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Volunteers can help on-going monitoring efforts of coral reefs by detecting long-term changes

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Contact:
gforrester@uri.edu

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Citizen scientists are increasingly playing an important role in monitoring environmental conditions around the world. There have been concerns, however, that the quality of volunteer data might not match the reliability of data collected by professional scientists. A new study has found that both citizen scientists and professional scientists were able to identify widespread decreases in the cover of live corals and increases in rubble and sand, during two long-term monitoring programmes of coral reefs. These results show that volunteers can indeed play a meaningful role in the conservation of these reefs, say the authors of this study.

This study assessed two programmes that monitor coral reefs in the British Virgin Islands, to establish whether scientists and volunteers were able to produce comparable results from monitoring data,

One programme, run by University of Rhode Island (URI) scientists, monitored eight coral reef sites from 1992 to 2012. The other programme was run by volunteers from the [Reef Check](#) organisation, which monitored four different reef sites from 1997 to 2012.

The researchers were particularly interested to find out if the Reef Check programme could identify long-term changes in the coral reefs, as such changes can be difficult to detect, but are vital for conservation efforts.

For Reef Check monitoring, divers swam along fixed 100 x 5 m (0.05 hectare), transects, or paths, on the four reef sites, counting fish species, invertebrates and benthic (bottom dwelling) organisms, such as corals. URI divers recorded fish, invertebrate and benthic species along shorter 30 m transects that were not fixed, but instead placed at different locations within 0.6 hectare monitoring sites during each visit.

The researchers identified 12 indicators, such as the presence of parrotfish, sea fans and hard corals, common to both programmes, which could be used to compare survey results between the two programmes.

In seven instances, observers from the URI and Reef Check programmes surveyed the same sites at the same times. In all cases, for each fish species of interest, Reef Check volunteers repeatedly counted more fish than the URI observers. When looking at long-term changes, the researchers found that URI observers identified increasing numbers of parrotfish, but declining numbers of snappers, whereas the Reef Check observers did not find these changes. One explanation for this, say the researchers, is that counting fish consistently takes a lot of practice and cross-checking between divers, and the volunteers simply don't have the time to do this.

Nevertheless, analysis of important benthic indicators from both programmes revealed similar long-term trends. For instance, both programmes identified widespread decreases in the cover of live corals and increases in the cover of rubble and sand. This is important, as identifying long-term and widespread, as opposed to local changes, is crucial in monitoring the health of coral reefs and being able to make appropriate conservation decisions.

This study shows that citizen scientists can provide data consistent with professional scientists' assessments. There were differences between the professionals and volunteers for some of the measures of biodiversity, as some are easier to assess than others. Nonetheless, citizen scientists can make valuable contributions to monitoring, for example, in helping to detect early widespread changes that indicate the health of coral reefs.

