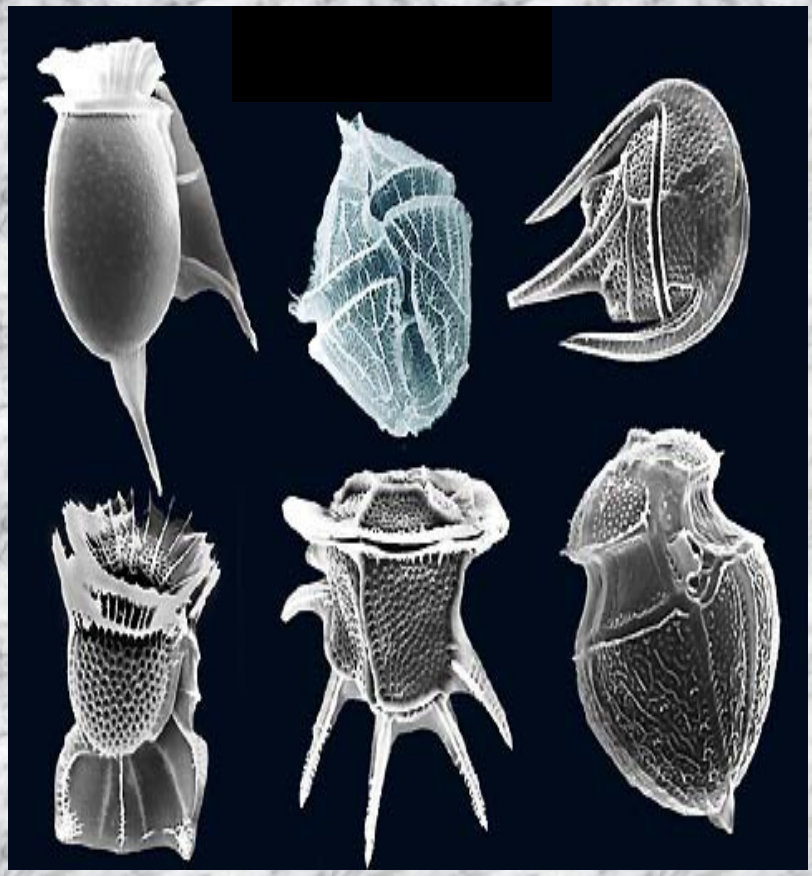
DINOFLAGELLATES

Kingdom: PROTISTA

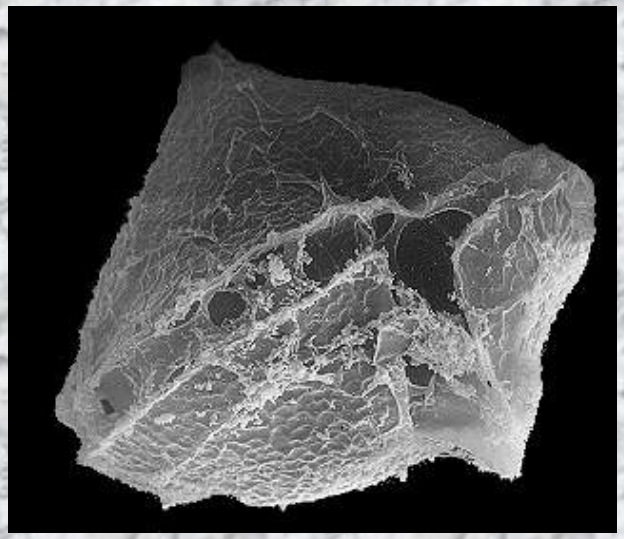
Phylum: PYRROPHYTA

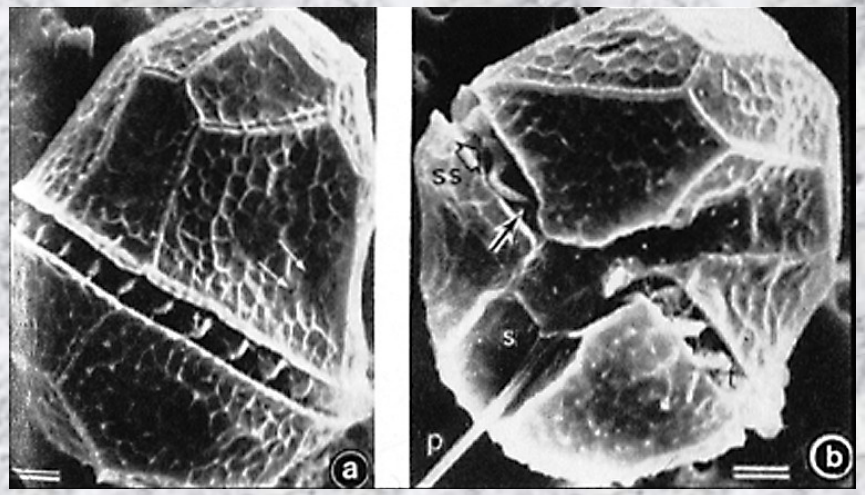
SHAPE



- Dinoflagellates have 2 flagella. One is wrapped around the body & the other trails behind.
- Many are made of theca (“shells”-thecate), but there are non cell-walled varieties (athecate).

SHAPE



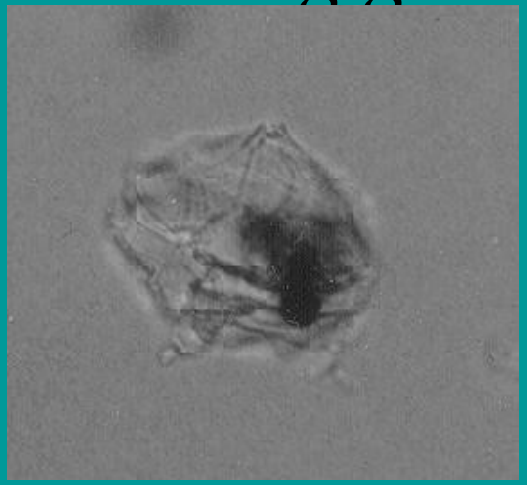


- Cell walls are often made of cellulose and may have pores.
- Presence of a light-sensitive pigment “eyespot.”

The ribbon like flagella are visible in the grooves in pictures a & b.

REPRODUCTION

- Binary Fission (Cell Division) which is asexual.
- Sexual reproduction under environmental circumstances involving gametes.

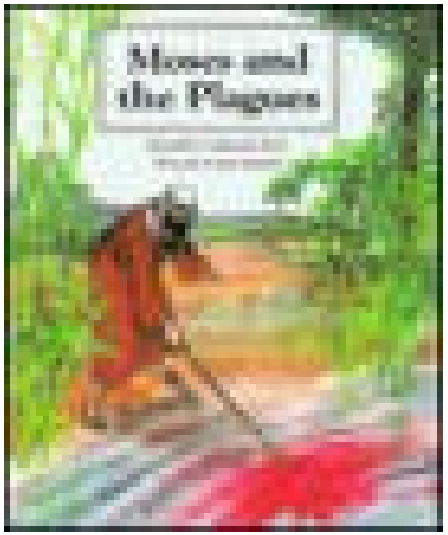


RED TIDES

- When conditions are right, an algal BLOOM occurs…This is a quick massive increase in reproduction of pyrrophyta. There are so many dinoflagellates that the water actually appears red!

In red tide peak there may be 100s of thousands of cells per drop of water.

A Biblical Reference?



- Some theorize that the rivers turning to blood as was described in the book of *Exodus7:20-21* in the Bible may have been an intense algal bloom.

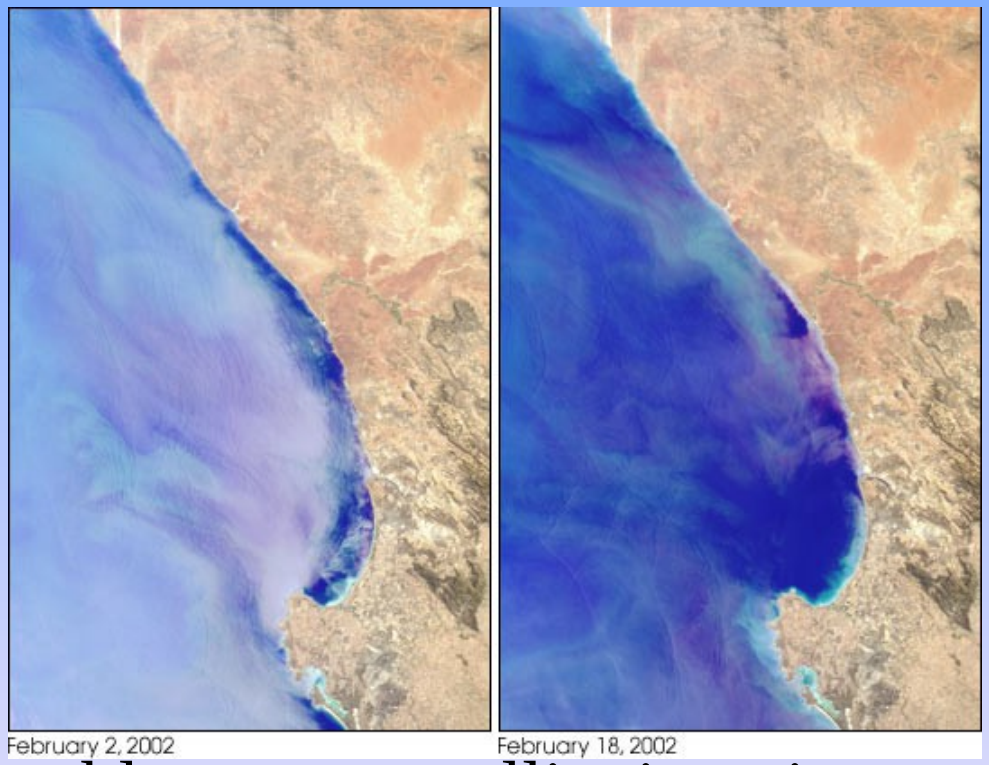
HARMFUL IF INGESTED

- While red tides & algal blooms don’t tend to be directly harmful to humans, they release an immense amount of toxins for other marine critters. These toxins build up in the food chain and that is how they become deadly for humans!

HARMFUL IF INGESTED

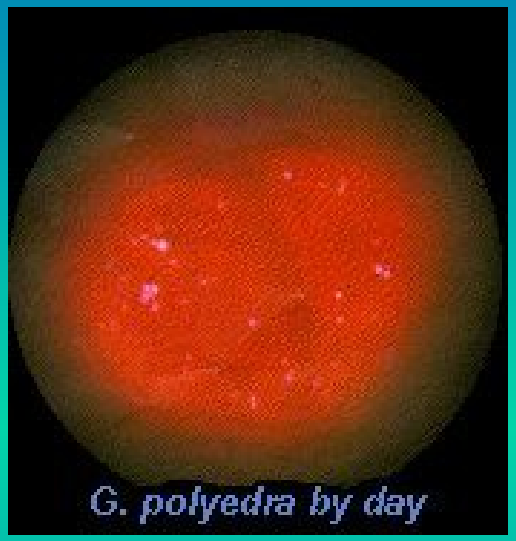
- Clams, etc..store poison in glands which when eaten by humans may cause nausea, diarrhea, numbness, vomiting, paralysis, loss of memory, pain, & (~300/yr) death.
- Breathing air sprayed up w/blooms may cause eye/throat irritation. May kill manitees, fish, humans.

VISIBLE FROM SPACE



- NASA is able to use satellite imaging to track and record algal blooms (red tides).

BIOLUMINESCENCE



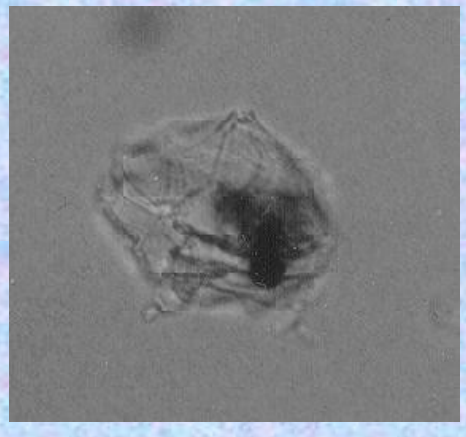
- Many Dinoflagellates have the ability to bioluminesce…they make their own chemical light.
- Often their light is seen in a crashing wave or splash of water at night.

RELATIONSHIPS

- Corals use the organic matter in its skeletons in a **symbiotic** relationship.
- Crabs, clams, oysters, and seaweeds are hosts for **parasitic** dinoflagellates.

MORE INFO:

- http://museum.gov.ns.ca/poison/redtide.htm - red tide info
- www.microscopy-uk.org.uk/ mag/artsep01/dinof.html - dinoflagellate info
- Dinoflagellate info -fig.cox.miami.edu/~161hon3/temp7.htm
- more dinoflaginfo&bioluminescence www.mbari.org/.../dinos/alimon/biolumin.htm



The End!