

Progress Report SP 2020-028

**Investigate habitat connectivity in relation to
environmental flows and barriers**

BCS Rivers and Estuaries Science

Project Core Team

X X **Supervising Scientist** Kerry Trayler
Data Custodian Kerry Trayler

Project status as of July 3, 2023, 1:59 p.m.

X X Update requested

Document endorsements and approvals as of July 3, 2023, 1:59 p.m.

X X
Project Team required
Program Leader required
Directorate required

Investigate habitat connectivity in relation to environmental flows and barriers

S Thompson, K Trayler

Context

The Swan Canning system is a salt wedge estuary with many freshwater tributaries that have high biodiversity values. Five tributaries have been impounded for water supply purposes. With a growing urban population, demands for fresh water are increasing and finding the balance between the public water supply system and ecological requirements for water is increasingly challenging in a drying climate. It is important to understand the water requirements of freshwater dependent systems in terms of volume, timing and duration of flow to adequately protect them. When ecological water requirements are determined and water provision is set, it is appropriate to monitor to ensure values are maintained and expected outcomes are being achieved. The latter includes consideration of how in-stream barriers and other threatening processes can be managed to maximise value of the flow provisions.

Aims

- Identify freshwater dependent biomes of ecological significance within the Swan Canning system, threatening processes, water requirements and potential for supplemental flows.
- Determine if there are detrimental impacts to ecosystems downstream of public water supply dams or water abstraction points.
- Determine connectivity of critical habitat and assess impacts of impediments to freshwater flows and movement of riverine biota.
- Investigate novel approaches for assessment of freshwater biomes within the Swan Canning system.
- Develop opportunities for collaborative research with other groups.

Progress

- Water provisions were monitored to ensure the prescribed water allocation to the lower Helena River was applied appropriately for maximum ecological benefit.
- A further 20 potential barriers in the Canning River were assessed to determine obstruction to fish movement. Criteria to categorise the severity of impact to fish passage were developed and will be applied to all barriers in the database.
- eDNA methods for assessment of freshwater faunal communities detected invasive cichlids in areas of the Canning River that were not previously detected by traditional sampling methods.

Management implications

- Management of in-river barriers may involve removal or modification to improve native fish movement through the Canning River but will require consultation with adjacent landowners and local authorities. Some barriers may need to be maintained to reduce the movement of invasive species and protect upstream native fish populations.
- Information obtained from monitoring fish movement and identification of incursions identified through eDNA surveys of the Canning River will provide an evidence base to manage invasive aquatic species expanding in range and to address new threats.
- Data and knowledge compiled as part of this work is contributing to the development of the Canning Waterways Restoration Plan.

Future directions

- Finalise the transfer of the barriers database into a GIS based framework that supports decision making and provides a tool for management.
- Based on environmental water studies, develop recommendations for water provisions for the lower Helena River.