First steps to countering “ocean blindness” in an alpine region: lessons learned from ocean literacy activities across a wide age group

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IMAGE by Simona Coda

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Premise

- The local natural environment and geographical context of a school strongly affects what students (from child-care to high-school) may learn and know about the surroundings and which actions need be taken to protect and conserve it

- The community living in a mountain region is less prone to learning about the sea or the ocean, about its main physical, chemical and biological charachteristis, and about the processes that regulate them and how or why day-to-day actions affect the ocean's health and sustainability – the so called “ocean blindness”.

Background information: The province of Biella

- **190 km from the closest coast**
- **Pre-alps (200-300m asl), continental/alpine climate (fresh water!)**
- **Farming, wool/cachemere industry**
- **Not uncommon to find people who have never seen the sea at a young age**
- **The sea and the marine environment are discovered mostly through recreational activities / summer break vacations**

The sea and the marine environment are discovered mostly through recreational activities / summer break vacations:

→ The sea is poorly known (i.e., organisms, seasonality)
→ The sea is seen as a positive environment
→ The sea may feel “distant” from one's responsabilities
“how can **we** be a problem?”

Ocean-literacy pilot activities over a wide age-group:

Childcare:	6 mo - 3 yrs	(20 pupils)
Kindergarten:	3 yrs – 6 yrs	(60 pupils)
Primary school:	6 yrs – 10 yrs	(50 pupils)
High-school:	14 yrs – 17 yrs	(250 pupils)

Childcare & Kindergarten

Activity keywords

Listening
Coloring
Hands-on / touch
Experimenting
Video-viewing
Reading

Objectives:

Introduce (to most) a totally new environment (colors, inhabitants, noises) with a very simplified reference to anthropogenic pressure (i.e., pollution)

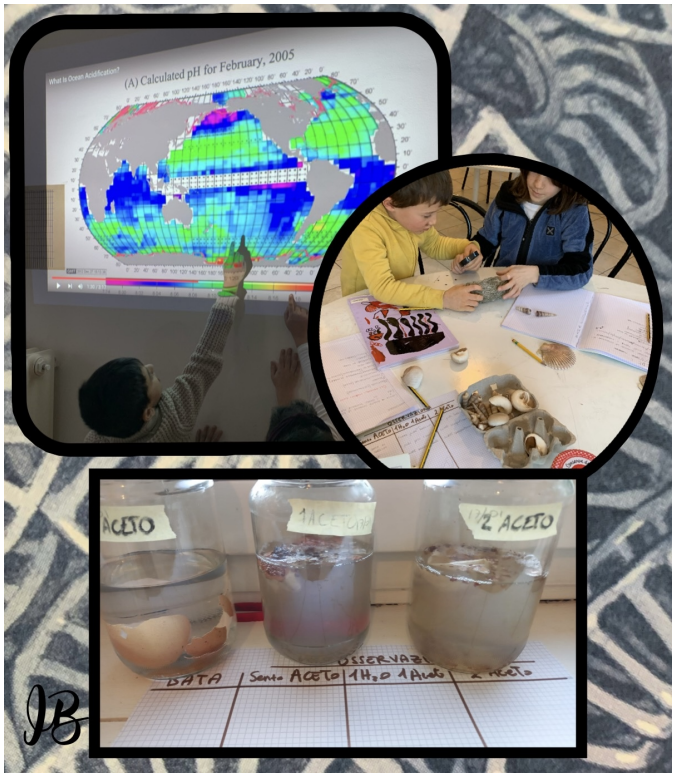
Primary school

Activity keywords
Listening
Coloring
Hands-on / touch
Experimenting
Video-viewing
Reading
Researching

Biodiversity

Ocean waves

Ocean acidification

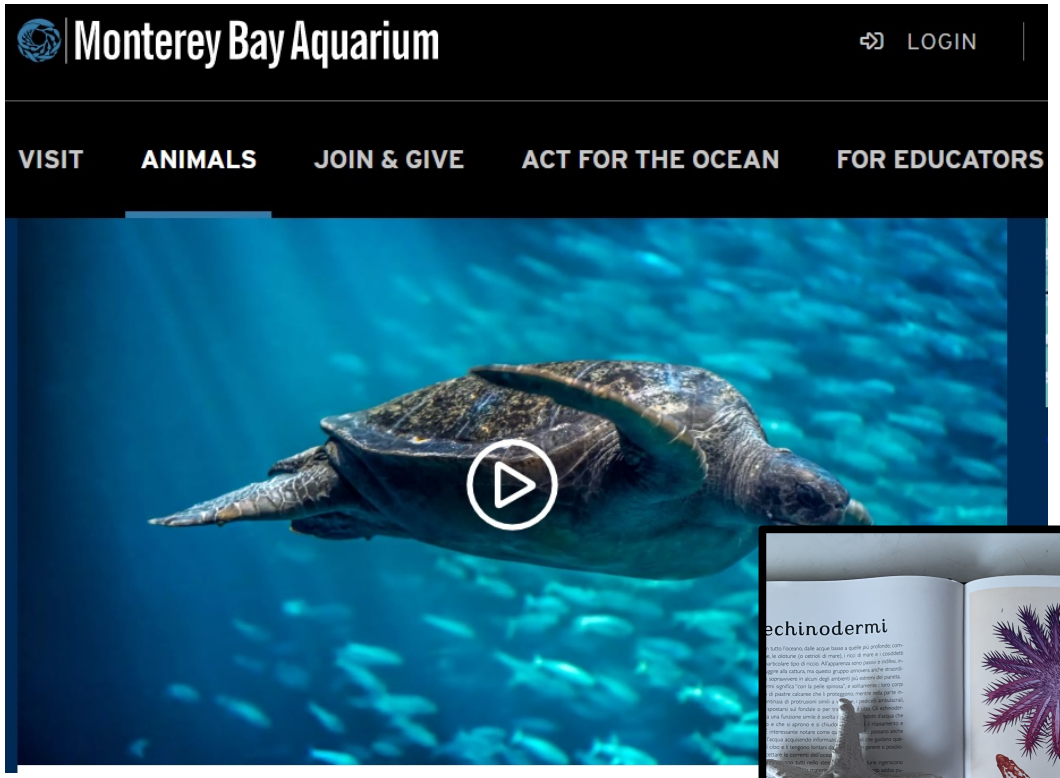


Objective:

1) Provide the tools to understand the functioning of a different environment (ocean), including human pressure 2) research and experiment

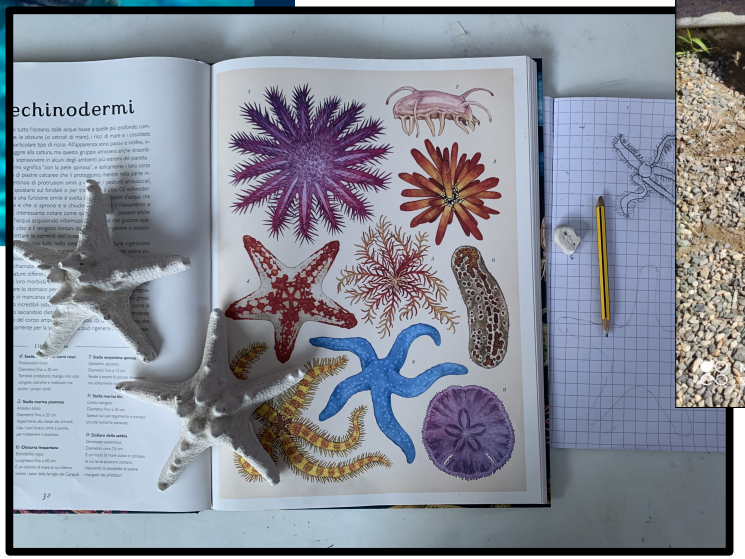
Childcare, kindergarten, primary school main resources:

Aquarium webcams / youtube videos



Variety of plastic reproductions

Books and real-size reproductions



Scuba-diving gear

High-school

Objectives:

1) Share personal “out-of-the-box” study & work experience: life of a PhD and of a (female) marine scientist.

2) Provide the tools to understand the functioning of a different environment: peer-reviewed publications, data analysis and experimentation.

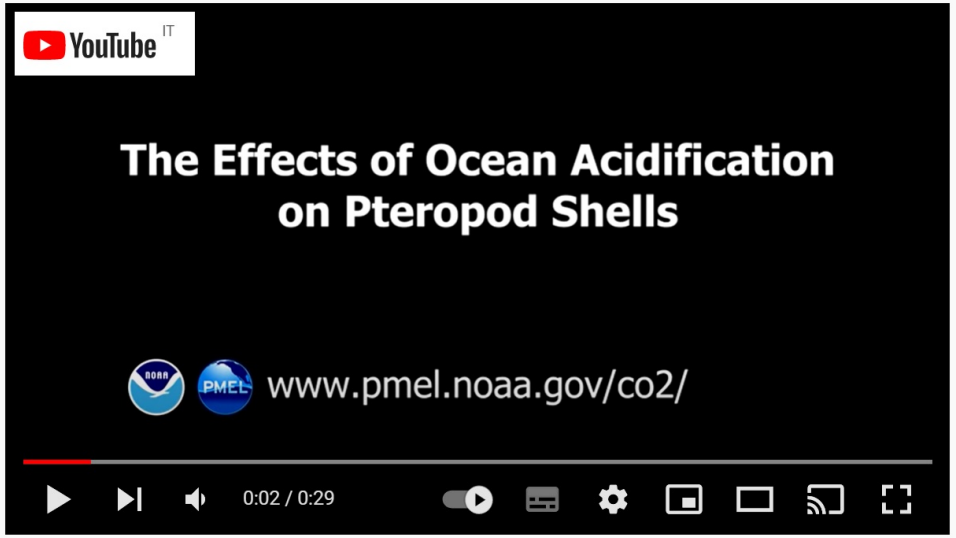
What is pH, what is ocean acidification? How does salinity or temp. change affect density and ocean ciculation?

High-school main resources

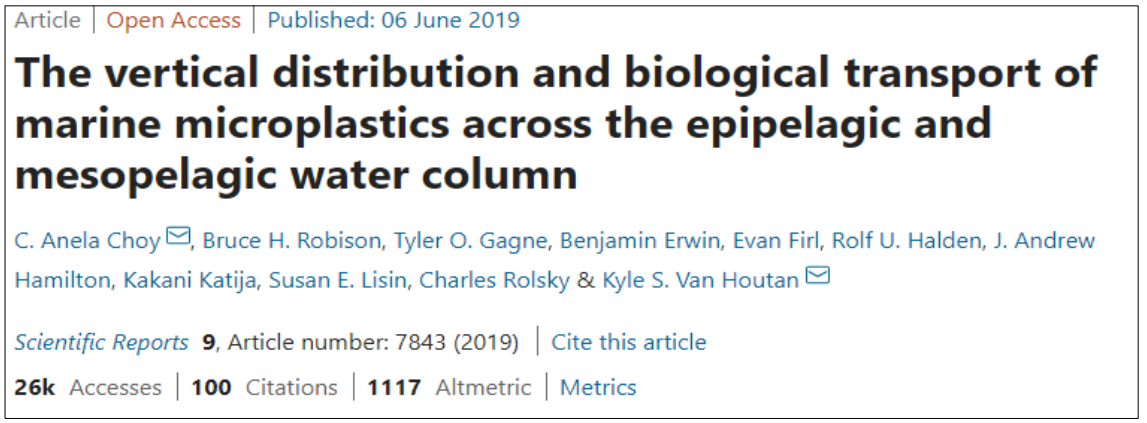
On-line ocean data visualization tool

https://explore.webodv.awi.de/

Selected on-line recorded seminars



Selected peer-reviewed publications



Article | Open Access | Published: 06 June 2019

The vertical distribution and biological transport of marine microplastics across the epipelagic and mesopelagic water column

C. Anela Choy, Bruce H. Robison, Tyler O. Gagne, Benjamin Erwin, Evan Firl, Rolf U. Halden, J. Andrew Hamilton, Kakani Katija, Susan E. Lisin, Charles Rolsky & Kyle S. Van Houtan

Scientific Reports **9**, Article number: 7843 (2019) | Cite this article

26k Accesses | **100** Citations | **1117** Altmetric | Metrics

“Ocean-literacy in an alpine region” - take home messages -

- Ocean-related activities conducted in cities / rural-areas that are far away from the coast may receive particular attention and interest, not only because they are “unusual”, but also because the marine environment is seen very positively.
- Such activities are fundamental, because they contribute to responsabilizing the population (i.e., tourisms & “ocean blindness”)
- These activities educate both students and their teachers who are likely not exposed to ocean-related issues.
- Basic concepts (i.e., ocean density, circulation, marine zoology) are a novelty over all age groups.
- Ocean-literacy activities are possible also when on-site activities are precluded or difficult
- Everyday products can be easily used to convey succesfully ocean-related issues (i.e., ocean acidification, water density and thermoaline circulation)

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