Plankton Activity Cards

(by Kahi Kai)

Description

Our plankton activity cards include 50 cards with 25 different high quality photographs of diverse planktonic organisms from Hawaii with corresponding information on taxonomy, biology, ecology and life history (see examples of descriptions of 5 different cards on next page). The cards can be used for different classroom activities K-12 in different subject areas (biology, English, arts, etc.) to reinforce the importance and diversity of marine organisms inhabiting our blue planet. The plankton cards can be used as a stand-alone activity or as a continuation from other activities around plankton such us the plankton kits from C-MORE or PVS workshops in port as part of Hokulea's worldwide voyage themed "Malama Honua – Take care of island Earth".

Why Plankton?

- Plankton are some of the most **diverse and abundant** organisms on the planet. The term plankton comes from the Greek word "planktos" meaning wanderer or drifter. Hence, plankton describes organisms that live in the water and cannot swim against major currents. Plankton are abundant in all bodies of water, marine and freshwater.
- Phytoplankton **produce around 50% of the oxygen** in the atmosphere through photosynthesis.
- Plankton also serve as the nutritional basis for all animals that live in our oceans. Phytoplankton are primary producers that provide the first form of energy within marine food webs. They are then consumed by zooplankton, which are known as primary consumers. Without plankton, none of the larger fish or animals in the ocean could survive; the entire marine food web would collapse.
- Plankton play a role in the **biogeochemical cycles** of many important chemical elements, including the ocean's carbon cycle.
- Plankton further can be considered **nursery grounds** for about 80% of all benthic marine organisms, which have a planktonic larval stage.
- Everything is somehow linked to plankton and it is important that we protect our oceans so that they can maintain their natural balance.

Possible classroom activities

- K-5: 1. play memory game (kids get used to the diversity of planktonic organisms)
2. use cards as inspiration for drawings and art projects
3. use cards as inspiration to describe organisms orally or in writing in any language

- Middle and Highschool:

> 2. & 3. Above (English, Languages, Arts)

> group cards according to taxonomy, life history (larvae or adults?, mero- or holoplankton?), position in food web, habitat, etc. (Biology)

> use the groupings as prompts to talk about general concepts of Biology: taxonomy/phylogeny, marine life histories, marine food web, marine habitats, functional morphology (what are the similarities within a grouping? What are the differences? Eyes, sensory organs, etc.)

> use cards to see how different plankton solve the shared problem of maintaining neutral buoyancy/staying afloat in the photic zone. Use as a starting point for students to create their own plankton designs and see which float. (Engineering & Design)

Please contact us (see below) if you are interested in getting a set of cards to use in your classroom for free. In exchange we ask you to send us your activity (how you used the cards, grade and subject) to be shared on our website as well as with other teachers interested to use curricula around Hokulea's worldwide voyage.

Kahi Kai contact info

Email: anuschka@kahikai.org
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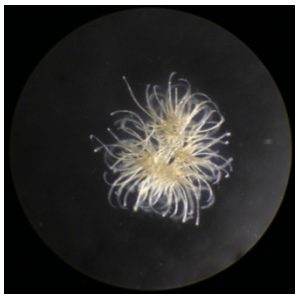
You can also find us on facebook and Twitter



Common name: Cyanobacteria puff

Taxonomic designation: Bacteria – Eubacteria – Cyanobacteria – *Trichodesmium*

Description: This little puff is a colony of cyanobacteria, probably in the genus *Trichodesmium*, commonly found in tropical and subtropical shallow waters low in nutrients. Cyanobacteria are bacteria that obtain their energy through photosynthesis. These puffs are little floating oases providing habitat for many marine organisms including other bacteria, diatoms, protozoans, and copepods. Copepods are its primary predator.

Habitat: Tropical and subtropical shallow waters; holoplankton

Position in food web: Producers/autotrophs (photosynthesis)

Common name: Coral

Taxonomic designation: Metazoa – Cnidaria – Anthozoa - Scleractinia

Description: This is the short-lived coral larva of a stony coral (scleractinian coral). Most stony corals build colonies in clear (oligotrophic = nutrient-poor), tropical shallow oceans and are world's primary reef-builders. Many scleractinian corals have symbiotic dinoflagellate algae in their cells. This larva already has photosynthetically active algae in its body (the little brown dots), which are transmitted from its parent.

Habitat: Open ocean as larvae, benthic as adults; meroplankton

Position in food web: Coral larvae do not feed, adults are reef builders/architects and eat zooplankton, catching them with their tentacles

Common name: Sea butterfly

Taxonomic designation: Metazoa – Mollusca – Gastropoda – Thecosomata – *Cavolinia*

Description: Sea butterflies (also known as pteropods, from the Greek meaning "wing-footed") are free-swimming pelagic sea snails that spend their whole life in the plankton (holoplanktonic). Instead of a foot used for crawling, the foot is modified into two wing-like lobes used for swimming. The shell is composed of calcium carbonate, and is very thin and translucent, which makes them among the first marine organisms to likely be negatively affected by ocean acidification.

Habitat: Top 25m of open ocean; holoplankton

Position in food web: Consumers of phytoplankton, eaten by many fish

Common name: Bristle worm

Taxonomic designation: Metazoa – Annelida – Polychaeta - Sabellariidae

Description: This is a larva of a tube-building adult bristle worm, or polychaete. It is easily recognized by its pair of tentacle buds, and two bundles of long, barbed, provisional bristles (chaetae). Adult Sabelariid bristle worms may form very dense aggregations in sandy and rocky habitats. Some species are not only important biologically but also geologically because they can form sandy reefs where appropriate hydrodynamic and sedimentological characteristics are present, and have done so in the past and present.

Habitat: Open ocean as larvae, benthic as adults; meroplankton

Position in food web: Consumers/predators as larvae, suspension feeders as adults

Common name: Crab

Taxonomic designation: Metazoa – Arthropoda – Decapoda - Brachyura

Description: This crab larva is at the megalopa stage, the last larval stage before it settles on the reef. Megalopa larvae use their big eyes to find their prey and their abdomen as a paddle to swim. Crab megalopa larvae are voracious predators, mostly eating other zooplankton, whereas most adult crabs are scavengers.

Habitat: Open ocean as larvae, benthic as adults; meroplankton

Position in food web: Predators as larvae, predators or scavengers as adults