



Parrotfish (credit Andrew Western of Eco Dive.)



Reef dissipating wave energy.

# The value of corals

We should know by now that coral reefs are essential for maintaining our way of life in Barbados, but what is this in monetary terms?

It sounds, almost wrong to ask, as the spiritual value, far supersedes money, and to attempt to monetize it also cheapens it. However, unfortunately, many decisions and management priorities are based on the value to society, which is often identified by dollar signs.

For example, say I'm a cash strapped government, do I spend part of my budget on promoting Barbados, so that tourists visit, or do I protect the corals? And what's a coral anyway, isn't it just a funny looking plant? Too many times in the past, governments have chosen the former, to the detriment of the latter, primarily because they are unaware of how much money coral reef services provide and that corals support the tourism industry. Valuing Ecosystem Services (ES) which are services provided by ecosystems to humans, just might change this.

There are a variety of ways to try and value ES which include assessing the direct values derived from reefs, such as the price people pay for reef fish or are willing to pay to view more fish on a dive (willingness to pay). Indirect services, such as coastal protection, are not so easy to quantify (actually none of it is easy). For this, one might look at the cost of damage to coastal properties

that was avoided due to the presence of coral reefs (avoided costs). What about no market value at all? What is the cost of a good feeling or the right for the reef to exist now and for future generations? One then must get creative and look at existence or bequest values.

Let's chat a bit about ESs starting with cultural services – aesthetic, spiritual, recreational. Maybe that sounds a little “fluffy” but really, who doesn't feel peace sitting on a beach at sunset watching the waves? Look at the scores of Bajans, who exercise on the beaches in the evenings. Perhaps the numbers decline a bit when I ask how many of us experience joy by snorkeling/diving on coral reefs (but hopefully that will change). Happily, the same things that attract us, also bring visitors to our shores and no need to remind anyone how important tourism is to our GDP.

While our dive tourism is still in a fledgling state, some of our guests come here specifically for this activity and even if they don't dive, they might go do a turtle snorkel and turtles hang around because of the coral reef habitat. Finally, one would have to look pretty hard to find a tourist who doesn't spend time on our beaches, which again are courtesy of coral reefs. Around 47 per cent of our tourists directly view the marine environment. It is important to their visit and researchers have found that a significant number, would either probably or definitely not return if our environmental quality

declines. Dive tourism in the Caribbean is estimated to provide billions of dollars annually (Burke et al 2011) and in Tobago, our close neighbours, reef associated tourism and recreation was estimated to contribute between US\$100 and \$130 million to the national economy annually (WRI 2008).

Coastal protection is our next ecosystem service. What do you think lies between you and that oncoming wave? Coral reefs that's what! (We used to have mangroves also which helped, but we managed to kill nearly all of them). Coral reefs dissipate wave energy, both the deep ones (bank/barrier) and the nearshore fringing and patch reefs and when we destroy them, we then have to spend significant figures in constructing breakwaters designed to do what natural reefs do free of charge, protect our shorelines. The Government of Barbados has so far spent over US\$30 million in building artificial structures to do this. Further, our beaches are comprised of sand from corals and reef associated organisms. Sand also acts as a buffer protecting human lives and coastal properties. We can't really put a value on human lives, but we can look at the value of coastal properties. Reefs protection in terms of reduced erosion and wave damage has been valued at between US\$18 and \$33 million per year in Tobago (WRI 2008).

Finally, fishing. Barbados has a magnificent array of fortunately mostly edible fauna (and some flora) in the nearshore due to coral reefs. Our beautiful, transparent waters are also quite barren, with the coral reefs providing oases in marine deserts, by creating structures that provide habitat for fish and other critters and generating food. The small animals attract the larger fish, which all support our reef fishery. Parrotfish (chubs), sea cat, moray eels (congers) and lobsters (to name a few) are all drawn to coral reefs and attract pelagic predators such as barracudas and sometimes sharks. The fishing industry is not just fishers though, it also includes the cleaners and the vendors. In Belize (primarily due to valuation studies) the government has determined that parrotfish have more value in cleaning the reef than in satisfying our palates and placed a ban on their fishing. A study carried out in Barbados on three fishing communities shows that the annual net revenue per year for fishing ranges between US\$46,285 to US\$84,146 (Peterson et al 2014).

ES provided by coral reefs in the proposed Barbados Marine Management Area (Weston to Fitts Village and Carlisle Bay to Cacrabank) are estimated to provide around US\$150 million annually and support around 6,000 jobs from the ES of fish provision, scenic beauty for tourism and coastal protection (Pascal 2015). To put it bluntly, that's some cash. We accept that the true value of nature cannot be calculated; this is immeasurable, but valuations helps to put it all in perspective and add to the already strong arguments for protection of this treasure chest, our coral reefs.

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Diver (credit Andrew Western of Eco Dive.)