

INTERNATIONAL RESEARCH AND TEACHING

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Returning from a seaweed collecting trip, technician **Tito Tomadora** (left) of Panama, **Jennifer Kelly '07** (middle) and research scientist **Wilson Freshwater** (right) stop on the Smithsonian's laboratory dock in Bocas del Toro, Panama. Kelly used specimens collected during this trip for a Directed Individual Study project completed during her senior year.



PHOTOS COURTESY OF WILSON FRESHWATER

Wilson Freshwater, whose specialty is large marine algae or macroalgae (seaweeds) and marine plant taxonomy, with colleagues from Roger Williams University, the University of Louisiana at Lafayette and the Smithsonian Tropical Research Institution in Panama, is conducting the largest effort to date to document the diversity of macroalgae in the oceans off the Pacific and Caribbean coasts of southern Central America. The project also addresses the need to train and attract new taxonomists.

Central America hosts some of the most beautiful and rare marine and terrestrial species on the planet. However, there is a lack of taxonomists to classify and document the taxa, i.e. the divisions or categories of variety and type.

Biodiversity is a measure of the health of biological systems. With

so many current stressors destabilizing environments, taxonomy and the branch of biological sciences known as systematics have become essential for diagnosing the health of ecosystems.

By classifying and cataloguing, taxonomists examine the phylogenetic relationships among species, distinguishing and determining the characteristics and roles they share with similar species. When organisms are classified, relationships between them become more obvious – as do their individual contributions to the health of their environments.

The accepted geologic history of the Isthmus of Panama offers unique potential to learn about the evolutionary rate of marine algae and how it compares to the rate of evolution of other organisms – an aspect of the project funded by the National Science Foundation's Biological Surveys and Inventory Program and the Smithsonian Institute's Marine Science Network. This work will continue through 2012.

During the summer of 2008, Freshwater and colleagues led a two-week tropical taxonomy training course for graduate students at the Smithsonian's Bocas Research Station on Panama's Caribbean coast. Latin American students as well as



students from the United States, France and Germany gained skills in collection, identification, characterization and preservation of species and practiced sampling in diverse marine environments.



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