

Shoreline Management Plan Ecological Processes

Sandy Beach Ecology Information Sheet, May 2007

What lives in, on or under the sand?



Ghost Crab. Source R. Richardson

To the casual observer, beaches may simply appear as barren stretches of beautiful sand, largely devoid of obvious signs of life. In reality, hundreds of species inhabit sandy beaches, and careful examination of sandy beaches reveals a hidden world of great animal diversity. We don't see this world because most organisms are quite small (a centimetre long or less) and live buried in the sand. Inhabitants of sandy beaches include representatives from all major groups in the food web such as decomposers (bacteria and fungi), plants (mostly small diatom algae), filter-feeding organisms (e.g. clams), scavengers (e.g. ghost crabs) and predators.



Ghost Crab burrow

Beach animals are remarkably well adapted to this harsh environment: almost all animals show great mobility, can burrow quickly into the sand when dislodged, are apt in orientating with the aid of the sun and moon, and display amazingly accurate rhythms of activity in relation to tides and waves.

Why is this environment important?



Turtle hatchling. Source A. Cuttriss

Sandy beaches provide habitat and support a great variety of living organisms. They are key ecosystems that link the sand dunes with the surf zone through a constant interchange of sand, organic matter and nutrients. The surf zones of beaches are an important nursery and recruitment area for fish that rely on the smaller invertebrates as a supply of food. For example, prey organisms (e.g. invertebrates) that live in the intertidal zone support fish populations and it is these fish that recreational fishermen target. Beaches are also home to a variety of shorebirds and the essential nesting habitat for turtles.

Food chain of sandy beaches

The constantly shifting sands of beaches do not support large plants with roots that are the base of all life on land. Yet, an amazing variety of life does flourish on our beaches. These animals are fuelled by inputs from the ocean that delivers plankton to the beaches' consumers. The sea also casts ashore larger dead organisms such as fish, jellyfish and other invertebrates which are eaten by the scavengers like ghost crabs and birds. Some beaches naturally accumulate considerable amounts of seaweed and seagrass on the upper shore near the dunes. This material often collects as a distinct "drift line". It may be unsightly to the casual observer, but such organic material is a vital food source and habitat to many animals.

What can you do to help?

Here are some ideas about how you can get more involved in caring for our beaches.

Getting to the beach



Beach access ramp

- Stick to public access tracks. Don't damage the dunes by walking across the plants to get to the beach.
- Don't drive across the sand dunes, stick to the designated parking areas.

On the beach

- Get involved in a BeachCare group to look after your local beach.
- Enter your beach in the Clean Beach Challenge.
- Use the beach not the sand dunes when sunbathing or playing.
- Leave shells on the beach for use by other animals for shelter.
- If you have carried it in ... carry it out. Go one step further: remove rubbish left by others.



Fishing line and hooks may injure birds and other fauna

In the water

- Know the regulations that apply to collecting animals including fish, abalone, crayfish, pippies and other shellfish.
- Bin unwanted or tangled fishing lines, nets and bait packages as they can be lethal to fish, marine mammals, birds and reptiles.
- Collect only the bait that you need. Some bait species are protected. Know the regulations on bait collection.

At your house and at work

Most coastal pollution originates on land. Rubbish thrown onto streets or oil on the road is washed into storm water drains and eventually into the sea. Sea currents can bring this rubbish and pollutants on to the beach. Here are some ideas to minimize pollution.

- Put waste fats and oils into a container for recycling or use on the garden.
- Remember that the drains are only for rain water. Don't let rubbish get washed down the gutter into a drain. Make sure all rubbish goes into bins for correct disposal or recycling.
- Engine oils must not be poured into drains but returned to a garage for recycling.
- Fix up oil leaks on your car.
- Dispose of unwanted chemicals responsibly. Petrol, paints, thinners, pharmaceutical drugs, and garden pesticides and herbicides, must not go into the sewers or drains.
- Use cleaning products that have minimum impact on the environment by breaking down quickly. Check the packet to see if it is environmentally friendly and has little or no phosphate content.

How do I get more information?

More information is available online at:

Gold Coast Shoreline Management Plan
www.griffith.edu.au/centre/gccm/gcsm

BeachCare Program
www.griffith.edu.au/centre/gccm/beachcare

Clean Beach Challenge
www.keepaustraliabeautiful.org.au/qld

Or contact:

Griffith Centre for Coastal Management
Griffith University Gold Coast Campus
PMB 50

Gold Coast Mail Centre, Qld 9726

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F: (07) 5552 8067

References

- McLachlan, A. and Brown A.C. 2006. The ecology of sandy shores. Burlington, MA, USA: Academy Press.
- Jones, A., Hacking, N. and Gladstone, W. 2003. Sandy Beach Ecology and Management. Pp 170-177 In : *Proceedings of the NSW Coastal Conference 2003*. 12th Annual Conference Port Macquarie, 4-7 November 2003.

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