Introduction

The PhytoCLAS project integrates emerging science discoveries from the Northern Gulf of Alaska (NGA), local Indigenous languages, and inter disciplinary experiences for youth in the region. Its goal is to increase local awareness and appreciation of phytoplankton.

PhytoCLAS builds on the findings of the core-funded research project: Smallest phytoplankton in the NGA. Phytoplankton play foundational roles in marine and coastal food webs and are the subject of an increasing number of research projects and long-term monitoring initiatives around the NGA. Evidence shows that the deep diversity of phytoplankton contributes to resilience and may help buffer the system from disturbance.

This project combines knowledge from NGA phytoplankton research with culturally responsive, experiential education to increase youth understanding and community awareness of phytoplankton. This project provides opportunities for youth and community members around the NGA to bridge gaps in their understanding of local marine ecosystems and make more informed decisions regarding sustainable use of local fisheries, subsistence harvest, and other resources.

Core Project Activity

Science Education

We have created and adapted a suite of phytoplankton-focused activities that include outdoor learning, microscope labs, art activities, guided discussions with scientists and community experts, and local learning. These activities are flexible and can be tailored to fit local areas of interest or school curricula, such as safer subsistence harvest for a camp at Dig Afognak or cell biology for the secondary We have created and adapted a suite of phytoplankton-focused activities that include outdoor learning, microscope labs, art activities, guided discussions with scientists and community experts, and local learning. These activities are flexible and can be tailored to fit local areas of interest or school curricula, such as safer subsistence harvest for a camp at Dig Afognak or cell biology for the secondary curriculum. Our aim is to provide educational experiences that are engaging, informative, and relevant to local contexts.

Kumitgarut

Kumitgarut means “things that are like beach flotsam” in the Alutiiq/Sugpiaq language. Zooplankton mostly eat phytoplankton, but some do eat zooplankton. Perhaps the most famous zooplankton is krill.

Nanu’tstarrynguaasqat Phytoplankton

Nau’starrynguaasqat means “ones that look like plants.” Phytoplankton can photosynthesize—just like plants on land! Some phytoplankton, like dinoflagellates, can also eat other organisms.

Kenqu’ut’stet Dinoflagellates

Kenqu’ut’stet means “ones which light up the ocean” in the Alutiiq/Sugpiaq language. The word could apply to any plankton that bioluminesces in the ocean, but dinoflagellates are perhaps the most notable for their bright blue light when agitated.

Acknowledgments & Funding

This project is deeply indebted to thelanguage speakers who share their knowledge with us. In particular, we are grateful to the Elders Session of the Alutiiq Museum and Archaeological Repository. We appreciate and are excited for the relationship to highlight relevant topics or scientific, art, language, and cultural practices fast allowed us to bring these activities to more schools and camps, and has made the learning environment more meaningful. Flexibility is key, and it is well worth it to do the extra work to connect your project to community or school needs.

Working with Educators

There are a multitude of ways that phytoplankton connect with community interests and school curricula. Adapting the curriculum to highlight relevant topics or scientific, art, language, and cultural practices is fast allowed us to bring these activities to more schools and camps, and has made the learning environment more meaningful. Flexibility is key, and it is well worth it to do the extra work to connect your project to community or school needs.

For Educators (priority given to communities along the shores of the Northern Gulf of Alaska)

★ Request a session led by the PhytoCLAS team for your K-12 class, camp, or youth group.
★ Borrow plankton and microscope kits.
★ Get training on how to lead microscope activities with kids and teens.
★ Contact: Katie Gavenus (katieg@akcoastalstudies.org, 907-235-1974)

For Coastal Community Members:

★ Learn more about the overall project (Contact Katie)
★ Sign up to be a guest presenter (Contact Katie)
★ Learn more about incorporating Alutiiq language into your projects (Contact Deborah Schmidt-Chua, Alutiiq Museum and Archaeological Repository, deborah@alutiiqmuseum.org)
★ Learn more about the overall project (Contact Katie)
★ Sign up to be a guest presenter if you have knowledge about plankton monitoring, coastal food web, or cultural practices. Contact: Katie Gavenus (katieg@akcoastalstudies.org, 907-235-1974)

Getting Involved

★ Request a session led by the PhytoCLAS team for your K-12 class, camp, or youth group.
★ Borrow plankton and microscope kits.
★ Get training on how to lead microscope activities with kids and teens.
★ Contact: Katie Gavenus (katieg@akcoastalstudies.org, 907-235-1974)

Shared Learning

Incorporating Local Indigenous Languages

We have encountered high levels of enthusiasm for this aspect of the project. We have also learned that protocols and expectations for working with language can be quite different from community to community and group to group. Sometimes, it can be easy to plug into existing language groups facilitated by a community organization, in other instances, it is important to move more slowly and build trusted relationships and shared understanding with language speakers.

It is incredibly important to incorporate language speakers for the time and knowledge they contribute to a project like this. A key advantage is that bioluminescent organisms are appropriate. Native organizations or local organizations that work closely with Native knowledge bearers and language speakers can provide guidance here. Often, it is best to host translation through one of these organizations.

Sharing food is important! Including a small ‘protocol fund’ in your project allows you to be able to bring food for meetings and community science events, and to purchase small gifts for local collaborators. Following these cultural practices makes a big difference.

Core Project Activity

Identify & Create Words for Plankton in Local Languages

A central focus of this project is collaborating with Indigenous first language speakers to name plankton. Phytoplankton are a critical but often invisible part of coastal ecosystems. Because of the tiny size of these organisms, local Indigenous languages often do not have specific names for these organisms.

Language renaming is an important need in the region, with many people committed to this work. This project is a small step to support these crucial language renaming efforts, and concurrently raises awareness about the importance of phytoplankton as a foundation of local ecosystems and local systems. We were able to work with Alutiiq language speakers through the Elders Session of the Alutiiq Museum & Archaeological Repository. We assisted 12 elders to gather enough names this winter and spring. As part of this gathering, they will share descriptions and stories about phytoplankton. These will be recorded, with permission, for use in plankton education efforts.

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Some plankton names have been adapted to local contexts.

Nau’s’tarrynguaasqat (for phytoplankton) and Kumitgarut (for zooplankton) in the Alutiiq language, and also identified as existing word - Qumqu’arut’at that names biology. Ancient roots of this term (of which many are plankton). See panel below for the full descriptions:

Chugachmiut Heritage Preservation and Chugach Regional Resource Conservation Committee: We are working with Chugachmiut Heritage Preservation and Chugach Regional Resources Conservation Committee to explore adding plankton names to the curriculum to highlight relevant topics or scientific, art, language, and cultural practices fast allowed us to bring these activities to more schools and camps, and has made the learning environment more meaningful. Flexibility is key, and it is well worth it to do the extra work to connect your project to community or school needs.