

## **Study on the Influence of Hypoxia on Fish in Coastal Construction Area**

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### **Abstract**

Coastal construction works tend to create dead water areas and inadequate vertical mixing of oxygenated water, which may cause hypoxia in enclosed water areas. Hypoxia has a critical impact on the living resources and may cause a serious damage on fishery. Although the tolerance of aquatic life to hypoxia is known, there is no information about the mortality of fish caused by hypoxia, because fish can swim and avoid it. In this paper, we construct a model to simulate fish behaviour, preference and mortality in a combined hydrodynamic and ecological model and are applied to a hypoxic bay in western Japan. For the development of the model, we conduct a field survey to observe fish behaviour in hypoxic bay where coastal construction work is going on. Then we conduct a series of preference tests for DO, salinity and temperature in the laboratory to decide environmental preference parameters of the fish. The model successfully reproduces the behaviour and preference of fish that was observed in the field survey. The model can be used as an environmental impact assessment tool on the mortality of fish caused by hypoxia.