

## “Statewide Dividends Through Research”

### Cryopreservation of Sperm from the Striped Bass, *Morone saxatilis*



For more information about this research project please contact:

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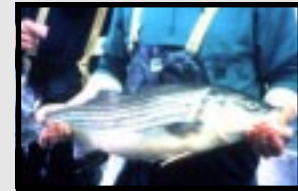
Graduate student Kimberly Edwards examines the fluorescent staining of striped bass spermatozoa.

**Researcher:**

Paul Schreuders

**Region of Impact:**

National



Striped Bass

**Research Description:**

The development of a cryopreservation protocol for striped bass spermatozoa through (1) the identification of the limitations of striped bass spermatozoa throughout the cryopreservation procedure in relation to osmolality, toxicity, mechanical sensitivity, and cooling and warming rates. (2) The development of a mathematical model of the cryopreservation process to aid in determining the limitations and (3) improvement of the current, unreliable protocol to allow practical, long-term, storage of striped bass spermatozoa.

**Research Benefits:**

**Economic**

Aquaculture is one of the fastest growing industries in the US, with an annual growth in excess of 10%. The necessity of the US to improve our own sustainable aquaculture industry increases every day. However, the breeding of striped bass still primarily depends on the development of broodstocks and seed from wild populations. Cryopreservation can offer a cost effective solution to store, transport, and develop populations in captivity. In hatcheries, cryopreserved sperm can be supplemented in the breeding process, limiting the number of males required, decreasing storage space and maintenance, and thus lowering costs.

**Aquaculture**

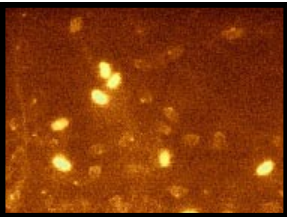
Cryopreservation can aid in the ability to supply sufficient seed supply on demand, year round and has the potential to revolutionize the industry as well as sustain current growth trends. Other advantages to cryopreservation are the availability of sperm from previous generations for selective breeding or to supplement supply should disease or accident cause a lack of fertile males. Collection and cryopreservation can also help to remedy the difficulties of breeding in captivity created from timing variations between the male and females of the species.



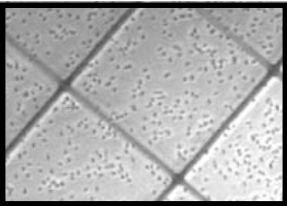
14th October 1998 schreuders1

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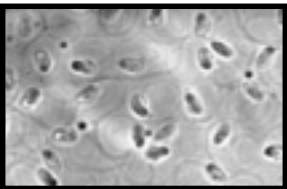
Cryopreservation of Sperm from the Striped Bass, *Morone saxatilis*  
(continued)



Mitochondrial staining of spermatozoa with Rhodamine 123. Bright cells have disrupted membranes and small dots within the cells are the active mitochondria.



Motility measurements were taken in a Makler chamber and captured on video for later analysis.



Low osmotic swelling of spermatozoa.

**Environmental**

Cryopreservation can aid in the restoration of a species or aid in the prevention of that species becoming extinct. Broodstocks developed in hatcheries through the aid of cryopreservation, which may be necessary if there is a shortage of males, can be released into the environment.

**Social**

*Morone saxatilis* is a species of fish with recreational and commercial importance in both the Atlantic and the Pacific. Its popularity has prompted the development of numerous hatcheries to supplement the supply from wild stocks.

