Virginia Cooperative Extension

PUBLICATION 600-200

# Getting Acquainted with Amyloodinium ocellatum

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## What is *Amyloodinium ocellatum*?

*Amyloodinium ocellatum* (abbr. *A.ocellatum*) is a marine dinoflagellate. While most marine dinoflagellates (small protozoan organisms) exist as free living members of the planktonic community, some such as *A. ocellatum* live at least a portion of their life cycle as parasitic organisms.

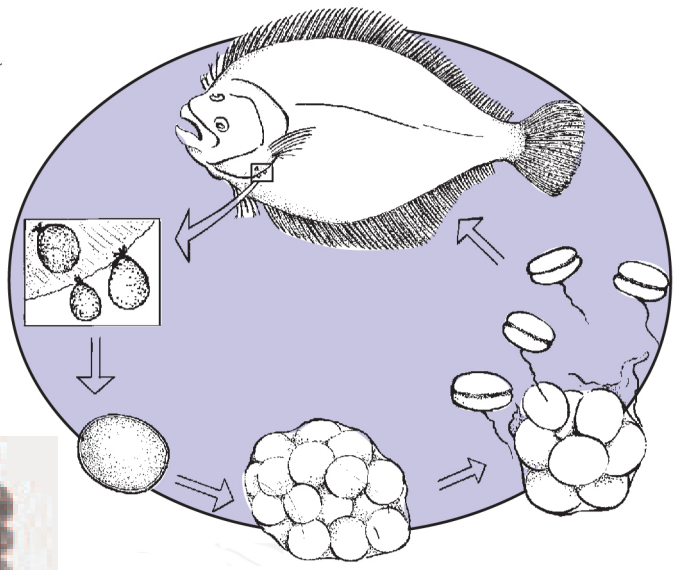
## What is the life cycle of *Amyloodinium ocellatum?*

*Amyloodinium ocellatum* exists in its parasitic stage as a trophont (feeding form), Figure 1. This trophont is attached via anchor-like roots and can infestthe gills, fins and body of the host fish. When the trophont has matured (average size 80 - 100+ microns), it falls free of the host and forms a tomont, Figure 2. This tomont, an encysted stage which falls to the bottom of the tank, subdivides internally and can form as many as 200+ infective stages.

These infective stages excyst (hatch) as dinospores (commonly called swarmers), Figure 3, and are the infective stage. These swarmers actively swim through the water column searching for a new host. The duration of this life cycle is temperature dependent, as is trophont size and tomont fecundity, and can range from seven to as many as twenty days.

**Figure 1.** Trophont

**The Life Cycle fof Amyloodinium ocellatum**



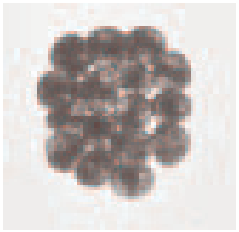


**Figure 2.** Tomont

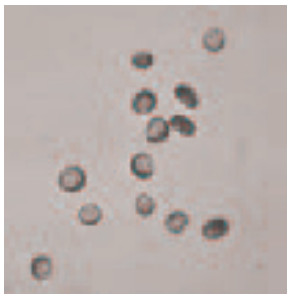


**Figure 3.** Dinospore

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Produced by Communications and Marketing, College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University, 2009



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## Why is *Amyloodinium ocellatum* a problem in aquaculture?

*Amyloodinium ocellatum* can cause extensive fish mortality in recirculating aquaculture production systems. *A. ocellatum's* fecundity rate, wide range of environmental tolerances, and resistance of the tomont stage to chemotheraputents make early identification of this parasite a high priority in brackish and marine culture systems. Once diagnosed, a quick response is essential to prevent rapid loss of fish stocks.

## How can *Amyloodinium ocellatum* be controlled?

There are three methods by which A. ocellatum can be controlled: chemical treatment, flushing, and filtration.

## CHEMICAL TREATMENT:

No FDA approved chemicals are available as theraputents against this parasite in food fish production. However, research has identified several chemicals shown to have reasonable success in its control. Benzalkonium chloride and ionic copper are the most effective at dislodging trophonts from affected fish. These chemicals do not however kill the encysted tomont-stage. In order to clear fish of detrimental levels of this parasite, repetitive doses are required, and this only keeps the parasite under control. Benzalkonium chloride is illegal for any use in food fish production, and ionic copper is only registered with the EPA for use as an algaecide.

## FLUSHING:

Flushing of production systems is another means of minimizing infestation levels of A. ocellatum. This is effective by physically removing the encysted tomont stage before it has had the opportunity to excyst. It is important when implementing treatment flushing that the water being removed from the system be withdrawn

## FILTRATION:

The best method to date in the control of *A. ocellatum* infestations in intensive aquaculture production systems is filtration. This physically removes the tomont stage from the production system while allowing for minimal water exchange. Filtration on a commercial scale in intensive recirculating aquaculture can be accomplished via microscreen, drum or bead filters. While microscreen/drum filters generally have a direct filtrate stream exiting the system, bead filters do not. As such, it is imperative that the bead filters be backwashed a minimum of one time per day. System volume should be filtered at least once per hour, and down to at least fifty microns. In research or hatchery environments, cartridge or diatomaceous earth filters may also be economically employed to control this parasitic disease.

*This FACT SHEET was published by:*

Virginia Tech

Virginia Sea Grant College Program,

Virginia Cooperative Extension

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