

# Discovering the world's near shore

## An introduction to the NaGISA project

By P. Robin Rigby

WHAT LIVES ON THE OCEAN'S doorstep? Is there a pattern to how much lives where, and how will these things change over time? The edge of the ocean is the part that we are most familiar with, and yet we are not able to answer these questions.

The need for an integrated assessment of global coastal biodiversity has resulted in an effort known as **Natural Geography In Shore Areas**, referred to by its acronym **NaGISA**, meaning coastal ecosystem in Japanese. To determine baseline diversity in the world's coastal zone and to compare areas separately and through time, NaGISA has set its goal as a series of well-distributed standard transects from the high intertidal zone to a depth of 20m, covering the world from pole to pole and around the equator, to be run for the next 50 years.

Targeting hard-bottom macroalgal and soft-bottom sea-grass communities due to their global distribution, relative complexity and poor characterisation, NaGISA has revised protocols that were developed in advance of International Biodiversity Observation Year (IBOY) 2001-2002. The protocols are simple, cost-efficient and intentionally low-tech,



NaGISA 2003

Katrin Iken, one of NaGISA co-PIs for the Eastern Pacific region, showing off quadrats while diving in Prince William Sound, Alaska.

allowing them to be adopted by many different research groups and countries. The standardised techniques will allow for biodiversity to be compared over latitude, longitude and through time in an online database, scheduled for public release in early 2005 ([www.nagisa.coml.org](http://www.nagisa.coml.org)). As part of the Census of Marine Life (CoML), a global project discovering what was, what is and what will be in the oceans, data will also be made available through the Censuses Ocean Biogeography Information System ([www.iobis.org](http://www.iobis.org)).

NaGISA protocols constitute the minimum standardised sampling requirements for biodiversity determination, although scientists are welcome to incorporate additional sampling parameters at local sites. The standardised protocol includes:

- 1) Passive sampling, photography and observational techniques, estimates of per cent cover of colonial invertebrates and rhizoidal macro-algae, and counts of algal stripes and solitary fauna within quadrats.
- 2) Active sampling, core samples of sea-grass beds, and careful removal of organisms from small quadrats within macro-algal sites.
- 3) Assessment, measurements of surface and bottom seawater temperature, and a visual classification of substrata.

NaGISA projects are run out of universities, institutes and research stations in participating countries that organise local study sites, sampling, outreach and education. NaGISA International is based in Japan and is responsible for the overall links between administrative centres, as well as database and workshop development. Currently, the two administrative centres in the Seto Marine Laboratory, University of Kyoto, and in

University of Alaska, Fairbanks, are the hub of all ongoing research. However, there are plans for them to be joined by South American, European and South Seas centres.

A unique aspect of NaGISA is in the meeting of the goal of global biodiversity coverage by locally vested interests around the world, while creating a standardised data matrix suitable for testing a wide range of ecological theories and solving practical problems. No other project has ever dealt with biodiversity information with such fine resolution on such a wide scale, nor tried to deal with the large knowledge debt in the taxonomic field. With links to the Global Taxonomic Initiative (GTI) and the Japan's Promotion of Science (JSPS) project, which have placed education at the forefront of their mandate, NaGISA has already begun to make progress in these areas. Current projects include various taxonomic workshops, high school and university programmes and educational exchanges. Developments in the field of taxonomic methods for study of meiofauna using flow-cytometry techniques, gel suspension and holographic imaging are also underway.

It is NaGISA's hope that by improving the general understanding of biodiversity and the methods in taxonomic study, we will promote and maintain a more thorough and accurate characterisation of the world's coastal biodiversity. ●

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