

Crystal Cove
CONSERVANCY

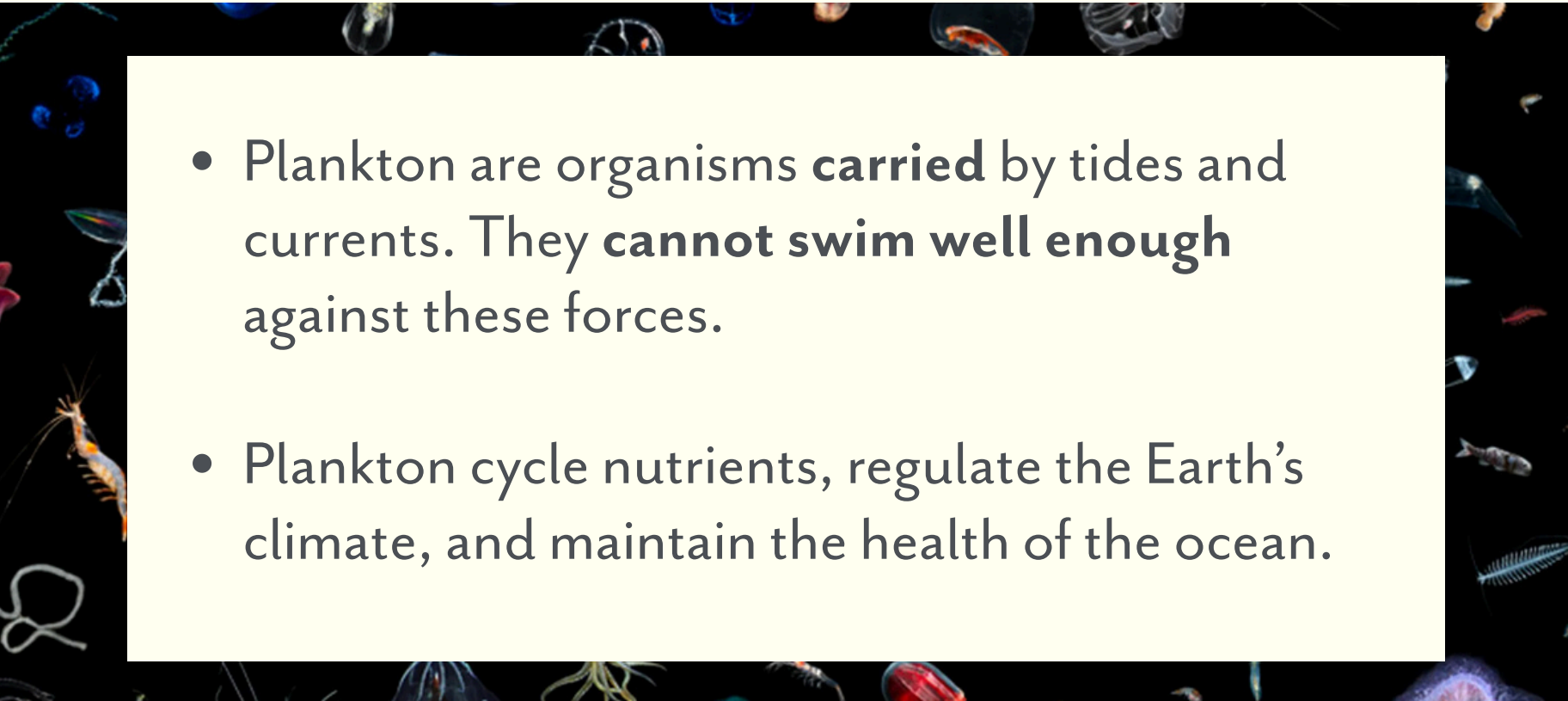
Plankton Field Guide

CALIFORNIA STATE PARKS
SINCE 1864

Plankton

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Comes from the Greek word ***planktos***, meaning '**wanderer**' or '**drifter**'



- Plankton are organisms **carried** by tides and currents. They **cannot swim well enough** against these forces.

- Plankton cycle nutrients, regulate the Earth's climate, and maintain the health of the ocean.

Types of Plankton

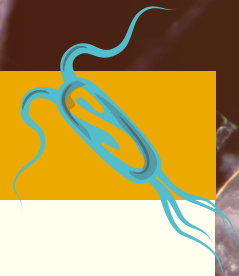
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Phytoplankton



- **Plant-like**
  - Photosynthesize for energy
- Release oxygen into the water
- Primary producers of the aquatic food web

Zooplankton



- **Animal-like**
  - Eats other organisms for energy
- **Meroplankton** are plankton for a *part* of their life
  - Ex.) Fish eggs, fish larvae, crab megalops







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Copepod

Zooplankton

Features:
Teardrop-shaped body, two long antennae, paddle-like tail, hard and jointed exoskeleton

One of the most common and abundant plankton species found worldwide!





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Brittle Sea Star Larva

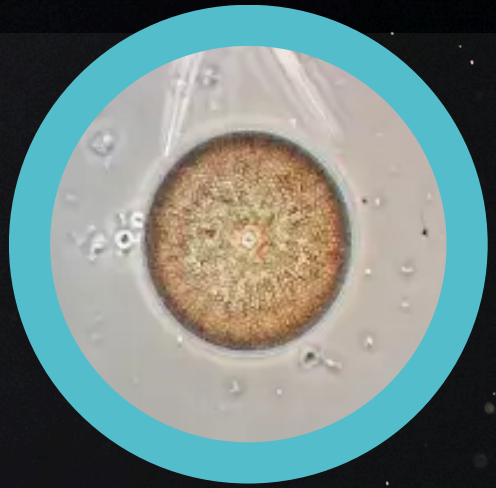


Sea Star Larva

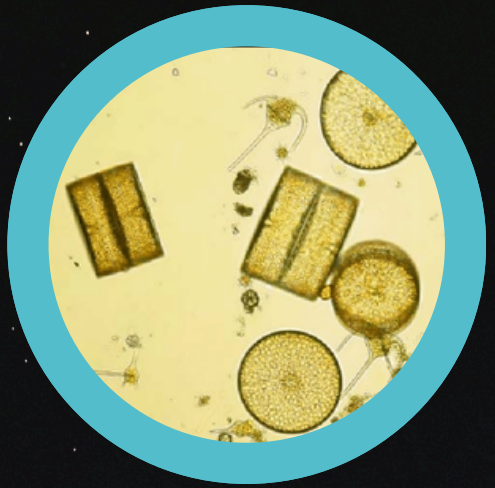
Meroplankton

Features:
Triangular shape, distinct legs or arm-like structures, symmetric halves (left and right).

Their transparent structure allows you to see interal organs like the stomach.







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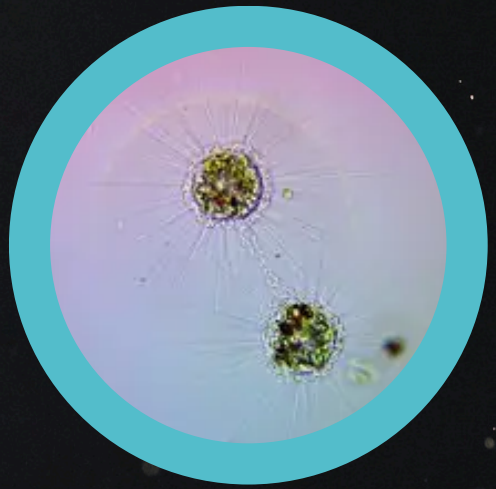
Coscinodiscus

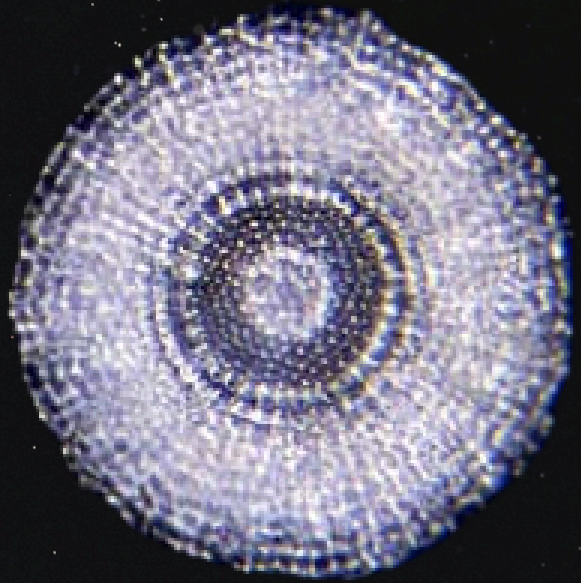
Phytoplankton

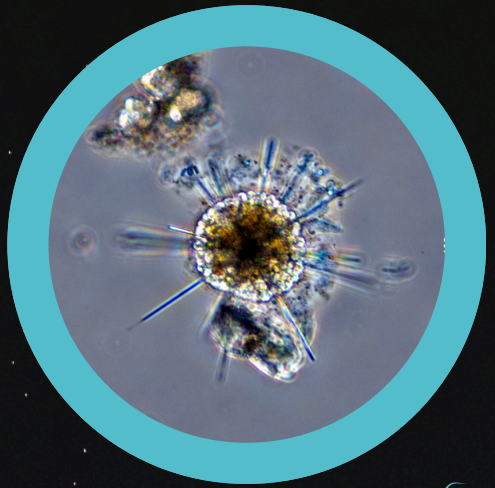
Features:

Circular from top view and cylindrical or "boxy" from side view – has many chloroplasts that look like dots.

There are about 400-500 species of Coscinodiscus!







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Radiolarian

Zooplankton

Features:

Spherical and symmetrical, has many arm-like spikes (nodes) that stick out from their body

Their spiky structures help them avoid predation and capture prey.







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Flatworms

Zooplankton

Features:

Long, flat body with a pointed head and two eyes. Can be ribbon-like or leaf-like in shape.

Flatworm eye spots do not have lenses and cannot form images, instead they detect changes in light.







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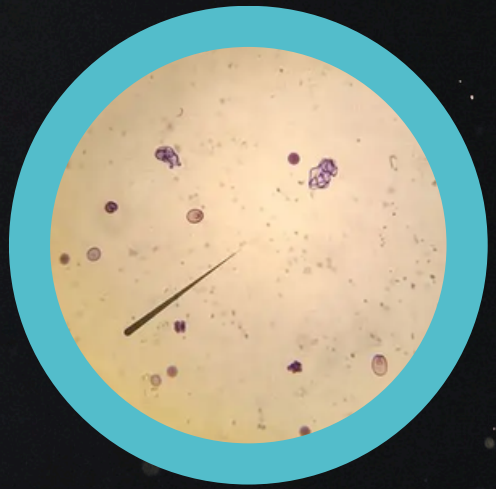
Crab Megalops

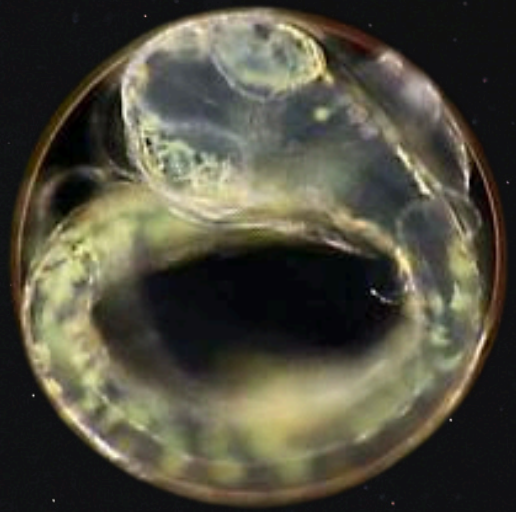
Meroplankton

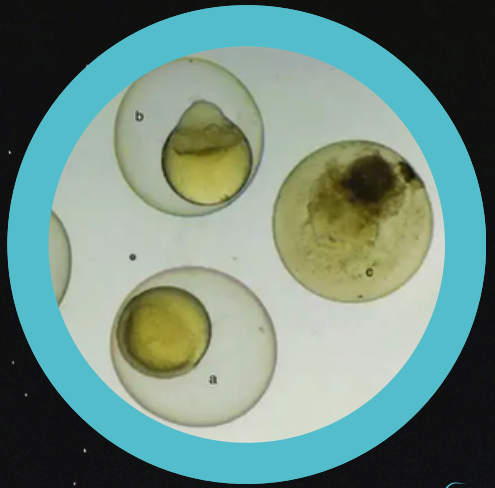
Features:

Distinct eyes, legs, and claws — transparent body with a tail-shaped abdomen, may have a set of antennae

This life stage lasts between 6-20 days until they molt into their adult form.







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Fish Egg

Meroplankton

Features:

Translucent and round (like a bead) with one or more dark spots inside, may have a visible fish embryo

The dark spot in the egg is the oil globule, which helps the egg float in water.







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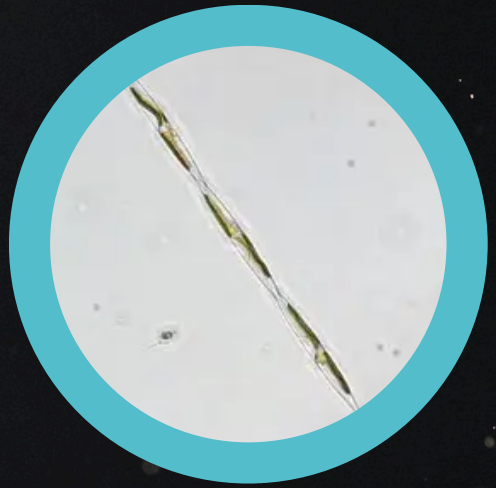
Fish Larva

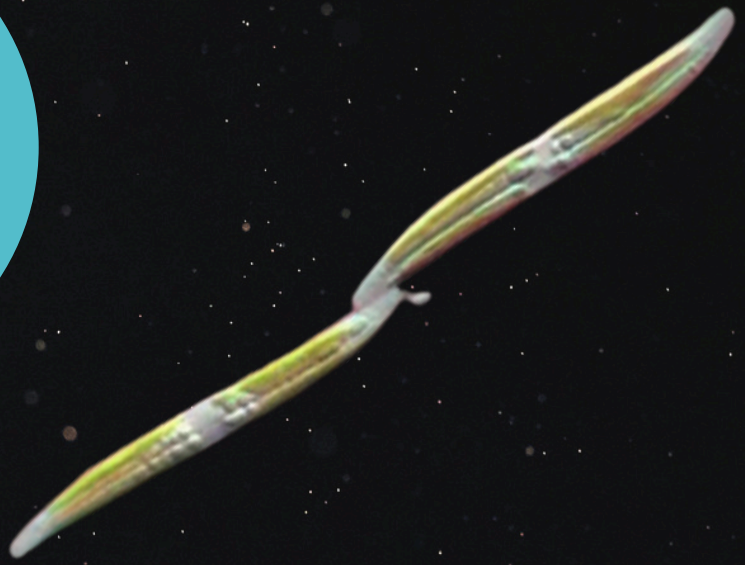
Meroplankton

Features:
Long, straight, and narrow body – large eye spots and underdeveloped or tiny fins

Most larvae consume over 50% of their body weight daily to achieve average growth.

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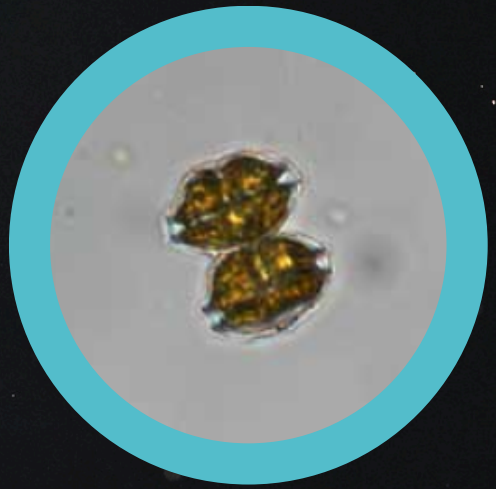
Species of Concern

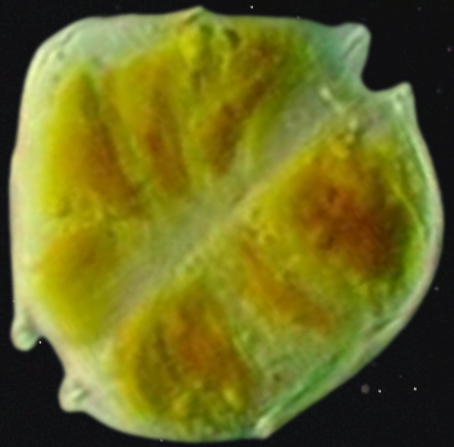
Pseudo-nitzschia

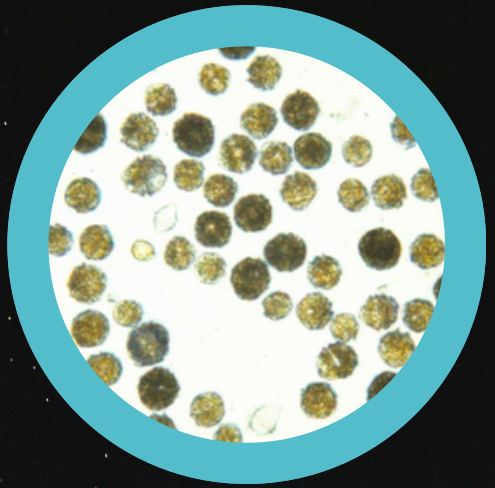
Phytoplankton

Features:
Elongate with rounded ends, can form long chains when cells overlap one another

Over 50% of pseudo-nitzschia species produce a neurotoxin called domoic acid.







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Species of Concern

Alexandrium

Phytoplankton

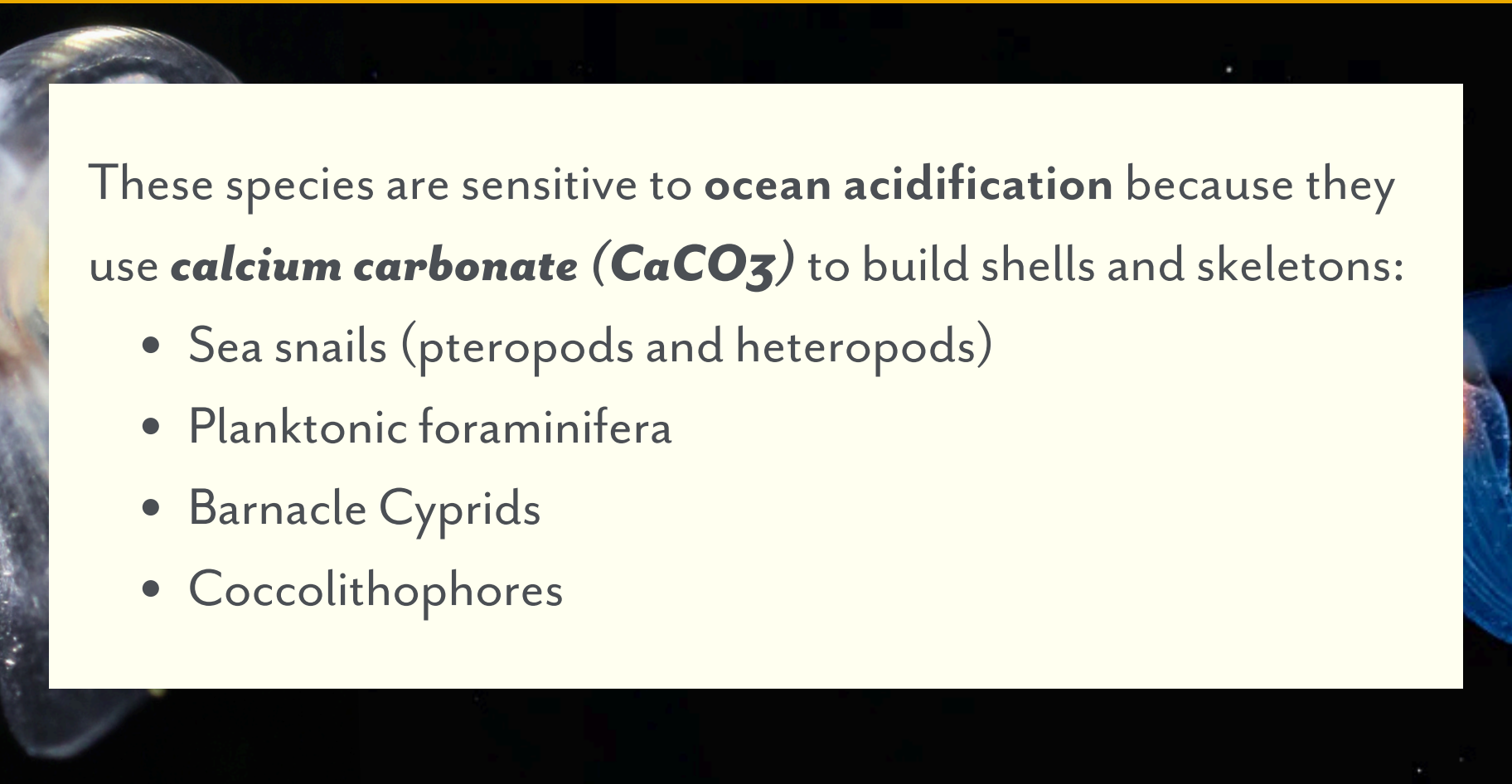
Features:

Roughly spherical, large groove down the middle, reddish-brown color, can be found alone or in short chains

In high concentrations, they can form "red tides" or harmful algal blooms.

Ocean Acidification Indicator Species

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These species are sensitive to **ocean acidification** because they use ***calcium carbonate (CaCO3)*** to build shells and skeletons:

- Sea snails (pteropods and heteropods)
- Planktonic foraminifera
- Barnacle Cyprids
- Coccolithophores







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Clio pyramidata

Pteropod

Features:
Long, pyramid-shaped body, transparent-white outer shell, pronounced ridge down the middle.

Known to be a host for parasitic copepods that eventually infest fish.







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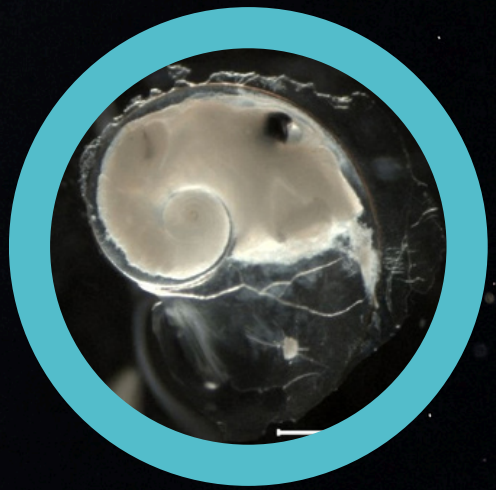
Cavolinia uncinata

Pteropod

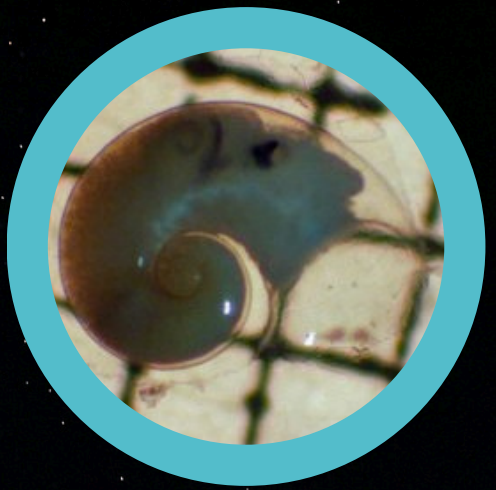
Features:
Transparent body with round shell, can have two long spines trailing from the back and wing-like lobes

Called a "sea butterfly" because of the flapping motion it does to move.

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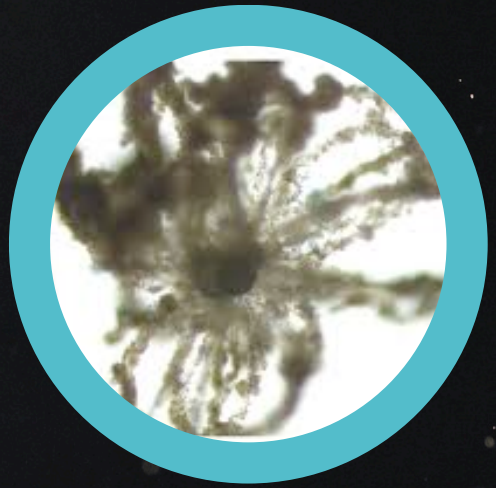


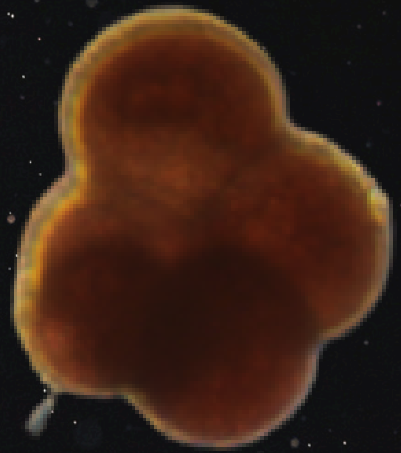
Atlanta californiensis — Heteropod

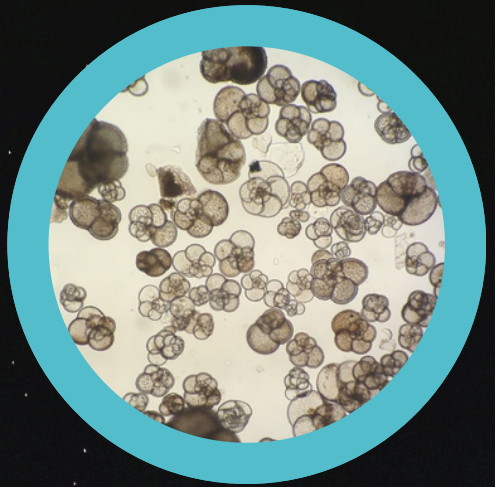
Features:

A type of sea snail with a flat, transparent shell with up to 4 whorls and soft body

This species is carnivorous and feed on pteropods.







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Globigerina bulloides — Planktonic Forminifera

Features:

Outer shell (called a test) is made of 3-5 bubble-like rounded chambers covered in spines or pores

Their shells make up a large part of deep-sea sediment, which has helped reseachers study ancient oceans.

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Turborotalita quinqueloba — Planktonic Forminifera

Features:

Has an outer shell (called a test) made of 5 bubble-like rounded chambers; Roughly shaped like a trapezoid

They have a fossil record that dates their existence back to 33-37 million years ago.

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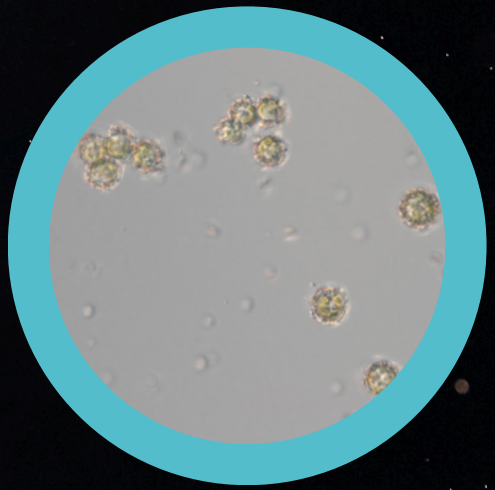


Barnacle Cyprids

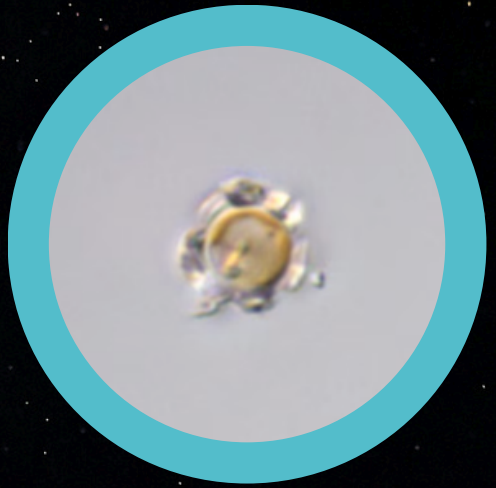
Features:
Round, oval body with swimming legs, and two antennae by the head.

The purpose of the cyprid is to find somewhere to settle permanently as they turn into barnacles.

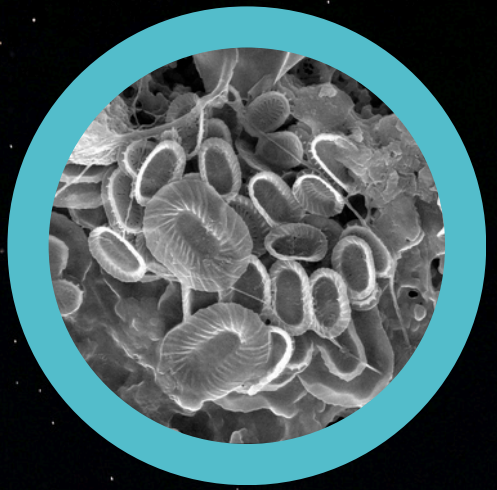
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Calcidiscus leptoporus



Gephyrocapsa huxleyi



Syracosphaera azureaplaneta

Coccolithophores

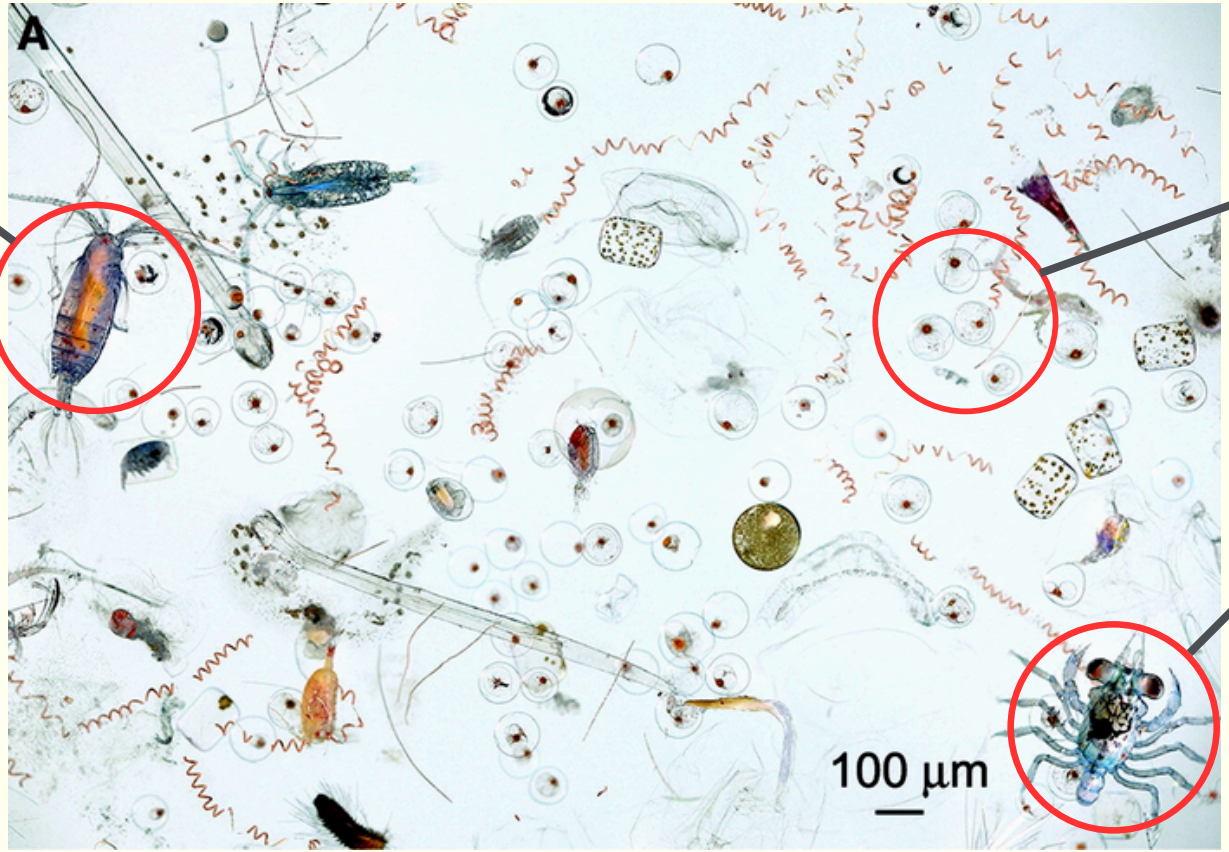
Features:

Can be round or elongated, depending on the species; covered by interlocking plates.

They are covered in calcite discs ("Cocoliths") that are translucent and refract light.

Example Identification Slide

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In collaboration with

UCI, UCHRI, & WUICAN

Created and designed by

Reugh Aldemita

