

Grazing has impacts on the Barrier Reef

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At the recent International River Symposium in Brisbane, the impacts of Queensland's rivers on the Great Barrier Reef were discussed.

Runoff in the rivers north of Gladstone contain large amounts of sediment and nutrients. When these rivers flood, large plumes of brown water extend many kilometers out into the Coral Sea.

Some of these sediments affect the reproduction of coral directly, but there are also indirect effects on the marine ecosystems between the land and the reef. Extra nutrients in the water stimulates algae growth, which combined with muddy water, reduces the growth of seagrass. This in turn affects other fauna and sea life.

The most important problem affecting the reef is said to be the crown of thorns starfish, which feeds on the coral. Researchers say the plagues of starfish are a sign of the reef being out of balance. One of the effects of increased algae is to increase starfish numbers by providing more food for the larvae and juvenile starfish.

Coral death from high water temperatures, referred to as coral bleaching, may also be affected by muddy water and algae. Temperature stress reduces reproduction of coral and its recovery after a reef has been attacked by starfish.

Cane farming has been implicated in soil erosion and nutrient runoff, but the sugar cane story has improved in recent years. Farmers have stopped burning cane and the trash blanket left after cane harvesting has dramatically reduced soil erosion and nutrients in runoff water.

An important source of nutrients is soil erosion over large areas of grazing land. There is no sugar cane grown in the Fitzroy River catchment for example and cropping comprises only 3% of the land use.

A moderate flow in the Fitzroy river, such as the flood in March 1994, transported 3.4 million tonnes of soil out to sea, containing 3,700 tonnes of nitrogen and 1,150 tonnes of phosphorus. Not only does this represent a major pollution problem for coastal waters, it is a huge loss of nutrients from grazing land. The cost of replacing these tonnages of nitrogen and phosphorus with regular fertilisers would exceed \$8 million.

Soil erosion from grazing land is minimal if pastures are managed well. Overstocking and reduced groundcover increases erosion and is a contributor to nutrient runoff in the Fitzroy and Burdekin catchments. For example, in the ECOGRAZE project conducted over 8 years by CSIRO and DPI scientists in the Burdekin catchment, two tonnes of soil were lost per hectare of grazing land when pasture utilisation was 35%, compared with half a tonne of soil loss per hectare when pasture utilisation was only 25%.

Good grazing management is important for the health of the Barrier Reef, with the situation becoming more serious due to the effects of climate change. Higher temperatures and less rainfall are reducing pasture growth on land which is already somewhat degraded by high stocking rates.

An action plan for the Barrier Reef is underway to improve the quality of water entering the Great Barrier Reef. More dramatic changes may need to be made in grazing land management if the plan is to have some useful impact.

All properties need to implement grazing management which provides either rotational grazing or wet season spelling. This needs to be combined with a radical reduction in the stocking rate across large areas of these northern catchments.

There is potential for carbon credits to help fund such a change. The adoption of reduced stocking rates and changes in grazing management have been shown to reverse the ongoing decline in soil carbon. Although the increase in soil carbon levels from best practice may be less than 0.5 tonnes of carbon per hectare per year, if carbon is worth \$20 per tonne, the payment would be \$10 per hectare. This could be similar to the current profits being made from grazing beef cattle on this land.

But the acceptance of climate change is still low. One of the starting points for the Reef Plan to succeed is for graziers to accept the idea that climate change is already impacting on their land. Dramatic reductions in stocking rate may be needed but, rather than putting them out of business, it might actually improve profitability. At the same time it will reduce the costly effects of nutrients on the decline of Australia's number one tourist icon, the Great Barrier Reef.