

Trans-disciplinary undergraduate marine science research experience in Puerto Rico

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Despite the enormous variety and socio-economic importance of marine resources in Puerto Rico, opportunities to conduct marine science research for undergraduate students are limited due to several factors, including few marine related university programs and limited infrastructure and resources at non-research institutions. Establishing collaboration among marine science research and teaching institutions from U.S. and Puerto Rico was identified as a potential way to bring marine science research opportunities to more undergraduate students and faculty from different STEM and social science (anthropology, sociology, economy) fields in Puerto Rico to develop a more inclusive trans/interdisciplinary marine science research agenda. A pilot intensive REU program was developed to support early stage (sophomore and junior) students from STEM and social sciences conducting research at a bioluminescent lagoon in Puerto Rico, in collaboration with the University of Maryland Center for Environmental Sciences.

Puerto Rico has three of the 10 most famous bioluminescent bays in the world, and are an important socio-economic resource for local communities. Puerto Rican students feel proud of these resources and concerned by its protection. This program offer the opportunity to conduct research on these environments, helping students to understand how they could contribute to protect them, how their learning is relevant for the future sustainability of Puerto Rico, feeling connected and engage with real world situations.

Many students are exposed mainly to traditional careers, such medicine, law and business administration through family, public media and society at large. Environmental related careers are perceived as oppose to "progress" or with lower relevance. In our program we focus on a trans-disciplinary approach to help the students understand the contribution and responsibility of science to society progress, using as a framework the use of a poorly studied bioluminescent lagoon by local community as a tourist attraction, analyzing challenges faces for all stakeholders.

Although this program is new and had been conducted only during the last two summers, we tested and refined a number of teaching-learning techniques that had been share with faculty from different institutions in Puerto Rico. Participation of faculty from other STEM field, such as Molecular biology, allowed to attracted more students to marine science careers. The model used of a supportive community which include from senior undergraduate students to scientists, was effective to develop self-confidence and skills that would help student through their major.