

» nsw oyster industry sustainable aquaculture strategy extracts

OSSM Factsheet 12

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Of particular importance to the NSW oyster industry is council's part in managing estuarine water quality and resolving land and water use conflicts through estuary management planning, land use planning and development control. Council may also provide waste management services to the industry and also assist the oyster industry with water quality monitoring and have a role in investigating water pollution incidents.

» **Healthy oysters and healthy estuaries**

Estuaries (where all NSW oyster farming occurs) are essentially the confluence point for all runoff and groundwater flow yielded by their catchments. Estuarine health is therefore a good indicator of the sustainability of catchment activity.

There are numerous potential sources of pollution that may affect estuaries, including urban and industrial effluent discharges, boat discharges, contaminant transport by rivers and agricultural run-off. Raised concentrations of pollutants can have serious effects on the health of plant and animal populations.

Oysters are particularly affected by pollutants because they rely on high quality water for their food.

On average, a farmed Sydney rock oyster will filter an estimated 0.25 ML (megalitres) of estuarine river water. It has been estimated that the farmed oysters in NSW remove over 1 million tonnes of suspended material, chiefly phytoplankton, in their lifetime. They have therefore an important role in the ecology of estuaries.

Because oysters filter such large volumes of water they are particularly sensitive to changes in water chemistry. For this reason they are sometimes referred to as 'grey canaries', as they are excellent biological indicators of estuary health. Their feeding habits and life-style make oysters extremely valuable, integrative indicators of water quality in estuaries and coastal lakes (White, 2001).

» **Water quality for food safety**

Bacteria, viruses, marine biotoxins and environmental pollutants may all impact on the suitability of oysters for human consumption. Most are a direct result of human activity with the exception of marine biotoxins.

Sources that may pose a risk to food safety include:

- sewerage system and septic tank over-flows and leaks
- sewage discharges from vessels
- re-suspension of contaminated sediments
- stormwater run-off
- discharges from industrial premises or agriculture.

See next page for more information ...

»» *Water quality for healthy oysters*

Oyster growth and production shows a wide variation from lease to lease, season to season and year to year. The majority of this variation would be explained by natural variations in water chemistry, temperature and seston (living organisms and non-living matter swimming or floating in a water body) availability although, surprisingly, there are gaps in knowledge on the Sydney rock oysters basic physiology and ecology (White, 2001). On top of these natural effects, oyster growth and production can be affected by water quality problems caused or exacerbated by human activity. This activity is predominantly catchment land use and activities close to the estuary.

The 'healthy growth' water quality parameters most likely to be affected by human activity are:

- Suspended solids. Silt affects the sensitive feeding apparatus of oysters and can lead to infestations of mudworm. In general, oysters feed more efficiently in relatively clear waters (White, 2001). Increased turbidity may also reduce primary production and seston levels. Suspended solid levels can be raised by any catchment land use that exposes and leaves soil bare to erosion or by excessive wave wash arising from activities such as power boating, within the estuary.
- pH. The optimal pH range for oysters appears to be between 6.75 to 8.75 with growth rates rapidly declining at either side of this range (White, 2001). Large areas of acid sulfate soils occur in coastal floodplains in NSW and the drainage of acid waters from these areas is a major concern to the oyster industry (White, 2001). An oyster can survive in low pH waters for a time, but eventually the shell dissolves and the oyster dies (Dove et al, 1999).
- Toxic elements and substances. Detailed knowledge of all substances that may affect oyster growth is not available, but Dove and others (1999) observed that elevated concentrations of Iron and Aluminium at low pH could cause significant mortality in oysters. Suspended iron compounds (flocs) associated with acid drainage can also smother growing oysters and clog gill structures (Dove et al, 1999).



»» *Determining development applications that may affect oyster aquaculture*

When considering an application for development that, because of its proposed location, may affect a priority oyster aquaculture area or oyster aquaculture outside such an area, the consent authority must:

1. Give the Director-General of the Department of Primary Industries written notice of the development application and take into consideration any written submissions made in response to the notice within 21 days after notice was given
2. Take into consideration the provisions of the NSW Oyster Industry Sustainable Aquaculture Strategy
3. Consider any issues that are likely to make the development incompatible with oyster aquaculture and evaluate any measures that the applicant has proposed to address those issues. Examples of potential land use incompatibility issues include access to oyster leases being limited by the development or the risk of adverse impacts of the development on water quality and, consequently, on the health of oysters and on the health of consumers of those oysters. The consent authority may refuse to grant consent to development if, in the opinion of the consent authority, the development is likely to have an unreasonable impact on a priority oyster aquaculture area or on oyster aquaculture outside such an area.

To obtain further information on the NSW Oyster Industry Sustainable Aquaculture Strategy please refer to the website: dpi.nsw.gov.au/fisheries/aquaculture/publications/

»» *If you have any questions or concerns please contact:*

Ballina Shire Council, Development and Environmental Health
Phone 6686 1210

