

# A World of **SCIENCE**

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The key to managing conflict  
and cooperation over water

Synthetic biology, a very discreet newcomer

Preserving the memory of the world

Getting out of debt



United Nations  
Educational, Scientific and  
Cultural Organization



Two of Australia's Pacific neighbours have also announced the creation of vast marine parks this year. At the Pacific Islands Forum in August, the Cook Islands unveiled plans to create a protected zone spanning nearly 1.1 million km<sup>2</sup> and New Caledonia a zone spanning 1.4 million km<sup>2</sup>.

The fact that nearly 5 million km<sup>2</sup> of additional marine protected areas have been designated in the Pacific Ocean within months of Rio+20 not only demonstrates that countries are taking energetic steps to conserve marine biodiversity. It also shows that they have integrated the need for networks of

large, connected areas that respect the integrity of ecosystems.

For details: <http://whc.unesco.org>;  
[www.environment.gov.au/marinereserves](http://www.environment.gov.au/marinereserves)

## Fewer creatures under the sea

**Previous estimates of there being well over 1 million marine species appear 'improbable,' says a team of 120 taxonomists led by Ward Appeltans of UNESCO's Intergovernmental Oceanographic Commission (UNESCO-IOC). They have just published a study based on the World Register of Marine Species (WoRMS), a database hosted by the Flanders Marine Institute in Oostende (Belgium) which the team of taxonomists helped to launch.**

The researchers report between 220 000 and 230 000 known marine eukaryotes, a vast group encompassing most marine species, with the notable exception of bacteria, archaea and viruses. Eukaryotes are single-celled or multicellular organisms whose cells contain a nucleus enclosed within a membrane. A large variety of life forms fit this description, including the single-celled protozoa, fungi, plants, animals and algae, the latter having the particularity of coming in both

unicellular (e.g. dinoflagellates) and multicellular forms (e.g. giant kelp).

Statistical modelling based on past rates of species discovery suggests that the total number of eukaryotic species in the world's oceans amounts to between 320 000 and 760 000. The higher value is close to the 120 taxonomists' own estimations of between 704 000 and 972 000. This suggests that between one-third and two-thirds of marine species remain to be described.

'Scientists have been describing species in the ocean – and on land – for more than 250 years but there has never been a central place where everything gets recorded,' says Appeltans. 'The only thing a scientist needs to do is publish a paper. As a result, many species have been described more than once – we found that this was the case for 40% of known species. This leads to a lot of confusion over species names. By centralizing information and making it accessible to all scientists, WoRMS should help to remedy the problem.'

'Having a taxonomic reference database like WoRMS will also help with assessments of the status of marine biodiversity,' adds Appeltans, such as the World Ocean Assessment due out in 2014 and those of the new Intergovernmental Platform on Biodiversity and Ecosystem Services. It will also help improve the data quality of global observation systems like the Ocean Biogeographic Information System managed by the UNESCO-IOC.'

The register comes at a time when species discovery is accelerating. More marine species have been described in the past decade (20 000) than in any previous decade. On average, 37% of species in over 100 recent field studies around the world might be new to science. If species continue being discovered at the current rate, most marine species will have been identified by the end of the century.

The study was published on 15 November in *Current Biology*.

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[www.cell.com](http://www.cell.com); see also the blog:  
[www.go.nature.com/qew2qq](http://www.go.nature.com/qew2qq)

## Nigeria to establish international biotech institute

**UNESCO Director-General Irina Bokova and Nigerian Minister of Education Ruqayyatu Ahmed Rufa'i signed an agreement on 15 October for the establishment of an International Institute for Biotechnology at the University of Nigeria in Nsukka which will function under the auspices of UNESCO.**

The University of Nigeria was a logical choice for the new centre, as it already hosts a centre of the National Biotechnology Development Agency. In addition, the university has a long history in agricultural and medical biotechnology.

The centre will provide high-level training, education and research in biotechnology, in particular as relates

to food security, the conservation of harvested crops, gene banks for seeds and other bio-tissues, as well as the control of tropical diseases. The centre will organize and host international conferences and training programmes in the sub-region, in collaboration with other universities and research institutes in Nigeria and beyond.

'The Government of Nigeria has placed a premium on the establishment of this centre, in order to harness African and global expertise, as well as competencies to address regional problems of global concern,' said the Minister of Education. 'Whereas the centre's immediate focus will be sub-regional and regional, its scope will ultimately be international. We are optimistic that the centre will

soon become not only a reference institution in the field of biotechnology but will contribute to national and international capacity-building, research and development and also foster the economic empowerment of the people.'

The presence of two Nigerian parliamentarians in the delegation to the signing ceremony testified to the broad level of support for this initiative in Nigeria. Biotechnology was one of 13 priority areas identified in the *Nigeria Vision 20:20* document, which is Nigeria's blueprint for national development. The target of the *Nigeria vision:20:20* is for Nigeria to join the world's 20 most powerful economies by 2020. Nigeria established a National Biotechnology Agency in 2001 to implement the