2008

Developing an Alternative Fishery for Virginia Watermen: The case for oyster toadfish (Opsanus tau)

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A project sponsored by the Virginia Fishery Resource Grant Program

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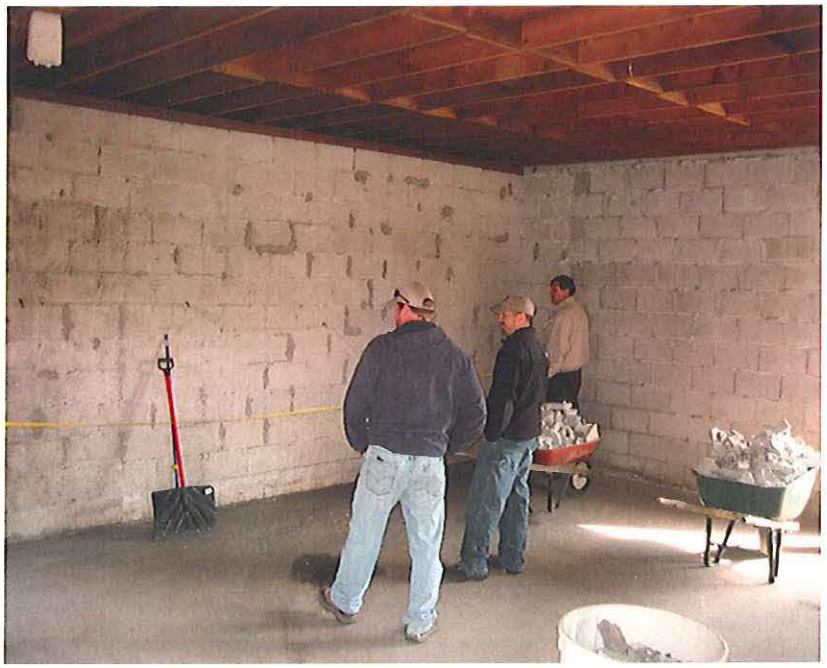
February 2008

Final Report for a Fishery Resource Grant Project

Project Title: Developing an alternative fishery for Virginia Watermen: The case for oyster toadfish (Opsanus tau)

Summary: This project sought to determine if a crabber by-catch, oyster toads, can be kept alive and marketed successfully so that both crabbers and distributors can gain supplemental income. Other Virginia crabbers and distributors have previously tried selling live toads but eventually abandoned or severely restricted their operations because of mortality problems. To our knowledge, ours was the first Virginia effort to hold toads in dedicated tanks using filters and leaky hose air injection into the water. Previous efforts used crab floats with pumped water but no filtering or air injection. We also experienced mortality problems which eroded gross margins. However, by injecting air into the water, we eventually learned to decrease the environmental stress for toads so that we could successfully hold them for longer periods of time and sell them profitably. Because of the mortality problems, the project produced gross margins that were barely positive for the first two years. But once the air injection began, late in the second year, mortality decreased. Getting on top of this mortality problem should allow us to improve margins this year. We think we can catch higher priced markets now because we can hold live toadfish for longer periods and suffer less mortality even if forced to sell in low price markets. This year we will use a better record system to track mortality.

Project Description and Physical Set-up: Oyster toads were considered a trash fish. There was no market for them. Neither sport or commercial fisherman wanted to them. When caught, the fish were usually thrown back. Crabbers knew pots set in the wrong place trapped oyster toads. Toads drive the crabs away, crabbers say. So pots were moved when toads appeared. More recently, a few crab buyers, who also had soft shell operations, found they could buy toads from crabbers and keep the purchase alive in crab floats. They sold the toads in ethnic markets. However, because of toad mortality at the crab house and invoices that were only partially paid, these efforts, to our knowledge, have either been abandoned or cut back to minimal operations.



A storage room was stripped to the bare walls and refubished

New circuit panel boxes were installed to provide power for water handling needs.

By investing in fiberglass tanks, water filters, air injection, marketing trips, and alternate fishing pots, we sought to overcome these obstacles so that a successful market could be built. Funds from Casey's Seafood and a Fishery Resource Grant financed these efforts.

A better water system, producing lower stress environments for the live toadfish, was needed.

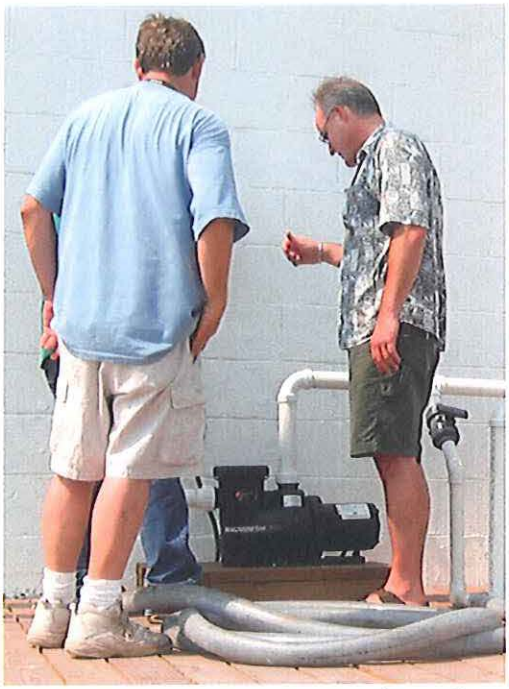
A storage room at Casey's Seafood, located at the small boat harbor in Newport News, was renovated to accommodate four fiber glass tanks, which came from Steve Wolfe Industries, Jamesville, N.C. The room was rewired in order to have adequate current to run pumps and regenerative blowers along with the possibility of electrical heating of water. The new wiring included three phase circuits.

Four tanks were installed in a bright room whose walls could be washed

The walls were insulated and lined with FRP panels so that entire room could be washed down. The finished room provided a clean working environment.

Water is drawn from the creek using a one horsepower Jacuzzi pump and pushed through a sand filter, which could be backwashed. From the sand filter, the lines went to the four flow through-tanks. The tanks are square with rounded corners. This design allows for the most efficient use of of space while still allowing circular water-flow. A round tank circulates water more efficiently but doesn't utilize space as well as a square tank.

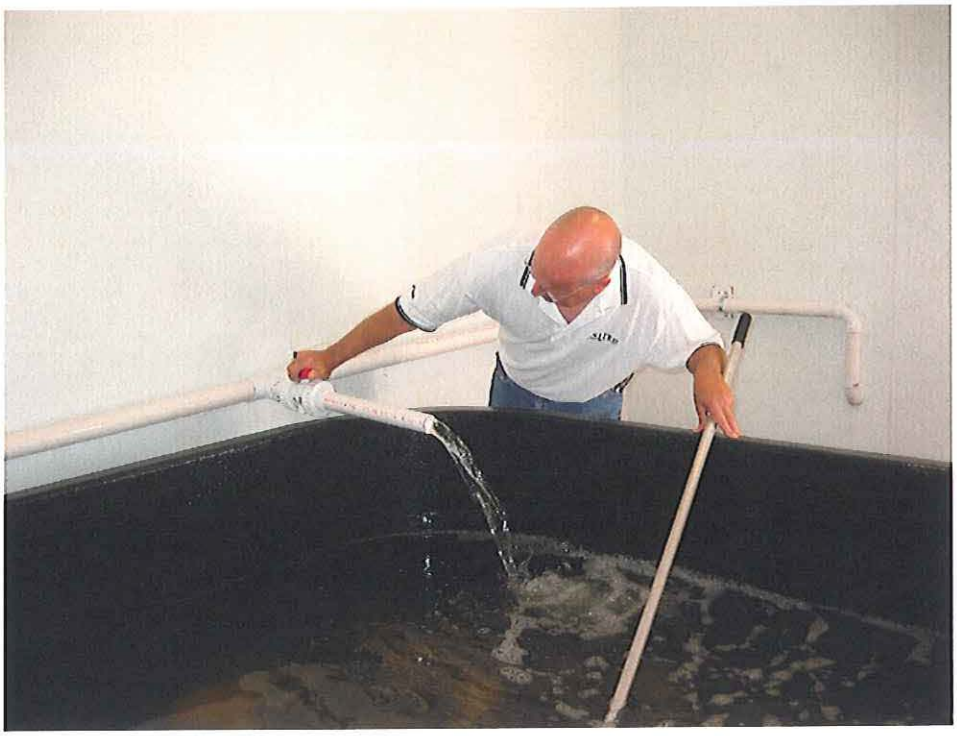
Water was pushed into the tanks along the sidewalls in order to create a circular water flow from the outside of the tank to its center before it exited the through a center stand pipe drain. The standpipes had external sleeves with slots at the bottom of the sleeves. This set



The pump which pulls water from the creek and pushes it through the sand filter

A sand filter was installed with a three-way back-wash valve to prevent the filter from clogging with sediment. During peak production the filter was back- washed daily. The pipes were also valved so that a live haul truck could be loaded with with seawater.

The water flow in each tank can be adjusted to control the speed of the water circulation and the turnover in the tank



up draws water from the bottom of the tank up the inside of the sleeve and out the stand pipe. By creating a circular flow and bottom to top drain, the tanks were make partially self-cleaning. However, the tanks also require manual cleaning at least once a week when they are being used at capacity.

The above physical setup comprised the water handling system for the first year. In the second year a regenerative blower was added, increasing the dissolved oxygen in the water and decreasing mortality.

Twenty-five fish pots of different designs were tried. However, this effort was abandoned as the crabbers reported the new designs did not catch toadfish as well as regular crab pots.

Capital and allied Costs:

Room construction and deck costs were paid mostly by Casey Seafood and most of the water covered handling costs by a Fishery Resource Grant. Costs are detailed in the tables below. A grand total of approximately $32,958 was spent on the project not including variable costs.

Room Construction and other expenses	Cost
Plumbing Supplies	$1,998
Insulation	559
Plywood	$1,149
Nails and Rivets	102
Electrical wiring and panel boxes	7953
Garage Door	565
Lumber for walls and deck	1149
FRP Board Wash-down Paneling	1440
Est. Labor	5900
Sand filter	950
Sub-Total	$21,865

Water handling and other costs	Total
4-7x7 ft fiberglass tanks	$5,000
Jacuzzi Pump	427
Regenerative Blower	623
Strainer Baskets	286
Filter Sand	50
Back-up motors	794
25 Fish Pots	1279
Bags and strap packaging to try new and distant markets	1248
Oxygen for bags	136
Marketing Trips	1250
Sub-Total	$11,093

The production process:

Greg Casey checks toadfish in the tank

Buying: The majority of the toadfish are purchased from the watermen who sell crabs to Casey's Seafood. The fish are a by-catch in the crab pots. The waterman put the toads in bushel baskets and keep them moist until they reach the dock. Occasionally we we purchase from watermen working for other plants. Usually they store the toads in a crab pot at their dock and deliver them once a week. We weigh the fish at our dock and record the weight for payment.

Culling: Our buyers will not pay for a toad unless it is one pound or more with a 11-inch minimum required in the State of New York. New York is the best market. After the fish are weighed we sort out the under-sized fish and deduct them from the watermens ticket. We return the small fish to the water. Enforcement of this sizing policy means crabbers do most of the culling before they get to the dock.

Storage: After weighing we immediately put the fish in our tanks.

Daily Tasks: Each morning we inspect the tanks of fish and remove any dead fish. We repeat this process at the end of the day. The sand filter is backwashed daily and each tank is manually clean once a week.

Packing and shipping: The fish are put into a 50-lb fish box that has a no leak thermal liner. About 20 pounds of fish are put in each box. We cut holes in the liner near the handle area of the box to allow air in the box. Sixteen ounces of saltwater are put in the bottom of the box to keep the fish

Cleaning a tank.

moist. The liner is sealed and the lid put on the box. The box is then sealed with tape for shipment. The boxes are palletized and put in the cooler until shipment. We ship on one of two trucks that go into New York. The fish are loaded on the truck usually around 3 p.m. daily and arrive in New York around 2 a.m. the next day.

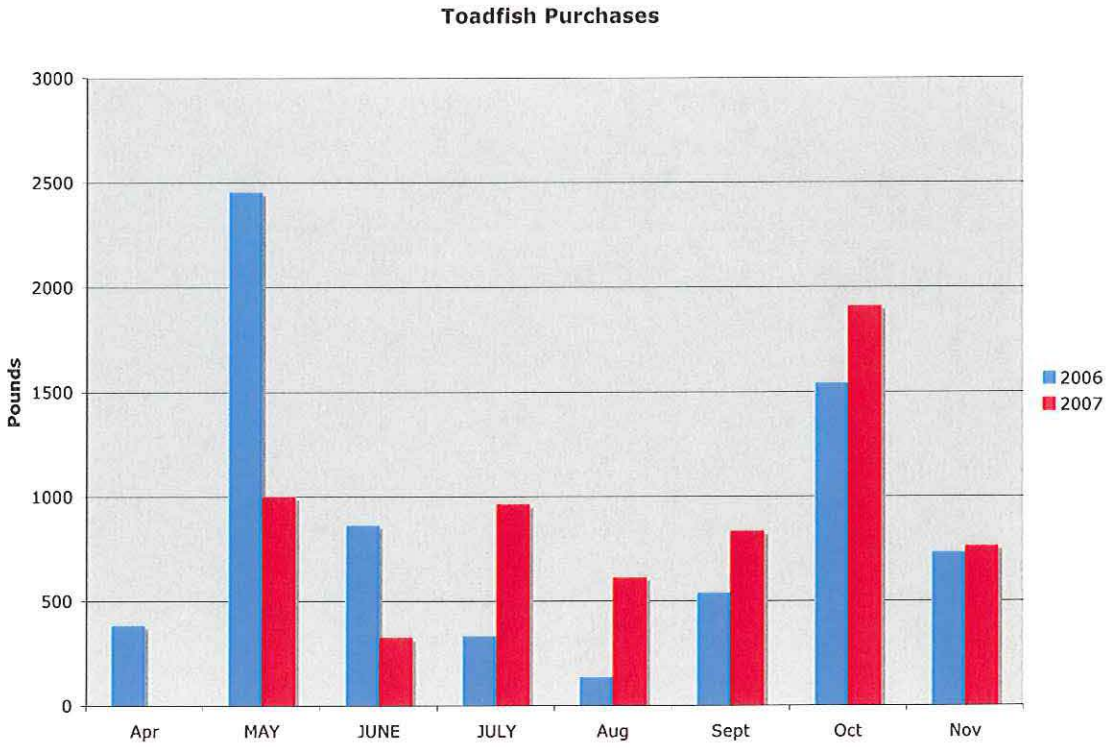
Up close and personal

Purchases and Sales:

In the first year of operation a total of 6,998 pounds of toadfish were purchased from crabbers at price of $2/lb or a total of $13, 796. In the second year 6,408 pounds were purchased at a weighted average price of approximately $1.22/lb. or a total of $7,838. Prices paid in the second year again started at $2 but dropped to as low as $1 during the season because of declines in the New York price when Delaware and New Jersey started putting substantial quantities of toadfish into the market.

Based on two years of data, production looks to have a peak in May and then tapers off through the summer and before peaking again in October. The chart and graph of purchases show this:

Oyster Toadfish		
Lbs Purch	**2006**	**2007**
April	384	0
May	2,455	1,000
June	864	325
July	334	963
August	135	611
September	539	834
October	1,541	1,909
November	733	762
December	3	4
Totals	**6,988**	**6,408**



Unfortunately because of mortality problems and cut tickets, gross margins on the project in the first two years were very small. In the first year the gross margin was $1,410 and in the second year it was $810.

In the first year we estimated that 33 per cent of the fish were mortalities or other wise not paid for. Approximately 13 per cent of that total was ticket shrink and the remaining 20 per cent were tank mortalities. This, of course, is unacceptably high, mortality, if this is to be a profit making enterprise. It should be stressed that these are derived mortalities. Dead fish were not weighed when taken from the tank, so mortalities are estimated from sales data. This year mortalities will be weighed.

In 2007, by being more selective about which customers we sold, the ticket cuts went down to 7 per cent of the invoice totals. However our estimated tank mortalities went up to 47 per cent, a crushing number for any enterprise. It was only at the end of the season, when a regenerative blower was installed, that the problem appeared to be ameliorated. This year there year there will be a reporting system installed to alert management when there is a problem.

Markets:

In the past two years we attempted to market toadfish in New York, Toronto, Washington and Chicago. We sold some mainstream markets, like the Fulton Fish Market in New York but mostly we marketed to Chinese-American markets. In the end the New York Chinese-American market proved to be best although it was subject to sharp price decreases when there were plentiful supplies of toadfish coming out of New Jersey or Delaware. We made several marketing trips to try to locate new customers.

New York

A New York marketing trip developed better sales leads than a similar Washington trip did. The trip also allowed us to better evaluate New York buyers by seeing their operations. As it turns out, all of the live fish buyers in New York are located in a fairly small section of Brooklyn. (The addresses and phone numbers of the buyers we visited are in the appendix) It is also possible to sell live toadfish, in boxes with a little water, in the New York Fulton Market. However, our experiments there were less than successful.

USA Chan Jing Seafood Trading

First stop on the New York trip was USA Chan Jing Seafood Trading Co. on Norman Ave. in Brooklyn. The manager there was Zhang Shu Lin. Mr. Lin spoke hardly any English and we spoke less Chinese, so conversation was limited.. Tom Wu, the man in charge of the sashimi operation there translated. Mr. Wu was cutting Taiwanese farmed cobia for the sashimi market. We learned USA's biggest product line was cracked conch, which they cracked and cleaned for New York market. Mr. Wu said they are trying to export live toads to Hong Kong.

They kept the live toadfish and eels at another facility several blocks away. The holding facility was very small. The eels were kept alive in a Bonar 4x4. There was a larger marine plywood box with a recirculating water system. Toad fish were held in this box. Wan To Ho, USA's buyer who works out of Florida, says USA is interested having people hold substantial quantities of toadfish until early winter. Then they will pay a premium for them, he says.

Although USA's facilities were not large they subsequently proved themselves to be a reliable buyer of toadfish.

Golden Sea Trading

Next stop was Golden Sea Trading which is owned by Paco Hou. He is primarily a tilapia dealer. He had previously dealt in toad fish but didn't have any in the building when we were there.

Mr. Hou is the third largest live fish dealer in New York. He had many tanks, nearly all of which contained freshwater or euryhaline fish.
Most of his fish were aquaculture product. In his tanks were the following:
Hybrid Bass
Big Head Carp
Common Carp
Wild Catfish taken from brackish water
Tilapia
Turtles(both snapper and soft shell)
Eels (larger than a one pound)
Conch

Mr. Hou's tilapia came mostly from Southern States Cooperative and at the time we visited he said he was paying $2/lb. picked up in North Carolina. He estimated that his hauling costs were $.25/lb. Commercial live haulers generally have a higher freight charge.

Mr. Hou said he was selling live tilapia to stores for $2.50, leaving him with a gross margin of only $.25 if there is not mortality. The predominate retail price in New

York Chinatown stores looked to be $2.89 or $2.99. Margins in this market are apparently narrow for both wholesaler and retailer.

For wild catfish, picked up in Maryland, he was paying $.40/lb. Hybrid Bass was purchased at $3/lb. He paid approximately $.50/lb for knobby conchs and $.90 for smooth.

Jim Casey and Paco Hou see if better toadfish markets can be developed in New York's Chinatown shopping district

Although Mr. Hou did purchase toad fish subsequent to the marketing trip no long term sales relationship developed.

Golden Sea's water handling system appeared to work wel. Fish mortality appeared low.

Water draining from the tanks was put through spun filter mats and then circulated back to the tanks. When the filters become dirty, they are lifted out and cleaned with a pressure washer.

New Hing Lee

Next we met with Ray Chui, who owns New Hing Lee. Mr. Chui said he is the second largest dealer in New York. He sends three flat bed tractor-trailers into the South pick up fish. He was not doing any toadfish, but said he would be interested. He deals mostly in Tilapia, purchased from Southern Farms in North Carolina.

Mr. Chiu, of course, operates under the same narrow margins that his competitors do. His handling system does appear to take some of the cost out of the system.

He uses fork lifts to load Bonar boxes on to his flat bed trucks. Water in the boxes is injected with oxygen while he is hauling fish.

Fish holding tanks in the Brooklyn warehouse of New Hing Lee.

Once the truck arrives in Brooklyn the boxes are lifted off the truck with a fork lift and the water is exchanged. The boxes can then be loaded on to small city trucks for delivery to retail stores. This system saves having to transfer the fish from one container to another.

L.T. Trading

The next stop for the New York marketing trip was at the oldest and largest live fish dealer in New York, L.T.Trading. He gets a tilapia truck of 10,000 pounds every other day. The tractor-trailer starts out with 13 to 14,000 pounds and makes one stop before getting to New York. The Tilapia comes from Bill Martin's Blue Ridge Farms in Martinsville, VA.

The fish are off loaded from the tractor trailer down a chute into huge cement block tanks in L. T.'s basement warehouse. Mr. Lui, who is universally called Shing, also deals in Lg Mouth Bass, Big Head Carp, Common Carp and Catfish.

As the largest live fish dealer in New York, Mr Lui was shown maximum respect wherever we went in Chinatown. He escorted us on a quick walking tour of the stores there. Suddenly everyone in New York was polite. When he took us to a Chinese Restaurant the waiters and the maitr'd deferred to him. The waiter said to us, "I know Virginia Tech. I used to work for Bill Martin. What kind of food do you want?" We indicated seafood and then the food just started appearing. At one point we ordered something from the dim sum cart. The waiter scolded us. "We'll get you special food. Don't order there," he said. It was the most deferential treatment we ever received in New York, but the deference was not because of us.

Because L.T. is the largest presence in live New York market one must take account of this company. However, they are clearly positioned to move high volumes at low margins. Possibly their scale is not appropriate for toad fish marketing. And their fish were all freshwater. To date they have not purchased any toad fish.

Fulton Fish Market at Hunts Point

We also visited the new Fulton Fish market where some subsequent sales of toadfish were made but ultimately we stopped trying to sell into this market because it wasn't profitable.

Washington

A marketing trip to Washington was also undertaken but no subsequent sales developed there so a report on that trip is not included. Customer stops are listed in the appendix. A summary of that marketing trip is available for those interested.

The New Fulton Fish Market at Hunts Point in the Bronx

Appendix:

Golden Sea Trading
Paco Hou
70 Flushing Ave.
Brooklyn, NY
917-337-5379

L.T. Trading
Shing Lui
369 Park Ave.
Brooklyn, NY 11205
718-875-4909

M.K. Seafood
Yong Kang
8850 Columbia
100 Parkway
Suite 401
Columbia, MD 20145
410-320-6965

New Hing Lee
Ray Chui
476 Baltic
Brooklyn, NY 11217
646-529-5115

Sam-Mi Oriental
Eric Lee
6674 Arlington Blvd
Falls Church, VA 22042
703-532-2066

True World Foods
Benjamin Sukijima
331 75th St.
Landover, MD 20785
301-386-5355

USA Chan Jing Seafood Trading
Wan To Ho
260 Norman Ave. Space 1A
Brooklyn, NY 11222
954-682-8838