
Bud Lilly's
ANGLERS' RETREAT
ROOMS

1999


Bud Lilly's
ANGLERS' RETREAT

Bud hilly 1999
at Headwaters
of Missouri
river at three
Forks

September 26, 1999

Good Morning!

This note is sooo very overdue. I apologize. Thank you - for your easy-going good humor and gentle indulgence of my inexplicable connection to your art. I have yet to hold a rod, but my pleasure in your company, and along the West's rivers grows.

I was also able, during an altogether too brief trip, so spend a few hours visiting with George Grant in Butte. He is quite frail and never leaves home now, but his memory and story-telling skills still wonderful. This visit, most of them stories were silly adventures on his river. His gratitude for his fishing and conservation life is very touching.

Jeannie (of the ranch) and I spent some time poking about Three Forks. You no doubt have plenty of pictures, but I'm sending these along anyway. The building is charming. I'm also sending the article written some years back, about the Quashnet on Cape Cod. It's where the story begins. Some of the people involved in that project were in Bozeman a few years back, and heard you speak, I think, at the T.U. conference. They spent some time fishing at Jeannie's ranch as well.

They videotaped your talk at the Headwaters Park, and will be sending me a copy when they're able. I was thrilled about the timing. This is all so fascinating to me, yet I have nothing to add. Okay with you if I just keep gawking and listening? I am soaking it all up, you know.

I'd be interested in hearing more about the travelling exhibit coming from Manchester, VT, due at the Museum of the Rockies, in Bozeman. And congratulations on your national award! You've probably received it by now.

Thank you again, for the pleasure of your company and patience. Perhaps with better planning on my part, we may yet meet on the East Gallatin. I hope so. My best wishes to you and your family for an easy winter.

Sincerely,

Barbara

Barbara Foster
17 Mill Road
Westborough, MA 01581
(508) 366-7180

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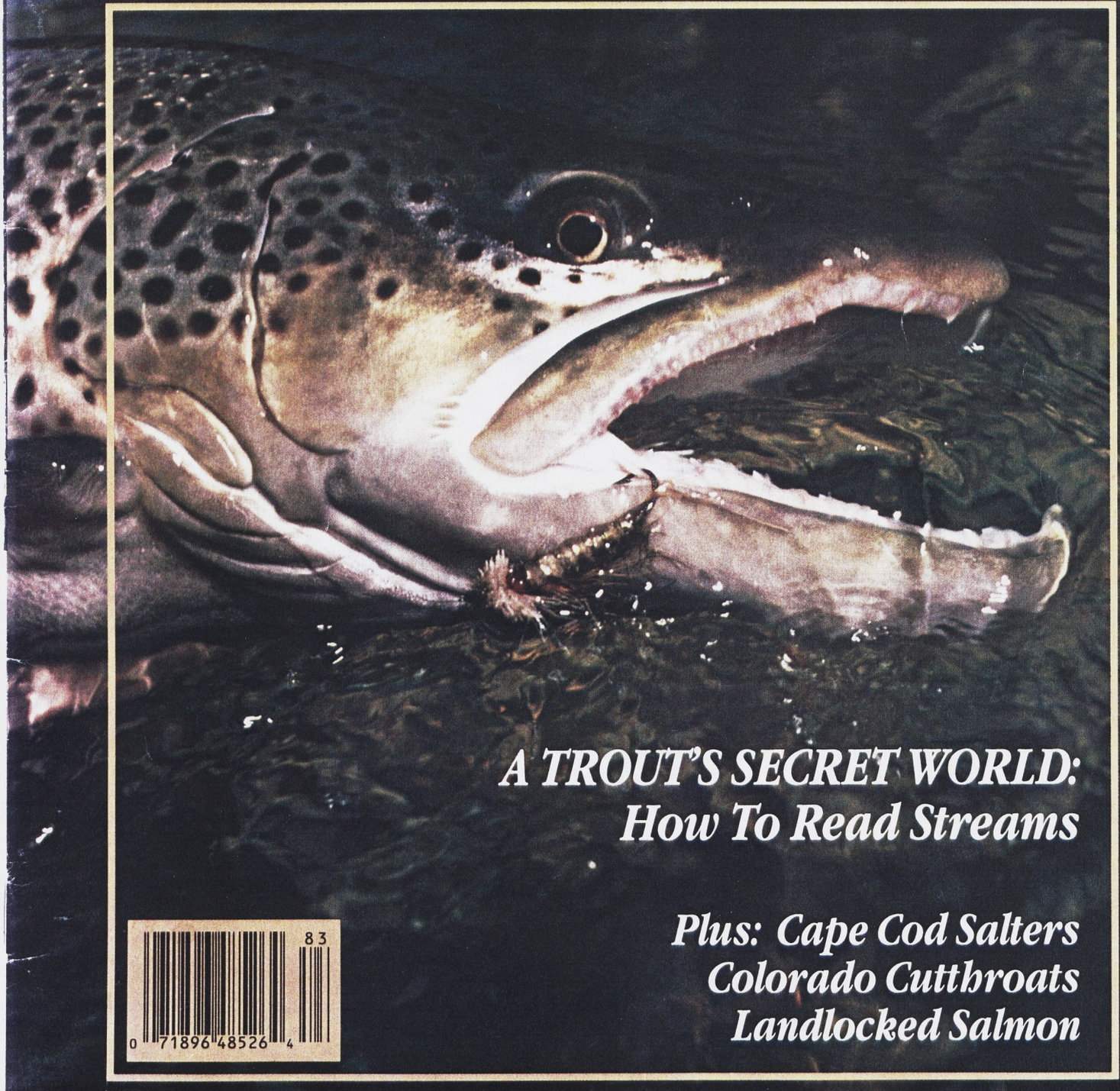

A TROUT'S SECRET WORLD: How To Read Streams

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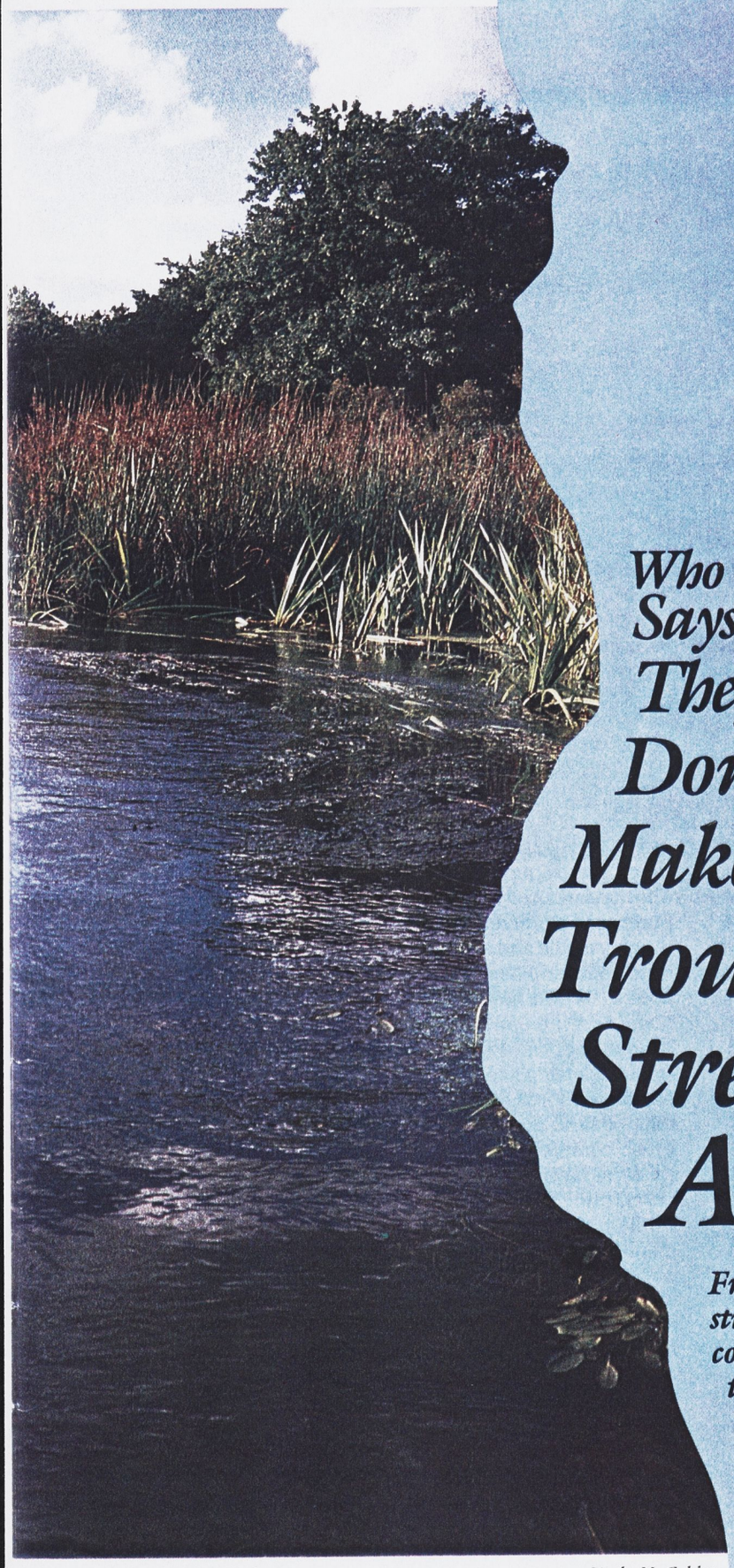


Linda M. Golder

Who Says They Don't Make Trout Streams Anymore?

Not me!
Jean

From pristine native brook trout stream to a straightened ditch coursing through cranberry bogs, to Cape Cod jungle, the Quashnet River has become one of the most impressive volunteer projects in Trout Unlimited history.

by WILLIAM O. McLARNEY

"AT FIRST ALL WE WANTED TO DO WAS fix a trout stream. That was our goal: trout, trout, trout," recalls Mike Arritt. Mike is one of the stalwarts of the Cape Cod Chapter of Trout Unlimited, which must have set some sort of record by logging 15,500 hours of volunteer labor (so far) toward restoration of the Quashnet River. In the process they have rediscovered the hoary environmental adage that "Everything is hitched together."

The stream-fixers have found themselves dealing, not only with trout habitat, but with wildlife, marine issues, open space concerns, drinking water and Indian land rights. Though most chapter members would never have dreamed it when the project began in 1975, they have become the spearhead of a 7,600 member coalition forcefully raising the question: "Where does the development of Cape Cod stop?" Not just with sportsmen and environmentalists,but with the business community, in the political arena and in the consciousness of the general public.

The environment which most immediately concerns the Cape Cod TUers stands out on the map as the largest "empty spot" on the Cape. It is the Quashnet River-Waquoit Bay watershed, shaped like an hourglass and just as full of sand. The upper bulb of the glass is the Quashnet basin, 7.5 square miles of mostly open space, within which innumerable cold springs combine to form a small but deep stream of freshwater with water quality unsurpassed in the crowded Northeast. The lower bulb is the semi-closed Waquoit Bay complex, where Quashnet trout fatten on shrimp and mummichogs. Like the Quashnet Valley, Waquoit Bay is, by Northeastern standards, an unusually pristine environment. Connecting the two "bulbs" is the 0.8 mile intertidal portion of the Quashnet, known locally as the Moonakis River. Here the Quashnet watershed narrows to a width of 1,000 feet. As we shall see, a healthy Moonakis is as critical to the functioning of the Quashnet-Waquoit system as an unobstructed passage to a real hourglass.

By way of analogy, the history of the Quashnet fishery might be described as having a similar shape. At one end is a glorious past when the Quashnet supported a naturally reproducing "salter" brook trout fishery along its entire four mile length and in Waquoit Bay, too. During this century, the fishery has been squeezed down almost, but not quite, to nothing. Today, the sands of the Quashnet are moving, literally and figuratively, toward an expanding future with the historic fishery restored.

The narrow point in the historical hourglass was reached just prior to 1975, as the culmination of centuries of environmental abuse which began when the first Englishman took an axe to the climax forest which once covered inland Cape Cod. By 1820, the Cape was essentially deforested. Next came the mill dams, which blocked off almost every major Cape stream. The freshwater brook trout fishery persisted, but the fat, silvery salters all but disappeared.

The alewives and the blueback herring which fed both men and trout were less fortunate, and occasioned an early environmental protest, culminating in the Falmouth "herring war" of 1800. One individual, whether in protest against blockage of the rivers or the radical ideas of the conservationists of his day is not clear, "conceived the idea of loading one of the old cannon on the [Falmouth] Green with herring. The charge was tamped down, the gun rammed to the muzzle with herring, and the match applied. The gun burst, probably from steam or gas generated by the unusual charge, and killed the gunner."

Damming was only a prelude to the major assault on the Cape's streams, launched by the cranberry industry in 1895. While cranberry bogs may be as integral to postcard New England as lighthouses, they can be environmental disasters, particularly along major streams.

To construct a cranberry bog, the stream must be straightened and turned into a ditch, with the sole function of regulating water supply. Tributary ditches are dug at right angles. A series of small dams is constructed, for the bog must be flooded in winter to prevent freezing of the roots. Perhaps worst of all, the natural vegetation must be cut and a layer of sand spread over the entire surface. Of course, part of the sand washes off, burying and sterilizing the stream's natural gravel bed, necessitating annual replenishment of sand. Later, pesticides and herbicides were added to the list of insults. By World War I, the entire length of the Quashnet Valley had been converted to what was touted as "the world's longest cranberry bog."

As bad as the bogs had been, their abandonment in the 1950s was worse. At first, with the cessation of sanding and spraying, there was a period of respite. The Massachusetts Division of Fisheries and Wildlife purchased 26 acres of riverside land, comprising roughly a mile and a quarter of the valley, and established a fishery based on hatchery brook trout. But now a shrub known as sweet gale took over the bogs. First it crept up the edge of the river. Then it arched over the water, drooped and fell into the stream, causing it to overflow its banks. The sodden banks crumbled, widening the stream and adding tons of sand and silt to the streambed. TU's early brush cutting sessions had an almost paleontological air, as layer after layer of brush, deposited over 20 years, came up.

As of 1975, though the mill dam and most of the cranberries were long gone, the Quashnet was what one TUer described as "prime white sucker habitat," with a few trout hanging on (about one per 100 feet, according to electrofishing estimates). Even those few trout were unfishable; to negotiate the Quashnet involved hunkering through a tunnel of sweet gale laced with greenbriar, all the while chest-deep in ice-cold mud. The banks were, as TU project leader Francis H. Smith put it, "Like a floating bowl of Jell-o." The "river" was often literally invisible.

Nature might have restored the Quashnet and the salter fishery, given a few centuries, except that de-

Matt Patrick

Trout Unlimited volunteer Francis H. Smith, chief engineer and cheerleader of the exhaustive Quashnet River project, wields brush loppers to cut through a jungle of sweet gale. Reducing the overgrown shrubbery has been the first step in opening the choked stream channel.

velopment would have gobbled it up. Besides, the Trout Unlimited gang didn't want to wait that long to cast a fly – though it sometimes appears that they, or their great grandchildren, may work that long on the Quashnet.

Aquatic Biologist Joseph Bergin of the Division of Fisheries and Wildlife played a major role in the next step. His particular interest was the sea-run brown trout fishery, which had been established on the Cape beginning in the 1960s, and had produced fish of up to 12 pounds from rivers like the Coonamessett, the Childs, the Mashpee, the Santuit, the Marston's Mills, Scorton Creek and their estuaries. It is difficult fishing, but the possibility of hooking salmon-sized trout in streams which average perhaps 10 feet in width is enough to set any angler's pulse to racing.

For all of its problems, the Quashnet had the best water quality of any of the Cape streams; Bergin wanted to use it as a source of broodstock for a project being carried out at the nearby East Sandwich hatchery. The idea was to use Quashnet spawners as the basis for developing an anadromous strain of brown trout adapted and keyed to Cape Cod streams. There were two obstacles: Bergin could scarcely get his shocker into the Quashnet, and the larger spawner browns couldn't get past a stopped-up culvert at Martin Road, just a few hundred yards above tidewater.

So Bergin enlisted the help of the TU chapter, with the initial goals of unplugging the Martin Road culvert and cutting 800 feet of the stream-choking brush just above it. To Bergin's amazement, once the TU crew got involved, "They just wouldn't quit." The weekend project evolved into a major restoration effort.

The project was first described for ***Trout*** readers in 1979 by Thomas R. Pero, who enthused, "To date the chapter has invested an incredible 4,000+ man-hours." At that time no one thought the effort would pass its first decade still going strong and looking to quadruple the figure which astounded Pero. Today, everyone acknowledges that the project is not quite completed. Mike Arritt, with something between a grimace and a mischievous grin, opines, "We'll be cutting brush for the next ten years."

Matt Patrick

At last! The final 1,200 foot section of the Quashnet lies brushed, one mile downstream from where TU's efforts began 12 years ago.

Cutting brush – no non-combatant who has heard talk of instream structures, selective breeding, tree planting and all the other glamorous components of the Quashnet project, can imagine the sheer amount of cold, sloppy drudgery the TU crew has put in fighting old sweet gale. Getting rid of the pesky shrub is the key to fishing the Quashnet's quaking banks, to flushing the cranberry industry's sand down through the Moonakis and out to sea, and to making the river fishable.

Trouble is, sweet gale grows back, but the project is gaining on it. Part of the key to ultimate victory is to cut the shoots in the fall, just before the plant goes dormant. Cutting is followed by planting reed canary grass. While some have criticized the project for introducing an exotic plant, its role is to stabilize the banks so as to make way for native grasses – and for the 1,100 trees so far planted by the chapter. Today, in the upper portion of the 1.25 mile project area, the banks are as firm as when Indians roamed the Quashnet Valley, and the TU crew is talking about re-establishment of native wildflowers.

Eliminating brush "undams" the river and allows it to cleanse itself, but TU has aided the process by installation of deflectors to concentrate the current where it is most needed. These were described in Pero's 1979 article, but in the interim the project has spawned an innovation: the temporary deflector. Made of boards tacked to vertical posts and set in the stream bottom – but not covered or backfilled – the temporary deflector is used to help the river eliminate discrete patches of sand and sediments. The assumption is that, with the stream stabilized in its natural channel, cleaned areas will continue to be self-flushing, and the deflector can be uprooted for use elsewhere. Two people can construct and set a temporary deflector in 1.5 hours, versus 100 hours of labor to construct the permanent sort.

Other activities which have occupied the crew's time are construction of overhead cover for the trout, re-establishment of the herring run, and persuading the state to designate the Quashnet a catch-and-release fishery (a custom already long honored by chapter members). The overhead covers, approximating undercut banks, have been highly successful, but nature has done even better. Opening up the river to sunlight stimulated the growth of aquatic plants like water starwort, and now there are perhaps more trout under this natural cover than under the TU structures.

Next to brushcutting, the most onerous task has been cleaning out the small ditches which connect the Quashnet Valley's myriad springs to the river. This involves crawling on hands and knees through an icy trickle, scooping semi-liquid black organic mud into a bucket (for ultimate use in sodding overhead covers). But no one really minds. Not only is the icy water a constant reminder of why we are all here, but the ditches are the favored habitat of wild brook trout fingerlings.

Though the project is unfinished, the chapter's initial goal of "trout, trout, trout," has been realized. The twenty-fold increase reported in the 1979 article for the first stream section has been replicated throughout the project area, and both species are reproducing on the newly exposed gravel. The shocker has turned up browns of up to 10 pounds, and last September chapter member Matt Patrick gleefully told me of taking a fat, silvery 14 inch brookie – a salter? In that same month I walked downstream along the Quashnet with my wife and daughter, not fishing, not stalking, just showing them the progress. The sound of feeding trout was as insistent as the chittering of the chickadees.

Not only is the Quashnet well on its way to restoration as a fishing stream, the former impenetrable tangle is giving way to an aesthetic triumph which is also prime wildlife habitat. For Mike Arritt, "The beauty of this is, this is public property. Anyone who wants to go down there and use it, walk around, can – you don't have to be a fisherman to enjoy the river. It's a tremendous place to go and just to be."

As chapter members became increasingly aware that their efforts benefitted more than trout and trout fishermen, others were becoming more aware of TU; just in time, for the river is threatened anew, and the battle is too big for TU to fight alone.

One of the major environmental and political issues in Barnstable County (Cape Cod), the nation's second fastest growing county, is preservation of open space and, once TU's efforts made it possible to enter and leave the Quashnet Valley unscarred and unmuddied, it became clear that the river and its environs constituted an extraordinarily valuable open space parcel. That there is so much open space

remaining in Mashpee, one of two towns through which the Quashnet flows, is largely due to the Wampanoag Indians, who tied up development for years with a controversial land suit. The Indians, distrustful of anything that smacks of officialdom, have remained aloof from the TU project for most of its duration. But, as development closes in, they increasingly view TU's conservation goals as consistent with their philosophy of land use, and have become valuable allies.

An issue which fires up even more of the Cape Cod citizenry than open space is groundwater. Plainly stated, there is not enough to go around, and much of what there is, is contaminated.

The entire Cape draws from a single source aquifer, replenished only by the rain which falls on the 400 square miles of sandy soil between Bourne and Provincetown. In effect, all the Cape's 150,000 citizens and its many more annual visitors have their straws in the same bucket, a bucket increasingly clouded by toxic wastes, pathogenic bacteria, saltwater intrusion, and just plain depletion. As it happens, the Quashnet is perched atop one of the last untapped and uncontaminated portions of that aquifer, a fact not lost on many people who may care little for trout, but yearn for a good drink of water.

Freshwater anglers constitute a tiny minority of the Cape's resident and transient population, but nearly everyone uses the sea. Several hundred people still engage in commercial fishing. Sport fishing, swimming and boating are all vital to the local economy. In an area where marine pollution is a growing concern, Waquoit Bay has been one of the bright spots. With the exception of the old and densely populated Seacoast Shores Development on the west side of the bay, both its shorelines and its watershed have been relatively undeveloped, and water quality and marine fishery data reflect that fact.

Yet lately Waquoit Bay has shown signs of eutrophication, and some scientists have referred to it as a "mini-Chesapeake." In recent years high coliform counts have caused Health Department closures of Waquoit Bay shellfish beds for the first time. Examination of a series of aerial photos taken from 1938 to the present shows the once extensive eelgrass beds of the eastern bay being reduced to a few small patches. Meanwhile, filamentous algae and dead eelgrass have combined to form a three foot deep layer of gunk on the bottom in the middle of the bay. These bottom waters are already close to "dead" and there is the danger that some summer most of the bay will go anoxic.

The single largest contributor of freshwater to the bay – as well as the cleanest – is the Quashnet. Further freshwater input comes from Childs River, Red Brook and a few smaller streams, but most of the rest enters as groundwater, seeping in around the edges or under the bay. And that groundwater is increasingly contaminated by sewage from old, failing tanks and nutrients from new sewage treatment systems.

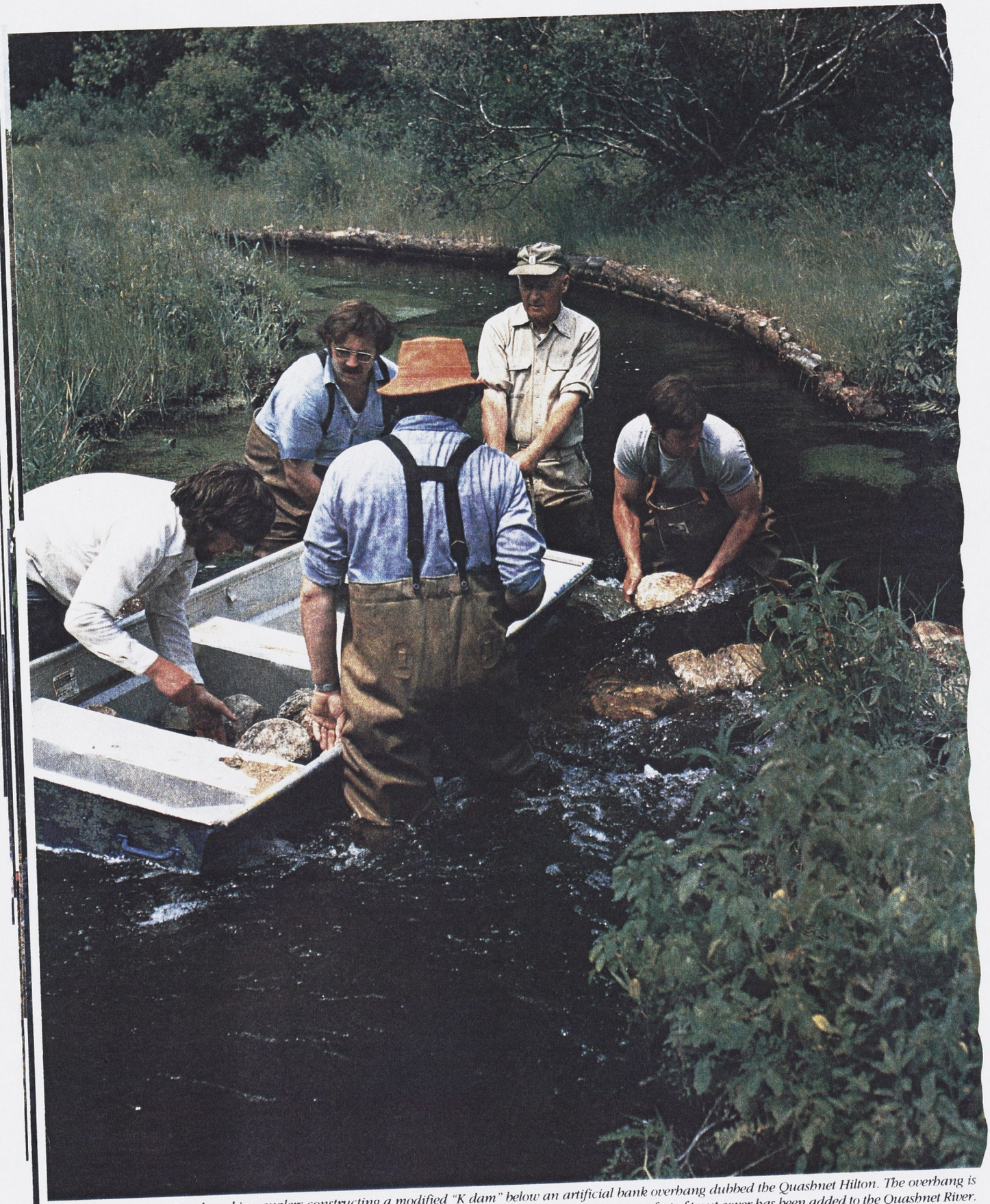
The current focus of development activity in the Waquoit Bay watershed is the high ground on both sides of the Moonakis. There, in the neck of the hourglass, is where water quality is poorest and shellfish closures most frequent. Were the Moonakis to go anoxic, it would constitute a barrier to sea-run trout. A stop-gap solution might be to increase tidal flushing by relieving a bottle neck where a narrow bridge and causeway constrict the Moonakis at Meadow Neck Road. But sooner or later the issue of water quality in Waquoit Bay must be confronted.

Waquoit Bay is not without advocates. Much of its pristine character is due to the efforts of Citizens for the Protection of Waquoit Bay (CPWB), a group that emerged in response to "insurmountable opportunity" around 1981, and persuaded the state to invest five million dollars in purchasing the 432-acre South Cape Beach, which guards the southeast corner of the bay, and uninhabited 332-acre Washburn Island, which shields the bay proper from Seacoast Shores. As of 1986, CPWB seemed to have outlived its usefulness, until the bay met a new threat, and Citizens met Trout Unlimited.

The threat, as ever, was development. In 1986, TU had urged the Massachusetts Department of Environmental Management to purchase a 255-acre piece on the west side of the river just above the project area. An outfit known as Forward Development Corporation (FDC) spent 3.2 million dollars to outbid the state, and purchased an additional 130 acres east of the river. They then announced plans to build 570 condominium units along Route 28, virtually on the river's edge and just above the Moonakis. Mashpee had passed an open space ordinance which would require FDC to donate part of the land to the town for conservation use, but TU members and other conservationists realized that was not

Matt Patrick invoked the spirit of the Quashnet's most famous* habitué, *Daniel Webster, and reminded the legislators that, as a member of the same House of Representatives, his most important legacy was a bill protecting the state's fisheries.

Thomas R. Pero



Hard-working anglers constructing a modified "K dam" below an artificial bank overhang dubbed the Quashnet Hilton. The overhang is 67 feet long and five feet wide, taking 300 hours to construct. To date 3,580 square feet of trout cover has been added to the Quashnet River.

enough.

No matter how well sewage from the development was treated, it would add to nutrient loading in the river and bay. Not to mention wear and tear on the river from an urban density population.

The problem called for more money and more voices than TU could muster. Just then, opportunity knocked. In June, 1986, Chapter Secretary Linda M. Golder called then Chapter President Matt Patrick. She and her husband, Bob, had been talking with CPWB chairman Henry Dick. CPWB was suffering from "total burnout" and was looking to disband and donate their remaining funds to a worthy cause. A meeting was arranged with Patrick, the Golders, TU Chapter Vice President Brian E. Tucholke, and the CPWB board. TU didn't want the money, they wanted the organization. Presto – the *ad hoc* Quashnet Coalition was formed, with TU and CPWB as charter members. Matt took the CPWB presidency, and Brian moved up to be TU Chapter President.

"So far as I know, I don't think TU ever built a coalition before in Massachusetts, but it wasn't very difficult at all. We had the issues and they were good ones," explains Fran Smith.

With two organizations counted in, Patrick and Tucholke went after more.

In Falmouth, the 300 Committee, formed to purchase open space in commemoration of the town's tricentennial, joined and has provided funds to hold key pieces of property.

The Association for the Preservation of Cape Cod joined and has facilitated mailings to a membership which has so far grown to 7,600.

In Mashpee, a Voter Information Association has been formed, and elected its candidates to town office by campaigning around the drinking water issue. They saw the protection of the Quashnet Valley as key to their future and joined. At one stroke a substantial percentage of the population of Mashpee was in the coalition.

Although the Wampanoags had fundamental differences with the towns on the water question, Patrick lobbied council president Joan Tavares and chief Earl Mills, and the Mashpee Wampanoag Tribal Council came on board, confirming their oft-stated dedication to wildlands conservation.

Rod and gun clubs, yacht clubs, concerned individuals – everyone was joining. In the latter category a number of scientists at the nearby Marine Biological Laboratory (MBL) and Woods Hole Oceanographic Institution (WHOI) would be key.

Through an effort involving scientists like WHOI's Dr. John Teal (coauthor of the classic *Life and Death of the Salt Marsh*), CPWB member Don Bourne and others, Waquoit Bay had been designated a National Estuarine Research Reserve. Although the Federal statutes governing this little known category of "protected" area are virtually toothless, the designation has drawn positive attention and research funding.

One of the most exciting studies has been initiated by MBL biologist Dr. Ivan Valiela. According to scientists like Teal and Valiela, the public often fails to distinguish between the sort of organic pollution that causes high bacteria counts and closure of shellfish beds and swimming areas, and nutrient loading, which is less noticeable – until there is a fish kill. Of the two, Teal says, "I stress nutrient loading because, in theory at least, there is a technical solution to pathogens." (Proper sewage treatment.)

Valiela opines that the big question is this: "Nutrients are being accumulated in vegetative tissues. Does this mean that one day everything will go anoxic?" (When that vegetation dies off.) Valiela and his graduate students are starting to look at things like the eelgrass die-off and algal blooms, and relate them to nutrient input. According to Valiela, "All previous studies of loading are back-of-the-envelope guesses, with errors of an order of magnitude due to extrapolation from, say, Long Island." As a result of their Waquoit Bay studies, Valiela's group eventually hopes to be able to predict the impact of building one more subdivision or one more house.

The importance of this work has not been lost on Trout Unlimited, and the local chapter has contributed $1,000 as seed money toward a larger National Science Foundation grant for Valiela's work. The grant – from an organization of freshwater anglers to a marine scientist who may never see a trout during the course of his work – is public acknowledgement that everything is hitched together. Clean groundwater makes the Quashnet work as a trout stream, and Waquoit Bay work as an estuary. Contaminate the Quashnet and you push Waquoit Bay toward the brink. Clean up Waquoit Bay and you enhance the Quashnet. Protect the groundwater and you save it all. And the way to protect groundwater is to control what happens on the land – including in the Quashnet watershed.

So, with marine research and stream restoration in good hands, the Quashnet Coalition set out to protect as much land as they could in the Quashnet Waquoit watershed, beginning with the FDC property. Given the outrageous real estate prices on Cape Cod, the coalition had to turn to state government.

There they found a friend in upper Cape Representative Tom Cahir. Cahir, a non-angler, already realized that "As a consequence of the Cape's being a sole-source aquifer, we have to grasp every way to thwart development." Attendance at a TU meeting convinced him that this particular effort to stem development had national significance, and he agreed to sponsor House Bill 5014, the Quashnet Bill, seeking $10 million to buy out FDC.

The Quashnet Coalition organized a phenomenally successful letter-writing campaign. Though it might be called a local issue, the Quashnet Bill produced more mail than any other issue before the Massachusetts legislature in recent years; it took three clerks to carry in the letters at the subsequent hearing. Cahir recalls, "Every legislator in the Commonwealth was approaching me about 'What is Quooshnet...Quonset...?'" The House Ways and Means Committee, although they were in the midst of pulling together the fiscal 1988 budget, were suf-

ficiently impressed to take the extraordinary step of holding the public hearing not in Boston, but in the Mashpee Town Hall. Over 150 citizens showed up for what legislators and local people alike later called the best organized meeting of its kind they had ever attended.

Cahir and his lower Cape counterpart, Representative Henri Rauschenbach, pointed out the importance of open space to the Cape and the state, and the necessity of protecting "whole ecosystems – not pieces."

Matt Patrick invoked the spirit of the Quashnet's most famous *habitué*, Daniel Webster, and reminded the legislators that, as a member of the same House of Representatives, his most important legacy was a bill protecting the state's fisheries.

Vernon Pocknett, past president of the Wampanoag Tribal Council, waxed poetic about the water – "Mother Earth's life blood." (After the meeting, the committee vice-chairman, Representative Angelo Scaccia of East Boston – one of the state's most urban districts – was seen, note pad in hand, quizzing Pocknett about his nature references and promising to use them on the House floor.)

There were speakers representing CPWB, the Research Reserve, the scientific community, the shellfish industry and the towns, but the finale fell to Fran Smith and the TU slide show. Smith flabbergasted some of the legislators with photos of 14 inch brook trout and much larger brown trout being released. "You put *that* back?" asked one incredulous politico. "Yes, sir, they're too valuable. We worked awfully hard to help produce that fish."

At the end Representative Scaccia called for testimony against the bill. None was offered. Representative Barbara Gray then called for a standing ovation for the TU volunteers. Soon after, House 5014 was attached to the Comprehensive Open Space Bill (House 5876) backed by Governor Michael Dukakis.

In November, 1987, the bill was passed. Good news piled up as additional money was made available for protection of coastal rivers through the Division of Fisheries and Wildlife. In response, the Quashnet Coalition embarked upon the task of identifying key parcels of land for protection and having them appraised. The Quashnet-Waquoit Basin remains the priority, but other Cape watersheds are being looked at, too.

This new activity presents new problems in the volatile Cape Cod real estate market. As Vicki Lowell of the Falmouth 300 Committee points out: "You can spend several thousands of dollars on appraisal and, by the time you're ready to purchase the land, it's obsolete." While the TU chapter and their allies confront this new challenge, one positive result which has already been secured is new recognition and respect for TU.

Vernon Pocknett acknowledges that, "My people pass through the Quashnet Valley all the time, just to see what you're doing. It's beautiful."

Vicki Lowell admits that, "We're not out in front on Waquoit Bay. We're following TU and CPWB."

Mashpee selectwoman Jean Thomas is "just getting to know the TU group, but they're great guys. The way that they're working, reading, expanding *themselves*, is just wonderful...With them I feel very comfortable. They have technical and scientific knowledge; they have initiative and drive."

Tom Cahir is "so impressed with their knowledge and intensity" and admits he has "really become educated" through his association with Trout Unlimited.

Joe Bergin says, "They're now a major force environmentally on the entire Cape because of their tenacity on this project. They've gotten cooperation out of the towns we would never have expected. If TU speaks on a development project anywhere on the Cape, they're heard. I never expected that."

Ivan Valiela concurs: "You've got to give a lot of credit to people like TU. From taking out old tires to...this. There's tons of groups that clean up roadsides, etc. But when you get a group that can alter the course of planning, that's exciting."

Throughout the project's life, the leader has been Fran Smith, a Falmouth plumber originally from West Springfield, Massachusetts, on the edge of the Berkshires (Massachusetts' *real* trout country, the natives will tell you). When Uncle Sam dropped Fran off in the Falmouth area after a Vietnam stint, he did what any angler would do – he explored the local trout haunts. It happens that the closest trout stream to Otis Air Force Base was the Quashnet.

Smith also took time to read, from shiny new treatises on stream ecology and restoration to musty old volumes detailing the exploits of Daniel Webster and his cronies. One of them, Dr. Jerome V. C. Smith, wrote in 1833 that, "The various...places where the sea-trout are found are almost innumerable, for there is not a rivulet that flows from the springy banks of the upland into the creeks of the salt marsh, but contains more or less." On the Quashnet, catches of a hundred trout might be made in an afternoon.

Fran's studies found their natural outlet in the Quashnet Restoration Project. What was an inaccessible piece of sucker water in 1975 today provides a first class catch-and-release fishery for those in the know, and Fran has been the recipient of TU's National Trout Conservationist Award, as well as awards from the Heritage Conservation and Recreation Service and the United Nations Environment Programme.

But the job is nowhere near done, insists Fran. "If we finish the habitat restoration and don't reintroduce the original sea-run brook trout, then we haven't really accomplished anything." You can catch brook trout in the Quashnet today, and now and then a fish like Matt Patrick's 14 incher turns up. But, for practical purchases, the salter fishery no longer exists on any of the Cape streams.

The disappearance of the salter has perplexed Massachusetts fisheries biologists for years. One of them, James W. Mullan, speaking of the Mashpee River, suggested in a 1958 paper that, "Overstocking the river with hatchery-reared brook trout would result in a condition of overcrowding which would

force the population of small native trout out to sea and they would thereby assume the anadromous habit."

Fran does not agree with Mullan's approach. Flying in the face of current fisheries biology orthodoxy, he feels that the salter is a genetically unique brook trout. "Everybody disagrees with me, but it's my feeling that there's something in the DNA – there's a spur there somewhere that makes them want to go to sea."

Mullan's experiment was tried in the Mashpee, the Quashnet and three other Cape streams between 1949 and 1956 and "worked" to the extent that the excess fish had to go somewhere, and some went to sea, even crossing open water to enter other rivers. But today there are no more salters than in 1949.

Rather than assuming that overpopulation is a precondition for anadromy (which is certainly not the case with other salmonids), one might hypothesize that the original decline in salters was due to pollution in the estuaries, where water quality has suffered far more than in the streams. The hardier brown trout may be better able to tolerate the contaminated estuaries than the brookies; they may also compete with them. Further, if one assumes that there is a genetic basis for anadromy in brook trout (as there appears to be in rainbow trout), then generations of isolation behind mill dams may have selected against the salter strain and in favor of nonmigratory fish (which have always been present). Further dilution of the tendency would have resulted from heavy stocking of hatchery fish derived from inland stock.

Now Fran wants to try *his* experiment: stocking the Quashnet with known sea-run brookies from a New Brunswick stream environmentally similar to the Quashnet. Arrangements have already been made to get the Canadian fish and, in 1983, Smith had targeted 1985 for the salter introduction. Now "I'm looking at a couple of years more of work, which will revolve around installation of devices – including very small deflectors to help us help Mother Nature's work."

If necessary, Fran would even favor the salters by eliminating the brown trout, a proposal which gives Joe Bergin apoplexy. For my part, I must admit that it is hard to give up the fantasy (occasionally realized) of tangling with a tackle-buster brown in an overgrown brook in favor of brook trout which might reach 2.5 pounds at best.

Still, there are other places to fish for sea-run browns. Philosophically, Fran is right. He is not after just a place to fish. He is talking about ecological restoration in one of the most populous portions of our continent. As Mike Arritt puts it, "Any more the fish are almost secondary to restoring a river." That river, and the fish that live in it, are a barometer of the quality of life on Cape Cod. When the last grain of sand has run out of the Quashnet half of the hourglass, through the Moonakis and into the sea, Fran, Mike and company want that life, brook trout and all, to measure up to what Daniel Webster enjoyed.

Linda M. Golder

Fran Smith enjoying a rare treat: casting from an old cranberry bog dam to the wild trout he has helped restore to the Quashnet.