Note from the President: North Carolina has made big strides this year for mariculture. Work is beginning on a new state of the art research hatchery at UNC Wilmington, and Marine Fisheries now has a $2 million annual recurring pot of money to build oyster reef sanctuaries. I truly believe those programs will go a long way to restore clean water to the state and to help build a shellfish industry, especially through mariculture.

The hatchery will work to produce an oyster that can adapt to our waters and withstand the adverse effects of disease. We can then use this stock to build a wide system of oyster reefs that will clean and filter the water and add a huge biomass of larvae to the surrounding harvestable areas. The hatchery will also develop an oyster that can be used by farmers to grow in about a year and a half. In the long run, we will be better off economically and environmentally than we are now, and these projects will have proved to be a good investment.

But we have unfinished business that is having a negative effect on the mariculture industry. I’m referring to the areas of Core Sound in Carteret County and to all the waters of Brunswick County that are off limits to shellfish leasing. You can’t do much with a healthy stock of oysters if you can’t get many people involved in farming.

It doesn’t take much of an economist to figure out what we are missing in North Carolina. Simply consider at the records of Virginia and Maryland in the Chesapeake Bay.

In recent years, Maryland watermen have harvested clams and oysters from Atlantic coastal bays averaging slightly more than $350,000 in total dockside value. This year, entrepreneurs from the neighboring Virginia Eastern Shore will bring in about $30 million.

The difference is that Virginia has a robust aquaculture industry, and Maryland does not. Virginia’s hard clams are raised in beds leased from the state. Maryland watermen used hydraulic dredges to haul in wild stocks that are now so depleted that coastal bay dredging has been banned as of Oct. 1.

Maryland Gov. Martin O’Malley recently toured a clam farm, after which he declared that it’s time Maryland caught up with Virginia. He also asserted that mariculture, particularly clams and oysters, may hold the best hope of reviving the state’s flagging seafood industry.

What’s true for Maryland is true for North Carolina. We also have a flagging seafood industry. Our take of shellfish this year will be about $1.5 million. We’re ranked 7th of the 14 Eastern seacoast states in shellfish production. Our fishing industry is plagued
by declines in crab catches, low prices for shrimp, closing out of fish houses, foreign competition, and crowding out of local fishermen from waterfront access. Today 84 percent of our seafood is imported and half of those imports are farmed-raised. It doesn't need to be this way. We have a dwindling number of commercial fishermen who need a place to go and something to do. Clam and oyster mariculture can fill that need.

A one-acre water column lease can conservatively produce more than 100,000 oysters for market. That includes a quarter-acre nursery area and three-quarter acres of grow-out with plenty of room for maneuvering a boat or barge. Considering the current price for cultured oysters, which in North Carolina is low, it could yield a wholesale take of $40,000. That's not bad for a one-acre crop.

But to accomplish this, the governor and lawmakers will have to take several steps. The first and perhaps most important is to provide thousands of acres of desirable growing areas for leasing. That may sound simple, but it breaks with a few of hundred years of tradition, and watermen have long resisted the competition. Next, the state will need to nurture greater private investment. Shellfish aquaculture could potentially provide dozens if not hundreds of needed jobs.

The Core Sound debacle dates back to 1993 when the Marine Fisheries Commission approved a shellfish lease on the Core Banks side of the sound despite a petition with 780 signatures asking them to deny the lease.

It was a terribly heated and disturbing issue for the residents of Core Sound. Old family feuds rehashed. Shouting, and exaggerations of the problem came from both sides, and as a result, the most accessible part of the sound was put off-limits to leasing. Brunswick County had a similar experience a few years earlier.

Let's hope the feuds of the past have simmered enough to begin some long needed work to expand leasing and mariculture in the state. This will help boost the economy of our traditional coastal fishing areas. It will be good for all concerned.

Virginia Introduces Water Quality Plan to Protect Shellfish Farms: State officials presented a plan to better protect water quality on Virginia's Eastern Shore—as well as the many clam and oyster farms that demand clean water to survive.

Clam farming, especially, has become a major economic force on the Eastern Shore and now ranks as the wealthiest such industry in the nation, generating more than $50 million per year in sales.

But farmers and watermen have become worried about increased waterfront development along the myriad coves and creeks where shellfish farming, or aquaculture, has taken off.

Last year, Gov. Timothy M. Kaine's administration asked the state Department of Environmental Quality to devise a strategy for protecting water quality while also allowing growth to continue, if more carefully controlled.

The news created a political storm on the Shore. But after months of meetings and hearings and technical debate involving developers, farmers, environmentalists, local officials and engineers, DEQ revealed its delicate balance Tuesday, which the State Water Control Board quickly endorsed with little debate.

The proposed rules still must undergo a round of public comments, probably another public hearing, and governmental scrutiny. Officials said a final plan should take effect by next spring.

Under the state plan, developers and landowners on the Eastern Shore would be required to study environmentally sensitive alternatives if they want to expand or build wastewater systems that would discharge sewage into shellfish waters and cause a health condemnation of them. Virginia-Pilot July 30, 2008
Crisis in French Oyster Industry: France's shellfish industry is facing its worst crisis in 40 years. Farmers have seen between 40 and 100 percent of their oysters aged one to two years wiped out in recent weeks, far higher than the normal mortality rate in the summer months, a top industry expert said.

An expert from the Ifremer institute, Tristan Renauld, said "the animal has been using up a lot of energy developing its genitalia and using a lot less to defend itself". Samples collected by Ifremer suggest that the Vibrio splendidus bacteria has contributed to the oysters' weakness.

According to oysters farmers cited by the weekly magazine Marianne, the culprit is the triploid oyster, which is modified to give it three pairs of chromosomes instead of two, as is the case with common oysters. "We are facing a major problem, with 40 to 100 percent of young oysters dying, depending on the beds. We will know with the coming high tides if the adults are also affected," Martial Monnier, director general of the national shellfish industry board said.

"We always have a higher mortality rate of young oysters in the summer, but only up to a maximum 30 percent. We haven't seen anything like this since the crisis in the 1970s which decimated the native flat oysters, now largely replaced by the Pacific oysters."

About 100 oyster farmers dumped at least 12 tons of oyster shells on the doorstep of a government office in Bordeaux to demand more aid to overcome a shellfish crisis.

France produces more than 100,000 tons of oysters a year. AFP, Cancale, France, July 2008

Fish Houses Close: Research funded by the North Carolina Sea Grant Program, and conducted by cultural anthropologist Barbara Garrity-Blake and North Carolina Sea Grant Seafood Specialist Barry Nash, found that only 78 of the 117 fish houses open in 2000 were still in operation in 2005.

The report includes startling figures on the impact of imports. Due in large measure to the volume of swimming crabs imported from Asia, only 13 of the 45 certified crab picking houses that operated in the state in 1982 remain open. In 2004, North Carolina shrimpers received less per pound, adjusted for inflation, than in the late 1960s.

Oregon Shellfish Larvae Kill: Whiskey Creek Shellfish Hatchery in Tillamook County hasn't been able to produce a significant amount of larvae or seed for the past eight months. That could lead to a decline in the future supply of shellfish, including oysters.

Now, Governor Kulongoski has approved a nearly $100,000 grant for Whiskey Creek to fund research and treatment options for the problem.

Plans call for testing new commercial seawater treatment systems, and research to detect and eliminate the bacteria that's causing the problem.

Researchers think the naturally occurring bacterium may be associated with changes in the environment and ocean currents. AP - July 6, 2008.

Taylor Illegally Using Tidelands: Taylor Shellfish Farms illegally used state tidelands in Washington's Totten Inlet to seed and harvest oysters and geoducks and could face major penalties, according to the Department of Natural Resources.

Nearby landowners in the south Puget Sound area and opponents of aquaculture are angry that the shellfish company — the biggest in the state — likely reaped millions in revenue from public waters.

Taylor representatives have admitted to the encroachment, chalking it up to an accidental blurring of boundaries over several decades.

"The Taylor Shellfish Co. has acknowledged seeding and harvesting oysters and geoducks on state tidelands in Totten Inlet, but it wasn't intentional," company spokesman Bill Dewey said.

Taylor was alerted to the problem after a complaint was filed with the State Auditor's Office, he said. That resulted in a DNR inquiry, and then Taylor hired a surveyor at the request of the state agency, Dewey said.

Dewey said he doesn't expect a fine from the state because the trespassing was unintentional.

Taylor Shellfish Co. is the state's largest shellfish grower and owns or leases 9,000 acres of tidelands in Totten Inlet, Hood Canal, and other areas. The Olympian, August 2008
Oyster-Friendly Microalgae Colors Food Blue-Green: The blue-green pigment from microalgae responsible for green gill in oysters may also provide a natural blue-green coloring for food, according to the latest research.

The compound called marennine, produced by the microalgae Haslea ostrearia, not only has potential to act as a pigment, but it also "exhibits significantly higher antioxidative and free radical scavenging activities than natural synthetic antioxidants commonly used in food, according to a study in the Journal of Agricultural and Food Chemistry.

The pigment shows excellent properties for use in foods, including high water solubility, high resistance to heat and light, and stability at the pH range of 6 to 8, according to researchers from five French universities and institutes.

The market for natural colorings is growing, buoyed by consumers' concerns regarding artificial food colorings and flavorings. Foodnavigator.com/Europe

30m Oyster Farm Grows in Kaipara: Development work has started in Kaipara Harbor on what promises to become New Zealand's largest oyster farm, generating about $30 million in exports and creating at least 100 new jobs.

Biomarine, which operates oyster farming in Mahurangi Harbor and a processing plant at Snells Beach, has been given approval by the Auckland Regional Council to start work on the long-planned project after years of battling red tape.

The new oyster farm will eventually cover 7,600 acres, dwarfing the 2,600 acres that the company uses for aquaculture in Mahurangi Harbor. Biomarine chief executive Jim Dollimore says the new farm will be among the largest oyster farms in the country, and because of the quality of the water, it will be the most productive.

His company will invest between $3 million and $4 million developing the farm, with a further $2 million invested in a new oyster processing plant planned. The processing plant is expected to be up and running by 2011.

The Kaipara oyster farm will take 12 years to reach full production, because of a condition that it be developed progressively in five stages, to ensure it meets environmental standards.

It is expected to produce between forty and sixty million oysters annually, mainly for export to Japan, Australia, Italy, and new emerging markets such as in Dubai. Norwest News July 2008

Rare Purple Pearl Found in Clam: For Debbie Deameade and Larry Catalano, a trip to Wegman's grocery store in Hamburg, New York on Memorial Day weekend made their day.

The two were planning on celebrating the holiday weekend by having a few friends over for some Little Neck clams.

As they waited for their friends to arrive, Larry Catalano decided to partake in a few clams ahead of time. What happened next is something even he says he still can't believe.

"I bit down into a clam and felt something hard—I thought it was a piece of the shell" Catalano explained.

However, what he spit out into his hand was no shell, it was a smooth purple pearl.

"It was like I had died and gone to heaven" he said. Catalano said he knew right away it was a pearl, despite the commonly held belief that pearls only come from oysters.

"The color was what got me, and even the whole inside of the shell was purple."

While most people believe pearls come from oysters, in fact they can be produced in any mollusk, including snails and oysters, though experts put the odds of finding a pearl in a clam at 1 in 100,000, even greater when you factor in that many people swallow the clams whole without chewing, thus potentially swallowing a down payment on a new home. The Sun Hamburg, NY

The Coming Arctic Invasion: According to climate models of the Intergovernmental Panel on Climate Change, which monitors global warming and its effects, the Arctic Ocean will become virtually ice-free by 2050 as global warming continues. And many climate experts and scientists, including Geerat J. Vermeij of UC Davis and Peter D. Roopnarine of the California Academy of Sciences in San Francisco calculate that it's likely to be under way in little more than 20 years.
In fact, there's evidence that some of that invasion from sea to sea by more primitive organisms has already begun, but the other way around - in this case, from the Atlantic to the Pacific.

British oceanographer Chris Reid of the Hardy Foundation for Ocean Science in Plymouth was monitoring tiny creatures called diatoms in the waters of the long-familiar Northwest Passage nine years ago. He discovered a species of diatoms in the Northwest Atlantic that had never been seen there before but is native to the northern Pacific.

Diatoms are one-celled plants and are the most common organisms in the masses of oceanic plankton that make up the basis of the oceans' food webs and the entire ecology of the seas. The species Reid spotted is called Neodenticula seminae, and an article in the journal Nature quotes Reid saying: "We were very familiar with the species in the Pacific, but we had never seen it in the Atlantic before - it took awhile for us to realize the significance."

In an interview, Vermeij said that neither he nor Roopnarine had been aware of Reid's 1999 discovery when they reached their own conclusions from the fossil evidence of the ancient invasion and from current DNA studies of varied shellfish species in both oceans.

"But it looks like the invasion may have already begun," Vermeij said.

Studying the fossils of marine organisms from 3.5 million years ago, the two California paleontologists saw that water from the Pacific Ocean must have been flowing north through the Bering Strait and into the Arctic Ocean where the ice had cleared and food was abundant. From there, hundreds of Pacific marine species moved into the warm North Atlantic to "colonize and enrich" the sea there, Vermeij and Roopnarine concluded.

"But a million years later the ice age returned in the far north and put an end to all of that," Roopnarine d. "The Arctic Ocean, covered densely with ice again, became virtually a desert."

Now that the northern seas are warming and a new mass migration of marine species is in the offing, "there's a fair likelihood the invasion might generate new fisheries," Roopnarine said. "Extinctions are unlikely, and there might be a cascading increase in abundance, perhaps, but that's not easy to predict."

Vermeij agreed. "Invasions like this can increase the genetic diversity of many species," he said, "and in the long run we'll see a lot of new hybrids." San Francisco Chronicle Aug 10

Memory: Stay Sharp by Eating Liver and Shellfish: If you want to keep your memory into ripe old age, eat plenty of liver and shellfish. Vitamin B12, which is found in these foods, is one of the most important for maintaining a healthy brain.

People who have a low store of B12 are six times more likely to suffer from brain shrinkage, a new study has found. It's reckoned that 40 per cent of people are deficient in the vitamin, and the problem is particularly bad among the elderly.

The study, carried out by Oxford University, examined a group of 107 people aged from 61 to 87 years. Lead researcher Prof David Smith says: "The rate of shrinkage of the brain as we age may be partly influenced by what we eat." Brain shrinkage has been associated with dementia and Alzheimer's disease.

Aside from supplements, liver and shellfish are very rich sources of B12. Neurology, 2008; 71: 826-32

Sea Grant Struggling to Avoid Staff Reductions:

Job vacancies at North Carolina Sea Grant won't be filled due to budget constraints.

Some North Carolina Sea Grant (NCSG) employees are paid with federal funds, and others with state funds.

NCSG received $1.68 million from the National Oceanic and Atmospheric Administration this year to fund research, outreach, and education programs.

The program also received around $763,000 from the North Carolina legislature, an amount that has not increased in the last decade.

"We've received notice that we've fallen below the percentage of federal dollars that are required to go towards research, so we need to increase the level of research projects," explained Mike Voiland, NCSG executive director.

With a higher percentage of federal dollars slated for research, less money will be available for employee salaries.

Voiland said the program is not filling positions when staff members retire or resign. One position in the program's communications division has been vacant since early summer when
a long-time employee retired.

"With no substantial increase in state funding, it looks like we could lose two or three additional positions," Voiland said.

Voiland said the agency would do everything it could to avoid having to close the Manteo, Wilmington, and Morehead City extension offices. *Outer Banks Sentinel*

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