

Marine Biodiversity Initiative for Central America International Partnership for Research and Training on Marine Biodiversity and Genomics

Prof. Jorge Alberto Huete-Pérez, Ph.D – Molecular Biology Center at the Universidad Centroamericana, UCA, Managua, Nicaragua

Prof. Martin Polz, Ph.D. – Massachusetts Institute of Technology, Department of Civil and Environmental Engineering, MIT.

Summary

The goal of this initiative is to assemble an international network of scientists to train local researchers and assist them in the study of neglected Mesoamerican coastal marine biodiversity and the impact of climate change (e.g., via ocean acidification). Specifically we are focusing in Honduras, El Salvador and Nicaragua. We use a cross disciplinary approach (taxonomy, molecular biology and genomic techniques with biodiversity conservation). This network will identify gaps in knowledge for future more in-depth research on the current status of marine biodiversity, leading to collaborations on the sustainable use of marine resources and better understanding of anthropogenic influences on ocean biodiversity. This includes: Biodiversity of the marine life found along the coasts of Nicaragua, Honduras and El Salvador (Genomic archive); Impact of invasive marine species; and Effects of climate change on the Mesoamerican marine biodiversity.

Activities

1. Training workshop on marine ecology and genomics techniques.
2. Marine microbial biodiversity tools and genomics Training in field techniques, research and bioinformatics.
3. VII Nicaraguan Biotechnology Conference Marine Biodiversity and Genomics in Central America.
4. Methods and Bioprospecting for research on marine microorganisms.

Impacts

- Advanced scientific and technical knowledge for informing development-related policies by building regional capacities on biodiversity and conservation.
- Improved the capacity of local institutions. Professors, technical personnel and students are trained by eminent scientists from the US with expertise on marine biodiversity and appropriate technologies.
- Enhanced the technical infrastructure of local institutions and provided assessments of the various small marine research centers in Central America to identify the needs for upgrading their technical infrastructure and to design future research plans.
- Impacted the broader community in the region through partnerships between researchers, community leaders and authorities, educators and students. Proactively engaged our target audiences.



Coastal-marine biorepository located at the Molecular Biology Center in the Central American University



Marine Microbial Biodiversity Tools and Genomics Training in Field Techniques, Research and Bioinformatics Workshop.



Participants of the VII Nicaraguan Biotechnology Conference. Marine Biodiversity and Genomics in Central America.

Future Developments

- Second International Conference on Central American Marine Biodiversity and Genomics (2016). Followed by planning sessions and committee building within the international network with a strategy for advancing biodiversity research and conservation.
- The network will continue training and project development workshops ; students and scientists will be trained DNA sequencing, data sharing & field training.
- New Proposal: Determine the impacts of continental remodeling on neotropical biodiversity as a consequence of the Chinese Interoceanic Canal through Nicaragua. A comprehensive biosurvey of the canal route. The implications for the landscape connectivity of reptiles, amphibians, terrestrial mammals, and understory birds are severe. More than 20 vertebrate species are in critical danger due to the canal, the number of threatened species is higher.

Acknowledgements

Project Grant Award AID-OAA-A-11-00012; Collaborating institutions UCA; MIT; NEB; WHOI; Albert Einstein College of Medicine.

