

## ALGAL INFORMATION SHEET

### North Carolina Division of Water Quality



just one of many “*Pfiesteria*-like”  
species in North Carolina

**ALGAL GROUP:** Pyrrophyta (Dinophyceae)

**COMMON NAME:** *Pfiesteria*-likes

**PFIESTERIA-LIKE DINOFLAGELLATES:** *Pfiesteria* cells are relatively small (10 microns) with a “figure eight” shape. There are several different species of small figure eight shaped dinoflagellates that live in the estuary along with *Pfiesteria*. When a sample is examined with an ordinary light microscope, all of these different species tend to look the same and are called “*Pfiesteria*-likes.”

Scanning electron microscopy (SEM) and molecular probes are the only way to positively identify whether “*Pfiesteria*-likes” are actual *Pfiesteria* species. SEM is used to examine the structures underneath the outer cell layers to determine the actual identities of the different cells in the sample. These methods are not available at the NC Division of Water Quality (DWQ).

**DWQ ANALYSES OF FISH KILL SAMPLES:** DWQ routinely collects algal samples during fish kills and fish disease events. These samples are checked for *Pfiesteria*-likes. The presence of *Pfiesteria*-likes in a sample does not necessarily mean that actual *Pfiesteria* species were present at the fish kill or that *Pfiesteria*-likes were the cause of the fish kill. It only means that cells having a small figure eight shape were found at the site.

While DWQ is unable to determine if actual *Pfiesteria* is in a fish kill sample, it can examine *Pfiesteria*-likes for the presence and appearance of chloroplasts. Autotrophic algae have chloroplasts which allow them to perform photosynthesis. *Pfiesteria* is heterotrophic. It does not have chloroplasts but can ingest other algae and use the stolen chloroplasts for a short period of time. Ingested chloroplasts tend to look different than original chloroplasts. If most of the *Pfiesteria*-likes in a sample have their own chloroplasts, it is unlikely that actual *Pfiesteria* are present in the sample.

**LABORATORIES OUTSIDE OF DWQ:** When algal samples collected at fish kills contain high amounts of *Pfiesteria*-likes (>150 units/ml), samples are often sent to research laboratories. The Center for Applied Aquatic Ecology in Raleigh has the ability to examine *Pfiesteria*-likes under SEM. Laboratories at the University of North Carolina at Greensboro and the National Oceanic and Atmospheric Administration laboratory in Beaufort can examine samples with molecular probes. *Pfiesteria*-like samples and results are collected, exchanged, and discussed between DWQ and research laboratories as a professional courtesy.

## **REFERENCES & RESOURCES**

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