

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.)

BILL: CS/SB 2038

SPONSOR: Natural Resources Committee and Senator Carlton

SUBJECT: Red Tide Research and Mitigation

DATE: April 12, 1999 REVISED: 4/15/99 _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	<u>Branning</u>	<u>Voigt</u>	<u>NR</u>	<u>Favorable/CS</u>
2.	<u>Hendon</u>	<u>Hadi</u>	<u>FP</u>	<u>Fav/3 amendments</u>
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

I. Summary:

This bill establishes a Harmful-Algal-Bloom Task Force to determine research and monitoring priorities and control and mitigation strategies for harmful algal blooms and make recommendations to the Fish and Wildlife Conservation Commission. The Florida Marine Research Institute shall appoint the task force members from certain specified occupations and must include citizen group representatives and members of government.

The bill requires the Florida Marine Research Institute to implement a program designed to increase the knowledge of red tide, and to provide funding and technical assistance to government agencies, research universities, coastal local governments, and organizations with scientific and technical expertise for research purposes. Provides the criteria for the procurement of contractual services under the program. Provides an appropriation of \$3,000,000 from the General Revenue Fund to the Florida Marine Research Institute. Of this amount, \$1,000,000 is to continue 10 specific contracts for promoting state, federal and private partnerships, \$1,000,000 is for the Mote Marine Laboratory and \$1,000,000 is for the Florida Marine Research Institute for research on red tide.

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:

The bill 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. The Florida Marine Research Institute shall appoint scientists, engineers, economists, citizen-group members, and members of government to the task force. The task force is to determine research and monitoring priorities and control and mitigation strategies and make recommendations to the Fish and Wildlife Conservation Commission by October 1, 1999, for using funds as provided in this act.

The task force is required to:

- Review the status and adequacy of information for monitoring physical, chemical, biological, economic, and public health factors affecting harmful algal blooms in Florida;
- Develop research and monitoring priorities for harmful algal blooms in Florida, including detection, prediction, mitigation, and control;
- 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; and
- Make recommendations to the Fish and Wildlife Conservation Commission by October 1, 1999, for research, detection, monitoring, prediction, mitigation, and control of harmful algal blooms in Florida.

After the completion of the above tasks, the task force may be continued at the pleasure of the Florida Marine Research Institute. Up to \$50,000 of the appropriation in the bill can be used by the task force for travel and document costs.

The Florida Marine Research Institute shall implement a program designed to increase the knowledge of factors that control harmful algal blooms, including red tide, and to gain knowledge to be used for the early detection of factors precipitating harmful algal blooms for accurate prediction of the extent and seriousness of harmful algal blooms and for undertaking successful efforts to control and mitigate the effects of harmful algal blooms.

It is the intent of the Legislature that this program enhance and address areas that are not adequately covered in the cooperative federal-state program known as Ecology and Oceanography of Harmful Algal Blooms (ECOHAB-Florida), which includes the University of South Florida, Mote Marine Laboratory, and the Florida Marine Research Institute. The stated goal of the program is to enable resource managers to assess the potential for public health damage and economic damage from a given bloom and to undertake control and mitigation efforts through the development and application of an integrated detection and prediction network for monitoring and responding to the development and movement of harmful algal blooms in Florida marine and estuarine waters.

The bill also creates a financial disbursement program within the Florida Marine Research Institute to implement the provisions of this act. Under the program, the institute shall 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, economic impact study, monitoring, detection, control, and mitigation. The program may be funded from state, federal, and private contributions.

The bill appropriates from the General Revenue Fund to the Florida Marine Research Institute for fiscal year 1999-2000, an additional \$3 million to carry out the purposes of the act. For additional information see Economic Impact and Fiscal Note below.

Contractual services procured under this section are not subject to the provisions of s. 287.057, F.S.

The bill specifically provides that rules are not required to implement this act.

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:

If effective red tide monitoring, prediction, and cost effective red tide control result from this appropriation, then local coastal economies could benefit from lessened impacts of red tides and harmful algal blooms.

C. Government Sector Impact:

The bill appropriates \$3 million from the General Revenue Fund to the Florida Marine Research Institute for fiscal year 1999-2000 to carry out the purposes of this act. The bill specifies that the funds are to be used as follows:

Purpose	Entity	Amount
Continue harmful-agal-bloom contracts to promote state, federal, and private partnerships	Manatee Community College, the University of Florida, the University of Miami, the National Oceanic and Atmospheric Administration, the United States Food and Drug Administration, the St. Johns River Water Management District, the Florida Department of Health, the Mote Marine Laboratory, the Woods Hole Oceanographic Institution, and a citizens group Solutions to Avoid Red Tide	\$875,000
Administration of contracts	Florida Marine Research Institute	\$75,000
Travel and documents	Harmful-Agal-Bloom Task Force	\$50,000
Continued Contracts Subtotal	Florida Marine Research Institute	\$1 million
Red-tide research	Mote Marine Laboratory	\$1 million
Red-tide research	Florida Marine Research Institute	\$1 million
Total		\$3 million

The Department of Health has indicated that this bill may provide continued funding during FY 1999-2000 to complete a study that began during FY 1998-1999. The Department of Health intends to request approximately \$100,000 from the Department of Environmental Protection during FY 1999-2000 to complete ongoing health related studies involving red tide and other harmful algal blooms. personnel are provided by the department as in-kind contributions and funds are used to support expenses and equipment required for the study. The bill does not provide for a recurring source of funding for health-related studies.

Additional Comment by Fiscal Policy Committee Staff

The current Senate General Appropriations Act includes an appropriation of \$275,000 to the Mote Marine Laboratory for red tide research.

VI. Technical Deficiencies:

None.

VII. Related Issues:

CS/CS/SB 864 (first engrossed) transfers the Florida Marine Research Institute and most marine resource functions from the Department of Environmental Protection to the constitutionally established Fish and Wildlife Conservation Commission. The senate bill contains a provision to

allow the Executive Office of the Governor to transfer funds associated with the transferred functions to the new Fish and Wildlife Conservation Commission.

VIII. Amendments:

1 by Fiscal Policy Committee:

Amends section 1 to require that the Harmful-Agal-Bloom Task Force make recommendations to the Florida Marine Research Institute for using funds provided by the act rather than the Fish and Wildlife Conservation Commission.

2 by Fiscal Policy Committee:

Amends section 1 to require that the Harmful-Agal-Bloom Task Force make recommendations to the Florida Marine Research Institute for research, detection, monitoring, and control of harmful agal-blooms rather than the Fish and Wildlife Conservation Commission.

3 by Fiscal Policy Committee:

Amends section 3 to correct reference to date at which contracts continued under the act were initiated.