

Kinka Swamp

The Great Barrier Reef Coastal Wetlands Protection Program Pilot Program was commissioned by the Australian Government to deliver on-ground actions for the sustainable management of 22 priority wetlands in the Great Barrier Reef catchment. The \$2 million program was delivered over two years by a consortium led by Conservation Volunteers Australia and involved partnerships between government, community and landowners to identify and protect these wetlands.

Project summary

The Pilot Program project at Kinka Swamp has been so successful that the area has been gazetted as a Reserve for Beach Protection and Coastal Management, with Rockhampton Regional Council (formerly Livingstone Shire Council) as trustee. The project involved restoration of fish passage to 57 hectares of wetland by constructing two fishways at strategic locations, as well as improving access for recreational purposes. The environmental value of the site was promoted through education and an interpretive sign.

About the site

Kinka Swamp lies within the Yeppoon–Keppel Sands tidal wetland in central Queensland. This wetland comprises:

- extensive intertidal salt flat and mangrove areas
- a bunded, seasonally brackish and hypersaline lagoon
- a seasonally fresh to brackish wetland isolated by a road
- salt marshes
- good stands of low-relief remnant vegetation scattered through the wetland landscape.

Kinka swamp retained poor tidal connectivity with the Great Barrier Reef lagoon at supratidal areas.



Photo 1: Salt marsh at Kinka Swamp (photo: Rockhampton Regional Council)



Photo 2: Kinka Swamp retained poor tidal connectivity with the Great Barrier Reef lagoon at supratidal areas (photo: Rockhampton Regional Council)



Queensland
Wetlands Programme



Australian Government

Broad, shallow wetlands attract significant populations of waterbirds, including many rare, endangered and vulnerable species. The site is considered to be suitable habitat for migratory birds and the critically endangered yellow chat.¹

Part of the land is currently a quarry reserve, with sand extraction confined to a relatively small central area adjacent to the wetland. The swamp is a popular destination for the local community, with excellent opportunities for recreation and wetland education.

Kinka Swamp is listed in *A directory of important wetlands in Australia* (1996) and is considered critical in the protection of water quality, nursery habitat for fish, enhancing biodiversity, and contributing to regional landscape values (*Kinka wetlands draft land management strategy* 2004).

Challenges

Restricted fish passage threatens the ecology of many of the coastal wetlands of Queensland. It is the main environmental threat to Kinka Swamp, with a constructed bund wall and road across the swamp acting as a barrier to hydrological connectivity between the tidal and freshwater systems (see Photo 3).

A lack of hydrological connectivity causes:

- reductions in migratory fish populations
- increased salt concentrations in the lagoon, effectively creating an uninhabitable 'wet desert' during the dry season.

Another environmental challenge at Kinka Swamp was the management of public access and vehicles. Unregulated access and recreational uses have the potential to disturb birdlife, particularly waterbirds that inhabit the swamp.



Photo 3: Lower tidal barrier pre-construction. Fishway now connects tidal area (right) to pond (left) (photo: Rockhampton Regional Council)

Rehabilitation actions

To improve **fish passage**, two fishways were designed by Queensland Primary Industries and Fisheries, and constructed by Livingstone Shire Council. A culvert was installed under the roadway (see Photo 5) and a fishway constructed on the lower side of the bund wall (see Photo 6). These works reinstated tidal and freshwater flows and revived the connectivity of the wetland.



Photo 4: Roadway with small culvert, before construction of fishway (photo: Rockhampton Regional Council)

¹ Listed as critically endangered under the Environment Protection and Biodiversity Conservation Act (1999) List of Threatened Fauna



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Photo 5: New culvert through roadway barrier now connects freshwater wetland to brackish water (photo: Rockhampton Regional Council)



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Photo 6: Water now flowing freely through fishway into tidal area (photo: Rockhampton Regional Council)



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Photo 7: Detailed design of the newly constructed fishway (photo: Rockhampton Regional Council)

How do fishways work?

Fish need to move from downstream estuarine breeding areas to upstream nursery areas. Fishways provide access through built structures (such as bund walls, culverts and crossings) that are otherwise difficult or impossible for fish to negotiate. They slow the flow of the water, and provide small ponds between the rocks where fish can rest.

Livingstone Shire Council conducted photo monitoring before and after construction of the fishways, and this continues half-yearly. The council, assisted by local schools and Landcare groups, conducted fish, vegetation and weed monitoring; this too continues half-yearly. The council also developed and funded an ongoing **bird monitoring** program, in conjunction with the Wildlife Preservation Society of Queensland. Its aim is to minimise disturbance and encourage protection of waterbirds at the wetland.

An **interpretive sign** was erected at Kinka Swamp to educate the community about wetland values and functions. Local media releases promoted the environmental rehabilitation occurring at the site, and, after the fishways were constructed, the council distributed information brochures to schools, Landcare and environmental groups.



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Photo 8: New entrance to Kinka Swamp with pedestrian gate and signage (photo: Rockhampton Regional Council)

To improve **access and vehicle management**, the council constructed a designated vehicle parking area, and protected the wetlands by erecting barriers that allow only pedestrians and cyclists to enter the wetland.

As a culmination of these achievements, and to protect this site into the future, Kinka Swamp has been gazetted as a **Reserve for Beach Protection and Coastal Management**, with the local council as trustee.

Innovations

Future actions

WetlandCare Australia has suggested examining the feasibility of:

- totally removing the lower tidal barrier, to allow the release of ponded saline waters (and solve the problem of supersaline incidents), full tidal exchange, and mangrove and salt marsh rehabilitation
- providing a deepwater fish refuge hole upstream of the upper tidal barrier, to improve the survival of migratory fish.

Protecting migratory birds: JAMBA, CAMBA and ROKAMBA

Over the last three decades, Australia has played an important role in international efforts to conserve migratory birds of the East Asian–Australasian flyway. The Australian Government has entered into three bilateral migratory bird agreements:

- Japan–Australia Migratory Bird Agreement (JAMBA) in 1974
- China–Australia Migratory Bird Agreement (CAMBA) in 1986
- Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA) in 2002.

JAMBA and CAMBA list terrestrial, water and shorebird species that migrate between Australia and the respective countries. In both cases the majority of listed species are shorebirds. Both agreements require the parties to protect migratory birds by:

- limiting the circumstances under which migratory birds are taken or traded
- protecting and conserving important habitats
- exchanging information
- building cooperative relationships.
- ROKAMBA formalises Australia's relationship with the Republic of Korea in relation to migratory bird conservation, and provides a basis for collaboration on the protection of migratory shorebirds and their habitat.

JAMBA, CAMBA and ROKAMBA provide an important mechanism for conserving migratory birds, including migratory shorebirds.

All migratory bird species listed in the annexes to these bilateral agreements are protected in Australia as matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth). For further information, see also www.environment.gov.au/biodiversity/migratory/waterbirds/index.html



Photo 9: Great egret (photo by Adam Gosling)

Further reading

Department of Primary Industry and Fisheries 2006, *Kinka Swamp bund wall fishway design drawing*.

Department of Primary Industry and Fisheries 2006, *Kinka Swamp access road fishway design drawing*.

Environment Australia 2001, *A directory of important wetlands in Australia*, third edition, Environment Australia, Canberra.

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Photos courtesy of WetlandCare Australia



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