Attachment:

The following is the flowchart of incubation experiments (Figure S1). To explore the self-purification process of Tieshan Bay from different pollution sources under different salinity, this study designed four representative pollution sources and determined their sampling locations: river sources, domestic sources, industrial sources, and aquaculture sources were all included. The sampling points for the incubation experiments were obtained from various typical pollution sources in TSB. Given the absence of major rivers discharging into the sea at TSB, the Fozi River was selected as a representative river source to simulate the self-purification process of river pollution under varying salinity and nutrient conditions in the upper reaches of TSB. Additionally, domestic pollution sources were collected from wastewater treatment plants. For industrial pollution sources, Refining and Sinopec Beihai Refining & Chemical Company, located in the coastal Industrial Zone of TSB was chosen. This company represents a typical industrial pollution source characterized by its large scale and economic significance. Samples of seawater, free from contaminants, were collected in proximity to the designated S2 aquaculture site. The sampling point was situated at a depth of 0.5 metres below sea level.

The water from the pollution sources and the background seawater were mixed in the incubation experiments according to different salinity levels (low salinity, medium salinity, high salinity). Sampling was performed once daily, with 12 samples obtained during each collection. According to the growth process of phytoplankton, Samples were collected at incubation experiments of 1, 2, 4, 6, 8, 10, and 12 days. Sampling was performed once daily, with 12 samples obtained during each collection. A total of 84 samples were collected seven times, covering two seasons.

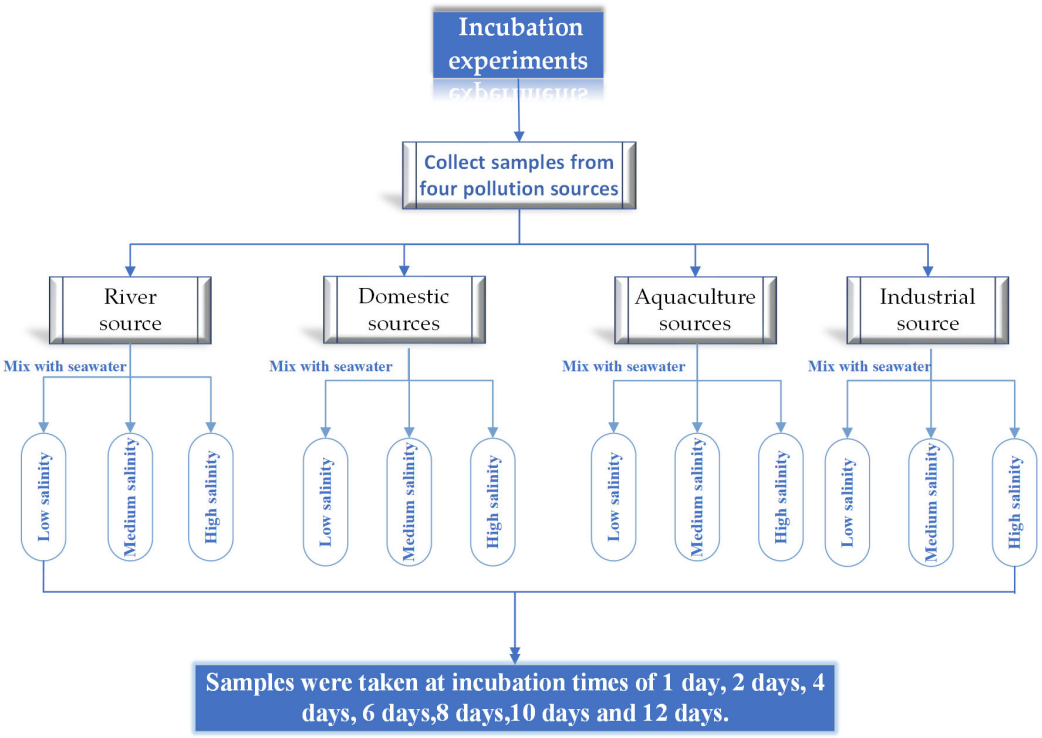

Figure S1. Technical route of the incubation experiments.