FROM A MOUNTAINTOP TO 1,000 FATHOMS DEEP -Robert H. Boyle, Sports Illustrated, August 17, 1964 *(This seminal work on the Hudson River helped launch the modern environmental movement as well as giving birth to what later became the Riverkeeper model)*

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In length, the Hudson is a minor stream compared to the great rivers of the world. But from its origin in the Adirondack Mountains to its enormous canyon on the ocean floor, the Hudson is an extraordinary experience—rich in scenery, in fish and in controversy

Robert H. Boyle

To those who know it the Hudson is the most beautiful and fascinating of all American rivers. Lordly, majestic, glorious and noble are the words most often used to describe it. Its heroes and villains, ranging from the Headless Horseman to Franklin Delano Roosevelt, are part of American myth and history. Yet there is a side to the Hudson that few persons know: the life beneath the surface of the water that first races down mountain peaks, then glides through gentle valleys and looming hills and ends by plunging into the abyssal ocean depths.

By turns, as it flows south from the tiny pond that marks its source in the Adirondacks, the Hudson is composed of fresh, brackish and salt water, and it contains an astounding variety of animal life. In the river's wide southern expanses of the Tappan Zee and Haverstraw Bay, it is literally an arm of the sea. The Atlantic reaches in 50 miles upriver to Bear Mountain, where in a blurred no-man's land of marshy creeks and coves, sand sharks, striped bass, yellow perch, white perch, sea sturgeon, pipefish, black bass, tomcod, butterfish, common jack, billfish, pickerel, bluefish, menhaden, anchovies, American sole, summer flounder, smelt, sunfish, sea horses and trout mingle in startling confraternity. Once in a while even porpoises move in from the sea, swimming as much as 100 miles upriver, where they blister and die in fresh water. In the summer muskrat and mink live in the ballast rock under the New York Central tracks on the east bank, and in the fall rafts of wild ducks dive for food within sight of the George Washington Bridge. In the winter bald eagles in search of fish ride the ice floes south to Croton Point, and in the spring fishermen spread gill nets on hickory poles to catch shad on their run from the sea. In any season this river is an intricate and awesome thing.

Nor is it restricted to where the maps would have you think it ends. Twenty-five thousand years ago, before the glacial icecap melted, the Hudson ran much farther out to sea. Now, south of the Narrows, the entrance to New York Harbor, the old river channel runs into the Atlantic bottom, sinking deeper and deeper into the shallow continental shelf. There it has buried waterfalls that would dwarf any now on the surface of the earth. One hundred miles southeast of the harbor the old channel ends in a great canyon one mile deep and five miles wide. Here, or so those who have tried it say, is the "most fabulous fishing spot in the world."

The Hudson, excluding its nether reaches beneath the ocean, is 320 miles long, and in its course it drains 13,000 square miles. The ocean tides sweep up it all the way to the dam at Troy, 150

miles north. At the Narrows and at Troy, the average range between high and low tide is four and a half feet. Much of the river is surprisingly shallow. In Haverstraw Bay, where the river is almost four miles wide, the bottom is for the most part only eight or 10 feet down. It is a soft, gray, mucky clay, and in some places is extraordinarily thick. The engineers who built the Catskill reservoir aqueduct had to dig down 1,100 feet to reach bedrock before they could tunnel under the river.

The downstream flow is 135,000 gallons per second. But besides this normal flow, there is yet another force at work: a large subsurface current set in motion by the rising tide. The current sinks because it is composed of sea water, which is heavier than the fresh water coming downstream, and when the current is running strong it pumps five gallons of water up the Hudson for every one gallon that the river sends down. After burrowing north for 40 miles, the current surfaces, joins the normal downstream flow and goes out to sea again. So complex and deceptive is this current that it flowed undiscovered until 1958.

The source of the Hudson is a two-acre spring-fed pond named Lake Tear of the Clouds, 4,300 feet up on the southwest slope of Mount Marcy, which is the highest point in New York state. Descending from the Adirondacks, the Hudson splashes through forests of spruce, hemlock and pine. More than 1,200 lakes and ponds drain into the river. The headwaters average 60 inches of precipitation a year, 20 inches more than the rest of the river valley gets, but the branches of the trees slow the melting of the snow and the roots retard runoff. The Hudson almost never floods. Through these upper reaches beavers work along the banks of the tributary streams, and white-tailed deer are abundant. Black bear, which have been known to exceed 600 pounds, are so common as to be a nuisance to summer campers. There are fishers, a very large and relatively rare member of the weasel family, and bobcats, and once in a while a lynx wanders south from Canada. There may even be a mountain lion or two. Sporadically, there are reports of gray wolves, but these are coy dogs, a cross between a coyote and a dog gone wild. A genuine wolf has not been seen since 1912. The last elk was shot in 1942, and the moose disappeared back in the 1860s. In 1951 a moose showed up on a golf course near Troy, then galloped off to parts unknown. The guess was that it had not come down from the Adirondacks but somehow had straggled across the country from northern New Hampshire or Maine.

In the 1920s and '30s the State of New York Conservation Department conducted biological surveys of all the watersheds in the state. Three volumes dealt with the Hudson, and they contain detailed papers on the aquatic plants, plankton, insects and fishes of the region. Every pond or stream feeding into the river was noted and numbered, and many were examined closely. Lake Tear of the Clouds itself was found to have no fish at all. Some biologists believe that trout were planted in other remote ponds and lakes in the area by ducks and geese that accidentally picked up the adhesive eggs on their legs. Farther down, the Hudson has native brook trout. Some of the feeder streams have so many, in fact, that the fish are stunted because of overpopulation. The trout in the river itself are mostly browns. The brown trout were imported from Germany and Scotland in the 1880s when the brook trout began to die after deforestation caused the water temperature to rise.

In Thirteenth Lake, which drains into the Hudson, the Conservation Department has stocked Sam Browns, a cross between a female brown trout and a male Atlantic salmon, but so far none has been seen in the river. Whether or not the Hudson itself ever was an Atlantic salmon river is a matter of dispute. The consensus now is that the river was south of the salmon range and

probably had only a few strays. The Hudson is too warm and too slow to attract salmon in any number. Between 1873 and 1882 the Fish Commission of New York planted several hundred thousand young salmon for stocking in the river, and the results were not cheering. Few were ever seen again, though in 1930 an angler reported catching a 15-pounder in the river near Kingston. In all probability it was a stray. (Then again, an angler never knows what he may catch in the Hudson. In the summer of 1932 a fisherman said he caught a barn-door skate near Albany.)

By the time the Hudson reaches Warrensburg in the foothills of the Adirondacks, it has descended more than 3,000 feet in 70 miles. The temperature of the water has risen so that only a few brown trout linger—they can withstand higher temperatures than the brook—and "warm water" fish, such as northern pike, pickerel, black bass and sunfish, are numerous. The bass are essentially intruders; they are native to the Midwest and the Great Lakes and entered the Hudson only upon completion of the Erie Canal in 1825.

At Glens Falls and Fort Edward raw sewage pours into the river, and the mills and factories add their wastes. Dams and locks choke the flow and turn the river into a chain of sluggish lakes. By the time the Mohawk, an "open sewer" according to innumerable state reports, joins the Hudson and the river passes over the Troy dam, it has become highly polluted. Nonetheless, there are fish, including striped bass and shad, that nudge against the dam. But a short way south Albany adds its sewage, and the filth is too much: the river dies. For 10 miles there is a fishless stretch of water. In place of fish are the strange creatures that biologists call "index organisms" because they are the telltale signs of gross pollution. There are sludge worms, which dwell upright in the mud in stationary tubes, half burrow, half chimney. Pale red in color and 2,000 to the square foot, they carpet the bottom. There are leeches, rattail maggots, the larvae of syrphus flies, which as adults are bright and handsome insects that look like bees and wasps and feed on the nectar of flowers. In warm weather methane gas bubbles the size of grape-fruit rise to the surface. The stench is overpowering. The Hudson is so awesomely foul here that it is a source of wonder to sanitary engineers, and in the trade they speak of the place, almost fondly, as "the Albany pool." When the upriver runoff slows in the summer, the pool is at its worst. There is little current to thrust the pool downstream, and on those rare occasions when it does stir, the rising tide from the sea pushes it back up toward the dam.

The Water Resources Commission of New York has made plans to clean the pool. In the late 1950s the state made extensive surveys of every watershed, building on what the biologists had done in their 1930 surveys. Every tributary and pond draining into the Hudson, every sewer outlet and industry pouring wastes into the river was studied, noted and numbered. The Albany pool has been given a "C" classification, which means that it should be fit for fishing. "It's a goal," says George E. Burdick, a Conservation Department biologist, in wistful tones. "It took us generations to contaminate the river this much, and we can't expect to rectify the conditions overnight. But, barring repeal of the law, it will be done."

South of Albany to Poughkeepsie, the Hudson flows through gently rolling country. Midway, the looming mass of the Catskills suddenly thrusts up from the tableland, some 30 miles back from the river. At a distance the mountains are mysterious; up close they are enchanting, their sides cut with sharp cliffs, waterfalls and rushing streams. Three hundred and fifty million years ago the sea covered the land where the Catskills are now. Then the sea retreated, and the rushing waters carved into the rising mountains, exposing the mollusks embedded in their flanks.

The west bank villages are hard put. "For Sale" signs are everywhere. During the 19th century these river towns prospered from shipbuilding, brickmaking and ice-cutting. Ice from the Hudson was shipped as far as the West Indies; now the icehouses, stacked from floor to ceiling with trays, are used for growing mushrooms. Should supply exceed demand, a slight draft over the trays will slow production satisfactorily.

Although the Hudson is off the Atlantic flyway, hunters in the upriver towns like to gun for ducks. However, ducks are scarce in the river flats north of Stockport. The Army Corps of Engineers is dredging a 32-foot channel to Albany for tankers and freighters, and the silt is dumped in the flats. "I hate to do it," a dredgeman says. "I'm a hunter myself, but you can't fight the government."

On the east bank, from Rhinecliff to Hyde Park, are the estates of Millionaires' Row. Some of the houses are still in private hands; others have been taken over by religious orders and the state and federal governments.

This far below Albany the river water has become, with time and proper treatment, fit to drink. The Hudson is Poughkeepsie's reservoir. The colonic bacteria from the Albany pool have died off, and the oxygen content has risen greatly. Fish abound, particularly giant carp that weigh up to 30 or 40 pounds. Goldfish weighing as much as a pound may sometimes be seen schooling with them. The carp arc the pigs of the river, roiling the bottom for decaying matter and making it difficult for bass and other game fish to sight their prey. (Carp were introduced into this country from France in 1831 by a Mr. Henry Robinson of Newburgh, who bred them in ponds and released them annually into the Hudson a dozen or two at a time. Robinson was later pleased to write that his fish were doing well in the river.)

To most persons the Hudson Highlands are the most spectacular part of the river. Storm King Mountain guards the northern approach, Dunderberg, Bear Mountain and Anthony's Nose the southern. At present, conservationists are fighting the Consolidated Edison Company, which wants to build a hydroelectric station at the foot of Storm King. The company also plans to build a reservoir southwest of the 1,355-foot-high mountain. Water would be pumped up from the river, and when power was needed would be released to pour down inside the mountain to turn generators. The power would be sent south by 20 miles of high-tension wires cutting through the Highlands and the hills of northern Westchester. Valley conservationists do not feel warmly toward Con Ed. Only a year or so ago, the company's atomic power plant at Indian Point, 10 miles south of Storm King, killed striped bass and other fish by the ton when they swam up a canal only to be blasted by high-pressure water jets. Until proper screening was installed, a truck used to take the fish to garbage dumps to rot.

West Point lies in the middle of the Highlands. From mid-May to mid-June this area is the center of the Hudson's striped bass spawning grounds. Here the river is at its deepest, 202 feet. The striper eggs weigh more than water, but the current keeps them afloat so the sun can warm them. After hatching, the fry generally move south to Haverstraw Bay, where they feed in the marshes of Croton Point. In the spring, about the time the dogwood is in bloom, the striper fishing off Croton Point can be superb. According to Howard Powley, a watch repairman in Croton, this is the one place in the river where the stripers will take artificial lures. Usually the fish weigh from three to seven pounds, but they are there in numbers. Croton is said to be Indian for striped bass. Ordinarily, Powley does not go as far as the point to fish. At lunchtime he walks across Route 9

in front of his shop, goes up the footbridge over the Central tracks and fishes from the breakwater near Croton station. Last year he took a 17-pounder on a bloodworm, and this year, the day after he had extolled the fishing to a friend, his daughter caught a 10-pounder off the rocks that look toward High Tor, the peak across the river at Haverstraw.

Commercial fishermen get stripers here, too, some of which go up to 40 or 50 pounds. They are unmarketable because they taste of the oil released in the river by ships. The netters either throw the fish back, where they die from torn gills, or take them home and soak the fillets in brine overnight to wash out the oil. The big stripers frequent the old oyster beds in the Hudson, where they nose about for marine worms, herring and other succulents. The muck in the bed of the main channel offers little food, but the marshes are glutted with riches. There are blue crabs that scuttle up past the harbor from the sea, snails that huddle on stones between the tide levels and barnacles that lie on their backs and kick food into their mouths with their feet. The barnacles are hermaphroditic, and when they are not clustered close together they fertilize themselves, perhaps accounting for their scientific name, Balanus improvisus. There is a species of isopod, Cyathura carinata—a cousin of the sow bugs that are found on land under rocks—that burrows into the muck. Sturgeon feed upon them. In Haverstraw Bay there are both salt- and fresh-water shrimp and prawns. The fish feast on all. "The lower Hudson compares favorably with the richest lakes," a biologist once noted.

At one time the oyster beds in the river ran from Peekskill to the Narrows, a distance of 50 miles. In places the shells of the old beds are 10 to 14 feet thick, and archaeologists excavating Indian sites on Croton Point have found shells in camps that were 6,000 years old, the oldest findings of their kind in the eastern U.S. In the early 1950s, Long Island oystermen, led by Butler Flower of Bayville, leased 5,000 acres of river bottom in the Tappan Zee and Haverstraw Bay from the state. The spawning beds in the Sound inexplicably had become unproductive, and the river offered a likely alternative. Mature oysters were sown, and their spawn—known as sprats—"set," or took, on bits and pieces of the old shells. After a year the young oysters were pumped up from the river and transplanted to "growing" grounds in the Sound. After two years there they were transferred to "fattening" grounds near Bayville on the north shore of Long Island. The Hudson oysters "fattened up" well, Flower says, but then in the spring of 1957 "there was a lot of snow up the river, and a slug of fresh water came down and killed practically everything off." Flower has since planted some more mature oysters in the river, but so far their sprats have not set.

Most of the commercial fishermen on the Hudson work only in the spring, when the shad are running. But Jimmy Mowbray of Peekskill works all year round—on a part-time basis. Jimmy lives on Annsville Creek, which flows into the river. Outside his house, a red-and-white bungalow just off Route 9, is a sign saying "LIVE BAIT WORMS." Jimmy is 26, 6 feet tall and wears glasses. For two years he pitched minor league ball for the Phillies. One of his roommates was Art Mahaffey. When Jimmy's arm went bad after relieving in 11 straight games for Tiffin, Ga. he came back home to fill an opening in the electricians' union. The Mowbrays have always fished the river. Jimmy's great grandfather used to net sea sturgeon in the days when they were so plentiful they were known as Albany beef and brought 6¢ a pound. Once Jimmy's Uncle Ed, who lives up in back, helped to net a sturgeon that was so big he was unable to land it. The fish seemed almost as long as the 15-foot skiff he was in. Now and then shad fishermen will find a sturgeon. In 1953 a 251½-pounder was caught below West Point. It was eight feet long and had a girth of three and a half feet. Most shad nets are not strong enough to hold sturgeon, which in the

Hudson have been known to top 400 or 500 pounds. Sometimes fishermen will find huge holes in their nets, torn by sturgeon that rip through like torpedoes.

The Mowbrays used to net for the Fulton Fish Market. Nowadays Jimmy catches eels up to four feet long and stores them in boxes in Annsville Creek. He sells them to local Italians, who like to eat them on feast days. Most of Jimmy's business is done in baitfish. The river is aswarm with killifish, a very hardy minnow that ranges from half an inch to four inches long. They flock into the coves and inlets to feed on mosquito and midge larvae, and Jimmy scoops them up in a seine. He keeps a stock of 40,000 in boxes next to the eels out in the creek, and he puts 2,000 of them in two bathtubs in his cellar for ready sale. He gets 35¢ a dozen.

In the spring Jimmy sets fyke nets in the creek mouths to catch fish for stocking ponds. He leaves the nets in the water for two or three days, and when he goes back they are so full he cannot lift them. He shovels the fish out into 50-gallon cans. There are white perch, black bass, catfish that go up to six or seven pounds, pickerel that go up to three, small stripers, an occasional rainbow or brown trout (that the law makes him throw back), rock bass, sunnies, crappies, carp, suckers and big shiners. One customer, a lawyer in Croton whom Jimmy liked, wanted a pond stocked. Jimmy gave him the works: 700 pounds of fish.

During the winter the river freezes over, and Jimmy sets a trap line in the marshes. Most of the time he catches muskrats. He gives the carcasses to friends for eating and cures the skins in the cellar. They fetch $1.25 apiece from a wholesaler in Poughkeepsie. Four or five years ago, before American furriers started buying from the Russians, the price was $4. Occasionally Jimmy gets a mink, which brings $7, and up the creeks he gets beavers, which sell for the same price. He strikes it rich on otters. A good male sells for $20.

Hudson River life is free-spirited around Croton Point, where you can catch almost any kind of fish, but 25 miles downstream Thomas R. Glenn Jr. is at his busiest catching something different—polluters. Mr. Glenn, the director and chief engineer of the Interstate Sanitation Commission in New York City, is a tall, heavy-set Texan who is blunt and direct. "Some sanitary engineers prefer high-sounding terms like 'wastes,' " he says. "I say garbage." Established by the States of New York, New Jersey and Connecticut, the ISC has jurisdiction over the waters of the greater harbor area east to New Haven and Fire Island inlet, south to Sandy Hook and north to the Bear Mountain Bridge.

The main problem in the lower Hudson is the 175 million gallons of raw sewage that the West Side of Manhattan pours into the river every day. It issues from skyscrapers, apartment houses, gas stations, nightclubs, stores, theaters, restaurants, tenements, factories and hospitals. It floats down the drains that gird the city streets and empties into the river, where the tides and currents rock it back and forth between the Narrows and Croton Point. The majority of New Yorkers are unaware of this phenomenon that commands almost as many awed students of sewage as the Albany pool. One scientist told a fascinated gathering that the river was "one of the most astonishing of the natural agencies for the disposal of sewage that I know of," and Earle B. Phelps, professor emeritus of sanitary science at Columbia, has written, semijocularly, in his otherwise serious and scholarly treatise, Stream Sanitation: "Often homeward bound commuters, crowded on the front end of a [Staten Island] ferry boat on a hot summer evening, enjoy the light spray of salt water carried aboard by the wind as the bow of the boat hits the passing waves. This is surely a situation where ignorance is bliss." This year, Glenn says, New York City is going to

start construction of a $60 million secondary sewage treatment plant for the city's West Side. When the plant is finished along about 1968, it will be able to process a minimum of 220 million gallons of raw sewage a day, which will be good news for ferryboat riders.

Elsewhere in the greater harbor area, the ISC has made violators cease fouling waters. All in all, the ISC has been successful in more than 50 major cases. The commission has five inspectors, too few to police the area thoroughly, so in 1963 the commission installed an automatic robot monitor in the Arthur Kill, a waterway between Staten Island and New Jersey. The kill is lined with heavy industry, and it is a busier ship passage than the Panama Canal. The monitor checks the water every eight minutes. A thermometer takes the temperature, and analyzers in the device sample the pH (the relative acidity and alkalinity) and the dissolved chlorides and oxygen content. Telemetry sends the readings directly to the ISC office at Columbus Circle, where they are recorded on a graph. "When we put it in, we didn't tell anyone about it," Glenn recalls. "We used to come back to the office late at night or on weekends and watch the graph. We could see the polluting start. No one thought we'd know, but we did, down to the exact time, and after a warning the offending companies cut it out." The monitor has been so successful that Glenn is hopeful of installing more. "I am," he says, "very optimistic about the Hudson. It's just a matter of time before the river is cleaned up. I only wish it could be sooner."

Out beyond the Narrows and the Lower Bay, where the Ambrose Lightship rides, the Hudson no longer needs Mr. Glenn. It purifies itself by disappearing into the sea. The ancient channel of the river carves through the continental shelf until, 100 miles away, its canyon plunges more than 1,000 fathoms down to meet the ocean floor. The canyon, or the gorge, as it is sometimes called, lies to the south of the shipping lanes, and for most of the year few men visit it. The distant bottom is marked only by blips on echo sounders, and the water, reflecting the vast depths, is vivid indigo.

The canyon was largely unexplored until 1928, when William Beebe, the oceanographer and director of the Department of Tropical Research of the New York Zoological Society, chanced to visit it briefly. "I had to spend most of the summer of 1928 in New York City," he later wrote in the society's Bulletin, "and yet I longed to be exploring on the edge of known things. How could I manage both at once? There came to mind a cartoon in which Skippy and his small friend stand for a long time gazing out to sea. Throughout three layers of cartoon strips not a word passed between the two urchins. At last, without turning his head, Skippy said, 'You know, that's only the top of it.' That cartoon set me thinking, and brought to mind the Hudson Gorge, silent, black, cold,—with its sunken vastness filled with unknown forms of life."

With the help of L.F.V. Drake, president of the Salvage Process Corporation, Beebe borrowed a tug, the Wheeler, and set course for the canyon. There the surface water temperature was 68°, while 3,000 feet down it was 40° and at the bottom 31°. A special winch lowered weighted silk nets half a mile as the Wheeler crawled along at two knots. At a wave of Beebe's hand the winch began to reel in, and finally the nets came aboard, dripping and bulging with "pink treasure, glittering and gleaming, trembling with strange vitality, every spoonful a cosmos of hundreds of living beings." The fish were so cold they were almost painful for Beebe to touch, and among them were several that hitherto had been found only in such places as the Gulf of Guinea off the west coast of Africa, Panama and the Pacific. Two species were completely unknown. One, a deep-water relative of the herring, Beebe named Bathytroctes drakei, in honor of the helpful Mr. Drake; the other, a small, transparent, ribless, balloon-skinned creature related to the angler-fish,

he called Haplophryne hudsonius, for the canyon. All told, Beebe spent only two days at the canyon and he never returned, but he considered his findings so important that he formally named the jaunt aboard the Wheeler the Eleventh Expedition of the Department of Tropical Research of the New York Zoological Society. "Long after the last animal and insect from the heart of Africa and New Guinea have been collected and named and the north and south poles have been crossed and recrossed with tourist planes," Beebe wrote, "strange fish and other creatures will still be brought to light within a day's motor-boat run of New York City."

It was not until some 30 years after Beebe's trip that a different kind of fisherman took a look at the canyon—a sports angler named Finn Haakon Magnus. Magnus is a beefy, inventive Norwegian who came to the U.S. at 17. He is now 56. Fifteen years ago he made a fortune manufacturing plastic harmonicas. He added to his wealth by inventing a small portable plastic organ with numbered keys, which enabled a musical illiterate to play a tune within 10 minutes. Given ample money and time, Magnus decided to turn to the sea. He bought a 40-foot Matthews cruiser and navigational charts. After some study—Magnus is not the sort to do things on impulse—he reasoned that the Hudson Canyon looked promising, and so he lassoed on extra gasoline tanks and embarked to jeers that he was "a crazy Norwegian." What he discovered was some crazy big-game fishing. He soon sold his boat and spent $100,000 on a new one specially designed to make the long trip from Brielle, N.J. in four and a half hours. The new boat, a 47½-footer named Magnus, is equipped with radar, loran, depth finder, depth thermometer, fish finder, ship-to-shore telephone and a small plastic organ on which Magnus thumps out Home on the Range and You Are My Sunshine during starlit nights over the canyon.

He has found a tremendous variety of life in the canyon: giant leatherback turtles upwards of 1,000 pounds, killer whales, pilot whales, sharks and porpoises that can make the water boil for miles. Most of all, there are big-game fish, some of which are not supposed to be in the area at all. Pacific albacore are so plentiful as to be pests. One day Magnus caught 17 in self-defense. "I didn't want to catch any more," he says. "I wanted to get away from them." There are blue marlin, very rare north of Hatteras, 500-pound bluefin tuna, the yellowfin tuna, a very warm-water fish, and white marlin from 45-90 pounds. Magnus' son, Kenneth, caught a rare bigeye tuna that weighed 245 pounds. There are multitudes of dolphin, bluefish and tilefish. Once Magnus caught two lancet fish in the depths. These are eel-shaped monstrosities with great spiny dorsal fins like sails and alligator mouths with sharp teeth an inch long. "I believe the canyon is the most fabulous fishing spot in the world," Magnus says.

Below the surface the water temperature fluctuates wildly. Within one 500-foot section, Magnus found a difference of 27°. The Gulf Stream flows 150 miles to the east, but there are days, Magnus says, when it veers in toward land. A pale blue, it snakes into the indigo waters of the canyon, and the temperature jumps 10°. It carries small, strange fish by the thousands, and flying fish ordinarily not found north of Florida fill the air with frightened leaps.

After fishing the canyon for five years, Magnus has come up with a theory of his own on fish migration. In essence, he believes that fish do not migrate by instinct or what one might call free will. They move from place to place, he says, because they live in blocks of water that are constantly shifting according to the rhythms of the sea. The fish, in short, are "captives of their environment," and they are wafted into the canyon by forces beyond their control.

Frank Mather III, an associate scientist at the Woods Hole Oceanographic Institution who corresponds with Magnus, says, "We're getting quite excited [about the canyon] at the Institution. There is absolutely no doubt that large predator fish are concentrated in unusually large numbers." Mather, in fact, is so excited that he has asked the National Science Foundation to back extensive studies of the canyon.

Although Magnus spends the summer at sea in splendid isolation, Mather reports that in October and November commercial fishermen, mainly from Nova Scotia, flock to the canyon. "The Canadians," Mather says, "learned about it from the Scandinavians, who accidentally found swordfish while fishing for sharks." The commercial fishermen catch swordfish with hooks, instead of the traditional harpoons. They string long, multihooked lines from floating barrels, and the swordfish either take the motionless bait or are foul-hooked in the attempt. In a good night a single ship may haul in as many as 100, more than a crew used to harpoon in an entire season. Perhaps the scope of the Hudson is best seen by simply comparing its beginning in a fishless mountain pool with its terminus 100 miles at sea where fishing fleets catch swordfish by the thousands.

ILLUSTRATION

CONTINENTAL SHELF

HUDSON CANYON

Lancet Fish

Killer Whale

Porpoise

AMBROSE LIGHTSHIP

STATEN ISLAND

HAVERSTRAW

WEST POINT

NEWBURGH

White-tailed Deer

KINGSTON

Black Bear

ALBANY

MT. MARCY 5344

LAKE GEORGE

LAKE CHAMPLAIN

TROY

HUDSON

POUGHKEEPSIE

PEEKSKILL

CROTON POINT

TARRYTOWN

YONKERS

Striped Bass

Blue Crab

LONG ISLAND

HUDSON PALISADES

White Marlin

Leatherback Turtle

Swordfish

PHOTO

A water skier avoids peril of a sunken sailboat in the Hudson north of the Beacon-Newburgh Bridge. Here, more than 100 years ago, trashy carp were first stocked in United States waters.

PHOTO

Almost 200 ships, from freighters to troop transports, are in mothballs near Bear Mountain. The government sells four a year as surplus. Average price for a Liberty ship: $50,000.

PHOTO

With catfish, perch, carp and shiners, Jimmy Mowbray rows back to his home on Annsville Creek. Some of these fish were used to stock a pond; others were cut up to use as crab bait.

PHOTO

Crew members unload a giant tuna that Sportsman Finn Magnus landed above the terminus of the Hudson Canyon, which cuts a 100-mile trough through the continental shelf into the Atlantic.

By
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Robert H. Boyle (1928-2017)

SI Staff

Robert H. Boyle amassed more than 300 bylines, in everything from boxing to baseball, over nearly 50 years of writing for SPORTS ILLUSTRATED, but he was best known for stories on the environment. A groundbreaking piece in the Oct. 26, 1970, SI (Poison Roams Our Coastal Seas) reported on toxic chemicals in water sources, and he was an early voice on global warming. Boyle settled in Croton-on-Hudson, N.Y., where he founded the Hudson River Fishermen's Association in 1966. That organization morphed into Riverkeeper in '83, which became an environmental model and the inspiration for the global Waterkeeper Alliance. Boyle died last week after a battle with cancer. He was 88.