Supplementary Material

# Supplementary methods

## Diversity index

Shannon-Wiener diversity index (*H'*) was calculated using the PRIMER 6.0 software package, according to the following formula:

Where P*i* is the percentage of the abundance of species *i*.

## ABC curve

ABC curve (Warwick, 1986; Clarke, 1990) was calculated using the PRIMER 6.0 software package. Warwick (1986) constructed ABC curves to explore the external disturbance status of macrofaunal communities, and Clarke (1990) proposed a statistical coefficient W to describe the degree of separation of the ABC curve; W has a value between -1 and 1. A value of W close to 1 indicates unpolluted conditions, whereas a value of W close to -1 indicates disturbed/polluted conditions. In addition to the curve, the *W* value can be calculated using the following formula:

where *S* is the number of macrofaunal species in each sample, *Bi* is the biomass of species *i*, and *Ai* is the abundance of species *i*.

## AMBI and M-AMBI

AMBI (Borja et al., 2000) and M-AMBI values (Muxika et al., 2007) were calculated using the AMBI 5.0 software with the updated species list of 2019. Most species are divided into five ecological groups (I–V) based on their tolerance to pollution. All non-benthic invertebrate taxa (fish) were ignored according to the guidelines for the use of AMBI. The calculation formula is as follows (Huang et al., 2019):

AMBI = [(0 × %EGI) + (1.5 × %EGII) + (3.0 × %EGIII) + (4.5 × %EGIV) + (6.0 × %EGV)]/100

where EGI–EGV is the number of individuals in each of the ecological groups I–V.

According to the AMBI program, the AMBI value was between 0 and 7. The lower the value, the better the ecological health (Borja et al., 2000). If the number of unassigned animal species is more than 50%, AMBI will not be available; if the number is between 20% and 50%, the results should be carefully evaluated.

## BOPA

BOPA index is null only when there are no opportunistic polychaetes, indicating an area with a very low amount of organic matter. The index is low when the benthic environment is good, with few opportunistic species, and it increases as increasing organic matter degrades the benthic environment (Dauvin and Ruellet, 2007).

where *fp* is the opportunistic polychaete frequency and *fA* is the amphipod frequency (except for the genus *Jassa*).

## BENTIX

BENTIX (Simboura and Zenetos, 2002)) is used to classify the marine ecological environment and evaluate the environmental effects of stress factors based on AMBI and is measured by the relative percentage of sensitive species (GS) and tolerant species (GT) (Simboura and Zenetos, 2002; Simboura et al., 2007).

BENTIX = (6 × %GS + 2 × %GT)

Where GS=EGI+EGII and GT=EGIII+EGIV+EGV.

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