

Redmap: Citizen science as a research tool for monitoring ecological change in the marine environment

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A major challenge in establishing how climate change may be impacting on our marine ecosystems, particularly in Australia, is the scarcity of longer-term and larger-scale monitoring programs that inform us of such changes. We have developed a web-based on-line database and mapping facility (Redmap – Range Extension Database and Mapping project) where members of the public submit data and photos on catches or observations of marine species that are observed outside their known distribution (e.g. species that may be undergoing range shifts). The east coast of Tasmania, Australia is situated within a climate change ‘hotspot’ with recorded rates of ocean warming over the last 6-7 decades of 3.8 times the global average. Evidence suggests almost 100 marine species have shifted in response with range extensions recently recorded in barnacles, sea urchins and dozens of fish species. Since the launch of the website 16 months ago we have had an overwhelming response from the marine community including commercial and recreational fishers, divers and boaters. In addition to engaging the Tasmanian marine community, the site has received over 22,000 hits from 135 countries and the success of REDMAP has resulted in proposals to extend the concept nationwide and adapt Redmap for Alaska. Community participation in REDMAP can create for individuals the sense (and in this case, the reality) that they are actively and constructively helping with a major issue currently facing the global community – people can log on and literally see how their information has helped generate a picture of how our marine ecosystems are changing, they can see ‘their’ data point on the map. REDMAP is raising awareness and engaging participants in our fishing industries, improving industry and community understanding of the impacts of climate change on marine biodiversity and resources. We believe Redmap is a successful concept as it is engaging the community on the issue of climate change through an activity they enjoy (fishing and diving) and is also a mechanism to provide clear acknowledgement of the valuable knowledge held within our marine industries and general community. We report on a formal project evaluation currently underway for Redmap to assess how the program is perceived by Tasmanian fishers, divers, resource managers and scientists. This is critical to understand as ensuring community-based research or monitoring programs are on-going and sustainable involves achieving legitimacy and credibility from both community and scientific perspectives.

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