

Human activity has a huge impact on coral reefs. Such reefs are actually socioecological systems, says marine biologist Lisa Becking. Her expedition on board the *Temukira* therefore combines nature and sociological research.

text Roelof Kleis photo Barbara Kieboom

'Humans and nature go hand in hand'

As you read this, Lisa Becking (Marine Animal Ecology) is out on the high seas somewhere off the coast of the Bird's Head Peninsula, West Papua. She is leading a 10-day expedition to study the state of the coral there. For once, this is not because the coral is in a bad way. In fact, it is thriving there, in spite of the warming of the ocean.

Why is that?

'That is precisely the key question for this expedition. In the past few years there have been a number of cases of "global bleaching", with bleaching and death of reefs due to the seawater warming up. A lot of reefs have been badly affected by that, but not in this area, where the ecosystem seems to be resilient. How come? Is it the biology, the enormous diversity that is here, or is it down to the management of the nature reserves? And what can we learn from that for nature reserves in other regions? This area gets promoted for tourism purposes precisely because the reefs are still so beautiful. But how does that affect the reefs, and the people who make a living from them through fishing or income from tourism? The context of tourism is significant. Tourism has increased by a factor of over 30 since I first went there 10 years ago: from 900 visitors per year back then to 30,000 now.'

The area around the peninsula, the Bird's Head Seascape, is the most biodiverse tract of tropical ocean on the planet, housing more than 600 species of coral and 1500 species of fish. The area includes 12 'marine protected areas', making for 35,000 square kilometres of

protected marine nature. The expedition is studying two of those marine parks, which are exploited for tourism to differing extents. The programme includes the usual ecological measurements to gauge the quality of the reef. Almost virgin reefs will be compared with places visited by a lot of tourists. But that is not all; this expedition will go further. In Becking's words, 'We shan't just look underwater but also outside it.' Becking and her team will do sociological and economic research onshore, in the firm conviction that humans and nature are inextricably connected.

Is that a new insight?

'Not really. The human factor has always been an aspect of my work. You can't just pop to Indonesia, do a bit of diving, do your thing, and go off again. That kind of "parachute science" is very outdated. My research always starts with a cup of tea with the *kepala desa*, the village chief. I try to make clear what my research is about and we discuss where, how and with whom my team can work. Local people always join us on the boat, and I always learn loads from them about the area, their interaction with nature, their work and village life. That's a very sociable process, but it has never been part of my research. At some point I realized that half of what I observed never got into my papers. Nature conservation of coral reef systems depends on both ecological processes and socioeconomic processes at work on dry land. I want to integrate those processes into my work more.'



Leontine Elisabeth Becking

Born	Amsterdam (1978)
Studied	Biology, University of Amsterdam (2004)
PhD	Naturalis Biodiversity Centre and Leiden University (2012)
Work	Berkeley University (2013-2015), Wageningen Marine Research (2012-present), Marine Animal Ecology (2015-present)
Prizes	Rubicon (2012), Veni (2015), L'Oréal-UNESCO (2019)
Member of	The Young Academy (2018) and WUR group The Young Academy (2017)
Hobbies	going to art exhibitions and concerts, photography, reading, freediving.

Lisa Becking writes a column in the Dutch daily newspaper *De Volkskrant* and is a founder member of The Young Academy book club 'On the same page'.



PHOTO: AWALUDINNOER AHMAD/SHUTTERSTOCK

▲ A lot of reefs have been badly affected by global bleaching, but not all of them. How come?

So you need humans in order to understand and protect nature better?

'Humans and nature go hand in hand. Nature reserves visited by lots of tourists are socioecological systems. Humans influence nature and vice versa. You have to accept that: tourism is a given. Keeping tourists away is no longer realistic. I think there is a better way of protecting nature by assuming that humans are an integral part of the system and thinking about how you can adapt behaviour and policy. I am very convinced about that. No, I haven't suddenly turned into a sociologist. My aim is still to understand the natural system, but that system has got bigger for me, and now I work together with social scientists.'

Swimming and diving are second nature to Lisa Becking. 'I cannot remember a time when I didn't swim. When I was a child we always went to Menorca in the summer. I learned to snorkel very young, and I discovered the life going on underwater. I wanted to know everything about it, and when I got to know a marine biologist as a teenager, I knew for sure that that was what I wanted to be. I want to understand that system. I still have that curiosity. My research focuses on the question of how marine ani-

'When I got to know a marine biologist as a teenager, I knew for sure that that was what I wanted to be'

mals and plants adapt to change in their environment. And I try to use that knowledge to help protect that nature.'

She's been quite successful in that so far. Becking has been awarded research grants (including Rubicon and Veni grants) and received the L'Oréal-UNESCO Award for talented women scientists last December. One Wagenin-gen scientist went before her – biotechnologist Maria Barbarosa, who is now a professor. That is Becking's express ambition too. 'You embark on tenure track with the idea of working towards a chair.'

Does a scientist have to be ambitious?

'I think all scientists are ambitious, only their ambitions take many different forms. At the moment the definition of a successful scientist is extremely narrow: someone who is competitive, writes a lot of papers and brings in a lot of funding.'

What's wrong with that?

'In itself, it produces perfectly good scientists who do nice research. The disadvantage is that such a narrow definition creates a very specific image of what makes an excellent scientist. It is important to broaden that image to include more people and to make the university more diverse. Just as an ecosystem benefits from high diversity, I think a university is stronger and nicer if it has people with diverse talents and qualities. Inspiring leaders, for instance – people who get the best out of others. Or people who are outstanding teachers, or who enter into dialogue with the wider society. Also, the complex scientific and societal challenges facing us today call for a range of solutions and therefore for a range of approaches and talents.'

So we need more scope for diversity?

'Yes. Diversity goes beyond gender and culture. It's about being able to be a successful scientist in different roles and with different talents. Nationally, Wageningen scores very poorly on its percentage of women professors. By changing the evaluation system you create a different academic culture and space for a wider range of people. The way the evaluation criteria at WUR currently work, to become a personal professor you have to be an outstanding all-rounder. But luckily change is in sight, with working groups reassessing tenure track. I think we should aim at teams of people with different talents, who represent excellence collectively. Team science, rather than a bunch of individual walking wonders.'

Becking's ideas about diversity and her views on nature as a socioecological system are reflected in the 18-strong crew of the expedition she is currently leading. 'It is One Wageningen in action, with three science groups, two research institutes and a 4TU associate on board.'

Besides biologists and ecologists, there are also social scientists working on the research boat the *Temukira* and onshore. The aim is for them all to do research together. 'We talk a lot about multidisciplinary work, but it is quite difficult to put into practice,' says Becking. 'You don't speak the same language. By being in the field together and seeing how other people go about their work, you gain a better understanding of the kind of data people collect and how that relates to what you do.' So the ecologist goes along on visits to a village, and the sociologist helps take measurements at sea. As far as is practical, of

course. The aim is for this pooling of perspectives to lead to a more complete knowledge of the system. Becking might want to establish a new line of research. 'I came up with that idea together with modeller Ingrid van de Leemput (Aquatic Ecology and Water Quality Management) and sociologist Machiel Lamers (Environmental Policy), and we want to expand it into a larger line within WUR.' The L'Oréal-UNESCO grant (25,000 euros) gives her five months to flesh out the idea, which she is doing at NIAS (Netherlands Institute for Advanced Study in the Humanities and Social Sciences) in Amsterdam. 'I get the space there to think, write and work on proposals. It's crazy really, that you need a grant in order to be able to think. The peace you need to be able to think associatively and come up with new ideas is really something we should build into our daily lives as scientists.' 

EXPEDITION

The expedition to the Bird's Head Seascape (West Papua, Indonesia) runs from 13 to 23 January 2020, and is financed by the KNAW from the SPIN programme, and the Young Academy. The team consists of scientists from the Netherlands and Indonesia as well as local teachers, nature conservation organizations and policymakers. Besides Becking, WUR is represented by coral ecologist Erik Meesters, economist Eva van den Broek, modeller Ingrid van de Leemput and sociologist Machiel Lamers. The expedition is studying the resilience of coral reefs in relation to diving tourism in the area. You can follow the expedition via <https://weblog.wur.nl/kustzee/category/resilience-of-the-richest-reefs> and Becking's own social media.



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