
Red Algae Bloom

Level

8+

Key question

Should a large algal bloom be removed from an attractive beach to improve aesthetics for local holiday makers?

Key outcome

Understand the complexities of managing the natural environment when faced with a conflict issue.

by Sue Feary, NSW NPWS,
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Though this is an issue directly related to Jervis Bay, the approach can be applied in other areas.

What you need

Suitable footwear

Camera

Measuring tape and surveying poles

What you do

1. Gain first hand experience of the extent of the problem through a field inspection.
2. Obtain information on what is being done currently to address the issue.
3. Provide feedback on the effectiveness on the existing management and educational programs.
4. Consider alternative approaches.

Field survey

Examine the beach and photograph it.

- Measure the extent to red algae on the beach using poles and tapes.
- Measure the depth of one of the piles of rotting algae. Note that face masks may be useful!
- Observe any animals living in the pile.
- Do you observe birds looking for food amongst the algae?
- Estimate the distance from the algae to the nearest house.

Questionnaire

Prepare a simple questionnaire to ascertain local residents views.

- What do they consider is the affect on their houses.
- What do they suggest as the causes of the algae.
- What do they think should be done.
- By whom – the local council, National Parks and Wildlife Service, or the Environmental Protection Authority.

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Background

Marine algae are the primary producers of the ocean, if not the earth. Producing more than 50 per cent of the world's oxygen supply, some estimates suggest that if marine algae were to perish, life on earth would be seriously threatened. On a smaller, more local scale, the health of the marine environment of a bay can be measured in part by the diversity and health of the marine algae growing in it.

For many years, and particularly since December 1994, red algae deposits have appeared on some of the Jervis Bay beaches at one time or another. Depending on the weather and the tides, the deposits are quickly removed or they may stay around for many weeks. If they do not get washed away they begin to decompose and release hydrogen sulphide which produces the characteristic unpleasant rotten egg odour.

Many people believe that the increases in nutrient levels that promote algae growth are due not to natural causes but to urban runoff and sewage outfall in the Bay. The cautious opinions of the scientific community, who understandably are reluctant to commit themselves to a direct cause and effect answer in the absence of hard data, offer little comfort to the local community and to those involved in the tourist industry.

The situation is exacerbated by the reluctance of any one government agency or the Local Government Council, due to the lack of clear legislative jurisdiction, to take responsibility. In fact, several agencies, and Council, all have some responsibility. A successful solution to the problem therefore can be achieved only through a cooperative program.

The NSW National Parks and Wildlife Service has prepared a pamphlet on behalf of all relevant agencies to educate the community about red algae and to let them know that solutions are being pursued (see accompanying Information Sheet).

The Issues

There is a need to:

- Determine the causes of the phenomena by gathering quantifiable data over a long time period instead of relying on anecdotal information.
- Reduce the inputs from human induced activity.
- Decide whether or not algae can or should be removed from the beaches.
- Develop an effective public education program about the causes and effects, directed at changing people's attitudes.
- Establish a long term management strategy.

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Red Algae in Jervis Bay

Extensive deposits of red algae on the beaches of Jervis bay are of concern to both local residents and tourists. The pleasures of recreational pursuits such as swimming, boating and sunbathing are significantly reduced by the presence of such large amounts of the weed on the beaches and in the swash zone. As the algae decomposes, there is a nauseating smell. Huge piles of dead algae have accumulated along some of the beaches. There is a concern that the algae will cause a downturn in tourism and more seriously, that local residents will consider selling their properties, many of them expensive houses with views, and moving away.

An Information sheet

by Michael Murphy, Project officer, NSW National Parks & Wildlife Service

State Government Agencies and the Shoalhaven City Council are aware that the Jervis Bay Community is concerned about the deposits of red algae that have appeared on our beaches in recent months. Several meetings have been held to discuss short and long term solutions to the problem. Removal of the deposits from the beaches is not possible due to the costs involved and the risk of damage to sand dunes. There appears to be no easy solution at this time but agencies will continue to actively seek options. This pamphlet is intended to provide information on the problem.

What are algae?

Marine algae are commonly known as seaweeds. Approximately 500 species are known to occur in Jervis Bay, which makes it one of the richest areas in the State. Marine algae are divided into three groups: the Green Algae; Brown Algae; and, Red Algae. Many species of green and brown algae occur in inter-tidal areas, while the red algae are more common in deeper waters. Marine algae work in the same way as forests on land, producing oxygen and soaking up carbon dioxide. They are an essential part of the Bay's marine environment, providing food and shelter for numerous marine invertebrates and fish, which in turn support the Bay's populations of penguins, dolphins, and seabirds, as well as commercial and recreational fisheries.

What is the red weed?

The species currently occurring as large masses on beaches is the red algae *Acrosorium venulosum*. This is a bottom-dwelling species which is known to have been present in considerable quantities throughout Jervis Bay for many decades.

Why does it bloom?

The relatively warm, calm waters of the Bay are favourable for the growth of seaweed, and most years have seen different species bloom. Usually, these 'blooms' remain out of sight below the water's surface, but occasionally wind and currents will drive them ashore.

Is it a natural event?

Marine scientists have studied Jervis Bay and believe these blooms are probably a natural part of the marine environment. Similar blooms occur both on open coasts and in other bays of Australia. Nutrients from agriculture, urban development, and effluent discharge may possibly be contributing factors, but are not believed to be the direct cause. The relative importance of natural and human nutrient sources is being examined.



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Is it safe?

Despite the unpleasant odour from decaying seaweed, it is not poisonous or dangerous. It is not related to the 'red tides' which have been known to kill fish. Various species of shorebird, including gulls, plovers, oystercatchers, and turnstones forage among the beachdrift seaweed. The seaweed is broken down by invertebrates and microorganisms and the nutrients eventually returned to the Bay.

What is being done?

- Signs will be erected on affected beaches explaining the phenomenon and redirecting residents and tourists to unaffected beaches.
- Aerating the masses of algae on the beaches to alleviate the unpleasant odour will be trialled.
- The quantity of algae present on the beaches will be measured for future reference and comparison.
- The Lower Shoalhaven Total Catchment Management Committee is to manage a water quality monitoring programme in the Bay. The aim is to identify the cumulative effects of the various natural and human nutrient inputs into the Bay.
- The Shoalhaven City Council has started the process of replacing the effluent outfall at Plantation Point with land-based effluent disposal.
- Healthy Cities and the Shoalhaven City Council are undertaking a community awareness programme regarding urban run-off.
- The recently prepared draft Jervis Bay Regional Environment Plan sets guidelines for future development to minimise the impact on the environment.
- The protection of part of the Bay's catchment in the NSW and Commonwealth Jervis Bay National Parks, and the proposal for a Marine Park are all positive steps toward protecting the exceptional natural environment of this beautiful area.

Implications

There is a perception by the local community that the continued presence of red algae will have serious long term implications for the future of a number of industries based in the area. These include:

- (a) The fishing industry: the weed gets caught up in nets making it very difficult to haul them in.
- (b) The real estate industry: there is real fear by local residents that house values will drop because of the red algae.
- (c) Tourism: relies very heavily on the clean clear waters and the extensive stretches of white sand as the major attraction of the bay. The industry may be reluctant to promote the area if it is perceived to be 'polluted' by red algae deposits.
- (d) Beach based recreation by visitors and residents: One of the major attractions of staying in the coastal villages is the ability to pop down to the beach for a swim before breakfast. There is a reluctance to swim in the water or even go onto the beach if it is covered in red algae.