

HOW TO USE THE PAST TO PLAN FOR THE FUTURE

KAREN A. STEIDINGER

**Florida Fish and Wildlife Conservation Commission
Florida Marine Research Institute**



How can studies on other harmful algal species and events help structure an action plan directed toward monitoring, mitigation, and management

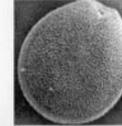
- ❖ **Like Texas, Florida's experience with red tides and other HABs has helped to determine direction when new HABs emerge**
- ❖ **Like Texas, Florida brought in experts to discuss different red tides and the biology and ecology of the causative organisms**
- ❖ **Texas has a Harmful Algal Bloom Committee consisting of state agency personnel, academia, and interested parties that prepared a report outlining specific research needs**

❖ Task Force report identified 7 HAB groups as requiring further research and identified research topics

❖ The Task Force itself prioritized research through the funding process by identifying which topics would be funded

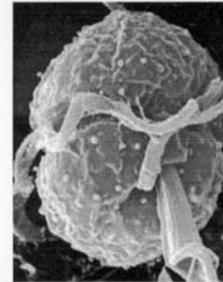
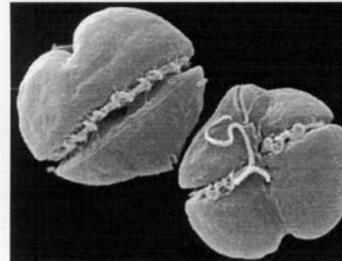


submitted to
**Florida's
Harmful Algal Bloom
Task Force**

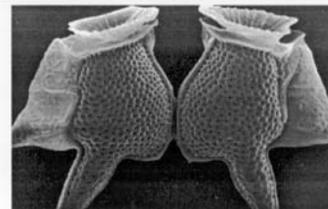


by the
**Harmful Algal Bloom Task Force
Technical Advisory Group**

and prepared by
**K. A. Steidinger
J. H. Landsberg
C. R. Tomas
J. W. Burns**



Harmful ALGAL BLOOMS in Florida



March 8
1999

❖ 10 million was provided by the Florida legislature to address HAB issues over a 5 year period with 3.3 million contracted to outside investigators at the recommendation of the Task Force and the remainder going to a joint FMRI/Mote Marine Laboratory HAB program

❖ The responsible state agency with its research scientists and collaborators (>20) were successful in being awarded ECOHAB and MERHAB federal grants to supplement state funds for major red tide programs.

ECOHAB:Florida



A 5-year federal, state, academic, and private laboratory partnership to understand the development of Florida red tides and be able to predict their occurrence, movement, and landfall through coupled biophysical models



13 institutions including the University of South Florida, Mote Marine Laboratory, and the FWC Florida Marine Research Institute and 23 Principal Investigators

WHAT DRIVES FUNDING FOR HAB MONITORING, MITIGATION, AND MANAGEMENT

- ❖ **Public health**
- ❖ **Living resources and Fisheries**
- ❖ **Economic losses**
- ❖ **Area covered and frequency**
- ❖ **Constituency concerns and complaints**

ECONOMIC IMPACT



In the 1970s, two red tide outbreaks caused by the toxic dinoflagellate *Karenia brevis* affected several west coast counties for 3 to 5 months and caused an estimated 15- to 20-million-dollar impact to those counties. Recently, a WHOI report estimated that from 1987-1992 an average annual cost for total USA HABs would have been 49 million in Year 2000 dollars.

TEXAS

Website w/current info

Fish kill hotline

Kill and Spill Team

HAB committee

workshops

Action plan

Lobbying

FLORIDA

Website w/ current info

Fish kill hotline

Event response /volunteers

HAB Task Force

workshops

Action plan

Lobbying

Red Tide Alliance

What is Needed Based on What is Known

- ❖ Species and strains in Texas**
- ❖ Toxins and toxicity of Texas strains**
- ❖ Influence of nutrients, light and other factors**
- ❖ Persistence of toxins in the environment**

What is Needed Based on What is Known

- ❖ Life cycle stages, particularly bottom resting stages
- ❖ Environmental influence on “excystment”
- ❖ Does life cycle influence spread of *Prymnesium*
- ❖ Documenting basins with cysts

What is Needed Based on What is Known

- ❖ *Prymnesium parvum* and its life stages – microscopic detection or molecular probes and arrays, sentinel monitoring stations or autonomous platforms
- ❖ Will mitigation or control measures have to be applied annually because of resting stages

What is Needed Based on What is Known

- ❖ Does Texas *Prymnesium* have any affinities with populations in Europe or elsewhere – is it native or introduced
- ❖ Can mitigation and control treatments used elsewhere be applied to Texas waters, are there new methods being tested

What is Needed Based on What is Known

- ❖ What are the forcing variables – biotic and abiotic – for bloom initiation, growth, and maintenance
- ❖ What are the species-species interactions including predator-prey relationships
- ❖ What are the forcing variables for *Prymnesium* bloom termination in different environs

Prymnesium monitoring, mitigation, and management will need

- ❖ **An action plan**
- ❖ **Collaborative research efforts**
- ❖ **Protocols**
- ❖ **Agency or Committee direction**
- ❖ **Targeted funds, recurring**
- ❖ **Communication and coordination**
- ❖ **Public outreach**