

# CHESAPEAKE QUARTERLY

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Terrapins  
*The Fall & Rise*

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CHESAPEAKE  
QUARTERLY

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**Cover photo:** The diamondback terrapin is known as the mascot of the University of Maryland College Park and the official state reptile. This particular diamondback is known as Patsy, and she was rescued by Marguerite Whilden of the Terrapin Institute and Research Consortium. PHOTOGRAPH BY JOHN CONSOLI. **Opposite page:** Naturalist Willem Roosenburg has been catching and often recatching terrapins in creeks off the Patuxent River for 22 years. He is holding a female terrapin that he's caught before as part of a long-term study documenting some of the threats to her survival.

# RETURN OF THE A Natural History of Two

Maybe you can go home again, at least if it's summer and home is Southern Maryland. It's early June and Willem Roosenburg is heading out towards the river he grew up on. He's steering a small skiff along Washington Creek, a short, muddy-looking branch of the Patuxent River. The 49-year-old biologist is back from his teaching job at Ohio University and he's doing what he did first as a kid, then as a graduate student: he's looking for turtles.

It's the first day of his summer turtle-catching season, and under his wide-brimmed hat, Roosenburg sports a round face, a goatee, and the smile of a big kid let out of school. As he glides the skiff up to a fyke net, one of several he set out two days ago, he immediately starts an introductory lecture to a boatload of four assistants. Out on the river, he's still playing the teacher. Two of his assistants are undergrad students from the University of Maryland where a diamondback terrapin named Testudo is the school mascot. They've heard the lecture before and begin hauling the net aboard.

His other assistants are hearing his talk for the first time. They're field biologists just arrived from faraway Myanmar, sent here for training by the International Turtle Alliance and the Wildlife Conservation Society, organizations alarmed by the possible extinction of turtles in Asia. Back in Myanmar, naturalists are organizing conservation and restoration programs focused on the Burmese roofed turtle. This is the biologists' second day in Southern Maryland and their first experience with emptying fyke nets.

The fyke net, a long, baglike cylinder, lies submerged in shallow water with

several hoops breaking the surface like the humps of a small whale tethered to the shore. In the belly of this whale Roosenburg expects to find a number of diamondback terrapins, the species he's been monitoring along this river for more than 20 years now, a species that's been crawling around rivers like this for longer than humans have been walking on two legs. Turtles shared the earth with dinosaurs and somehow survived the mass extinction that wiped them out. Sometimes the race is to the slow.

"Let's show you how to get these turtles out of the net," Roosenburg tells his Myanmar assistants. As the net comes out of the water, several diamondbacks are clawing their way along the sides, their heads sticking through the net and swiveling on narrow necks like periscopes scanning for enemy ships. Most of them lose their grip and tumble backwards.

"You first go to the back of the net," Roosenburg says, "and you need two people." His helpers, Khin Myo Myo and Kyaw Moe, grab the back end and begin shaking out the net. A small pumpkinseed sunfish and several perch are soon flopping along the bottom of the boat. And crawling among them are seven terrapins.

Roosenburg picks up one of the larger terrapins, a female with a bright yellow bottom and a distinctive diamond pattern on the back of its shell, and holds it out. "Somebody want to hold her?" he asks. "She's a female. You can actually feel the eggs inside it, little hard round things that dimple." Myo Myo takes the turtle and hesitantly inserts her fingers under the shell. "I think she's probably 30 years old. And she's marked," he says pointing to notches along the rim of her shell.

# NATIVE *Local Species*

Michael W. Fincham

He put those notches there himself when he first caught this same turtle years ago, and those notches tagged her with a numerical ID that will stay with her the rest of her life. “This one’s ID is 1R2R4R11R9L,” he says, reading first the right side of her shell, then the left.

On this bright June morning, Roosenburg and his crew pick 24 terrapins out of five fyke nets along two muddy creeks and 18 of them are clearly marked recaptures. They also find a number of blue crabs and fish, including a hogchoker, which unleashes a lecture on the nomenclature of local species. The crew gets lessons on bagging terrapins and numbering the bags according to location. Field notes on time and date and site of each capture go into a yellow notebook.

This mark-and-recapture study is one of the reasons biologists come this far to work with Roosenburg. For more than two decades, he’s been catching and notching turtles along these creeks. He’s doing natural history, a traditional form of science that features time-consuming field work, close observation, and obsessive record keeping, all aimed at a fulsome description of organisms and their survival over time in their natural habitat.

In his records are some worrisome signs. Roosenburg has not been catching as many turtles as he did just 10 years ago. Is Maryland’s diamondback terrapin, like the



Burmese roofed turtle, rapidly becoming an endangered species while hardly anyone's watching?

Long-term records that track population trends are rare now in estuarine biology. They're rare because they're rarely funded. For his turtle work on the Patuxent, Roosenburg has been funded well for only seven of 22 summers. His research has been largely self supported. Are natural historians like Roosenburg also becoming an endangered species?

Natural history may be dying out, much like some of the animals it once described in such loving detail. That, at least, is the argument put forward by a number of scientists and philosophers of science who would revive the discipline. They point to the encroaching popularity of newer fields, such as cellular biology, molecular biology, systems ecology, and mathematical ecology. Scientists in those fields are seen as rising stars working in cutting-edge research, a perception that leads to generous funding for newer fields and skimpy support for "old-fashioned" fields like natural history. Universities, of course, have a natural tendency to follow the money, hiring scientists in hot fields in hopes of bringing in larger grants that will help pay the bills. It's one of their survival strategies.

The results of this trend were spelled out in pessimistic detail several years ago in "The Impending Extinction of Natural History," an essay published in *The Chronicle of Higher Education*. As universities fill up with specialists in the new fields, those specialists are not likely to hire junior faculty in older fields like natural history. A cascade of decline can follow, similar to declines seen when wildlife populations are driven out of their breeding grounds. "The natural historian has been pushed to the margins of academe," wrote the co-authors of the essay, David Wilcove, a conservation biologist, and Thomas Eisner, a pioneer in the field of chemical ecology. "The de-institutionalization of natural history," they write, "looms as one of the biggest scientific mistakes of our time."



John Consoli

## Diamondback Terrapin *Malaclemys terrapin*

The diamondback terrapin is the only North American turtle that lives exclusively in the brackish waters of estuaries, bays, and salt marshes. The carapace of each animal has markings as unique as a zebra's stripes or a human's fingerprints and the pattern on its shell gives the diamondback its name.

The subspecies found in Chesapeake Bay, the Northern diamondback terrapin, grows larger than any other diamondback. Males can reach six inches, while the generally larger females may grow up to nine inches. Terrapins primarily eat mollusks such as snails, clams, and mussels, their strong, sharp beaks allowing them to break their prey's hard shell.

Though terrapins can live longer than forty years, very few of the eggs laid actually survive the first year. Predators such as foxes, raccoons, and skunks prey on eggs and juveniles. As diamondbacks mature, threats largely shift from natural predators to human-induced challenges, such as fishing pressure and damage from boat propellers.

Natural history today is only seen as useful if the animal it studies is useful. The blue crab supports an important commercial harvest in Chesapeake Bay, and so does the striped bass, and once upon a time, so did the native oyster — all species that have been and still are well studied. But what's the economic payoff from natural history on species like the diamondback terrapin? When Christopher Norment, an expert on the Harris sparrow, applied for a job at a small university, he got the tough question about natural history: "What good is your research?"

Another rap against natural history is that it seems to offer no "theoretical fix," according to Mark Sagoff, a philosopher and critic of theoretical ecology. Science that promises to deliver (eventually) a theory about how a whole ecosystem works is more likely to get funded. System-wide theories seem more "useful" for managing

complex ecosystems than detailed descriptions of an individual animal — unless that animal is a force in how the system functions or malfunctions. "What we really have to do," says Sagoff, "is find out how terrapins are an umbrella species or a keystone species or a nail-in-the-coffin species. Or any metaphor you like." Then terrapins might be worth saving — along with the natural historians who study them.

Such seems to be the naturalist's dilemma in the contemporary science climate: How do you run a long-term, largely unfunded study of a low-profit, low-theory animal? And what good, after all, is your research?

Roosenburg is lecturing again, and this time everybody is listening. He and his assistants and five bags of turtles are crammed in a small field lab, getting ready for their first data-recording session of the season. Their makeshift lab is a small dark room in a red brick outbuilding that might have been a horse stable once upon a time.

The lab sits on a large farm estate that holds a number of barns as well as two small cabins where the student assistants bunk and a creekside house where Roosenburg and his family spend their summers. The whole setup comes with a low rent to Roosenburg and his crew, thanks to the good will of a long-time landowner who likes the idea of a local scientist doing long-range natural history on a native species.

That's part of the secret behind Roosenburg's success in running a long-term study of a low-profit animal: he uses low-cost lab space and low-cost help like biologists from Myanmar and undergrad students from Ohio University and the University of Maryland.

His students are eager, but untrained. Hence all the lectures. "You're looking at a turtle that is probably twice as old as you guys are," Roosenburg tells his assistants, holding up a large female that was at least 15 to 20 years old when he first caught her in 1988. For this turtle and for every other one that comes out of his

nets, he wants a dozen data points recorded, including time and place of capture, carapace length, width, height, mass, sex, and age. If it's a first-time turtle, he will give it an ID, notching its shell with a drill and file. If it's a recapture, he wants the ID recorded along with any changes in size and condition. Everything goes into the computer, into the database.

As Roosenburg holds her, the turtle keeps twisting in his hands, oblivious to his lecture on field data, her claws paddling the air as she tries to crawl back to her home river. She's clearly a survivor, with the scars to show for it. "This is from spending a lot of time in pound nets," he says pointing to scrape marks along her legs. That goes into the computer also.

One fact comes out of the computer immediately: this 40-something female has shown up in Roosenburg's nets 14 times in 20 years. Recapture rates like this are good news for the naturalist because every time this turtle reappears in his nets, she adds a new data point, making his demographic records even more robust. To date he has more than 30,000 captures of more than 10,000 terrapins.

Other facts come out: this lady terrapin seems to have lived her entire life within three miles of here. Four decades ago her mother dug a small hole, probably in sandy soil along a local creek, perhaps urinating to soften the ground. There she laid her eggs, a baker's dozen in most cases. Life in a turtle nest is either quiet or catastrophic — with catastrophes coming in the form of foxes or raccoons, both adept at sniffing out turtle urine and digging through the sand to feast on turtle eggs. The hatchling that grew into this hefty female first came crawling out of a lucky nest as a tiny turtle, pea green and perfectly formed — but still easy prey. Like most females, she outgrew every male in the river, but did not reach sexual maturity until age eight or later. Thanks to her size she survived foxes and raccoons; thanks to luck, she survived watermen's nets and motorboats, two of the leading killers for large terrapins.

Every November or December, she hibernated, swimming to the bottom of a

*Shipping his oars, he leaned over and suddenly saw turtles gliding under and around his boat, turtles by the dozens.*

*He was floating through a herd of hundreds.*

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small, deep creek and digging herself into the mud for a long winter's sleep. Scientists call this brumation rather than hibernation, but by any term it's a neat trick for an air breather who normally likes to sun herself on rocks and tidal flats.

Once past puberty she began mating with male terrapins, and several times a year she dug her own nest and laid her own clutch of a dozen or more eggs. Each year, however, she found fewer nesting beaches as new homes replaced old farms and new owners put in more riprap and bulkheads and docks along their waterfronts. How many offspring from this 40-year-old are likely to survive? According to Roosenburg's numbers, perhaps one in a hundred.

Pausing in his lecture, the naturalist looks the terrapin dead in the eye and smiles. It's not clear whether the biologist is catching the turtle or she's catching him. "Hey babe, how you doin'?" he asks, one survivor to another. "Welcome back."

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Like his lady terrapin, Willem Roosenburg grew up on this same river. The biologist is the son of a biologist who also worked the Patuxent. Bill Roosenburg was a field worker at a small field station that the Chesapeake Biological Laboratory established at Hallowing Point. On a nearby bluff above a farm, Bill Roosenburg built a home with a view of the river where young Willem spent much of his free time. He hung around with biologists and grad students at the station, hitchhiked rides on the research boats, and learned to pull sampling nets. Like the sons of local watermen, he also learned to fish and boat and trotline for blue crabs. Rowing on the river one day,

he spied small, dark bobbleheads popping up, then disappearing. Shipping his oars, he leaned over and suddenly saw turtles gliding under and around his boat, turtles by the dozens. He was floating through a herd of hundreds. An accidental vision that proved prophetic.

After high school he left to become a biologist, starting the long, slow swim towards a Ph.D. When he was finally a doctoral candidate at the University of Pennsylvania, he went looking for a dissertation topic and a site for his field research. He thought again about the Patuxent. His father was there and now he was struggling with health problems. And all those turtles were there.

He began with a proper Ph.D. question: did ground temperature in the nest determine the sex of the hatchlings that emerged? It was an odd phenomenon, one found in other turtle species, but not documented in terrapins. In most animals, of course, sex is determined when an egg is fertilized, not when it sits buried in a nest much later. It was a question he would study in the field and later in the lab, working with biologist Al Place at the Center for Marine Biotechnology of the University of Maryland Biotechnology Institute in Baltimore.

During his first summer in the field, he worked completely alone, setting out fyke nets, catching and marking terrapins, tracking down nest sites, and checking the sex of little pea-green hatchlings as they came crawling out. It was a ragtag operation, but it was a start. When he came back for a second season, he was surprised by how many recaptures he was finding in his nets. That revelation opened the door to other research options, demographic studies exploring how local history and ecology create variations in life history traits. By the end of his third summer he was hooked. He realized he could do this the rest of his life.

After graduate school his life fell into a familiar rhythm. Fall, winter, and spring, he hibernated at Ohio University digging out his own niche in an academic habitat. He taught classes in ecology and evolution, supervised graduate students, and



published well. Every summer, he packed up the family for the annual migration back to his home river. At the beginning of every summer the same question from the kids: why do we have to spend every summer in Maryland?

“To be quite frank with you, I love doing field work,” Roosenburg admits. He’s working his way through his sandwich at a picnic table next to his summer house. Lunchtime at his turtle camp is a do-it-yourself affair where he stocks the kitchen with bread and cold cuts and everyone makes his own. For the crew it’s break time between finishing the lab work and hauling the turtles back out to the river where they’ll be released to go look for their own lunch.

Field work like this has its joys — and its sorrows, the kind of emotional complexities rarely found in lab-based experiments or computer-based ecosystem modeling. For many in the natural history tradition, the joys can be seen in their writings, whether it’s Thoreau poking around Walden Pond, Darwin picking up plants in Patagonia, or Aldo Leopold tending his Sand County farm in Wisconsin. The same joys can be heard in Roosenburg’s lunchtime talk about tracking terrapins along the Patuxent. “I love

being outside,” he says. “That’s the most important reason why I am a biologist.” But the sorrows are there also. Field work in the 21st century has a flip side: a working naturalist often comes face to face with the decline of the animals he’s studying.

The best summers for Roosenburg — as a scientist and a Southern Marylander — were the seasons he spent working together with local watermen, catching fish in bank traps under his own commercial license and catching turtles for his research project. Bank traps are tall box-like cages that watermen use for catching gizzard shad, catfish, yellow perch, and peeler crabs. These large wire cages sit out from a river bank, sticking up out of the water at the end of a long stretch of net that runs directly out from the shore. When fish and crabs and muskrats and turtles are cruising the shallows, they encounter the net and try to swim around it. Their detour lands them smack in the bank trap.

For a turtle, a bank trap is usually not the worst fate. A proper trap stands tall enough that its top sticks up out of the water, even at mean high tide, and air-breathing animals like turtles can rise up, stick their periscope-like heads above the water, and breathe. If the trap is not tall

enough, however, or if the waters rise too high on a wind-driven tide, or if watermen don’t check the trap regularly — then turtles and muskrats and others can easily die. Working with a local waterman, Roosenburg would pick live turtles out of the traps, haul them off to his field lab to record data, then return them lovingly to the water.

For the terrapin biologist, the bank traps were a bonanza. The income from his commercial catch bought fuel for the boat and paid room and board for his field assistants, and the turtle catches added data to his growing demographic study of the species. On good days he was taking more than 100 turtles out of 35 bank traps. On his best day he hauled home 196 turtles, nearly all of them large females. Turtle bags completely filled the back of his pickup truck, and two teams of assistants had to spend eight hours recording, measuring, and marking before heading back out in boats in the middle of a northeaster to get the turtles back in their home waters. Hard work every day, but for a Southern Maryland boy, it was the best of two worlds: he could be a waterman and a scientist at the same time.

One of those worlds came to an end with the great bank trap war of St. Mary’s County. It was a war between watermen



## Terrapins on the Patuxent

Kyaw Moe, a field biologist from Myanmar, learns how to handle a fyke net. He's pulling diamondback terrapins out of a creek off the Patuxent River that's now lined with large homes and new lawns where terrapins used to nest. He's here for training with Willem Roosenburg (center), a biologist who's been running a long-term research project on his hometown river. Helping with his mark-and-recapture study are Margaret Lilly and Tom Parker, students from the University of Maryland where the terrapin reigns as the school mascot. Each diamondback is notched with a long-lasting ID, then weighed and measured, sexed and aged — and finally released back into the river. Over 22 years Roosenburg has more than 30,000 captures of more than 10,000 terrapins.

PHOTOGRAPHS BY MICHAEL W. FINCHAM.

and landowners. As waterfront farms along the Patuxent gave way to new homes with large, well-mowed riverfront lawns, many of the *arrivistes* from the cities and suburbs began complaining. These odd-looking bank traps with their stakes and nets were spoiling the view from the lawn. While some watermen were willing to move their traps away — some were not, citing fishing rights that date back hundreds of years. It was the kind of culture clash, full of ironies, that has become familiar in the tidewater regions of Maryland.

Caught in the cultural crossfire were the scientist and the terrapin. As the battle heated up, moving from local disputes towards legislative action, Roosenburg lobbied to keep the bank trap tradition alive, partly out of friendship with watermen, partly out of self-interest in his large turtle hauls, partly out of fears for what would follow. He even ran a large study of bank traps for the Maryland Department of Natural Resources (DNR) that identified ways to make them even more turtle safe.

When watermen lost the bank trap battle, Roosenburg's worst fears soon came true. After the legislature banned bank traps in St. Mary's County in 2001, watermen turned to fyke nets as they

warned they would, and turtles began dying in larger numbers as the scientist warned. Fyke nets don't stick up above the water unless a float is inserted to create space for air breathers. Roosenburg would keep floats in his nets, watermen would not.

The scientist lost his large turtle hauls as well as some long-standing friendships with watermen. When DNR officials caught watermen illegally keeping blue crabs caught in their fyke nets, the agency also closed down their commercial fyke nets. That left the biologist as the only legal fyke netter, a fact that enraged some local watermen who immediately blamed Roosenburg, sometimes confronting him on his collecting trips. "They swear that I was the one that turned them in," he says. "Somebody else called them in and I took all the heat for it."

The summer of 2001 was the low point. The crisis dissolved his friendships, a loss he regrets. "I'm from Maryland, I admired the waterman's way of life," he says. "That was friendship that I cherished." Bank traps were gone, watermen were angry, an oil spill was killing turtles, populations were dropping, his father was dying. "That all happened in one bang," he says. "Those were the dark days of my life."

Maybe you can go home again, but you can't step twice in the same river. On Roosenburg's river, farms were giving way to new houses, nest sites were disappearing, winter oystering was hitting new lows, and more watermen were turning to turtle catching. By 2001 terrapins were also facing dark days.

Roosenburg, however, was already quietly at work in another kind of war, a gathering campaign to save the estuary's oldest inhabitant. One of his projects highlighted the huge threat from recreational crab potting, an old-time tidewater tradition. It documented turtle deaths by drowning in all those crab pots hanging off all those community and private docks. According to Roosenburg, these accidental kills probably wiped out turtle populations decades ago in many rivers. Another project designed and tested bycatch reduction devices, now required by law, that can keep turtles out of these lethal pots. Yet other projects explored ways to make bank traps safer and tested fences for keeping predators off nest sites.

Findings like these came out of natural history work that went beyond classic observational surveys to include field experiments, hypothesis testing, and

# Poplar Island Success

Poplar Island nearly vanished from sight before the Army Corps of Engineers began building dikes for storing dredge material dug out of the shipping channels of Chesapeake Bay. Now the man-made island with its new wetland cells is becoming home to thousands of terrapins who are finding safe nests for their offspring. To keep track of births on the site, field technician Ryan Trimbath (below) and another assistant patrol the island during nesting season. When they find a nest, they dig it up, count the eggs, then cover them again, and flag the site. Fifty days later they ring the nest with aluminum flashing, creating a little terrapin corral to keep hatchlings from wandering away. When the hatchlings finally crawl out, Trimbath captures them for weighing, measuring, and tagging. The survival rate for these nests is running in the 70 to 80 percent range — happy news for biologist Willem Roosenburg (right) who releases hatchlings back into the wetlands.

PHOTOGRAPHS BY MICHAEL W. FINCHAM.



mathematical modeling of populations. This kind of natural history work could clearly have payoffs for conservation — at least if its findings are applied.

One of his key findings was applied when Maryland terrapins suddenly faced a new threat. The trouble began not in the Chesapeake but in China, a country that began importing more turtles in the 1990s for consumers who had long valued turtles for their meat and their alleged powers for fighting cancer, enhancing virility, and extending longevity. The fast-growing China trade began decimating turtle populations in

Myanmar, Vietnam, Borneo, Java, and Sumatra. Conservationists called it the “Asian turtle crisis,” and began warning that an American turtle crisis could be next.

In Maryland local groups began lobbying the legislature to close down the commercial fishery for diamondback terrapins. They pointed to incomplete harvest records that showed a fishery that was still small — but ready to explode. For 2002 DNR estimated a harvest of only 151 terrapins. Four years later, however, with only 14 watermen working the fishery, the harvest jumped to 11,010 ter-

rapin taken. The China trade could now quickly draw dozens or hundreds of watermen into the terrapin fishery and set off a turtle fishing boom that could prove disastrous.

The new lobbying campaign lasted several years with Roosenburg playing an advisory role — low-key, but persistent. As a member of the Chesapeake Terrapin Alliance, he was one of several scientists arguing that terrapins — because they are late-maturing, low fecundity animals — are easy to overfish. “He was quietly advising us that this was not a species that needs a fishery in the face of a declining

spawning habitat,” says Harley Speir, a fishery manager for DNR, the agency caught in the middle between conservationists, watermen, and legislators. In 2006, the campaign won a partial ban based on turtle size — and the harvest actually jumped. The next legislature enacted a complete ban on the commercial harvest of the diamondback terrapin. A new governor, Martin O’Malley, quickly signed it into law.

Some of the clinching evidence came from Roosenburg’s work. Called to testify before legislators the biologist spelled out a take-home message from the only long-term study of terrapins in the Bay. In the last 10 years, terrapin populations had already declined 75 percent in his home river, said Roosenburg, with hardly any commercial harvest in the region. A boom in the harvest could quickly drive the species down for decades.

Local research carries weight because it is local, suggests Speir. “It was significant,” he says of Roosenburg’s research. “It was the only real data we had for this area.”



Willem Roosenburg kneels down next to a canal-like creek and pulls three little green hatchlings out of a bag. He sets them gently on a small, stony beach bordered by thick, high-standing marsh grasses. The hatchlings stand motionless for a good 30 seconds, then one clambers over a stone, slips into the water and begins waving its legs like it wants to swim. The other two look around, then clump off towards the marsh grass.

The biologist snatches them up and plunks them back at water’s edge where they glance around again, then finally take the first plunge. “Okay guys, have fun,” says Roosenburg. “See you in a few years.”

It’s his last field day for the summer, and he’s spending it on the eastern side of the Bay on Poplar Island, the site of his second field research study. Once stretching over 1,000 acres, Poplar Island broke apart with time and erosion and land subsidence, dwindling to three smaller islands totaling less than 10 acres. Since

1998, the Army Corps of Engineers has been diking and filling to construct a large artificial island and dumping ground for all the dredge material that is dug out of the shipping channels of Chesapeake Bay every year. One key question for the Corps: can this new/old island also become a habitat for birds and, perhaps, for terrapins? That’s why Roosenburg is here.

To keep track of terrapin births on the site, the biologist has two assistants work the island every day. Ryan Trimbath and Tony Frisbee, both blond and slightly sunburned, patrol the island’s new wetlands, looking for nests, capturing and tagging and releasing hatchlings. Everything — the number and location of nests and hatchlings — goes into notebooks and then into the computer.

Answers are already coming out of the database they’ve built, answers that bode well for Roosenburg’s hopes for a terrapin restoration. Back in the Patuxent, he was finding survival rates running about one hatchling per hundred. Here on Poplar, he’s getting survival rates of 70 to 80 percent. No commercial harvesting for the China trade, no foxes and raccoons, no riprap and bulkheads blocking off the beach, no crab pots and bank traps and fyke nets to drown in. The only predators so far seem to be birds. If these survival rates keep up, the Corps could rename the place Turtle Island.

After his dark years on the Patuxent, the Poplar Island experience has been hope-inducing for Roosenburg. When the Corps first approached him about monitoring terrapins on a manmade island of 1342 acres, he had his reservations. “Now that I’ve looked and seen those wetland cells,” he says, “you’d be pretty hard pressed to tell the difference between them and other wetlands here on the Eastern Shore.” Poplar will double in size over the next decade, and restored islands like this could indeed swell Baywide terrapin populations.

What does Poplar Island mean for the mainland? The experience here stands as a rough “proof of concept” for some key steps that could be tried elsewhere. The

## Some Natural History Classics

“It is a commonplace of all religious thought, even the most primitive, that the man seeking visions and insight must go apart from his fellows and live for a time in the wilderness. If he is of the proper sort, he will return with a message.” So wrote Loren Eiseley, the scientist who made himself a great American writer. For several centuries natural history writers of the proper sort have ventured into America’s natural world and returned with messages that helped shape the country’s science and literature as well as its conservation and environmental movements.

Henry David Thoreau, *Walden*. By the writer who made himself a natural historian.

George Perkins Marsh, *Man and Nature*. An early effort at ecological thinking that helped launch the modern conservation movement.

John Wesley Powell and Wallace Stegner (editor), *The Arid Lands*. A report on the land beyond the hundredth meridian by the geologist who made several famous explorations of the Colorado River.

John Steinbeck (with Ed Ricketts), *The Log from the Sea of Cortez*. The tale of a trip to collect flora and fauna of the intertidal zone of the Baja, by a famous novelist and his best friend, the marine biologist who became the central character in several novels.

Aldo Leopold, *Sand County Almanac*. Its chapter on “The Land Ethic” profoundly influenced the literature of environmental ethics.

Loren Eiseley, *The Immense Journey*. Natural history that takes the long view, and does so lyrically.

Rachel Carson, *Silent Spring*. The book that helped outlaw DDT and inspired the modern American environmental movement.

John and Mildred Teal, *The Life and Death of a Salt Marsh*. The ecology of the salt marshes that edge the East Coast from Newfoundland to Florida.

William Warner, *Beautiful Swimmers*. A natural history of blue crabs and the watermen who chase them.

Christopher Norment, *Return to Warden’s Grove*. A new classic by a scientist who traveled to the Northwest Territories to study the Harris sparrow and learn about himself.

## More on the Terrapin

Chesapeake Terrapin Alliance,  
[www.cterrapin.org](http://www.cterrapin.org)

Diamondback Terrapin Working Group,  
[www.dtwg.org](http://www.dtwg.org)

Terrapin Institute and Research Consortium,  
[www.terrapieninstitute.org](http://www.terrapieninstitute.org)

ban on commercial harvesting will help, says Roosenburg, but more is needed. Watermen could check their bank traps and pound nets and fyke nets regularly (as many already do), recreational crabbers could fit their pots with bycatch reduction devices (as they are now legally required to do), landowners could begin replacing riprap and bulkheads with “living shorelines” that are graded and vegetated (as some are doing already). These may look like baby steps, but they are a start.

They could slowly bring more terrapins back to the mainland rivers where they were always part of the life and spirit and sense of place in tidewater Chesapeake, a world where a boy in a boat could look down and see hundreds of terrapins passing by.

Reaching into a long, tan bag, Roosenburg grabs another handful of little hatchlings and holds them up for picture-taking. This morning’s launch is being staged for two writers, two photographers, and a videographer. The new harvest ban seems to have stimulated more press interest, both in the diamondback terrapin and in the biologist who’s built a career trying to save them.

Roosenburg has only 15 hatchlings to release this morning, but it goes slowly with frequent retakes and multiple camera angles. Each baby terrapin gets a well-photographed *bon voyage*. “When we have 150 of these to release,” the biologist chuckles, “there’s a lot less ceremony.”

Finally he pulls the last terrapin from the bag, the last release for Roosenburg’s summer before he migrates back to academe. Atop a small grey stone, the lone diamondback stands its ground, tiny and charismatic and eerily confident, the newest apparition of the oldest animal life in the estuary.

“He doesn’t want to go,” says Roosenburg. “He likes it here too much.”

— email the author, [fincham@mdsg.umd.edu](mailto:fincham@mdsg.umd.edu)

# The Men Who Would

## *How Grand Plans for the Lowly Terrapin . . .*

Michael W. Fincham

**T**he man who first made a lot of money off terrapins in Maryland arrived in Crisfield in 1887. Albert T. LaVallette Jr. moved to town with his new wife and began buying terrapins from local watermen and selling them to high-end restaurants in cities like Baltimore, Philadelphia, and New York. He set off the first great boom in terrapin fishing in the Chesapeake Bay, emerging as the “Terrapin King” of Crisfield and turning Crisfield into the terrapin capital of the east coast.



The man who made terrapins even more famous in the state grew up in Crisfield during that boom. Harry Clifton “Curley” Byrd, the son of an oysterman, was born in 1889 and left town in 1905, riding a steamboat across the Bay to enroll at College Park as a cadet at the tiny Maryland Agricultural College. He became a star athlete there, then the football coach, then the president of the University of Maryland. In the process he helped transform the College Park school into one of the largest and fastest growing universities in the country.

The king and the coach probably never met, but the two men had much in common. Both were ambitious, with big plans, flamboyant personalities, and colorful private lives. And both altered the fame and fate of diamondback terrapins in Maryland.

**A**LBERT LAVALLETTE JR. was probably born ambitious. His grandfather was a well-known admiral and his father a successful businessman, according to the family history unearthed by Eugene L. Meyer for *Chesapeake Bay Magazine*. Grandfather Elie LaVallette VI had commanded the *U.S.S. Constitution*, the warship famous in history as “Old Ironsides,” and was eminent enough to have two naval destroyers and a town in New Jersey named after him. LaVallette’s father, Albert Sr., worked in land development and was shrewd enough to talk some Philadelphia investors into forming the Manokin River Oyster Company near Crisfield.

LaVallette Jr. came to Crisfield with a clever plan. The town was already wildly busy with booming oyster businesses and a traditional blue crab fishery, so LaVallette focused his money-making schemes on the diamondback terrapin, an unexploited species that was prolific in the abundant shallows and marshlands of the lower Eastern Shore. Long seen as poor people’s food, turtle meat had been eaten by early colonists, by soldiers in the Revolutionary army, by slaves on tidewater plantations — but seldom by the well-off in the high-end restaurants of the Northeast.

In an early example of niche marketing, LaVallette traveled to cities like Baltimore, Philadelphia, and New York and sold the best-known restaurant in each city on a secret

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**Talent, ambition, and terrapins** brought fortune and fame to two residents of Crisfield, Albert LaVallette Jr. and “Curley” Byrd (above, from left). PHOTOS: LAVALLETTE, COURTESY OF ELSIE BLUHM; BYRD, UNIVERSITY OF MARYLAND SPECIAL COLLECTIONS.

# Be Kings

## Went Somewhat Awry

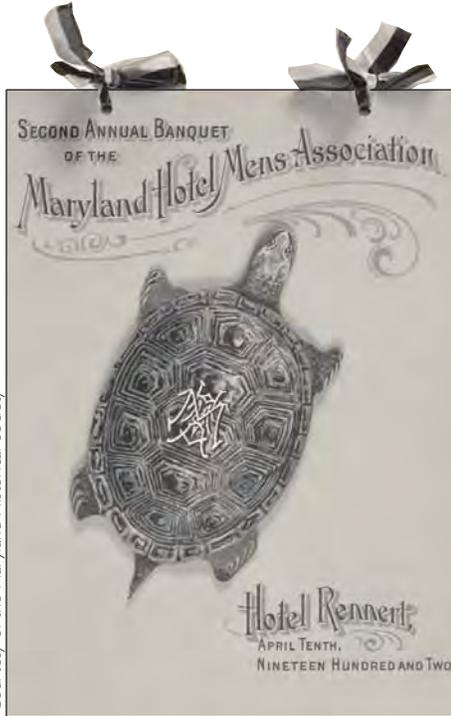
recipe for terrapin soup that he had picked up in the Caribbean. According to Glenn Lawson's account in *The Last Waterman*, each sales pitch included an entertaining performance with LaVallette as chef whipping up his secret soup with considerable flair in the restaurant's kitchen. Under his original deal, one restaurant in each city would have exclusive license to use his recipe, but it would have to charge a high price for the dish. And he, of course, would be the only supplier. As these elite restaurants advertised their exclusive LaVallette's Diamondback Terrapin, they created a strong brand that LaVallette later capitalized on. When it came time to renew the contracts, he expanded the market, making his now well-known recipe available to other restaurants in each town. He also raised his prices. Back in Crisfield, the terrapin fishing boom was on.

WHILE CRISFIELD WAS BECOMING — however briefly — the terrapin capital of the country, young Curley Byrd was making money for college by dip netting for crabs, according to a local historian, and could often be seen running barefoot on the tidal flats, training for the track team. After graduating from the local high school, he arrived in College Park with plans. At the Maryland Agricultural College he listed his goal — perhaps in jest — as “becoming a star athlete,” and he achieved the feat in three sports. In football he was quarterback and captain, in baseball he was the top pitcher, in track he set long-standing sprint records. Byrd was also popular with his classmates, who thought him clever and — with his curly black hair — handsome. Under his photo in the 1908 yearbook, a phrase warned: “The devil hath power to assume a pleasing shape.”

After graduating in three years, he left College Park to play yet more football as a ringer at several other colleges and more baseball as a minor league pitcher for a farm team of the Chicago White Sox. By 1912 he was back in College Park as football coach, and under his leadership the Maryland Agricultural College defeated Johns Hopkins University that year for the first time in the school's history, a feat that established his popularity with a new generation of students and administrators.

By 1920 the coach had added two jobs — athletic

Courtesy of the Maryland Historical Society



Terrapins were so popular at the beginning of the 20th century that they were featured on this menu card for a 1902 banquet. The Hotel Rennert (below), located at the corners of Liberty and Saratoga streets in Baltimore, had a restaurant favored by local businessmen and politicians and journalists like H.L. Mencken. Known for fine Southern food and seafood, especially terrapin soup, the hotel kept hundreds of live terrapins penned in the basement. The Rennert shunned Carolina terrapins and served only Chesapeakes, which may have come from Albert LaVallette Jr. No record survives of the exclusive soup recipe that came with the terrapins, but the one listed below contains the basic ingredients included in more recent recipes.



Bygone Baltimore: A Historical Portrait by Jacques Kelly

### Classic Terrapin or Mock Terrapin Soup

- 1 quart chicken or veal stock
- 2 cups terrapin meat, chopped (substitute lean beef or dark chicken meat)
- 1 cup cream
- 2 hard-boiled egg yolks
- 2 tablespoons butter
- 1 tablespoon flour
- 1/2 teaspoon salt
- 1/8 teaspoon paprika
- Dash of mace
- 1/2 cup sherry

Bygone Baltimore: A Historical Portrait by Jacques Kelly



director and special assistant to the president — and he spent a lot of his time in Annapolis successfully lobbying the state legislature to make his old aggie college the home campus for a new University of Maryland. Like Albert LaVallette selling his terrapin soup, Byrd was able to sell the idea of a new university, largely through his immense personal flair. “What he was great at was his personality,” says George Callcott, the historian who recounts the Byrd era in his two histories of the University of Maryland. “He made everybody love him,” Callcott says. “He bent everybody to his will.”

Curley Byrd now had big plans for his university and big problems to overcome. The university was new, it was small, and it did not yet have the loyalty and financial support of tens of thousands of alumni. To most Marylanders, the new state university was still the little aggie school that ranked well below long-established schools like the Naval Academy, Washington College, St. John’s College, Georgetown, and the more recent, but well-funded Johns Hopkins in Baltimore. “There has indeed been a tradition for the socially proper people in Maryland and especially in Baltimore to go to Johns Hopkins or

Princeton or the University of Virginia,” explains Callcott. “And this was always derogatorily called the aggie college.”

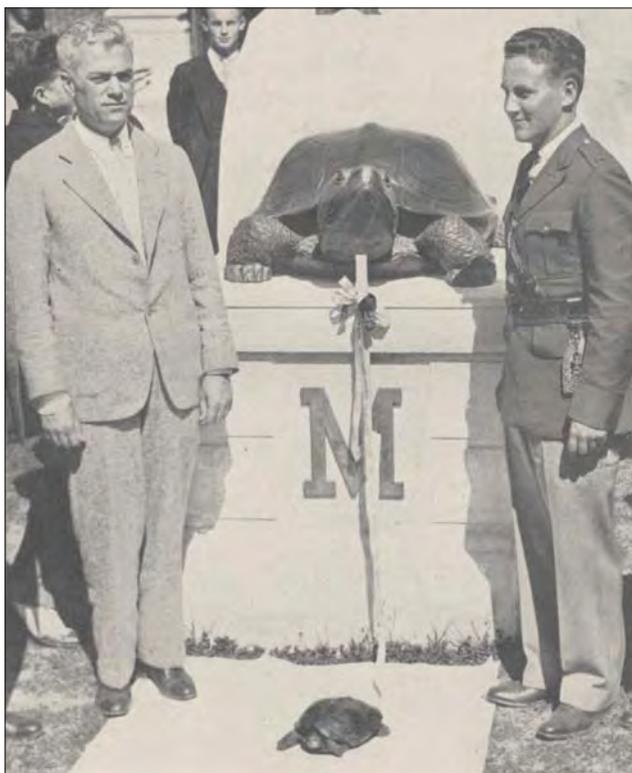
One of Byrd’s strategies for building a new university was building winning teams, especially in football, the college sport that seized the public mind during the Jazz Age. The popularity of his teams helped him in his job as chief lobbyist before a legislature that had no alumni from the new university and few from the old aggie college. “Byrd believed very sincerely, and maybe he was right, that the way for a university to become a great university was for it to become known, for it to become loved by the people,” explains Callcott. “And the best way for it to become known and to be loved by the people was to have winning teams.”

Another way to become loved was to change the name of his winning teams. By 1923 coach Byrd, the son of Crisfield, was calling his team the Terrapins. Most of the newspapers followed Byrd’s lead and gradually dropped old names like the Aggies, or the Farmers, or The Old Liners. It probably helped that Byrd — among his many jobs — was also a sportswriter with the *Washington Evening Star*. And sports stories, then as now, put the university

before the public more than any other form of journalism.

As branding, the new name was as brilliant as one of LaVallette’s best tricks. The terrapin name jettisoned the old down-scale label as an ag and engineering school and rebranded the new university by linking it with a charismatic animal familiar to anybody who lived near or visited the many rivers and beaches of the Chesapeake Bay. Terrapins were known and loved, often as pets for children who grew up to be fans. Maybe the scrappy teams called Terrapins and the university they represented could also be loved.

Students, at least, clearly loved the terrapin connection. Eight years after Byrd renamed his teams the Terrapins, the student newspaper prodded the University into canonizing the terrapin as the school’s official mascot. The Class of 1933 raised money for a large, 300-pound bronze statue and named it “Testudo.” The live model for the statue came from Crisfield, of course, and the bronze Testudo stood for years in front of Ritchie Coliseum where it was the target of kidnappings by raiding bands from Hopkins, Loyola, Georgetown, and the University of Virginia.



**Curley Byrd, the coach,** began calling his football team the Terrapins back in 1923. When the class of 1933 created Testudo, a 300-lb bronze statue (shown at left at its unveiling), the terrapin became the school’s official mascot. The living terrapin that was the model for the statue crawls on the ground. She’s probably headed back to Crisfield where she and the coach both came from. Byrd soon became president of the university and later hired football coach Jim Tatum (below) who brought home a national championship in 1953. Over more than 80 years, the terrapin (opposite page) has worn a few hats and odd clothes and smoked some pipes as the enduring mascot for a rising university. PHOTOS: THIS PAGE AND OPPOSITE PAGE, 1934-1978, UNIVERSITY OF MARYLAND SPECIAL COLLECTIONS; 1994 AND 2003, UNIVERSITY OF MARYLAND.



**T**HE TERRAPIN FISHING BOOM that Albert LaVallette had unleashed around Crisfield made him briefly rich and socially prominent. He built a new home for his wife and two children, a large bungalow on the fringes of town out on Hammock Point. Behind the house were the pens where he stored all the terrapins he bought from local watermen, feeding the animals scraps of crab waste collected from local crab houses.

The boom soon went bust, a classic case of fishing a resource with little or no knowledge of the basic biology of the target species. Terrapins, it turned out, are easy to overfish. The largest and most profitable terrapins are the females who lay only a dozen eggs at a time and don't start doing that until they are eight years old. When watermen quickly fished out most of the females, they drove down population levels in Maryland for decades. In 1891, the new boom had watermen harvesting more than 35,000 terrapins for sale to high-end restaurants. Ten years later, they were harvesting fewer than 70.

By then terrapin soup was still the rage and overfishing episodes were common in many states along the east coast, perhaps sparked by LaVallette's early success in marketing his recipe. Declines in supply, of course, kept the price high for what was becoming a rare delicacy, and the high price kept driving fishing pressure and lowering the supply even more. What finally broke the cycle, according to scientists, was Prohibition. It outlawed the sherry that went into diamondback soup.

As the harvest declined, LaVallette's economic fortunes began to sink. Competitors cut into his market, and some began importing terrapins from the Carolinas and passing them off as "Chesapeake" (much as crabs are shipped in today for use in "Maryland-style" crabcakes).

His personal life took an even more dramatic turn when he began an affair with his children's governess, Mary Bussey. It cost him his family and his house and his life in Crisfield. According to Meyer's account in *Chesapeake Bay Magazine*, LaVallette moved to Hampton, Virginia where he lived for decades on a houseboat with his new love. The local paper called him a "picturesque character" and a vivid story teller, once famous for breeding terrapins. He died a pauper in 1937 and was buried in the Hampton National Military Cemetery.

Terrapin populations in Maryland and many other states took decades to recover from the fishing frenzy LaVallette had helped unleash. Attempts to breed them in captivity were tried in several states, including North Carolina where scientists at the U.S. Bureau of Fisheries Lab in Beaufort were describing the reproductive biology and growth rates that made terrapins so easy to overfish. After the commercial demand for terrapins dropped away, the lab released tens of thousands of hatchlings into the marshes and sounds of Atlantic and Gulf Coast states. More than 500 were released into Maryland waters.

**C**URLEY BRYD'S professional life also took a dramatic turn when the coach of the Maryland Terrapins was appointed president of the University of Maryland in 1935. It was, for the times, a bold decision to pick a football coach with no advanced degrees, a recent divorce, and a reputation for dating attractive women, but Byrd was able to turn both the Depression era and the Post World War II era into boom times for his school. He managed to raise huge amounts of money in these tough times, mostly through his personal charisma and his canny deal-making both in Annapolis and in Washington DC.

His best-laid plans for the Maryland Terrapins eventually backfired. To bring his university back into the public eye after World War II, Byrd began hiring coaches who would take his team to the top of the college football world. The best of them, Jim Tatum, took the team to a series of big-time bowl games and won a national championship in 1953 for Curley Byrd's Maryland Terrapins. The result, however, was a reputation, some say undeserved, that Maryland — at the time the third largest state university in the country — was more a football school than a highly ranked academic institution. When Byrd resigned to run for governor in 1954, his opponents brought the football-school charge into the partisan political debate, a tactic that played a big role in Byrd's greatest defeat.

Byrd later lost races for the Senate and the House of Representatives, but his life as a public official continued. In 1958, he was appointed chairman of the Maryland Tidewater Fisheries Commission, the state agency charged with managing all of Maryland's fisheries. It was an appropriate crown for the son of an oysterman. After he died in 1970, his body was buried in a churchyard back in Crisfield.

The real terrapins of Maryland, the diamondbacks that swam the state's shallow waters and plodded through its wetlands and woods, may have been the unexpected beneficiaries of Byrd's sports teams. As Maryland became more urbanized and suburbanized, fewer Marylanders actually saw many real terrapins. But nearly everyone knew they were there.

Their high profile helped terrapins survive when a new overfishing boom threatened. In the 1990s, China began importing turtles from across the globe, setting off heavy fishing that decimated turtle populations in a number of Asian countries and drove many species close to extinction.



1934-35



1940-41



1953



1964



1978



1994



**Fear the Turtle**

2003

When the China trade reached into the Chesapeake Bay, the commercial harvest in Maryland began climbing dramatically: in just four years the estimated harvest jumped from 151 to 11,010 terrapins taken in 2006.

Conservationists had been warning that a new boom was ready to explode. Maryland watermen, another endangered species, were already struggling through declines in their commercial harvests of blue crabs and oysters. With rising prices from the growing China trade, watermen could start flooding into the terrapin fishery again, setting off a harvest frenzy that could rouse LaVallette's ghost from his grave.

In 2001, when conservation groups were banding together to campaign for a fishing ban, they found that the terrapin had a lot of fans in Maryland, thanks in part to Curley Byrd's university. By a fluke of timing, the University of Maryland in 2003 began republicizing its historic mascot, the diamondback terrapin, by launching a new, well-funded "Fear the Turtle" marketing campaign, complete with T-shirts and posters and television spots.

Through the wizardry of digital graphics, the campaign could move beyond cartoon terrapins to create dramatic, yet realistic versions of a handsome, charismatic, full-colored terrapin that could walk, talk, lift its head — and roar. The campaign boosted fundraising and student recruitment, and it probably helped the conservation campaign as well. According to one biologist, it showed millions of Marylanders what real terrapins look like.

The conservation campaign took several years of lobbying and a lot of planning by environmentalists, scientists and activists — but it finally won. Last year the legislature enacted a complete ban on the commercial harvesting of terrapins and a new governor signed it into law.

For terrapins, some well-laid plans finally worked out. Now the ghost of Albert LaVallette was back in his grave. And somewhere Curley Byrd was smiling. 

# Naturalist at Bay

## A Winter's Tale

Michael W. Fincham

It looks like our last, best chance for the year. Motoring out of Cambridge marina, we can see some skim ice floating below the docks, but all the signs say this is a good day for diving and filming and photographing the bottom of Chesapeake Bay.

We had the right weather: windless, clear and cloudless. We had the right season: two days before Christmas, two days into winter when cold waters can run clear, with no warm-weather plankton blooms to block out sunlight.

And we had the right cameraman: Nick Caloyianis, a Marylander who has done deep-water filming all over the world. Lean and lightly bearded, Caloyianis and his partner Clarita Berger came well-equipped for a day of shallow-water diving in the Choptank. They've loaded the cockpit of a wide-beamed workboat with crates and piles of scuba gear and camera gear and underwater lights.

As we cruise the middle of the Choptank River, the sun — still low in the east — begins bouncing light up off the river. Behind us, it slowly lights up the brick and frame houses that stand like sentinels along the shore and lends a soft glow to all the white sailboats and cabin cruisers that now crowd the waterfront. Would there be light below the water? That's the gift we're looking for. But the river gives no clue. We are cutting across a flat, flashing mirror.

As a filmmaker, I first hired Nick more than 20 years ago to dive down and film the Bay's dwindling seagrass beds for a documentary called *Chesapeake: The Twilight Estuary*. Since then Nick has filmed all around the world, from the waters off Galapagos and the Greek

Islands to the Red Sea, the North Atlantic, the Arctic, the Caribbean, and the far western Pacific. In recent years, however, he has refocused his energy on his home waters and refocused his career on a new role: he's trying to turn himself into an unusual kind of naturalist, an underwater naturalist.

According to the classic definition of the species, a naturalist uses direct observation to study plants and animals in their environment, in most cases bringing back data in the form of field notes and samples for lab analysis. It's a definition that fits scientists who focus more on field work than laboratory experiments, molecular biology, or theoretical modeling. And it's a definition that fits certain nonscientists, including writers like the famous Henry David Thoreau and the less famous Gilbert Klingel. Back in 1951, Klingel wrote *The Bay*, one of the first popular books on the Chesapeake. Klingel, it turns out, is an inspiration Caloyianis likes to cite, not just for his book, but for his early interest in directly observing the underwater life of the estuary. He spent time on the bottom in old-style diving suits with metal helmets and in a diving bell he invented himself. He brought back some of the first photographs of the underwater Chesapeake.

The naturalist label, by these definitions, may also fit a photographer like Caloyianis. For a number of years he's been trekking out with all his scuba and camera gear to film and photograph the key species in the Chesapeake, both the famous and the little known: not just blue crabs and oysters and striped bass, but red sponges and toadfish and killifish, all shown in the underwater world where they live, a world the rest of us — includ-



**Always bring lights** — that's one lesson Nick Caloyianis learned from decades of filming and photographing underwater life in the Chesapeake Bay. His photographs document the loss of natural light in the estuary. In 2008 (above left) he worked with multiple lights as he tried to film oyster restoration on Dominion Reef in the mainstem Bay. Back in 1979 (above right), he had plenty of light to photograph his partner, Clarita Berger, as she took pictures of the grassbeds of the Choptank River. PHOTOS: MICHAEL EVERSMEIER, AQUA VENTURES, INC. (LEFT) AND NICK CALOYIANIS (RIGHT).

ing most scientists — never see. His new goal is a book he's titled *Life Beneath the Chesapeake*. He sees it as "a big picture look" at the underwater estuary: full of color photos that would give — species by species — a view of the whole system. He's after "the quintessential elements that made the Chesapeake what it is."

If Caloyianis can pull it off, his picture book could make the perfect gift for some future Christmas — but that's a big if. He's got better gear than Klingel ever had, but he's got a bigger problem to solve. The key to great photography is light, and light is hard to come by in the Chesapeake, much harder than it was when Klingel made dives in the mid-1950s or when Caloyianis himself first began diving and photographing in the mid-1970s. As a beginning photographer who couldn't land many assignments, he worked for two years as a commercial oyster diver. "I didn't make that much money," he said, "but I saw a whole lot. And every chance at good visibility I took my camera in the water." Down along the bottom of this same Choptank River he

made pictures showing 20 to 25 feet of visibility. "Look how clear the water was," Caloyianis said. "We haven't seen that in a quarter of a century."

Today he's back on the Choptank to film the bottom for another documentary, and he'd be happy with just four to six feet of visibility. Even that kind of clarity is rare, he warns, on the order of one day in ten. Some days he can't see his hand in front of his face. On those days he packs up his gear and goes home.

Caloyianis, however, has learned a lot of tricks over the years. The key trick is persistence, to keep hauling his hopes and his gear down to the Bay despite being skunked. Another trick is to always bring lights. The best tricks are to pick his spots — two favorites are Eastern Bay and Mobjack Bay — and pick his days. He checks the marine weather reports, especially the wind reports, and pulls up the latest satellite imagery that can show an educated eye a lot about current turbidity patterns. He also calls John Volatile, an ex-waterman who keeps a constant weather eye on the Bay. Lately Caloyianis has got-

ten his batting average up to six days out of ten.

We're still hoping for a 10-foot day when Ben Parks, our captain, drops anchor out in the middle of the Choptank, just east of the Route 50 bridge. Parks is a long-time waterman with local knowledge and a GPS. Both tell him we're floating directly above Bolingbroke Reef where seed oysters were planted three years ago. Back in the cockpit, Don Meritt, a scientist from a hatchery at the UMCES Horn Point Laboratory, swings a set of long-handled tongs over the side and starts working the bottom. When he pulls up a load of big oysters, we know we're on target. The oysters are clumped together and clotted with mussels, another good sign. Oysters and mussels are strong filter feeders and restoring them to the bottom could help clear the Bay's murky waters.

While Caloyianis swings his oxygen tanks across his back, Clarita Berger leans overboard and tries her spit test. Her small glob of spit slides quickly past the boat. A strong tide is running — not a good sign.

*Continued on p. 16*

## Naturalist, from p. 15

Both divers gear up, buckle on their weight belts and slide overboard. Captain Parks hands a heavy underwater camera down to Nick, and the two divers sink out of sight, swimming hard against the current.

When they find the reef, it's mostly by feel. Down along the bottom, the divers are not getting a 10-foot day or a 4-foot day or a 2-foot day. Visibility is down to inches and the two divers have to hang onto each other to keep in sight and hang onto rocks to keep from being swept off the oyster bed. Caloyianis surfaces with several minutes of footage, but it's too murky to be useable, and he doesn't ask for his still camera. Healthy oysters are down there but not enough of them to clear the water. Despite all the planning, he's been skunked again. Days like this keep pushing his book into a distant future. It's time for the born-again naturalist to pack up his gear and head home. For this winter's day, at least, there'll be no gift of light from the Chesapeake. ✓

# New R/V Rachel Carson Commissioned

Leaders from Maryland's academic, scientific, and public policy communities welcomed the Research Vessel *Rachel Carson* as the flagship of the Chesapeake Bay research fleet. The 81-foot, \$4.6 million University of Maryland Center for



Environmental Science (UMCES) research vessel expands scientists' abilities to track the pulse of the Chesapeake Bay and pays homage to one of the nation's environmental pioneers.

Christened by First Lady Katie O'Malley on November 16, 2008 at the Annapolis City Dock, the *Rachel Carson* is a state-of-the-art research platform specifically tailored to the needs of Chesapeake Bay scientists. Designed from the ground-up, the ship is large enough to transport research teams up and down the Bay's entire 184-mile length, yet runs shallow enough to allow scientists access to the smallest of critical Bay tributaries.

In addition to her shallow draft, the *Rachel Carson* is specifically designed to provide a solid foundation for decades of service to UMCES scientists. A state-of-the-art dynamic positioning system allows the vessel to "hover" motionless

over one spot regardless of wind and current. A trio of powerful winches allows scientists to launch and retrieve multiple buoys and sampling devices over the side or stern. Built-in electronic sensors will continuously

measure the Bay's water quality, biology, and currents whether underway or on station.

The *Rachel Carson* is named in honor of the world renowned marine biologist and nature writer who wrote her most influential books while a resident of Maryland. Carson wrote articles about the Chesapeake Bay and the best-seller, *The Sea Around Us*, which inspired a generation of marine scientists. Ms. Carson is best known for her book *Silent Spring*, which is credited as being a "wake-up call" for environmental concerns in the United States.

The vessel will replace the aging R/V *Aquarius* which has ably served Bay scientists since 1972. The *Carson* begins service in early 2009 and is stationed at the UMCES Chesapeake Biological Laboratory in Solomons. For more about how the ship was built and about the kinds of research at UMCES, visit [www.umces.edu](http://www.umces.edu).

Read BayBlog, see the Photo Gallery, and send your comments at Chesapeake Quarterly Online at [www.mdsg.umd.edu/CQ](http://www.mdsg.umd.edu/CQ)

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