

SENATE STAFF ANALYSIS AND ECONOMIC IMPACT STATEMENT

(This document is based only on the provisions contained in the legislation as of the latest date listed below.)

Date: April 3, 1998 Revised: _____

Subject: Harmful Algal Bloom Research and Mitigation

	<u>Analyst</u>	<u>Staff Director</u>	<u>Reference</u>	<u>Action</u>
1.	<u>Green</u>	<u>Voigt</u>	<u>NR</u>	<u>Favorable/CS</u>
2.	_____	_____	<u>WM</u>	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

I. Summary:

The bill establishes a Harmful-Algal-Bloom Task Force. Provides the task force must determine research and monitoring priorities and mitigation and control strategies for harmful algal blooms and make recommendations to the Department of Environmental Protection for using the funds in this bill by October 1, 1998. Requires the committee to make recommendations that state and local governments can implement to develop a response plan and to predict, mitigate and control the effects of harmful algal blooms. Defines the goal of this project as the production of an integrated detection and prediction system for monitoring and responding to harmful algal blooms in Florida's waters, allowing resource managers to assess potential damage and undertake control and mitigation efforts. Directs the department to provide funding and technical assistance to government agencies, research universities, coastal local governments, and organizations with scientific and technical expertise for the purposes of harmful-algal-bloom research. Provides criteria for the procurement of contractual services.

The bill appropriates \$3 million from the General Revenue Fund to the Department of Environmental Protection for fiscal year 1998-1999 to carry out the provisions of this bill. Requires that \$1.5 million of these funds be provided to the ECOHAB-Florida Partnership, half of which shall go to Mote Marine Laboratory to fund the unmet needs of the ECOHAB-Florida program. Provides that up to \$50,000 shall be used by the department to support the task force's travel and document-production costs. Provides the remaining funds may be used for contracts as authorized in Section 2 of the bill, which may include enhancement of remote sensing capabilities for harmful algal blooms and an economic impact study of typical financial losses associated with a red tide bloom in Florida using the 1995-1996 blooms as a model.

The bill creates a new section in the Florida Statutes.

II. Present Situation:

Red tides, a type of harmful algal bloom, cause massive fish kills, shellfish contamination, and severe respiratory irritation to residents and visitors of Florida's Gulf coast. Because of the severe economic and public health effects of red tide, much consideration has been given to predicting, controlling, and mitigating harmful algal blooms. Red tides occur worldwide and are caused by several species of marine phytoplankton, a microscopic plant producing potent chemical toxins. The origin of Florida's red tide is blooms of a single-celled algae called *Gymnodinium breve* ("*G. breve*"). While coastal pollution may enhance red tide blooms in some areas, Florida's red tide appears to result from natural processes not caused by pollution. These red tide blooms are part of the ecology of Florida's gulf coast regions.

Between 40-80 miles offshore in the Gulf of Mexico, red tide blooms result from a massive multiplication of *G. breve*. These blooms are driven by winds and ocean currents towards nutrient-rich, shallow waters where the blooms multiply to harmful levels. At higher concentrations, *G. breve* creates a brownish-red sheen on the water's surface. In lower concentrations, the water's surface may appear yellow-green. Some red tide blooms have covered as much as several hundred square miles of water. These blooms enter the bloodstream of fish through their gills and cause fish to die quickly. Filter-feeding shellfish, such as oysters, clams, and mussels consume *G. breve* and concentrate the toxins in several organs, making these shellfish unsafe to harvest and eat. The Department of Environmental Protection must determine that waters and shellfish in an area are free of red tide toxins before shellfish may be harvested. In addition, red tide can cause a variety of symptoms in humans including irritations of the eyes, nose, and throat.

Because focused research into the ecological and oceanographic mechanisms that influence harmful algal blooms is urgently needed, the National Science Foundation and the National Oceanic and Atmospheric Administration developed a national research agenda to guide research efforts. The goal of the program, Ecology and Oceanography of Harmful Algal Blooms (ECOHAB-Florida), is to "develop an understanding of the population dynamics and trophic impacts of harmful algal species which can be used as a basis for minimizing their adverse effects on the economy, public health, and marine ecosystems." ECOHAB-Florida relies largely on a comparative approach utilizing data from large-scale, regional field programs and theoretical studies using new or existing models to simulate the dynamics of red tide blooms in different oceanographic systems, rather than limiting its research to a specific study site. While ECOHAB-Florida centers its research on the ecology and oceanography of harmful algal blooms, many other aspects of this phenomenon fall outside this scope and still require research.

Factors that impact red tide and need further research according to Solutions To Avoid Red Tide (S.T.A.R.T.) include: the precise location of initiation zones for blooms, the cause of the bloom initiation, what causes the bloom to die off, what amounts of toxins are produced, how the toxins are released, and at what stage of the life-cycle are toxins produced. This bill is intended to address those research areas not adequately covered by the ECOHAB-Florida program. The proposed project, focusing on harmful algal blooms in Florida, will result in an integrated

detection and prediction network for monitoring and responding to the development and movement of harmful algal blooms in Florida's waters. Resource managers, using the applications of this interactive system, will be able to assess the potential public health and economic damage from a bloom and take appropriate control and mitigation steps.

III. Effect of Proposed Changes:

Section 1. Establishes a Harmful-Algal-Bloom Task Force for determining research, monitoring, control and mitigation strategies for red tide and other harmful algal blooms in Florida waters. Directs the Secretary of Environmental Protection to appoint scientists, engineers and citizen-group members to the task force. Requires the task force to review the status and adequacy of information for monitoring physical, chemical, biological, economic, and public health factors affecting harmful algal blooms in Florida. Also requires the committee to make recommendations that can be implemented by state and local governments to develop a response plan and to predict, mitigate, and control the effects of harmful algal blooms. Directs the task force to determine research and monitoring priorities and mitigation and control strategies for harmful algal blooms and make recommendations to the department for using the funds in the bill by October 1, 1998.

Section 2. Provides the department shall implement a project designed to increase knowledge of the factors that control harmful algal blooms, including red tide, which will act as a basis for early detection, prediction of the extent and seriousness of the blooms, and allow for the opportunity to successfully control or mitigate the effects of harmful algal blooms. Clarifies legislative intent that this project address those areas not adequately covered in the cooperative program known as ECOHAB-Florida. Defines the goal of this project as the production of an integrated detection and prediction network for monitoring and responding to the development and movement of harmful algal blooms in Florida's waters. The long-term goal is to allow resource managers to use the interactive system to assess the potential for public health and economic damage from harmful algal blooms and begin control and mitigation efforts. Directs the department to provide funding and technical assistance to government agencies, research universities, coastal local governments, and organizations with scientific and technical expertise including but not limited to Mote Marine Laboratory, Harbor Oceanographic Institute, and the University of Miami for the purposes of harmful-algal-bloom research, monitoring, detection, control and mitigation, and economic impact study. Provides the program may be funded from state, federal, and private contributions. Requires the department to spend funds on priorities established by the task force. Provides criteria for procuring contractual services.

Section 3. Appropriates \$3 million from the General Revenue Fund to the Department of Environmental Protection for fiscal year 1998-1999 to carry out the provisions of this bill. From these funds, \$1.5 million shall be provided to the ECOHAB-Florida partnership, half of which is to be provided to Mote Marine Laboratory to fund the unmet needs of the ECOHAB-Florida program. Up to \$50,000 shall be used by the department to support the task force's travel and document production costs. Provides that remaining funds may be used for contracts as authorized in section 2 of this bill, which may include enhancement of remote sensing capabilities

for harmful algal blooms and an economic impact study of typical financial losses associated with a red tide bloom in Florida using the 1995-1996 blooms as a model.

Section 4. No rules shall be required to implement this act.

Section 5. This act shall take effect July 1, 1998.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Economic Impact and Fiscal Note:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

While there is no direct impact on the private sector, this project's long-term goal of allowing a resource manager to assess the impacts of a harmful algal bloom quickly and mitigate or control its damaging economic and public health effects would benefit the private sector.

C. Government Sector Impact:

The bill appropriates \$3 million from the General Revenue Fund to the Department of Environmental Protection for fiscal year 1998-1999 to carry out the purposes of this act.

VI. Technical Deficiencies:

Section 3 of this bill states that \$3 million is appropriated from the General Revenue Fund to the department for fiscal year 1998-1999. From this appropriation, the ECOHAB-Florida partnership is to receive \$1.5 million, half of which shall be provided to Mote Marine Laboratory. It is unclear, however, whether the \$50,000 to be used by the department for travel and document

production costs shall be taken from the department's \$1.5 million appropriation or the other half provided to ECOHAB-Florida.

Also, in section 3 of this bill on line 31, page 3, the phrase "additional sum" is unclear. While it likely refers to the \$3 million as an additional appropriation beyond the funds which the department receives through general appropriations, the phrase "additional sum" should be removed for clarity.

VII. Related Issues:

None.

VIII. Amendments:

None.

This Senate staff analysis does not reflect the intent or official position of the bill's sponsor or the Florida Senate.
