Our coral reefs: "touch with your eyes" [1]

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El Nuevo Día [2]

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'Snorkeler' standing on the coral reef, a behavior that should be avoided to protect this ecosystem.

By Dr. Thomas Webler and Karin Jakubowski

There are dozens of shallow coral reefs within easy access from many shore locations across Puerto Rico. For Puerto Ricans and visitors alike, the reefs are a source of fish as well as an inspiring place to visit and witness the beauty of nature. Coral reefs are also one of the most important ecosystems on our planet, as they critically support thousands of marine species and are thought to be a source for the treatment of multiple diseases. Thus preserving our coral reefs is essential to the local communities, the environment and to a productive and sustainable tourism industry.

Unfortunately, coral reefs are under a great deal of stress, and visitors to the reefs can make matters worse if they act inappropriately. Researchers in other parts of the world have shown that snorkelers and SCUBA divers can damage reefs by kicking or walking on the reef. They may accidently break pieces of coral by grabbing it or hitting it with their equipment. Fins can also stir up sediment, which can smother young corals. And there are also threats from picking up or collecting conch, urchins, and all kinds of marine life in the reef ecosystem.

Researchers from the Social and Environmental Research Institute (SERI) in Massachusetts wanted to know if it was possible to measure the impacts that reef visitors in Puerto Rico are having and to reduce those impacts by encouraging proper behavior at reefs. The overall mission of SERI is to contribute to solving environmental problems by improving understandings of the social factors and human behavior that cause these problems. SERI's research in Puerto Rico was inspired by a vision of sustainable tourism and it was supported by a grant from NOAA's Coral Reef Conservation Program together with the cooperation of snorkel and SCUBA dive tourism companies across Puerto Rico.

To gather baseline information about how often visitors to Puerto Rico's reefs contact the reef, researchers made in-water observations of divers and snorkelers who came to coral reefs for recreation purposes. They made hundreds of scientific observations over the 2011 summer and winter seasons. They found that, overall, snorkelers contacted the reef 2.8 times for every 10-minutes they spent snorkeling around coral. It is difficult to know if this number is high or low, since there is only one other study of snorkelers anywhere in the world. SCUBA divers were also observed. They contacted the reef more often than snorkelers did (3.8 times every 10 minutes). There are five other studies of scuba divers elsewhere in the world and the results from this study in Puerto Rico are the highest.

Snorkelers in groups tended to do more damage, because they paused to take their heads out of the water and discuss what they are seeing. During this time, they were vertical in the water and their fins were often kicking the coral, or, worse, they were standing on it. Divers were much more aggressive about picking up rocks, grabbing lobsters, collecting conch, and holding onto the reef in order to take photographs.

While not every contact with the reef causes damage, some do. Anything we can do to reduce the number of contacts divers and snorkelers have with the coral helps. SERI researchers wanted to know if it was possible to change the behavior of people at the reefs. Using scientific knowledge of what drives individual behavior, they developed a video about proper reef behavior (https://vimeo.com/43207675 [3]) and designed a pledge that people could sign to promise to practice proper reef behavior.

Since January, cooperating tour companies have been showing this video to divers and snorkelers right before they go onto the boat and asking people to sign the pledge. The researchers have been counting how often people who watched the video contacted the reef. They found that people who watched the video and signed the pledge contacted the reef much less often than did people who did not watch the video or sign the pledge. The contact rate dramatically decreased from 2.8 to 0.3 contacts per ten-minute period. In other words, people who watched the video and signed the pledge contacted the reef 8 times (or 88%) less often than people who did not watch the video. Moreover, the percentages of snorkelers who never touched the reef at all soared from 63% to 93%. These findings suggest the pre-trip messaging can change visitors' behaviors, thus improving the ability of eco-tourism operators to help sustain reefs as well as the economic livelihoods of their employees. Observations on SCUBA divers are still underway.

The take home message of this research is that tour companies can use pre-trip messaging to

dramatically reduce the impacts of tourists to reefs. Of course visitors are not the only problem facing coral reefs, nor are they the most important problem. Coral reefs are threatened in many ways including: physical harm caused by poor boating and anchoring practices; overfishing that upsets the delicate balance of the ecosystem; toxic contaminants carried by rivers and streams that poison and smother reefs; and the rise in ocean temperatures and the change in the pH of ocean waters due to greenhouse gas emissions and climate change. All these problems need to be addressed. This research points to specific and practical things that we can do right now to reduce impacts from reef visitors, while still supporting valuable ecotourism operations and the human communities that depend on them. A focus on visitor behavior is not an excuse to avoid working on the other threats. Coral reefs are incredibly beautiful and valuable ecosystems that must be saved. Hopefully this research inspires others to work to protect these living resources.

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Pledge for snorkelers:

Most visitors to coral reefs never touch, kick, or stand on the coral. They are careful not to stir up the sand near the coral with their fins. Coral are fragile and, if injured, are slow to recover. Keeping a safe distance from the reef is the best way to ensure these beautiful reefs are here for future generations. If you need to fix your mask or snorkel, it is best to swim away from the reef first.

I pledge to be a responsible visitor to the reef by:
Being aware of where my fins are at so I don't kick the coral
Treading water instead of standing on the reef
Not stirring up silt near the reef
Keeping a safe distance from all marine organisms

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