



ProBleu

Promoting ocean and water literacy
in school communities

Call HORIZON-MISS-2022-OCEAN-01

Deliverable D3.4 ProBleu Science Stories

Lead Beneficiary: Plymouth Marine Laboratory

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Table of contents

Table of contents	3
Preface	4
Summary	4
1. Science Stories	4
1.1 Where to find the Science Stories	5
1.2 What is included	6
2. Recommendations	8
Educators	8
Scientists	9
Network of European Blue Schools, ProBleu, and related projects	9
Fundors	9
Acknowledgements	9

Preface

This document provides an overview and signposting to the collection of ProBleu resources referred to as Science Stories, part of the wider ProBleu catalogue of teaching aids.

Summary

ProBleu provides a community-owned online catalogue of teaching aids for free distribution and re-use at schools, supporting the overall EU mission objectives to increase ocean and water literacy in youth. The catalogue is largely populated with thematic presentations (slides), datasets and spreadsheets, forms and tutorials to aid educators in generating tailored lessons. The catalogue uses AI technology to automatically translate shared materials into the 27 official EU languages, to overcome initial barriers, and to encourage further community contributions through the remixing and editing of content. Through ProBleu-funded school projects, the catalogue of shared resources grows beyond the initial sets of materials developed for the project by scientists engaged in the ProBleu consortium.

Stories are a powerful aid to engaging audiences, particularly at a young age. The stories described here are combinations of graphical animations and real-world footage describing the work of scientists. The main aim of these outputs is to unveil the world of scientific exploration that underpins our present day understanding of the challenges and opportunities associated with living on a planet dominated by water, but heavily impacted by human activity.

The Stories further intend to engage young learners with contextual lesson materials, with guides for educators provided alongside each of the stories.

The following Science Stories are provided in ProBleu:

- From Source to Sea – How can farming impact water chemistry?
- Ecosystem modelling
- An Ocean of Plastic
- Climate and the Ocean
- Exploring Biodiversity with Plymouth Marine Laboratory
- Science at Sea: a morning on the research vessel

All materials are accessible via <https://probleu.school/>. By building on the modular content sharing concept of the ProBleu catalogue, educators are encouraged to reuse, remix and reshare elements of the Science Stories - or to create their own.

1. Science Stories

ProBleu Science Stories provide a key part of the digital resource repository made available through the ProBleu Catalogue of teaching aids for water and ocean literacy. Science Stories are intended to provide teaching scaffolds around the experience of carrying out research tasks in real-life research settings such as research ships or laboratories, which are not directly accessible to the majority of students in primary and secondary education. The present

approach was inspired by past work of scientists linking to classrooms in question-and-answer style webinars while they carried out work at sea, sometimes on long ocean journeys. ProBleu sought a way to make such experiences accessible at any place and time, by providing virtual access. The result is a series of story-based introductions to the work of scientists working on key ocean and water challenges, interspersed with suggested classroom activities.

1.1 Where to find the Science Stories

The landing page for the ProBleu catalogue of teaching aids is found either through the main project website <https://probleu.school/> (Menu: Resource Catalogue) or directly through <https://probleu.pml.space>. This will take you to the landing page as shown in Figure 1.

The below signposting refers to the English language version of the catalogue. The language can be changed from the menu bar.



Accessibility options are found by clicking on the icon in the top left.

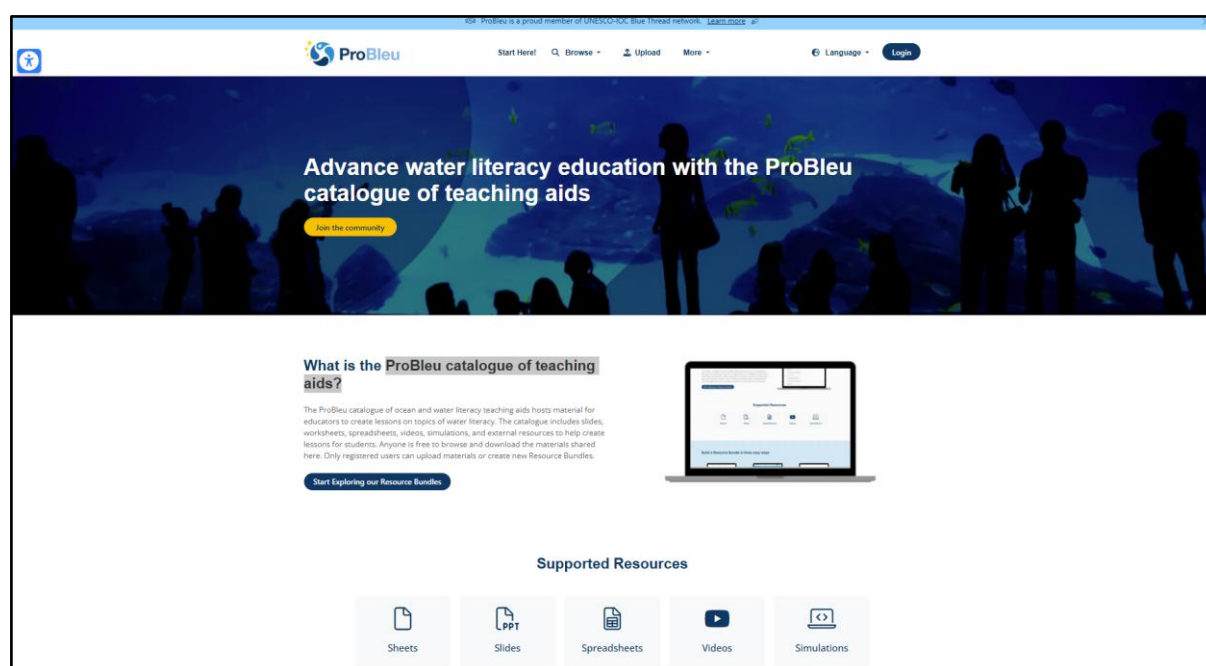


Figure 1. The landing page of ProBleu catalogue of teaching aids.

The Science Stories are found by navigating the menu (Browse -> Science Stories) or directly through the following link <https://probleu.pml.space/en/science-stories>.

Six stories were created thus far:

- From Source to Sea – How can farming impact water chemistry?
- Ecosystem modelling
- An Ocean of Plastic
- Climate and the Ocean
- Exploring Biodiversity with Plymouth Marine Laboratory

- Science at Sea: a morning on the research vessel

1.2 What is included

Each Science Story is introduced to catalogue users as shown in Figures 2-3. The landing page of each story introduces objectives and teaching outcomes, and the narrators and scientists are briefly introduced. The specific science focus or environmental challenge is provided under 'Background'. The themes for the stories were selected to provide balanced exposure of laboratory and field-based activities, show the diversity of ocean and water challenges, and to show a diversity of scientists, of varying experience, age and backgrounds, at work.

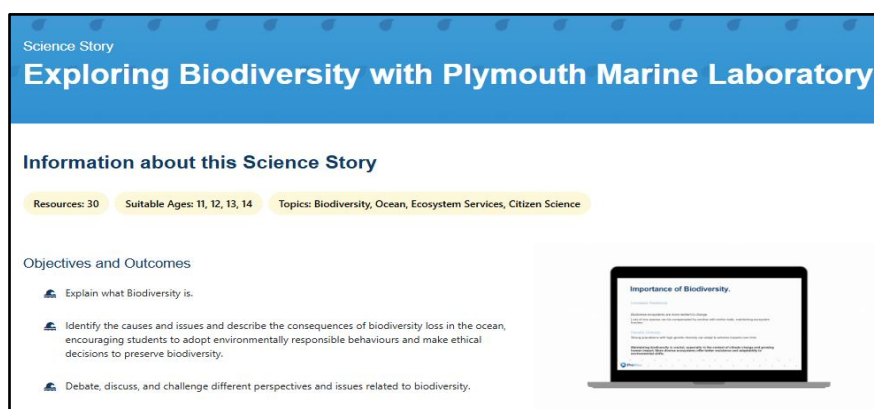


Figure 2. Introduction to the Science Story: Biodiversity in the Ocean.

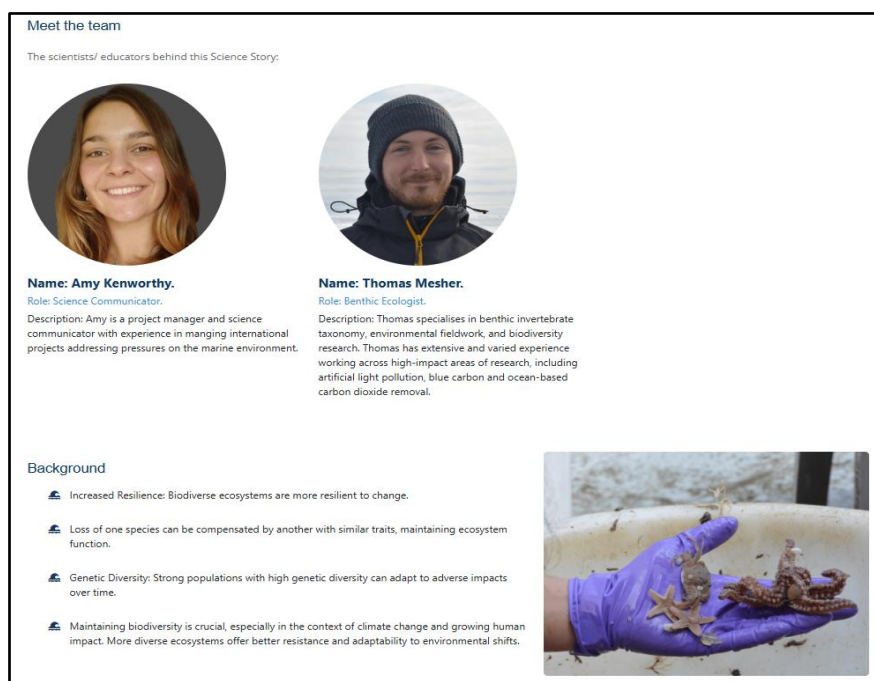


Figure 3. Introduction of the scientists and narrators, and scientific background of a science story.

Each story is accompanied by two sets of downloadable resources: a set of teacher's notes, and the presentation package itself (videos, slides, etc).

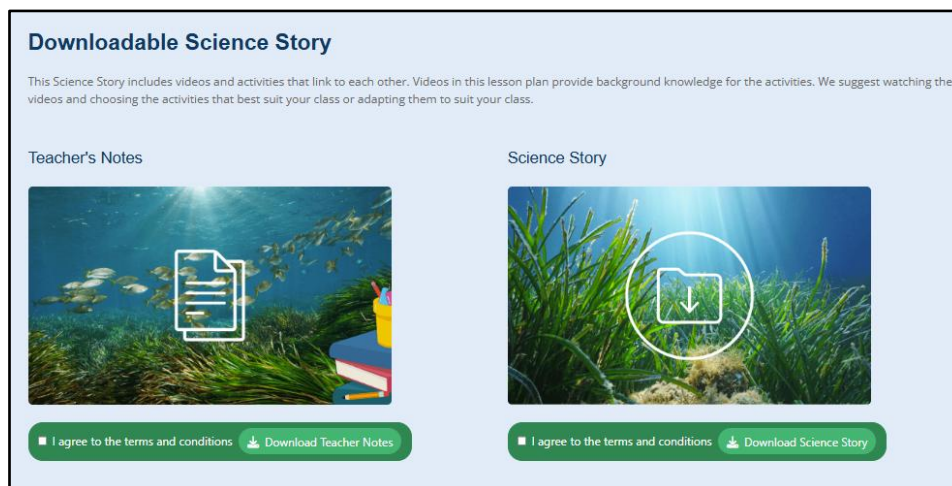


Figure 4. Downloadable materials.

Finally, the individual resources as they appear in the catalogue are listed (Figure 5). They can be found through other catalogue entry points (including site-wide search, and automated translations), and remixed into new teaching bundles. Note that videos and animations are not automatically translated, but may be reused under CC-BY licence including edits to add new voiceovers or captions. Automated captioning and translations are also available with each video through the hosting platform, Youtube.

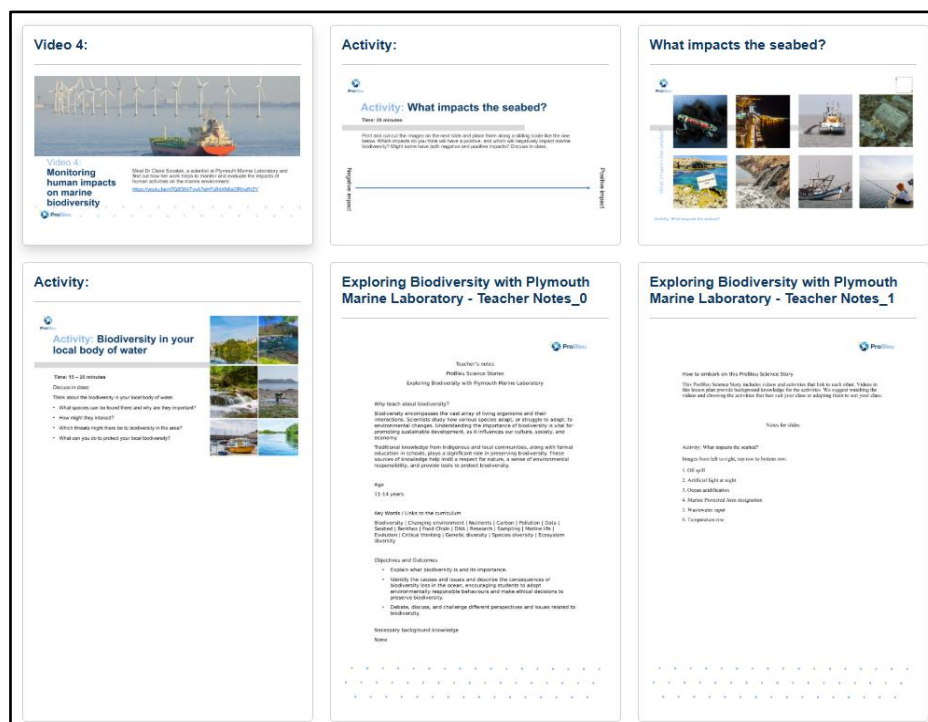


Figure 5. Subset of individual resources included in the story package.

2. Recommendations

As a new set of educational materials, the Science Stories are intended, first and foremost, to inspire students to take an interest in the science and discovery around water and oceans. There are several ways in which this format and its impacts can be enhanced by users of the catalogue, by other scientists looking to contribute, within the Network of European Blue Schools, and through future funding streams. Several recommendations to enhance impact are given below.

Educators

For educators, we recommend the following:

- Review the teacher's notes that accompany the Science Story you are interested in (see Figure 6 for an example).
- Review the slide pack, edit the slides to suit your needs and use the stories in the classroom.
- Identify points when to pause, explain, and introduce new activities.
- Video interviews may need to be close-captioned. This can be activated on YouTube where the videos are hosted.
- Videos have been edited to be short, and it is recommended to regularly pause them to review and discuss the content in the classroom.
- We suggest that individual students could be tasked to re-watch the videos to formulate their own questions for classroom discussions.



Figure 6. Individual resources included in the story package.

Scientists

- Consider producing Science Stories as part of the outreach and dissemination activities of your next research project - the impact of a story followed by thousands of students may well exceed that of your next publication.
- If you take on this challenge, please ensure that the result is free of external copyright, and that all persons featuring in the production agree to it being distributed under an open Creative Commons licence.
- Please also note that Science Stories require some additional work to feature properly in the ProBleu catalogue. Please contact the catalogue maintenance team early to discuss possibilities using the contact form: <https://probleu.pml.space/en/contact-us/>.

Network of European Blue Schools, ProBleu, and related projects

- Consider showcasing the engaging Science Stories as a way to involve more schools in using and sharing community generated educational materials.
- Consider adding the production of a story-based presentation of a school project to the suggested project formats that underpin accreditation of Blue Schools.
- It is important to assess the impact of the Stories format in classrooms. How well are they received, do they inspire questions to scientists, do they work well in other language settings? We encourage both schools using the materials and producers of similar materials to share their findings with the project team.

Funders

As a pathway to impact, generating science-based communications to a range of audiences is already an expected outcome from research projects funded by the European Commission and many national funding agencies. Young audiences are rarely specified as a required target group, which is at odds with the *Mission Restore our Ocean and Waters*. Whilst it takes specific skill to generate educational materials for classroom use, generating accessible stories provides an effective middle ground between generating educational materials and presenting science as-is, to reach this audience. Stories can show real scientists describing their work, and display role models for future water-literate generations. We therefore recommend that, for projects where dissemination strategies benefit from addressing young audiences, educational formats such as these are recommended by funders as valuable outputs for outreach and lasting impact.

Acknowledgements

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