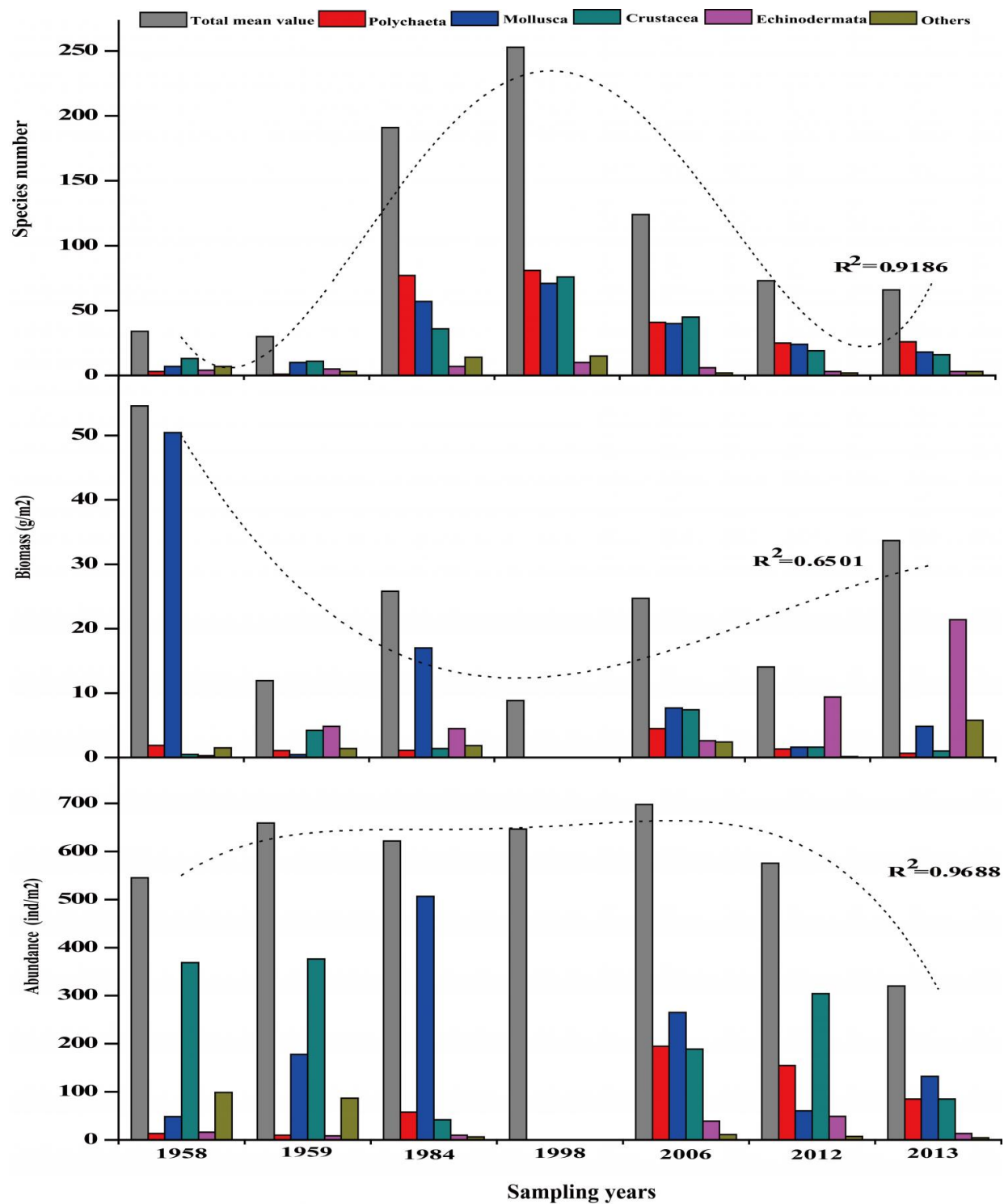


Changes in the macrobenthos community of the southern Bohai Sea over the past 60 years

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Yearly fluctuation of species number, biomass and abundance of macrobenthos community in southern Bohai Sea. Credit: ©Science China Press

The evolution and degeneration of ecosystems in estuaries and coastal zones are becoming a general trend worldwide. The Bohai Sea, an important, semi-enclosed sea in China, has been degenerating as a result of climate change and anthropogenic disturbances.

Macrobenthic assemblages plays a key role on the cycle of energy and materials in the marine ecosystem. Due to their unique living patterns, the health of macrobenthos communities is a good bio-indicator to reflect ecosystem health and the long-term changes of the marine ecosystem.

The first survey of macrobenthic assemblages of the Bohai Sea began in the 1950s, and several surveys were conducted after that. These investigations uncovered the species composition, [community structure](#), function group, secondary production and biodiversity of the Southern Bohai Sea. However, most of these focused on a short-term period (less than two years), and few on long-term succession of macrobenthos in Southern Bohai Sea.

Recently, an article titled "Long-term trends of macrobenthos in southern Bohai sea, China in relation to environmental changes" was published in *Scientia Sinica Vitae*. Researchers analyzed the community structure based on historical data and current data from 2011 and 2013. Over the past 60 years, the macrobenthic assemblages of Southern Bohai Sea have undergone temporal and spatial changes of species composition, key species, biomass and abundance, biodiversity and distribution pattern. K strategy species with long life, large size and high competitive advantage have been progressively replaced by R strategy species with short lifespans, wide adaptability and high reproductive capacity.

According to yearly fluctuation of species numbers, biomass and abundance, the succession process can be roughly divided into three

periods (Figure 1): prior to the 1960s, the characteristics of macrobenthic fauna were indicated by relatively low total species number, high value of biomass and abundance; commercial molluscs and crustaceans were the two dominant groups; In the second period, from 1980s to 2006, the macrobenthic fauna were characterized by increasing species number and decreasing biomass values; small-sized mollusks and echinoderms became the dominant groups; In the third period, after 2006, the increased value of biomass and dominant groups of molluscs and crustaceans in the macrobenthic community reflected a certain degree of recovery in bioresources.

China's coastal economy and the intensification of human sea-related activities progressed rapidly over the past 60 years. The structure and function of the marine ecosystem in Bohai also underwent dramatic changes and degradation. Environmental parameters such as seawater salinity, temperature, DIN, and N:P ratio exhibited positive trends, while DO, P, Si, and Si:N ratios exhibited negative trends in the Bohai Sea (Xuren Ning et al. in 2010). "Environmental changes alter the spawning, feeding, wintering grounds and migration routes of biological resources, and then affect the recruitment in populations. Anthropogenic activities such as over-fishing reduce the trophic level of the marine ecosystem, shorten the food chain, cause the food web to become simple, and ultimately lead to the miniaturization of species in body size," they explained.

This study fully confirms the long-term investigation and analysis of macrobenthos as an effective method for the quantitative study of long-term [environmental changes](#) and biological responses to human activities. This work clarified the succession of the macrobenthic community in the southern Bohai Sea, which is very important to understand the service and function of Bohai ecosystem and to rationally develop and utilize the biological resources in the Bohai Sea.

More information: Long-Term Trends of Macrobenthos in Southern Bohai Sea, China, in Relation to Environmental Changes, *SCIENTIA SINICA Vitae* (2016). [DOI: 10.1360/N052016-00063](https://doi.org/10.1360/N052016-00063)

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