



Prorocentrum minimum

Dinoflagellate

Threat scores

1. Ecological impact

- The species is considered potentially toxic to humans worldwide with rare cases of Venerupin Shellfish Poisoning (VSP) recorded in the last century. In Maryland, testing over the past two years on blooms suggest that this species has the potential to be toxic to shellfish (Molnar 2008).
- “The high biomass of *Prorocentrum* in blooms may severely reduce the amount of oxygen available to living resources at localized bloom sites. The result can be local fish kills, invertebrate kills and loss of habitat causing fish to move from the area due to low oxygen or irritation from the high cell densities. All these effects may produce local changes in the dynamics of the food web” (Molnar 2008).
- The mechanism of toxin production depends in a complex manner on a large number of environmental factors, and is similar to the model according to which many antibacterial toxins are produced (Molnar 2008). *P. minimum* can produce two kind of toxins: hepatotoxic and diarrhetic shellfish toxin, which is responsible for the death of fish and shellfish and is also dangerous to human consumers of mussels, especially during intensive *P. minimum* growth. Poisonings have been accompanied by gastrointestinal complaints such as vomiting, abdominal pain and diarrhea. However, it has not yet been established whether *P. minimum* produces toxins causing neural paralysis. (Molnar 2008).



2. Invasive potential

- Widely distributed and seasonally abundant especially in summer, *P. minimum* occurs in the form of several different strains, some of which produce toxins (Molnar 2008).

3. Geographic extent

- Regionally patchy

4. Management difficulty

- No controls for this harmful phytoplankton.

Geography and Habitat

1. Origin: Commonly found along the west coast of the USA, Japan, Gulf of Mexico, Caspian, Adriatic, Mediterranean and Black Seas, and Scandinavian waters; often in large numbers (Molnar 2008).
2. First introduction: 1963
3. Blooms found in Chesapeake Bay from 1963 to 1989.
4. Marine, estuaries/bays
5. Coastal waters. An armored, marine, planktonic, bloom-forming dinoflagellate. It is a toxic cosmopolitan species common in cold temperate brackish waters to tropical regions (Molnar 2008).

Invasion Pathways

1. Natural Spread

- Possible
- Blooms found in Chesapeake Bay from 1963 to 1989.

2. Ballast Water and Sediments

- Accidental possible
- Blooms found in Chesapeake Bay from 1963 to 1989.

Non native locations

1. 42- Carolinian
2. 43- Northern Gulf of Mexico
3. 70- Floridian

Sources

1. Molnar, Jennifer, et al. 2008. "Assessing the global threat of invasive species to marine biodiversity." *Frontiers in Ecology and the Environment*. 6 (9), pp. 485-492.
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3. <http://botany.si.edu/references/dinoflag/Taxa/Pminimum.htm>
4. <http://www.dnr.state.md.us/bay/hab/prorocentrum.html>
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