



Local News

[\[Print\]](#) [\[Email\]](#)



## Fishy research leads to the plight of the blue crab

By [Sara Michael](#)

Examiner Staff Writer 11/27/08



Yonathan Zohar is director of the Center of Marine Biology at the University of Maryland Biotechnology Institute in Baltimore. Yonathan Zohar, director of the Center of Marine Biology at the University of Maryland Biotechnology Institute, studies fish reproductive endocrinology and aquaculture as responses to the dwindling marine populations in the Chesapeake Bay and around the world.

### Q What is reproductive endocrinology?

A It's like OB/GYN for fish. Reproductive endocrinology is studying hormones that control reproduction and sterility and fertility in fish. This is very important to developing spawning and hatchery technologies for commercially important farmed fish. We are running out of fish. It's very clear that we need to leave the oceans and the wild stocks alone. Fish and seafood are the last livestock where we practice hunt and gather. We don't go to the wild to catch chickens or cows for human consumption, but you do it for fish. This practice needs to change, we need to be able to grow marine

fish through marine aquaculture, which is farming of finfish and shellfish. The first hurdle was to get them to reproduce in captivity.

**Q They are hesitant to reproduce in captivity?**

A Exactly. When you bring in marine fish such as rockfish and even salmon, you put them in tanks, and they do not reproduce.

**Q Why?**

A Stress. They are not experiencing the environmental conditions of the spawning ground. Fish in the wild migrate hundreds, sometimes thousands of miles to get to a spawning ground, where they are looking for conditions that are optimal for the offspring to survive. There is a whole chain of events that involve different hormones [that are] malfunctioning in captivity, because the conditions that trigger the hormones that result in reproduction are not there.

**Q How did you overcome that?**

A We started to look into what happens to those hormones when fish, the brood stock, are raised in tanks. We really nailed it down to one main hormone — a brain hormone that in captivity is not functioning [and developed a way to boost this hormone]. We developed a technology that is generic. You can tailor it fish to fish. You can induce ovulation and spawning. That is being used worldwide by different hatcheries. Now we are using the same concept for blue crabs. We don't need to treat them with hormones. We just need to manipulate the environment.

**Q How does that work?**

A The first and foremost objective is to see if we can replenish the spawning stocks of the blue crab. Those are what have declined 85 percent. For that, we have to be very careful of the genetics so we don't change the population. We bring in mated females that are able to complete the entire reproductive cycle in captivity.

**Q Does that protect the baby crabs from conditions that kill them?**

A In captivity, we can identify a combination of conditions that is optimal for them to spawn, and we do shift it around and get them to spawn on a year-round basis. People said, 'You won't be able to mass produce juveniles in captivity,' because they have very complicated early life cycle. It's very complicated to grow them. In the hatchery, we grow them to a releasable size of about 2/3 of an inch.

**Q How much of a difference is that making on the blue crab population?**

A We want to do something to help the blue crab situation before it gets like the oyster population. The oysters really are gone. First and foremost, we are scientists. We are trying to generate a better understanding of the blue crab's basic biology. We know relatively little about the blue crab considering the huge importance of its ecology to the Chesapeake Bay and the economy. We know very little about their life habits, and the idea here is to provide policymakers in Maryland and Virginia with solid scientific facts on its life cycle so they can make educated decisions on managing the fishery. The second objective was to see if we can develop hatcheries and nursery technology to mass produce those juvenile blue crabs in captivity. The third objective was to very carefully evaluate the feasibility of using hatchery-produced baby crabs to replenish the spawning stock. This whole field is quite controversial.

We are not putting crabs in the water for the watermen to harvest six months later. We are putting juvenile crabs in an area where they grow as fast as possible to reproductive maturity and contribute to the spawning stocks of the Chesapeake Bay.

### **Q Why is it controversial?**

A Some people say it's hopeless. In the early years there was a lot of stock enhancement that was done in a way that was not responsible. There is now a more responsible approach.

### **Q What does that mean?**

A You are making sure that — program by program or species by species — you evaluate whether stock enhancement is going to work or not. In the blue crab, our hypothesis was that it is feasible. It's not just taking them and releasing them anywhere. When is the best timing for release? Where is the best location? Each crab we have released has been individually tagged so we can monitor its whereabouts and survival rate. If this is going to work, the idea is to transfer the technology to the industry ... and start producing blue crab juveniles for the long run.

### **Q Will it get to a point that these crabs could then be harvested?**

A The idea is to get enough crabs out so we can replenish the spawning stock, and those in turn will produce enough more baby crabs and increase the abundance and the harvest.

### **PERSONNEL FILE**

Yonathan Zohar

- Age: 58
- Title: Director of the Center of Marine Biology at the University of Maryland Biotechnology Institute in Baltimore
- Hometown: Born and raised in Jerusalem
- Current town: Pikesville
- Family: Married with four children
- Education: Bachelor's and master's degrees from Hebrew University of Jerusalem and a doctorate in marine biology and comparative endocrinology at Faculty of Sciences at the University of Paris
- Research interests: Physiology, molecular and cellular endocrinology of fish reproduction; applied technologies for the manipulation of fish spawning; recirculating marine aquaculture; blue crab aquaculture
- Favorite seafood (to eat): Uni, which is sea urchin roe, scallops and crabs
- Hobbies: Scuba diving (but this is work, too), cooking, skiing and biking

*smichael@baltimoreexaminer.com*

### **Find this article at:**

<http://www.baltimoreexaminer.com/local/zohar112898.html>

Check the box to include the list of links referenced in the article.