

GLOBAL MONITORING PROGRAM PROVIDES EARLY WARNING OF COASTAL ECOLOGICAL DECLINE

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A massive 56 000 square kilometres of seagrass is present around Australia, most in Western Australia and Queensland, equating to nearly 32 per cent of the world's seagrass. Disturbingly, over the past few decades, seagrasses globally have been declining at a rate of 110 square kilometers a year or the equivalent to two football fields an hour. These figures are alarming and place seagrass meadows among the most threatened ecosystems on Earth.

Multiple stressors are the cause of this decline, in particular the negative impacts accruing from the billion or more people who live within 50 kilometres of seagrass meadows. Climate change is likely to add to these pressures.

These flowering marine plants, found mainly in clear shallow inshore areas of bays, estuaries and coastal waters, provide an estimated \$2.1 trillion per year globally in the form of nutrient cycling, sediment stabilisation, sequestration of carbon, habitat for fish, bird, and invertebrate species, food for dugong and endangered green turtles, and commercial and subsistence fisheries. Seagrass also supports important linkages between mangrove and coral reef habitats.

Of the world's 72 seagrass species, 40 are found in Australian waters. Information on the status of seagrass resources both locally and globally is solely dependent on monitoring efforts. This is the important role that the global seagrass monitoring program, Seagrass-Watch, plays. Developed in 1998, Seagrass-Watch provides an early warning of coastal ecological decline. It focuses on long-term monitoring and education, awareness and capacity building. Monitoring is a valuable tool for improving management practices by allowing resource managers to know whether resource status and condition is stable, improving or declining.

Participants in the program range in ages from 18 to 72 and represent a diverse cross-section of the community, including trades people, engineers, Indigenous communities, school teachers, fishers, divers, retirees, university students, biologists and ecologists. Many are involved with local environmental groups and have a keen interest in conservation and environmental issues.

Established in Queensland as an initiative of Primary Industries and Fisheries, the program has expanded to 17 regions in Queensland, as well as across New South Wales, Victoria, Western Australia and the Northern Territory. More

than 25 countries participate in the program globally and monitoring is occurring at more than 270 sites. Information collected can be used in local decision-making on habitat management practices and protection.

Seagrass-Watch methods were developed to be rigorous, yet relatively simple and easy to use. After six to nine hours of training, participants can produce reliable data. Training includes both formal and informal approaches. Technical issues concerning quality control of data are important, especially when the collection of data can be done by those not previously educated in scientific methodologies. Seagrass-Watch has an accepted Quality Assurance-Quality Control program in place to ensure that the program is producing data of high quality, and that time and resources are not wasted. Quality data reassures the data users (for example coastal management agencies) that they can use the data to make informed decisions with confidence.

Early detection of change allows coastal management agencies to adjust their management practices and/or take remedial action sooner. The program has provided information about the health of seagrass ecosystems for local management agencies and developed benchmarks where performance and effectiveness can be measured. Ongoing monitoring has detected loss and subsequent recovery of seagrasses in relation to climatic events including flooding.

Seagrass-Watch has also provided an early alert system exposing coastal environmental problems before they became intractable. This has been used to track the possible consequences of global climate change. The findings from the program have contributed to Ramsar and World Heritage Area assessments, regional and local management plans and reporting on the health of the Great Barrier Reef to determine the effectiveness of management practices applied as part of the Australian Government's *Reef Rescue* initiative.

By working with both scientists and local stakeholders, it is hoped that the impacts on seagrass meadows can be avoided. To protect the valuable seagrass meadows along our coasts, everyone must work together.

Information: www.seagrasswatch.org



Seagrass-Watch volunteers in Nhulunbuy, Northern Territory. Photo: Len McKenzie.