Students teaching students -
A unique approach to learning about
marine resources management

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Ultimate goal of the NOAA’s RTR Unit

To identify and recruit outstanding undergraduates into the discipline of population dynamics and careers with NOAA.
Goals of the summer program

• To teach students about the complexity of marine resources management
• To teach students the role that population dynamics plays in the process.
• To create a new teaching tool for the university classroom
Each year we focus on a different case study.

• In 2006 we focused on marine protected areas.
The topic for 2006

• What are the goals of MPA creation?
• How can we evaluate MPAs to see if they are working?

Map from NOAA NCDC
We chose to look at:

- MPAs in general
- one specific MPA
  - East End Marine Park on St. Croix, USVI.
We selected six undergraduate students through a competitive application process.
Their first task:
“See what you can learn”
Gave them access to the right reference material
Next, we went on a two week trip.

- Key Largo
- St. Thomas
- St. Croix
Gave them access to the key people

Agency Scientists
Fishermen

NGO staff
Academics
Gave them access to the right locations
While on the trip, the students were responsible for their own learning.

- Decided who they wanted to meet with.
- Selected the questions they wanted to ask.
This is a tremendous learning experience for the six students, but why limit the experience to the six students?
The students are asked to create a website to share what they’ve learned with other students.
Provided video
and still cameras
Gave them access to computer hardware and software
After the trip, they spend 2-3 weeks back at Virginia Tech, creating the website.
Marine Protected Areas

A Case Study

A Virginia Tech RTR project

Home

Marine Protected Areas

- Planning
- Stakeholders
- Evaluation
- Studies

East End Marine Park

- Background
- Planning
- Stakeholders
- Evaluation
- Studies

Case Study

How to Use This Website

Welcome

"Our planet's vast oceans have been viewed throughout history as an inexhaustible resource, both in terms of what they can produce and what they can absorb. But the ecological limits of oceans became apparent in the past decade. Eleven of the world's 15 most important fisheries and 70 percent of commercial fish species are now fully exploited or overexploited. And pollution of coastal waters often contaminates many remaining marine species." - Worldwatch Institute
The website contains:

- MPA facts
- Graphics
- Video interviews
- Links
- Glossary
- Supplemental reading
- Discussion questions

what you need to cover this topic in your class
How To Use This Website

This website is designed to be an educational tool, explored as a case study for undergraduate college students. Although this is an interdisciplinary case study and has the potential to be used in many class settings, the subjects detailed in this case study include: Marine Science, Natural Resources, Economics, Biology, Environmental Studies, Population Dynamics, Sociology, Public Policy, and Political Science.

This case study is very flexible, and can be utilized in a variety of ways. The suggested format for the presentation and teaching of this web-based case study is:

Approach the case study as a basis for a mock MPA planning workshop, with students assigned the task of planning and implementing a new MPA.

Allow students to navigate through the MPA and EEMP web pages for as long as time allows (at least 1-2 hours, or as an out of class assignment) and follow-up with a class discussion (1-2 hours). Base the class discussion on the over-arching questions that can be found on the various web pages.

The questions should challenge students to think critically about the complex social and biological issues surrounding MPAs. After navigating this website, students should have a general understanding of:

1. What an MPA is and why they are used
2. How an MPA is developed
3. Who is involved
4. Why evaluation of MPAs is critical
5. How to evaluate the effectiveness of MPAs

Following the class discussion, divide the class into seven groups, corresponding to the seven stakeholder groups presented in the hypothetical case study. It is important for the students to fully understand the point of view of their stakeholder in order foster lively debate.

Stakeholder groups include: Commercial fisherman, recreational fisherman, NGOs, tourist industry representatives, scientists and researchers, residents/recreational users and dive operators.

The "planning committee" can focus on one of the responsibilities tasked within the hypothetical case or on one aspect of MPA planning, such as development, monitoring, zoning or education and outreach. During this session, students should be able to accomplish a number of the following tasks:

1. Define a set of goals for the MPA, as well as SMART objectives for the proposed park, given the various interests of stakeholders
2. Create zones within the park
3. Develop an monitoring program, including feasible studies, to evaluate specified goals (both socioeconomic and biological)
4. Develop a set of education and outreach programs to promote awareness of the park

Visit the National Center for Case Study Teaching in Science to learn more about the case study method of teaching. Follow this link to find Articles Relating to Methods for Teaching and Writing Case Studies in Science.
Benefits to the six student participants:

- Participatory learning
- Critical thinking skills
- Teamwork skills
- Communication skills
- Networking opportunities
They also have a great time!
Benefits to students using the website:

• Not learning from traditional methods (e.g. textbooks, lectures).

• Gaining a first-hand, on-location perspective.

• Learning from students their own age.

• Learning from multimedia website.

• Gaining critical thinking skills.
Four other case studies are available.

Blacks sea bass management in the southeastern U.S.

Loggerhead sea turtle management.
Four other case studies are available.

Fisheries management in Puerto Rico.

What would ecosystem management look like in the Gulf of Mexico?
These* case studies are available for classroom use now!

Classes such as:

• Fisheries management
• Marine policy
• Conservation biology
• Environmental science/studies
This summer

- Eight students will conduct four stock assessments for use by the South Atlantic Fisheries Management Council.

- The product will be the assessment reports and presentations, rather than a website.
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