

LANKTOSCOPE: SEE THE WORLD OF PLANKTON AT SEA

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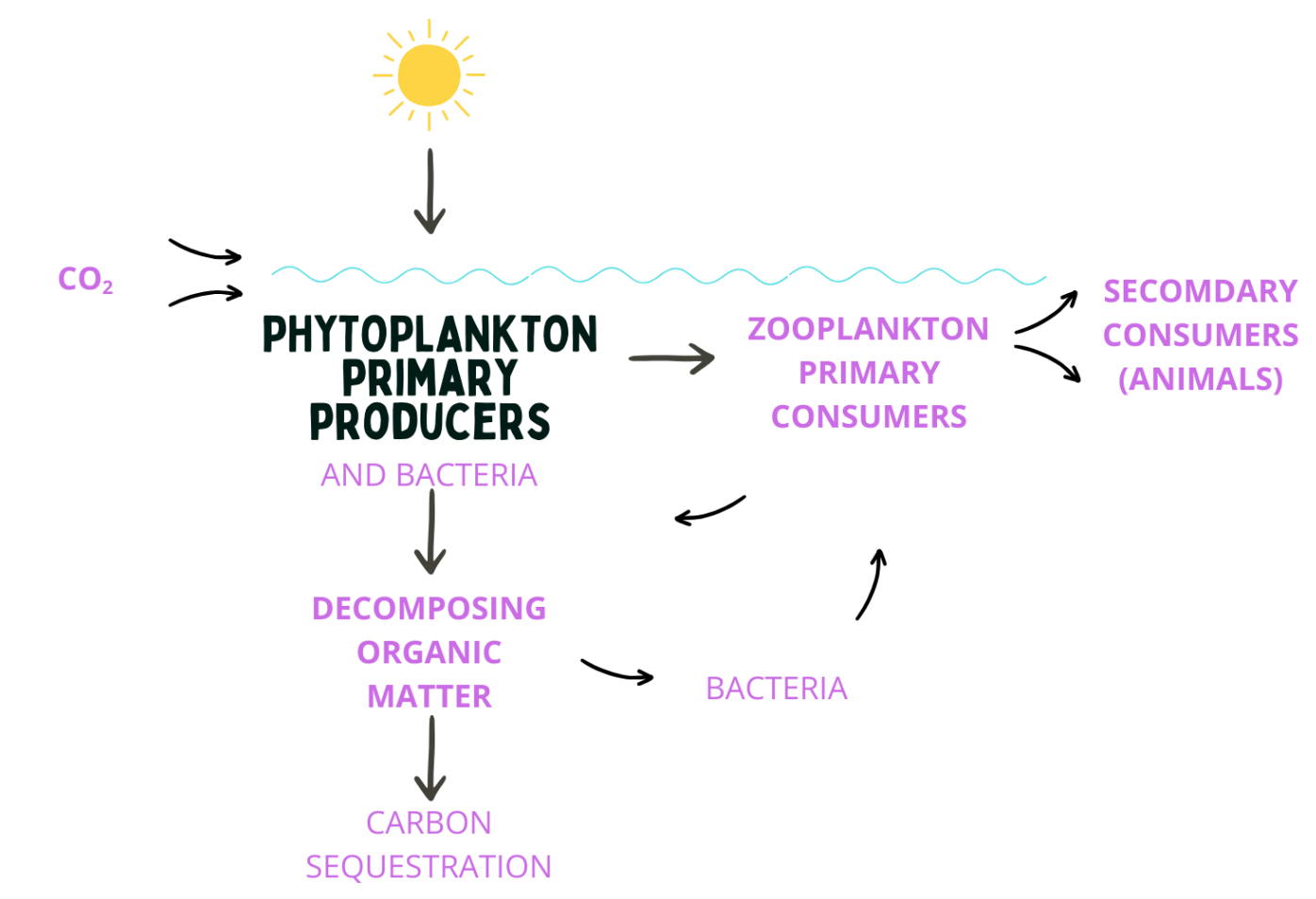
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The PlanktoScope- A Quantitative Imaging Platform



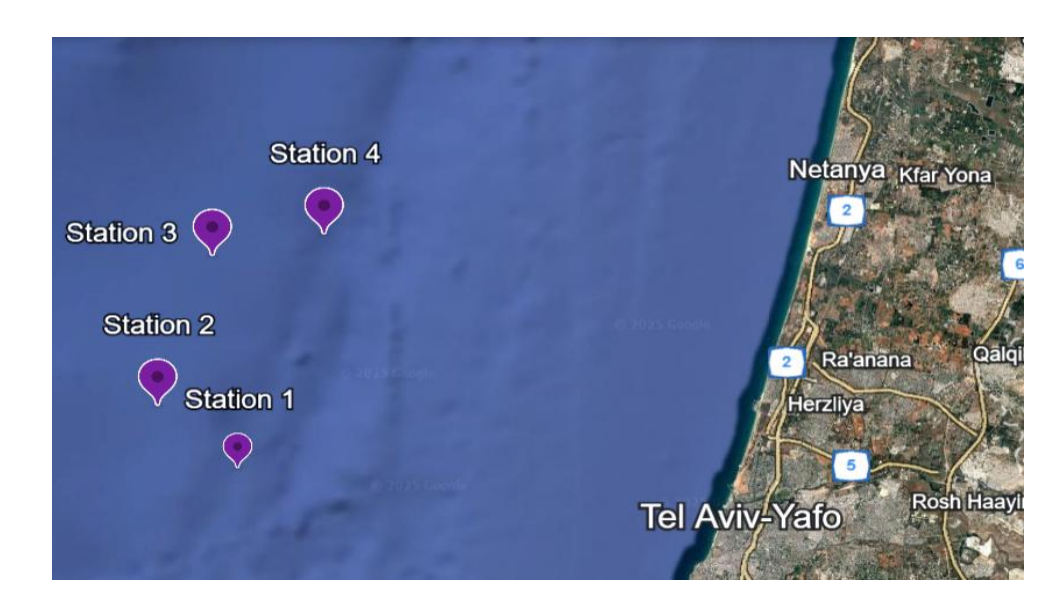
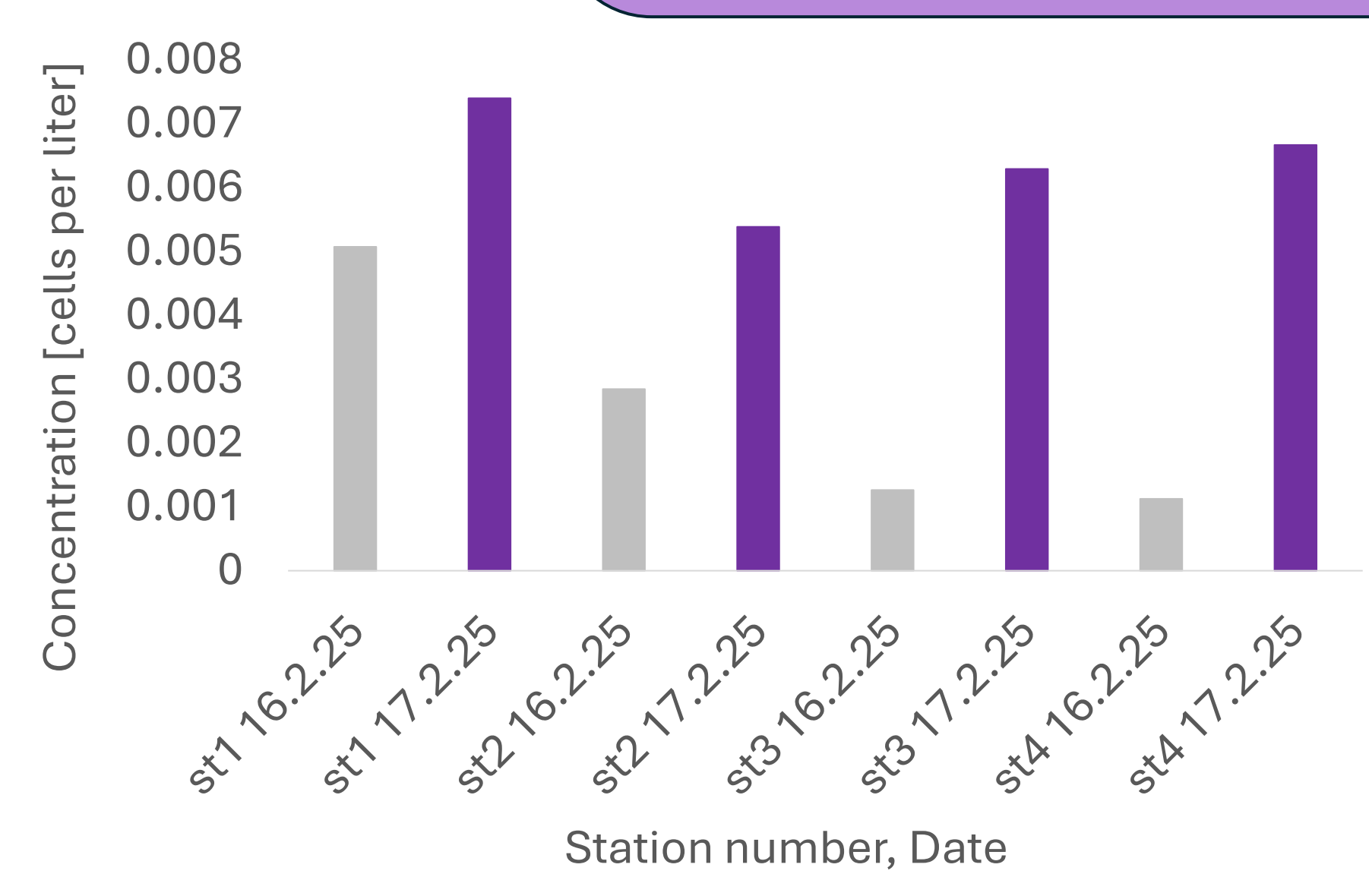
This is a portable, compact ($35 \times 30 \times 15.5 \text{ cm}^3$), affordable, light (3.5 kg), digital microscope, suitable for field and lab work. It allows high-throughput quantitative imaging of any non dissolved particles (ranging between 20-300 microns) through a flow cell. Live phytoplankton and zooplankton samples may be visualized, recorded and analyzed in real time, on a ship, at sea. It is worth looking at live plankton because when preserved, it loses its color and its size changes. Also, there are organisms that are very difficult to preserve well.

PLANKTON



Plankton, marine microscopic organisms, provide the foundation of global food webs, drive global biogeochemical cycles, and play a significant role in the carbon cycle, fixing 30-50% of the world's carbon dioxide. Changes in plankton communities are being regularly monitored to understand the effects of ecological changes and anthropogenic activities on marine and freshwater environments.

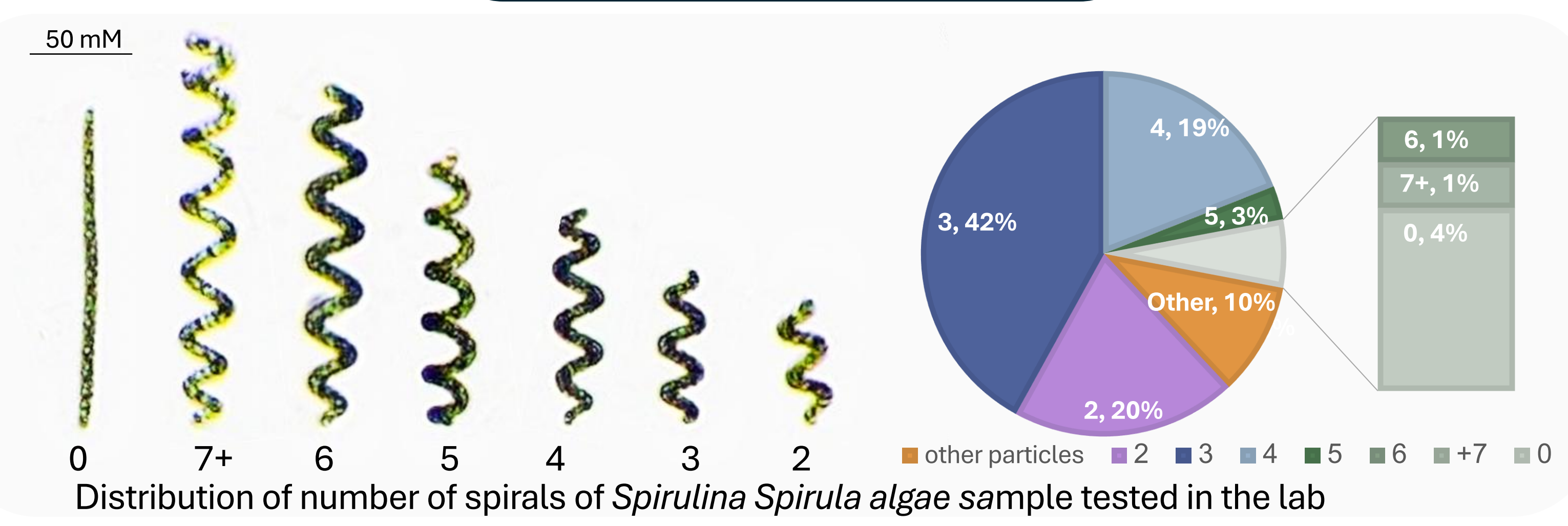
FIELD WORK



Sampling Stations

Concentration of *dinoflagellates* from sea water samples from different stations and dates. Samples were collected from 4 stations during a research cruise on the Mediterranean explorer (Medex) ship. The samples were processed on board at sea.

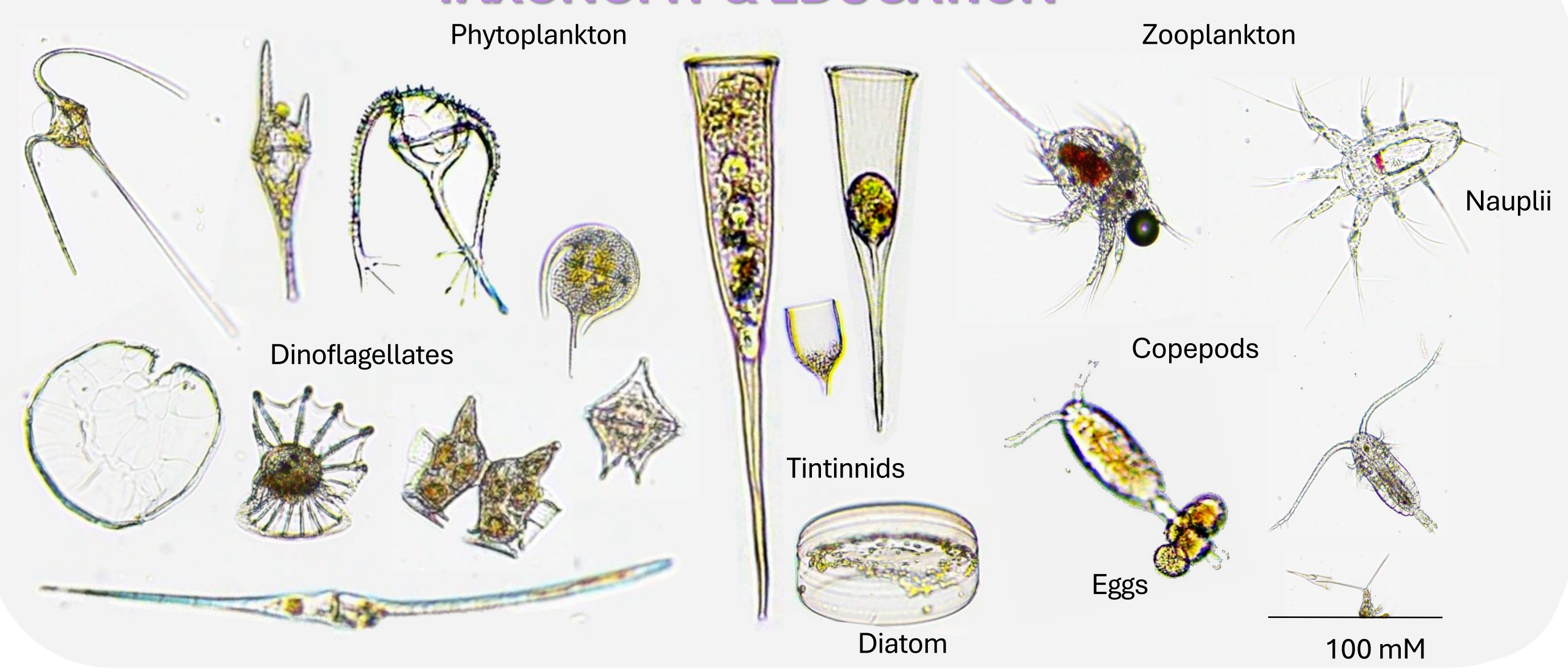
LAB WORK



APPLICABILITY

Particle size: limited to 20-300 mM
Quantification: by using Ecotaxa (a taxonomy website) AI taxon predicting tool, counting is much faster compared to counting with a microscope. However, images may contain more than one taxon which can lead to miscalculations.
Images: automated imaging and segmentation of large particles quantities. Particles are images in a 3-dimensional flow cell, thus large particles may not be in focus.
Adaptability: Suitable for field and lab work. Made of modular parts, can be adapted to evolving user needs, with an open-source software and hardware platform. Making changes in software and hardware require mechanical and programming knowledge.
Data sharing and global monitoring: the Ecotaxa website provide a platform to share research with other researcher in the plankton community, while maintaining the principles of FAIR data.

TAXONOMY & EDUCATION



EXPOSURE & INSPIRATION



OTHER USES

Archeology, Biology, Geology, Ecology....



Identification of pine pollen and NPP- from an archeological excavation (300-400 BCE)