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**PREDATORS****Algae Overruns Discovery Bay****WHY SHOULD I CARE?**

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As reef herbivores disappeared, the algae were free to grow unhindered.

**What makes you most hopeful for the future?**

Precht: "There are many people that truly care about saving our planet! Specifically, our valuable ocean and coastal resources..."

See Bill Precht's [full Q&A](#) »

**What would you recommend for students wanting to pursue a similar career?**


Aronson: "I recommend getting a liberal arts education. Take plenty of math courses, because coral reef ecology is a quantitative science..."

See Richard Aronson's [full Q&A](#) »

**What do you like best about your profession?**

Pauly: "[I like best] being able to see patterns that have never been seen before..."

See Dan Pauly's [full Q&A](#) »

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In its heyday, Discovery Bay, Jamaica, like much of the Caribbean, teemed with life. At the top of the food web was a gamut of predators. Sharks, snappers, groupers and jacks cruised near shore to feed, drawn by a tempting menu of reef herbivores like surgeonfish and parrotfish. Today that vibrant Discovery Bay lives only in photographs. The reef is blanketed by a suffocating layer of algae.

Biologists [Bill Precht](#) and [Richard Aronson](#) travel back in time, diving on the coral reefs in search of clues to what happened. Coral reefs are built from colonies of tiny animals called polyps. Only the top layer of the reef is alive. Beneath lie skeletons of past generations. Within this coral necropolis one can find a long record of the reef's health, a kind of medical chart. Aronson and Precht take a core sample from the reef and in so doing capture over a millennium of history. From this sample, they can see that for the last thousand years, the coral looks healthy. But then something unprecedented appears in the 1980s. The coral stops growing.

Pollution is often a suspect when it comes to environmental problems in the sea. But fisheries biologist [Dan Pauly](#) suggests another factor is also at play in Discovery Bay — a factor beginning with the loss of top predatory fish such as sharks, groupers and jacks. As fisheries decimated the large fish, smaller fish became the next commercial target — including those vital herbivorous grazers that kept fast-growing algae in check. Then when a hurricane weakened the reef and a lethal disease swept across the Caribbean killing the main remaining grazers — sea urchins — the algae were free to take over. The bay is still trying to recover.



Biologists find that the once-healthy coral reef stopped growing in the 1980s.

**References**

- » Aronson, R. B. and Precht, W. F. (2000). Herbivory and algal dynamics on the coral reef at Discovery Bay, Jamaica. *Limnology and Oceanography*, 45, 251-255.

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## PREDATORS



### Daniel Pauly, PhD Fisheries Biologist

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We asked each of our scientists to give us their thoughts on their professions and what they think the future holds for humanity.

#### What would you recommend for students wanting to pursue a similar career?

I think it doesn't matter what discipline you study as long as you accept that your discipline is going to be linked with other disciplines and the results of every discipline have to mesh with that of others. Very much as E.O. Wilson describes in his *Consilience: The Unity of Knowledge*.

#### What do you like best about your profession?

[I like best] being able to see patterns that have never been seen before. The trick here is obviously that I generate these patterns myself from data that I analyze a certain way. Because I am impatient, I use other people's data, which goes much faster than collecting one's own data. To cover up, though, I call this "analyzing secondary data." So what I like best in my profession is that I can use secondary data to generate patterns and relationships that have never been seen before.

#### What makes you most fearful for the future?

That we don't have a good mechanism for learning from history. Thus, every generation must learn, from painful experience, that warmongering leads only to widespread misery and that environmental destruction undermines human welfare. But what I am most afraid of are the combined effects of global warming, human population growth, religious delusions and the corporate control of our democratic institutions. I fear that these — acting in concert — are sufficient to push us into a political-environmental crisis so big that it will threaten the continuity of our civilization.

#### What makes you most hopeful for the future?

That young people do not inherit in their DNA all the stupid things previous generations have been coming up with.

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