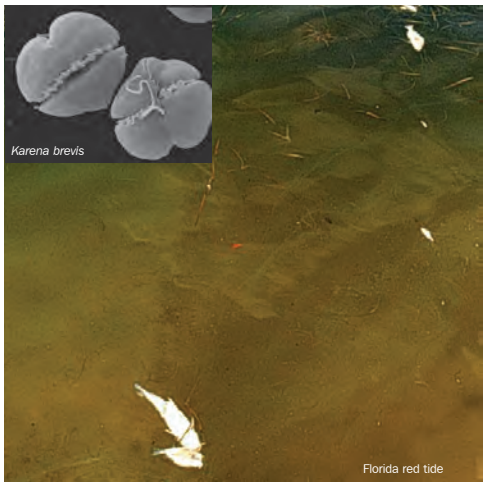

The potential role of harmful algal bloom toxins in bird mortalities

Introduction:

1. Unexplained mortalities of Florida's bird populations may be caused by Harmful Algal Blooms (HABs) and their lethal toxins.
2. Annual red tides caused by dinoflagellate Karenia brevis, kill or sicken hundreds of marine birds, but knowledge of impacted species, lethal doses, routes of exposure and longevity of toxins in affected birds is minimal. For rehabilitation centers to treat and successfully release intoxicated birds, improved management strategies based on sound science are desirable.
3. Freshwater cyanobacteria have been linked to Avian Vacuolar Myelinopathy (AVM), a disease affecting bald eagles and coots in the southeast U.S. Not documented in Florida, the risk from AVM is high and warrants an assessment of susceptible habitats and bird species.

Objectives:

1. Assess the role of HABs in bird mortality events and develop appropriate strategies for management.
2. Analyze brevetoxin levels in affected birds to determine lethal doses and to refine treatment protocols at rehabilitation centers.
3. Determine the risk of AVM in susceptible bird species.

Approach:

1. Assess bird mortalities for HABs or phycotoxins. In parallel, examine water bodies for toxic HAB species. Blood and tissues from freshly deceased birds will be split in triplicate for toxin analysis, archive and histopathology.
2. During red tides, sickened birds will be examined, tested for brevetoxins, treated, and specific species will be banded at rehab centers and released.
3. Conduct a comparative study of Hydrilla, other macrophytes and their cyanobacterial epiphytes from coot and bald eagle habitats.

Benefits:

1. The significance of HABs as environmental risk factors for Florida's bird populations will be determined and strategies to minimize or prevent further losses will be developed.
2. Affected birds can be treated and guidelines for their successful release developed.
3. If cyanobacteria implicated in AVM are confirmed, proactive strategies to minimize risk of exposure will be developed and information shared with other impacted states.

Given the importance of Avian Influenza surveillance to protect human health and commercial agriculture, we will assist by submitting tissues for AI analyses as a bi-product of this project.

Location:
Statewide

Contact:
Jan Landsberg, Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg
Jan.Landsberg@MyFWC.com

Florida Fish and Wildlife Conservation Commission

MyFWC.com

This project was funded by the State Wildlife Grants Program under Florida's Wildlife Legacy Initiative.