Progress Report SP 2020-026

Investigations of contaminants in the Swan Canning

BCS Rivers and Estuaries Science

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X X
Project Team required
Program Leader required
Directorate required

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Context

The Swan Canning Estuary is home to diverse faunal assemblages, productive seagrass and macroalgal communities and is a focus for many water-based activities, including recreational fishing. The estuary is situated wholly in the Perth metropolitan region and drains a large agricultural catchment. It faces many anthropogenic stressors including flow reduction, excessive nutrient input, and contaminant loading associated with a range of contemporary and historical land uses. Ensuring environmental and social values are maintained requires an understanding of threats. In particular, it is vital to understand the extent, distribution and potential impact of both novel and legacy contaminants, evaluate risk to the ecosystem and human health and improve approaches to management.

Aims

- Determine the distribution, extent and type of contaminants in the surface water and sediment of the Swan Canning Estuary and its catchment.
- Determine the uptake of contaminants in key estuary biota.
- Understand potential risks to human health through consumption of estuarine species.
- Explore potential control mechanisms for contaminants.

Progress

- A report determining the distribution, extent and likely sources of Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) contamination in the Swan Canning Estuary and catchment, focusing on surface water and two ecological and recreationally important aquatic species, blue swimmer crabs and black bream, is pending release and a subsequent journal article is in development.
- A report determining the concentration and composition of contaminants in western school prawn in the Swan Canning Estuary to provide guidance for human consumption guidance and baseline data for this species, has been completed.
- A report investigating change in sediment contamination in the Swan Canning Estuary has been completed.
- Sampling to determine the effectiveness of the Ellen Brook constructed wetland in removing and storing PFAS from surface water, has been completed.

Management implications

- Information on the distribution and concentration of contaminants in the estuary is used to identify the potential for environmental risk to the estuary.
- Analysis of PFAS in surface water in the estuary indicates low risk. Three surface water catchments where PFAS concentrations were elevated have been identified, and the information has informed initiation of management activities to mitigate PFAS runoff.
- Evaluation of PFAS levels in black bream, and blue swimmer crabs, and the contamination in western school prawns, provided evidence for decisions on health risk to recreational fishers from consumption of these species.
- Sediment contamination in 2015 was largely consistent with that in 2007 and provides a useful baseline for determining contaminant change over time and in response to management action. Information on sediment contaminant levels informs development planning approvals and highlights zones where risks associated with contaminant disturbance are greatest.

Future directions

- Complete report on the effectiveness of the Ellen Brook constructed wetland to remove PFAS from surface water.
- Preparation of manuscripts on PFAS project.