

# Utilisation and Management of Urban Marine Fish Habitats

## What are urban marine fish habitats?

The term 'urban marine fish habitats' may be used to describe a range of intertidal coastal waterways, occurring within or adjacent to areas of urban development. Commonly recognised as 'drains', these important fish habitats are often viewed exclusively as stormwater runoff channels. This common misconception leads to a lack of understanding of the role urban marine habitats play in maintaining coastal fisheries and in some instances, may lead to the neglect or mismanagement of these areas.



Example of an urban estuary in central Queensland, bisecting urban housing development (to the right) and major roads and shopfronts (to the left).

## Why are these habitats important?

Urban marine environments provide critical inshore habitat for a wide range of fish and invertebrate species, including many species of significant socioeconomic value to commercial and recreational fisheries. These habitats provide refuge and feeding areas for species including barramundi, mangrove jack, sea mullet, bream, whiting, mud crabs and prawns.

Monitoring in central Queensland has found fish/crustacean abundance and species diversity is as high in urban marine habitats as it is in non-urban habitats. Monitoring also identified that it's primarily juvenile life-stages which are utilising the urban marine habitats. What some may view as stormwater drains, are actually providing critical nursery habitat for many of our iconic species.

Urban marine waterways also provide the link between a mosaic of environments including; coastal freshwater streams, wetlands, and inshore bays and reefs. Many species require access between these different habitats during specific life-cycle phases.

Barramundi provide a prime example of the need to maintain the health of our urban marine habitats. Adult barramundi spawn off coastal headlands and river mouths in the summer months. The larvae develop in these coastal waters before migrating into estuaries and wetlands as juveniles. The juveniles grow rapidly in these habitats and after a year or two they mature and migrate back to coastal waters to breed. When the small juveniles migrate upstream they don't know what type of waterway they are moving into. If the adults spawn close to our coastal cities there is a high chance that they will pass through or end up in an urban marine waterway. Provided that the urban waterway is in good condition, those fish will thrive and make it to maturity.



Juvenile sea mullet, barramundi and mangrove jack (above), juvenile yellowfin and pikey bream (below), sampled from urban marine habitats in central Queensland.



For more information on urban marine monitoring or fish habitat management please contact the Fisheries and Aquatic Ecosystems team at: [info@catchmentsolutions.com.au](mailto:info@catchmentsolutions.com.au), or 07 4968 4216



## Threats to urban marine habitats

With the development of coastal waterways there is often modification to the existing fish habitats. These may include:

- Watercourse realignment
- Modification to stream bed and banks
- Removal of marine plants
- Construction of road crossings, stormwater outlets, flood gates or levee banks.

While marine plant and animal communities are quite resilient and adapt to the changed environment, mismanagement of these areas can have detrimental impacts. Instream infrastructure can form barriers to fish movement, modification to the bed and banks may make areas unsuitable for certain species, and the removal of marine plants, disturbance to sediments and increased runoff can reduce water quality. Waterway and asset managers should consider the risk of adverse impacts prior to undertaking maintenance works within urban marine habitats.

## Maintenance works in urban marine habitats

Local governments and asset owners often need to undertake maintenance works within urban marine habitats. Such works may be required to ensure adequate stormwater conveyance, repair/maintain instream infrastructure, provide access to property or, address water quality or public health concerns. In some instances works may be at the request of the public to improve the amenity of the area by removing rubbish or unwanted vegetation.

To minimise impacts to the urban marine habitats, the proposed works should be adequately planned, taking into consideration the nature and specific location of the works. Certain minor works may be undertaken in accordance with applicable acceptable development codes. These codes outline the work types and requirements for accepted developments.

Copies of the Department of Agriculture and Fisheries accepted development codes can be downloaded from the website:

<https://www.daf.qld.gov.au/> - Search Fisheries Accepted Development.

Works that don't comply with all of the accepted development code requirements need State Development Approval prior to commencement.



*Example of maintenance works being undertaken at an urban estuary in central Queensland*

## Best management practices for urban marine habitats – Management considerations

**Stormwater conveyance – removal of vegetation and sediment:** Is it required? Consider undertaking a flood analysis of the area to see whether the vegetation or sediment pose an increased risk to flooding. Often other features (e.g. culvert crossing) may be restricting water flow more so than vegetation or sediment accumulation.

**Responding to public complaint – removal of vegetation:** Negative public perception of mangroves often stems from a lack of understanding about estuarine environments. Consider installing information signs or implementing an awareness campaign to inform the community about the importance of waterway health and the role mangroves play in maintaining a healthy ecosystem.

**Vegetation clearing – where necessary:** Consider undertaking a plant survey to identify the species present. Plan the clearing in accordance with the accepted development code requirements or development approval conditions and undertake works during a period when the majority of plants are not flowering or fruiting.

**Disturbance to bed and banks –** Plan the works in accordance with the accepted development code requirements or development approval conditions. Consider installing a temporary bund and performing a fish recovery prior to commencing works. On completion, allow gradual reinstatement of tidal waters to re-oxygenate entrapped water and reduce sediment resuspension.

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