

## Counting corals for conservation

At a depth of 25 feet, marine biologist Doug Fenner gestures excitedly to a mushroom coral sitting on the sea bottom. At the surface he exclaims with a wide grin, "Fungidae taiwanensis!" This is Fenner's third dive in Anilao, Batangas and he is ecstatic over the presence of mushroom corals that have so far only been recorded in the coastal waters of Taiwan.

Fenner, an American who works with the Australian Institute for Marine Sciences (AIMS), specialises in coral taxonomy. Fenner was commissioned by the Tubbataha Project of the conservation organisation WWF-Philippines to survey the reefs in that famous atoll in the middle of the Sulu Sea. In between his projects in Tubbataha and Dumaguete, Fenner stopped by Anilao to gadget with the coral survey of the WWF project there. His experience in Asia, in Malaysia, Philippines, Indonesia, and Palau, in particular, makes him the ideal consultant for coral taxonomy. Of the 790 species of corals Fenner can identify at least 450 by sight alone.

But Fenner is not your stereotypical bookish, dust-covered scientist. When Fenner arrives in Anilao, he has no scientific instruments, no high-tech gadgets with him. In fact, he dives with the bare essentials—mask, snorkel, fins, tank, an old regulator, and a buoyancy control device with a defective inflator. He doesn't even use a wetsuit. When he conducts his surveys, he only uses an underwater slate and a waterproof index of coral species.

Underwater, Fenner is in his element. Hovering effortlessly above the corals he surveys the reef in a

**The excitement of discovering rare coral species is only one result of a survey carried out in the Philippines by marine biologist Doug Fenner. For conservation, his essential data will provide a safe future for the corals, writes Alan Silayan from Manila**

methodical and precise manner. Starting from the deeper parts of the coral reefs, he works his way up to the shallows in a random pattern that he alone understands. "I learned in Malaysia that to find new (coral) species you have to take time in the shallows," he says to explain his unorthodox diving method. Careful not to overlook even the smallest specimen of coral, he often misses the spectacle of fishes going about around him.

When it comes to corals, Fenner can outtalk anyone. He has the patience to explain the intricacies of coral biology to anyone who cares to listen. But he's also willing to learn from the locals. Fenner was fascinated as our boatman explained local beliefs about corals and pointed out areas of thriving coral patches.

By the time Fenner left Anilao, he reported 29 species of corals that have never been documented in Philippine publications. The coral species *Eguchipsammia* sp., in particular, is quite rare. In fact this was Fenner's first encounter with a live specimen in its natural habitat. The uncommon species *Halomitra clavator* is also another favourite. And it is only in Anilao where you can find a dense population of a few hundred specimens. But more

important than these discoveries is Fenner's conclusion, which he cited in a report to WWF-Philippines. "Anilao area reefs support a very high coral diversity, as high or even higher than the best reef sites yet studied within the 'Coral Triangle' area of highest reef diversity."

In the Tubbataha reef, after 19 dives, Fenner counted a total of 240 coral species. In Anilao, Batangas, after 18 dives, Fenner was able to identify 290 species of corals. Is it possible that Anilao's coral reefs are more diverse than Tubbataha's, a World Heritage site? The waters of Tubbataha are known all over the world as one of the most productive marine ecosystems in the planet. Could the same be said of Anilao?

There are 411 coral species recorded in the Philippines. More than half are found in Anilao. The dive site named Cathedral, with 67 species is more diverse than the entire Caribbean Sea with only 50 or so species for that entire area. In the world of corals this may be the Mount Everest of coral bio-diversity.

The question is, what do we do with this knowledge? Other than simply being a collection of species names and numbers, Fenner's findings can be used as a tool for conservation.



Of the 790 species of corals Fenner can identify at least 450 by sight alone. CREDIT: GUTSY TUASON

WWF is approaching conservation in Anilao in two ways. At the ground level, the organisation works with local communities to strengthen marine law enforcement, and eventually create a coastal resource management plan. At the same time, WWF also works with the provincial government of Batangas to come up with a bay-wide management plan for the entire Balayan Bay. Fenner's data is essential to focus management priorities on areas rich in species forms.

*Fungidae taiwanensis*, *Eguchipsammia* sp., *Halomitra*

*clavator*, meaningless names to most of us. Fenner, however, sees beyond this seeming gibberish right into the core of conservation. Fenner has transformed these scientific names into tangible strategies for conservation. "Anilao area reefs have exceptionally rich coral fauna, among the richest known in the entire world," says Fenner. "and thus deserve continuing efforts to preserve them." —WWF Feature

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## Environmental engineering in pollution control

REZAUAL KARIM

ENVIRONMENTAL problems in Bangladesh are on the rise and there is a growing fear of environmental catastrophe. Compared to the scale at which the environment is being harmed, the measures to keep it habitable are much more limited. However, environmental studies are gaining increasing importance in the universities. Researches are being strengthened on issues like how to protect the environment, what causes pollution, what causes ecological imbalance, how to ensure a healthy, natural and habitable environment and so on.

There has been an increase in awareness among people regarding the environment. Issues like climatic change, air pollution, water pollution, arsenic pollution, sewage problem, draught, floods and other natural calamities are being discussed a lot and a change in perceptions is being noted which is very heartening indeed.

Recognising the importance of addressing environmental issues, Shahjalal University of Engineering and Technology opened a separate department called Civil and Environmental Engineering Department. The first batch of graduates from this department this year. The Department of Civil

and Environmental Engineering, besides conducting the curricula at the university, have also entered a contract with Staffordshire University (UK) for "Appropriate Technology for Waste Water Treatment" project. They are also working jointly with the International Training Network (ITN) for water and waste management. The department is also conducting researches in a sewage development project in the slums of Sylhet.

Environmental engineering is important for conservation of the environment. In order to be an environmental engineer its essential to have knowledge of environment, life science, chemistry, geography, soil science, mathematics, economics and social science. And since this branch of science is also dependent on the use of technology to prevent harm to the environment, knowledge of basic engineering, especially aspects of civil engineering, is required. While constructing roads, a civil engineer has to ascertain the load, which a road can endure, while erecting beams or columns, the construction engineer has to ascertain how much load this beam (ultimately the building) will be able to take. Similarly, an environmental engineer has to ascertain just how much waste a river can tackle, how much pollution the atmosphere can handle. He has to devise ways for the environment to remain 'normal'.

People can be ensured a healthy life if they are provided with safe water, sound sewage disposal facilities, proper management of liquid and solid wastes and air pollution. And addressing these issues requires skilled human resource. Environment engineers have been trained in order to achieve these objectives.

The Shahjalal University of Engineering and Technology recently held a national seminar titled "Prospects of Environmental Engineering in Bangladesh".

Lots of highly technical instruments to measure levels of pollution, and technologies to combat pollution were displayed to the participants of the seminar. A lot these machineries are not being used yet.

## ENVIRONMENT WATCH

### Environment ministers set off on UN climate treaty marathon

AFP, Marrakesh, Morocco

Environment ministers from around the world set off on Wednesday on a three-day race to complete the UN global warming treaty, the keystone of efforts to fend off damaging climate change.

They faced mounting pressure to nail down the final legal and technical details in the Kyoto Protocol, ending a nearly four-year saga of storms and nagging doubt about the world's will to tackle a looming peril.

Experts meeting overnight Tuesday cleared a hurdle on the treaty's compliance clauses and were optimistic of success by Friday's close.

Outstanding problems include agreement on rules for establishing national inventories of the "greenhouse gases" blamed for global warming; eligibility criteria for Kyoto's market mechanisms; and a Russian demand for further concessions on forest "sinks" which absorb carbon pollution.

Ministers staked out early positions, bracing for long haggling over details that will determine the fate of billions of dollars in trade as well as the effectiveness of the world's most ambitious environment treaty.

The EU urged countries not to unpick a painfully won deal, reached in Bonn in July, that saved Kyoto from oblivion.

And it called on countries to ratify Kyoto in time for the 10th anniversary celebrations next September of the protocol's parent charter, the UN Framework Convention on Climate Change (UNFCCC).

But that appeal found no echo from Japan, which along with several other countries has a potential stranglehold on Kyoto.

Japanese Environment Minister Yoriko Kawaguchi spoke only of "the prospect of a possible entry into force" of Kyoto and stressed her objections to limits on the protocol's market mechanisms.

Kyoto requires rich countries and the transition countries of eastern and central Europe to make a cut of 5.2 percent in global emissions of greenhouse gases by 2008-2012 compared with their 1990 levels.

These gases, mainly the carbon by-products of burning fossil fuels, are warming the Earth's atmosphere, with the risk that the climate system could change catastrophically only a few decades from now, scientists say.

Kyoto was signed almost four years ago as a declaration of goals and sketched the path to reach them.

But transforming those ideas into treaty machinery has been a diplomatic nightmare. Kyoto's very existence was threatened in March when President George W. Bush branded Kyoto "fundamentally flawed" and unworthy of US ratification.

US delegation chief Paula Dobriansky, the under-secretary of state for global affairs, insisted on Wednesday the United States "will continue to play a leadership role" in addressing climate change, an issue which warrants "serious attention and real commitment".

But, as expected, she did not unveil the US' own proposals for tackling the problem.

Kyoto's supporters have feared Washington wants to float a counter-plan stripped of economically costly or politically difficult obligations that would woo waverers like Japan.

But the September 11 crisis has meant that the White House's inner circle has had little time to dwell on climate policy and Dobriansky reiterated almost word for word her previous, broad statements.

America was exploring "environmentally and economically responsible policies" and would seek partnerships and alliances in combating climate change, she said.

"The United States has no intention of discouraging the work of other nations on the Kyoto Protocol, but we will protect legitimate US interests," she said.

Even though it no longer plans to ratify Kyoto, the US has a seat at the Marrakesh talks because it is a signatory of the treaty's parent, the UNFCCC.

Even if Kyoto is concluded, it can only come into force in international law when it has been ratified by 55 countries representing 55 per cent of carbon dioxide (CO<sub>2</sub>) pollution by industrialised countries as of 1990.

As the United States accounts for 36 per cent of those emissions, the mathematics mean that any other major defection would have torpedoed Kyoto.

To save the pact, the EU had to make huge concessions in Bonn to Japan, as well as to Australia, Canada and Russia.

These concessions, added to the effect of the US pullout, have greatly compromised Kyoto's goal.

Instead of global emissions being cut by 5.2 per cent by 2008-2012, there is likely to be a rise of "10 to

12 percent" compared with 1990 levels, an energy expert told AFP on Wednesday.

This figure is based on the assumption that the United States takes no steps to reduce its pollution, he said.

### Japan lukewarm over Kyoto ratification

AFP, Marrakesh, Morocco

Japan on Wednesday adopted a lukewarm stance over the Kyoto Protocol, reiterating its support for the UN climate treaty but notably failing to declare when or even if it would ratify the accord.

"Japan firmly believes that effective actions against climate change require a global response in which all countries act under one single rule," Japanese Environment Minister Yoriko Kawaguchi told a conference here aimed at completing the troubled agreement.

"I pledge to do my utmost to reach agreement at this session."

However, Kawaguchi signalled that Japan opposed any cap on Kyoto's planned flexibility mechanisms, under which countries can use market forces to lower the cost of meeting national cuts in greenhouse gas emissions.

"For Japan, in considering the ratification of the Kyoto Protocol, it is extremely important that the agreement... will allow us to combine domestic emissions reductions with fully functioning mechanisms."

Japan's position at the Marrakesh talks is vital to determining whether Kyoto can be implemented or will perish after an exhausting four-year negotiation effort.

Kyoto's champion, the European Union, has declared that it wants Kyoto to enter force in time for the 10th anniversary next September of the Rio Summit, the event that led to the birth of the protocol.

The EU has been hiking the pressure on Japan to declare its willingness to ratify and not to unpick an agreement that saved Kyoto from collapse in Bonn less than five months ago.

Kawaguchi pledged Japan would "adhere faithfully" to the Bonn deal, but stressed the Marrakesh talks on completing Kyoto's rulebook had to establish "realistic and predictable rules with limited restrictions."

On Monday, press reports said Kawaguchi would tell US representatives that Japan had definitely opted in favour of ratification of the Kyoto treaty.

But the chief Japanese negotiator here, Kazu Asakai, said on Tuesday that his government's decision on ratification would depend on the outcome of the Marrakesh talks.

In the runup to Bonn, Japan kept the EU in a state of anguish about its intentions, alternating between pledges of support for Kyoto and its hope that the United States would return to the pact.

Kyoto sets down a goal of a 5.2-percent cut in global emissions of six "greenhouse" gases by 2008-2012. Japan's goal is a reduction of six percent.

Japan has shown increasing interest in the pact's flexibility mechanisms as its economic climate has worsened.

### Exposure to toxic chemicals taking toll on Thais: report

AFP, Bangkok

Toxic industrial chemicals released into the environment have caused widespread health problems and genetic defects in Thailand, a top health official said in a report yesterday.

"The number of people suffering from infertility, miscarriages, breast and ovarian cancer, declining sperm counts and testicular cancer is increasing," Thai health ministry official Suwanna Varakamin told the Bangkok Post.

Heavy metals and pollutants leaked into the environment amid rapid industrialisation have led to more children with Down's syndrome, youngsters with developmental problems and girls going through puberty prematurely, she said.

"These problems are related to exposure to toxic industrial chemicals," said the director of the ministry's family planning and population division, at a seminar on the UN's Population and Environmental Change 2001 report.

The report said the UN survey showed that industrialisation had introduced some 100,000 new chemicals into the environment since 1990 and that most had not been studied for their health effects.

The UN study said increasing demands on water, food and energy supplies by the world's growing population could threaten sustainable development.

It also said that while pesticides and fertilisers pollute ground waters in industrial countries, in developing nations, raw sewage and industrial waste were contaminating usable water supplies.