2. Techniques used: An extensive field study has been carried out to collect pertinent data to ground elevation, water quality, bottom sediment quality and benthos in the recent three years starting 2005. Also, to understand basic physical environmental characteristics of Horseshoe crab larva's habitat, individual larvae have been observed on the flat. These investigation results are compared with the past findings. A numerical computation of wave height distribution and bottom Sheilds numbers through the energy balance equation method has been conducted to study any changes in wave environments due to the landfill constructions.

3. Results and conclusions: A drastic decrease in the wave intensity due to the large-scale landfills is confirmed, as indicated in Fig. 2 and may be one of the reasons for increase in number of the breeding pairs. The results of the field study indicate, however, that natural environments of the flat and its neighboring sea such as water and sediment qualities have not significantly changed at the present time. Also, basic physical characteristics of Horseshoe crab larva's habitat environments are identified and discussed, as shown in Fig. 3, where individual larvae are plotted with bars over the topographic map (left figure) and the horizontal distribution of ignition loss of the bottom sediment (right figure).
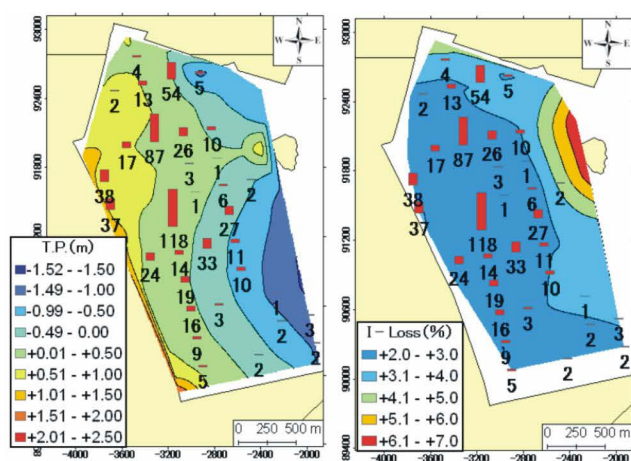

Fig.3 Individual larvae observed on the flat

Design and application of artificial neural network predicting model of assessment index in coastal marine ecosystem

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Due to the overexploitation of marine ecological resources and the worsening of environmental pollution, our typical marine ecosystem has been seriously damaged, with local (regional) water ecosystems imbalance and biodiversity sharp decline. So the development of marine ecosystem assessment will provide an important basis for decision-making for the effective protection of marine ecological environment and sustainable exploitation and utilization of marine ecological resources. Ecosystem health assessment is not only a focus but also a difficult point in ecology studied at present; with promising development and application, it has a great deal of questions existing at the same time(for instance, the concept and definition of health, evaluation criterion, etc). According to the assessment index system that has already been set up, by using MATLAB7.0 neural network toolbox, set up artificial neural network (ANN) with mapping predicting model to various kinds of physical and chemical, ecological factor and chlorophyll a density of coastal sea water. At the same time, the statistical software SPSS was used to make further optimization analysis to the correlation of marine ecosystem structure, function and environmental indicators. On this basis, perfect the method of ecosystem assessment, guarantee the accuracy and scientificity of assessment method, which promote the comprehensive understanding of ecosystem healthy.

Occurrence levels and distribution of organochlorine pesticides (OCPs) in surface sediments of the Bohai Sea, China

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The Bohai Sea located in North China is a shallow marginal sea enclosed by Liaodong and Shandong Peninsulas. Several large rivers, including Huanghe (Yellow River - the second largest sediment-load river in the world) drain into the Bohai Sea. The surrounding area of the Bohai Sea is a highly urbanized and industrialized region. The rapid industrialization and urbanization around the coastal regions has resulted in a severe environmental stress.

Organochlorine pesticides (OCPs), as one of the

groups of the persistent organic pollutants (POPs), have been caused extensive concern due to their high toxicity, persistence, bioaccumulation and biomagnification in the environment. OCPs have been widely used throughout the world since the 1950s (especially in China), thus they are ubiquitous in the environmental matrixes and the sediments usually regard as a final sink for the organic pollutants.

In this work, fifty-five surface sediment samples covering virtually the entire Bohai Sea were measured for OCPs to provide a better understanding of the occurrence levels, geographical distribution, possible sources and potential biological risk of these compounds in this area. The results indicate that the Bohai Bay and the area neighboring big harbors in the Bohai Sea had higher levels of DDTs, suggesting that the shipping and port facilities for transportation and fishery could be a local point source for DDTs in the coastal regions. Another possible cause is that the surrounding area of the Bohai Bay was ever an important production base for OCPs (especially HCHs and DDTs) in China. The (DDE+DDD)/DDT ratios indicate that degradation of the parent DDT occurred significantly in the study areas. The historical usage and production, suspended sediments, complicated hydrodynamic conditions and dilution effect could be responsible for the distribution patterns of OCPs. PCA results indicate that the distance to the pollution sources could be more important for the OCPs occurrence. Comparing the current data with sediment qualities guidelines, most of the OCPs in surface sediments from the Bohai Sea were relatively low from an adverse biological aspect, however, DDTs and chlordanes at various coastal sites had some biological risk due to their higher level in the area.

Composition change of organic matter in bottom sediment of the Osaka Bay

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We studied the composition change of the persistent organic matter, which consist of humin, humic acid, and fulvic acid, in Osaka bay, the Seto Inland Sea, Japan. The bottom sediment was taken in 1985 and 2004, respectively. Humic substances which extracted by sodium-hydrate and sodium pyrophoric acid is named alkali extracted humic substances. The persistent organic matter that is not extracted by the regent is humin, which is the most persistent in organic matter in bottom sediment. Then, humic acid was precipitated and separated by sulfuric acid. Amount of alkali extracted humic substances and humic acid were shown as total organic carbon (TOC) by TOC analyzer. Amount of hydrogen and oxygen in humic acid extracted were measured by CHNO analyzer after freeze dehydration. The qualitative alteration of humic acid was evaluated by using the relationship between H/C atomic ratio and O/C atomic ratio in humic acid. In addition, nitrogen and oxygen stable isotope ratio, $\delta^{13}C$ and $\delta^{15}N$, were analyzed for several samples. These parameters used to presume the origin of persistent organic matter.

The concentrations of TOC in surface bottom sediment significant decreased in 1985 than those in 2004. This demonstrated that total amount control of COD conducted since 1970's have been succeeded and the bottom sediment environment of Osaka bay has been improved. The ratio of alkali extracted substances to TOC decreased. This means that the amount of humin, which is the most persistent in organic matter in bottom sediment, raised relatively in 2004. The ratios of humic acid to alkali extracted humic substances in 2004 were greater than those in 1985, too. These results showed that amount of humin and humic acid, which are more persistent in organic matter, relatively increased in bottom sediment of Osaka bay.

The relationship between H/C atomic ratio and O/C atomic ratio in humic acid showed that the H/C atomic ratio enlarged in 2005. It was suggested that the decreasing of amount of humic acid flowing from land or the increasing of