

HARMFUL ALGAE NEWS

An IOC Newsletter on toxic algae and algal blooms

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No. 26

• Greece

The coincidence of a *Prymnesium parvum* bloom and the mass kill of birds and fish in Lake Koronia

An extremely dense bloom of the haptophyte *Prymnesium parvum* N. Carter (Fig. 1) occurred in August-September 2004 in the shallow Lake Koronia giving the water a yellow-golden colour. The bloom peaked from 9 to 11th September, 2004. This is the first record of a harmful *P. parvum* bloom in both inland and marine waters in Greece. Harmful algal blooms studied to date in Greek inland waters have been caused by cyanobacteria [for a review see 1].

Lake Koronia located in northern Greece (40° 40' 58" N; 23° 09' 33" E), at an altitude of 75 m above sea level has undergone a massive decrease in lake volume over the past 20 years, with dramatic decreases in surface area and maximum depth. In the 1970's the surface area was 46.2 km² and the maxi-

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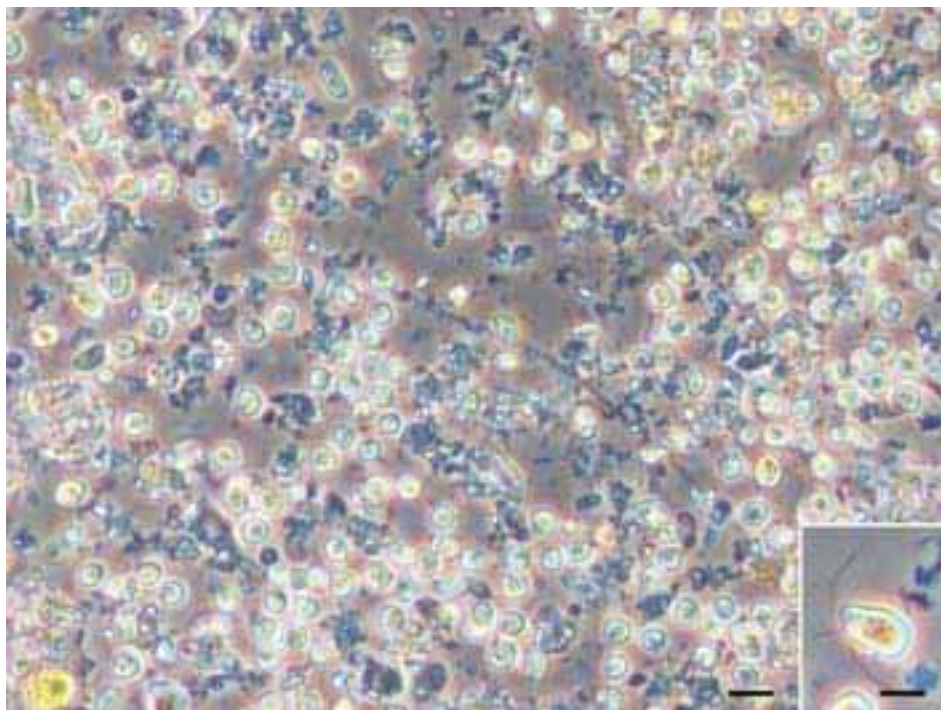


Fig. 1. Light micrograph (phase contrast) of a water sample, containing predominantly *Prymnesium parvum*, collected from Lake Koronia on 11th September, 2004. Inset: Motile *P. parvum* cell with visible flagellae and haptonema. Bars indicate 10 μ m; inset 5 μ m.

• Guatemala

Violet bloom produced by a cyanobacterium in a Guatemalan lagoon

During September 2003, violet discolorations due to cyanobacteria were observed in the water of Ipala Lagoon, 168 km from Guatemala City (Fig. 1), a crater of volcanic origin. These waters are drinkable and have been used by the nearby village for many years, without trouble. It is not known when these discolorations began, but the organism is now so abundant, that a

sample in a flask has a strong violet colour, like paint (Fig. 2). Counts with a hematocytometer gave estimates of 94,400 cells/mL. This cyanobacterium is strongly pigmented comprised approximately 99% of total cell count; there were a few Pennales and many phytoflagellates difficult to identify in the fixed sample.

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Fig. 2.

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• Costa Rica

Extensive blooms due to *Cochlodinium polykrikoides*: New to Costa Rica

At the beginning of April of 2004 an extensive bloom produced by *Cochlodinium polykrikoides* was detected, embracing the whole Pacific coast of Costa Rica. The bloom was characterized by a red-oxide colour and was located in front of the beaches of Puntarenas and Caldera in the Gulf of Nicoya, Costa Rica (10°N, 85°W). This phenomenon had never observed before in this country; the species dominated other phytoplankton usually responsible for blooms. The phenomenon started during the previous dry season (from December 2003 to March 2004) showing an important increase in April.

During this event a penetrating and fetid smell was perceived that affected the affluence of tourism to some beaches; there was also a great quantity of foam. Near some coastal towns dead fish, mainly Carangidae, were observed. In Culebra Bay, mortality of coral reefs was observed due to dense cell concentrations that reached depths up to 6 meters (Carlos Jimenez, in

press). Near the tourist aquarium Parque Marino del Pacífico, there has been damage such as deformation in larvae of *Lutjanus* (Lutjanidae), probably because the aquarium takes its water close to the blooms. Fishing activity was reduced, perhaps due to the presence of the large amount of mucus and decreased oxygen concentration in the water.

Since the year 2000, we have observed extensive algal blooms that last more than one year on the Pacific coast of Costa Rica, dominated by different morphotypes of *Pyrodinium bahamense* [1]. Prior to this, long lasting blooms were not observed. In May 2002, an extensive bloom was observed with similar characteristic to that reported in this note; on that occasion, 17 cases of human intoxication, with respiratory symptoms and burning feeling in the eyes were reported. This bloom was also dominated by *Cochlodinium polykrikoides* and the cyanobacterium *Trichodesmium erythraeum* [2].

Later on, during the rainy months of September and October 2003, several blooms of this dinoflagellate were reported, reaching maximum concentrations of 17.5×10^4 cells/L by mid-October 2003.

The time distribution of blooms produced by *C. polykrikoides* had increased from May 2002 until the present, mainly located on the central Pacific coast. In a same manner, this species has recently been reported in the Gulf of California [3, 4], and in Mexico. The Costa Rica blooms observed are generally monospecific, displacing other species usually present during this season. We wish to stress the need for research on HAB along the coasts of Costa Rica, where climatic changes or the increase in the anthropogenic eutrophication of coastal waters may be changing HAB patterns.

References

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Fig. 1. Light microphotograph of *Cochlodinium polykrikoides*.

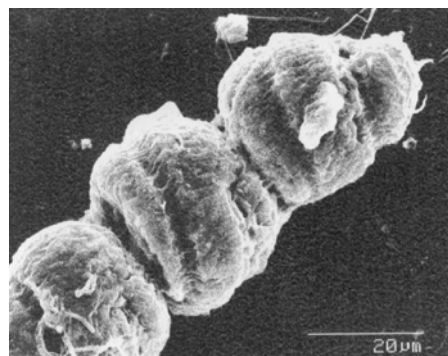


Fig. 2. SEM microphotograph showing the reticular cell and trichocyst.