Seagrasses of southwest Australia: West Coast

Along some 600 km of the west coast, a line of offshore islands and submerged reefs provides protection from the full force of ocean swell and zones of sand deposition. The longitudinal reef and islands remain from former coastlines drowned by rising sea levels – the most recent rise was about 6,000–12,000 years ago. These reefs are up to 20 km from shore, creating carbonate sand habitats which are ideal for seagrass growth, either very protected, such as Cockburn Sound, or more exposed, such as Marmion Lagoon.

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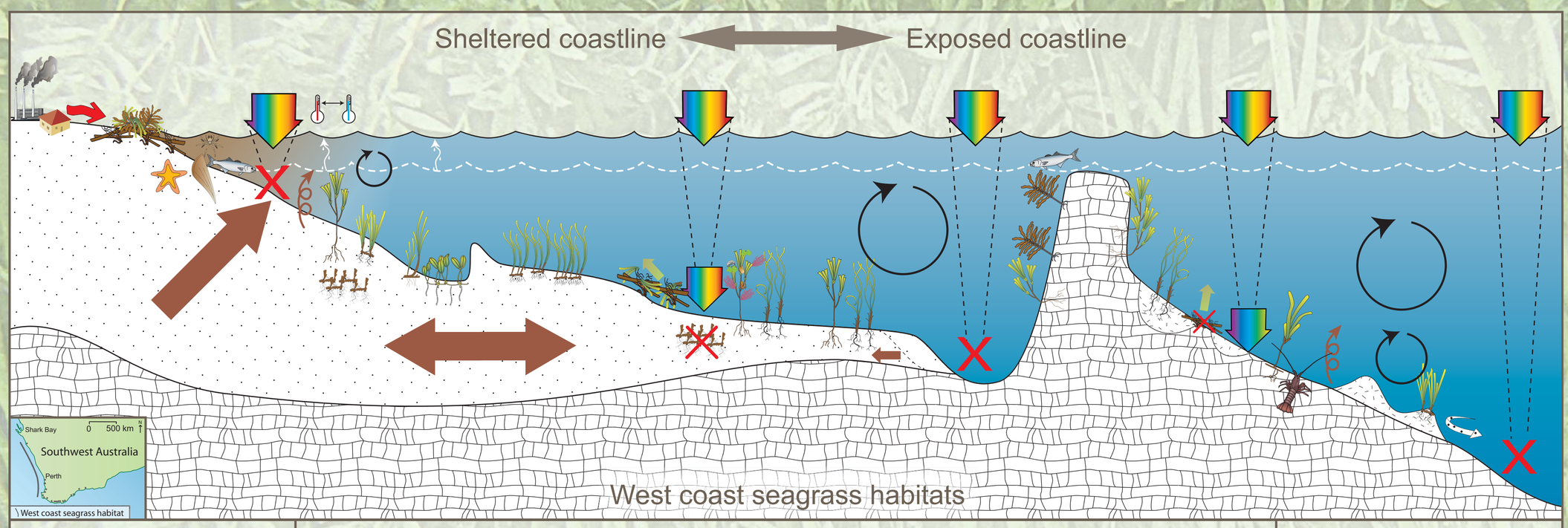
Limestone reefs create a barrier where the ocean swells break. The calmer waters inside the barrier allow seagrass to grow (top).

On Rottnest Island, the Leeuwin Current supports coral growth adjacent to temperate Posidonia australis *meadows (middle).*

During the winter months, large amounts of beach wrack (macroalgae and seagrass leaves) wash up in piles. Many juvenile fish live in the swash of these wracks (bottom).



S. Chape

Shoalwater Bay

In sheltered bays, a diverse community of ribbon-leaved and wiry-stemmed seagrass species overtop an understorey of less robust species.

Seagrass species	*Posidonia sinuosa*, *P. australis*, *Amphibolis griffithii*, *A. antarctica*, *Halophila sp.*, and *Heterozostera sp.*.
	Thalassodendron pachyrhizum, *Posidonia coriacea*, *P. angustifolia*, *Amphibolis griffithii*, and *A. antarctica*.
Light availability	Typically a very high light environment. However, inshore sediment resuspension can reduce light levels.
	Water rapidly absorbs light, resulting in light limitation with depth. Tolerance of low light varies between species.
Physical stressors	Water motion is reduced, but seagrass can be exposed to desiccation at low tides.
	Large orbital swells remove sand and can tear seagrass from the ground. Swells also result in sand bank migration and therefore sand erosion.
Sediment	Sand accumulates onshore in summer and is moved offshore by winter storms. Sand also generally drifts north along the shore.
	The thin veneer of sand is constantly scoured by wave action.
Fauna interactions	Large amounts of detritus build-up in seagrass meadows and along the shore. This is an important habitat for fish, and infauna.
	High water motion exports algal and seagrass detritus inshore. There is little local build-up.

carbonate sand | limestone reef | Coastal development results in nutrient inputs to these habitats. | Kelp (*Ecklonia radiata*) | Western rock lobster (*Panulirus cygnus*)

Dos Lord

Success Bank aerial

Exposed seagrass meadows are very dynamic. Erosion and deposition cause changes from bare sand to seagrass and back to bare sand again.

Management issues

Habitat loss to coastal development

Construction of marinas, harbours, and breakwaters results in direct removal of seagrass meadows. Construction also has a longer-term impact by altering movement of sand along the coast. While each individual development is often small, the cumulative effect of dozens or hundreds of developments threatens seagrass ecosystem integrity.

Reduced water quality

Nutrient inputs from rivers, groundwater, stormwater, and treated wastewater, as well as increased sediment resuspension from dredging activities, result in reduced water clarity and potential loss of seagrass. Historical loss of seagrass from Cockburn Sound is discussed as one of the classic examples of seagrass loss in the world.

Seagrass removal by anchor boat damage

Uncontrolled recreational and commercial anchoring within seagrass meadows can lead to ‘blowouts’ or expanding sand patches within meadows. Even permanent moorings will often scour a circle around them.

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Management responses

Local and regional planning

While many would like access to a coastal lifestyle, coastal development will ultimately change the very habitats we want to enjoy. Careful planning at local scales is required to minimise seagrass loss.

Water discharge and dredging

Improved wastewater treatment and water reuse as well as careful management of industrial inputs to coastal waters will reduce nutrient inputs. Dredging activities should be targeted to minimise impact upon seagrass.

Appropriate mooring and responsible boating

Moorings which minimise damage to seagrass such as the Easy Rider mooring system should be used. Small boats should anchor in sand rather than in seagrass meadows.

Background photo:
Posidonia sinuosa and
Amphibolis antarctica.
Photographer: Justin McDonald

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