Environmental Conservation **37** (1): 83–89 © Foundation for Environmental Conservation 2010 doi:10.1017/S0376892910000251

Assessing the quality of seagrass data collected by community volunteers in Moreton Bay Marine Park, Australia

THEMATIC SECTION
Community-based natural resource management (CBNRM): designing the next generation (Part 1)

PAUL G. FINN[1]*, NICOLA S. UDY[2], SIMON J. BALTAIS[3], KEIRA PRICE[1] AND LOUISE COLES[1]

[1]*Seagrass-Watch Moreton Bay, Queensland Conservation Council, 166 Ann Street, Brisbane, QLD 4000, Australia,* [2]*Moreton Bay Region, Queensland Parks and Wildlife Service, Department of Environment and Resource Management, PO Box 5178, Manly, QLD 4179, Australia, and* [3]*Wildlife Preservation Society of Queensland, Bayside Branch, PO Box 427, Capalaba, QLD 4157, Australia*

Date submitted: 27 August 2009; Date accepted: 27 January 2010;
First published online: 13 May 2010

SUMMARY

Volunteer-collected data have become widely used, largely because of a perception of cost efficiency, however, the quality of these data is often questioned. This paper analyses the quality of visual estimates of seagrass cover collected by trained volunteers in Moreton Bay (Australia) which has *c.* 25 000 ha of seagrass habitat. Seagrass was routinely monitored by trained volunteers at 51 sites (50 × 50 m area of intertidal flat) using standardized protocols. Volunteers walked three transects at low tide and assessed the percentage of substrate covered by seagrass within quadrats (50 × 50 cm in area) using photographic guides. Of 33 samples (quadrats) taken at each site, nine (27%) were photographed and later scored by coordinating scientists. The visual estimation of per cent seagrass cover by volunteers was highly correlated with that of scientists and can therefore be used as a reliable source of base-line information about seagrasses in Moreton Bay. The qualities of this successful community-based monitoring programme include expert scientific and multi-organizational involvement, simple methods and result dissemination.

Keywords: capacity building, dugong-grass, eelgrass, locally-based monitoring, Seagrass-Watch, south-east Queensland

INTRODUCTION

Community-based monitoring of environmental resources has become increasingly popular worldwide (Evans *et al.* 2000; Pattenengill-Semmens & Semmens 2003; Gouveia *et al.* 2004; Danielsen *et al.* 2007), including that of seagrass habitats (McKenzie *et al.* 2000; Mellors *et al.* 2008). Advantages of this kind of data collection include cost efficiency, coverage of large spatial scales, community engagement and education and multi-organizational involvement (Darwall & Dulvy 1996; Evans & Birchenough 2001; Fore *et al.* 2001; Nicholson *et al.* 2002; Goffredo *et al.* 2004; Sharpe & Conrad 2006; Danielsen *et al.* 2005*a*). However, the accuracy and usefulness of environmental data collected by volunteers are often questioned (Darwall & Dulvy 1996; Foster-Smith & Evans 2003; Gouveia *et al.* 2004; Uychiaoco *et al.* 2005). There is thus a need for studies comparing findings of volunteer monitoring with that of professionals (Danielsen *et al.* 2005*a*, 2009).

Seagrasses are marine angiosperms that have evolved to cope with salinity, low and variable light, water movement and anoxic sediment (Touchette 2007*a*, *b*). Seagrass meadows provide an important coastal habitat and are often indicative of ecosystem health in many intertidal and subtidal areas (Bostrom *et al.* 2006; McArthur & Boland 2006; Short *et al.* 2006, 2007). There are numerous natural and anthropogenic threats to seagrasses, and once lost, recovery by both natural processes and restoration practices can be problematic (West *et al.* 1990; Lee Long *et al.* 2000; Campbell & McKenzie 2004; McLennan & Sumpton 2005; Orth *et al.* 2006). Seagrasses are excellent organisms to monitor owing to their widespread distribution, important ecological role, sessile nature and the fact that they are integrative of environmental conditions and show measurable and timely responses to impacts (Orth *et al.* 2006).

Seagrass-Watch (SGW) was established in 1998 in Australia as an initiative of Fisheries Queensland (McKenzie *et al.* 2000) and is now the largest scientific non-destructive seagrass assessment and monitoring programme in the world, with 26 countries participating. There are currently 18 regions within Australia where SGW programmes have been established, and 15 of these are in Queensland. The largest of these regions in Queensland is located in Moreton Bay, a large estuarine bay adjacent to the city of Brisbane (south-east Queensland) and a marine park. In Moreton Bay, most sites are located within intertidal areas enabling ease of access and good visibility at low tide. In this respect, SGW aims to raise awareness of the condition and trend of the Bay's nearshore seagrass ecosystems and provide an early warning of environmental changes. However this can only be achieved if accurate and consistent data can be collected. We aimed to

*Correspondence: Dr Paul Finn Current address: RPS Group, PO Box 1559, Fortitude Valley, QLD 4006, Australia e-mail: paul.finn@rpsgroup.com.au