



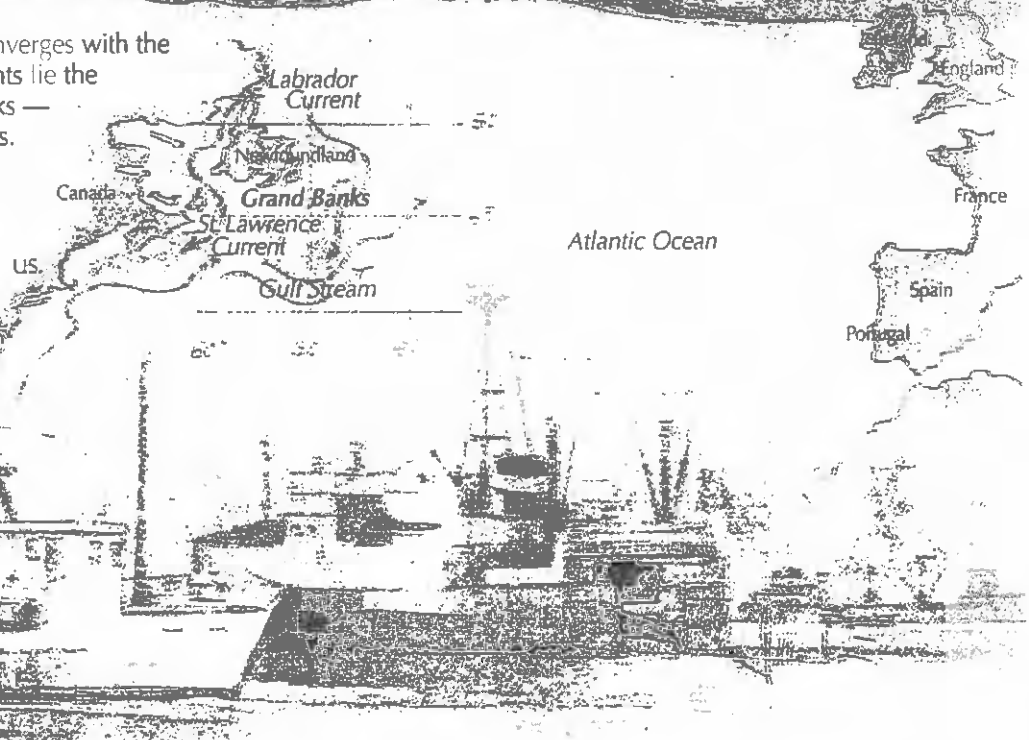
# EMPTY NETS

*Atlantic banks  
in peril*

**W**here the warm Gulf Stream converges with the cold St. Lawrence and Labrador Currents lie the underwater plateaus of the Grand Banks — once the world's richest fishing grounds.

Throughout this region, fish populations have plunged to unprecedented lows. Boats are idle. Docks are quiet. Once-thriving ports have become welfare villages.

Drastic measures have been put in place to save the surviving fish and the people who depend on them. So far, these measures have not worked...



LOUISBOURG, Nova Scotia  
DEEP WITHIN THE BOWELS of the vessel Cape Roseway, Wayne Bonnell, the luckiest man in an unlucky place, pushes his weight against a steel hatch. The door groans inward, and Bonnell pokes his flashlight into the blackness.

"This is where they used to dress the fish," he says. "It's grim now, pretty grim."

The Cape Roseway, 150 feet of modern fishing power, sleeps in Louisbourg's harbor, sheltered from the heavy swells that wash Cape Breton Island. Bonnell tours the rust-pitted hull and shakes his head.

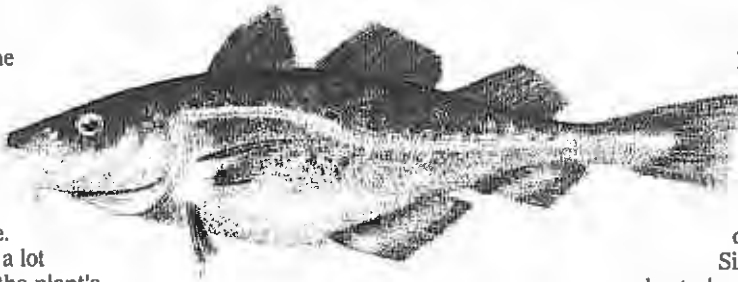
"Nothing but scrap," he says.

The maintenance man at a closed fish-packing plant, Bonnell lives Louisbourg's strangest routine. Each day he parks his sedan alone in a lot with 191 spaces. Then he checks on the plant's firefighting system, the last daily chore at a complex that once employed more than 400 people.

A decade ago, few would have guessed Louisbourg's fate. Fish prices were high. The Cape Roseway's nets were full. The town was riding a gold rush.

In those glorious days, the rumble of diesels outside the National Sea Products plant blended with the foghorn to make the harbor's char-

## PLUNDER OF THE COD PUSHES A SOCIETY TO THE BRINK



Stories by C.J. Chivers

Illustrations & graphics by Frank Gerardi

Photos by Suzanne Keating

JOURNAL-BULLETIN STAFF

Part one of a three-part series

acteristic sound. It was, residents thought, the orchestra of progress.

So promising was the future that the company was busy refurbishing its fish-packing line. Yet no sooner did new machinery rattle to life in 1988 than a strange thing happened. The plant began to shut down.

Throughout Canadian waters, populations of valuable groundfish — cod, haddock and flounder — had crashed. For a few more years fishermen went looking for fish, hoping to find the thick schools they remembered. They never did. The hunt finally ended four years ago, when Canada declared a moratorium on its renowned cod, telling fishermen that all but a small swath of water off Nova Scotia was closed to cod fishing.

Since that day, empty plants and rotting boats have become familiar Atlantic sights. But there is no better tombstone for the end of the Grand Banks fishery than this new Louisbourg factory and the mothballed trawler Bonnell looks after each day. Here rests the combined miscalculation of scientists, fishermen, politicians and business executives. For just as this plant prepared to plunge its knives into the great schools of cod, the schools of cod were gone.

Turn to **COD**, Page A-16

# Cod

*Continued from Page One*

A FEW HUNDRED YARDS from the Cape Roseway's stern, the uneasy Atlantic swirls over shoals at the harbor's entrance. A wave slaps the rocks and explodes skyward in a shower of foam.

Beyond this passage begin the most fertile fishing grounds the world has ever known, an ecological feature that was the principal reason Europeans settled in the area's inhospitable climate.

Within miles, boats steaming from Louisbourg encounter a submerged region of mountains and valleys: Curdo Bank, Misaine Bank, Artimon Bank and Eastern Shoal. The chart grows blank at the Stone Fence, a sheer drop where the continental shelf plunges into the Laurentian Channel. Further east, the bottom slopes back upward, the edge of the famed Grand Banks.

Almost anywhere beneath this roiling surface fishermen used to find fish, beginning with the cod that men in dories caught along the rocky shore. Farther out to sea, a skipper's options were as varied as the points on a compass: To the south, boats sailed the Scotian Shelf to the Gulf of Maine and Georges Bank; to the east, boats rode the swells some 200 miles to the fog-bound Grand Banks; to the north, boats steered around Newfoundland, where fishermen jigged and trapped cod in the company of brooding icebergs, which sail down from Greenland on the Labrador Current.

All of this is the kingdom of cod. Cod were once so bountiful here that sailors claimed to catch them in baskets. They were such a staple of life that people preferred them to lobster. The word "fish" was reserved for cod; all other species were called by their textbook names: pollock, redfish, haddock, salmon.

Certainly, cod are no salmon. Cod swim sluggishly, eat most anything, and have small, fleshy whiskers on their chin. When they mate they emit croaking noises. Brown brutes, the color of mud, they grow toadlike with age. But cod have two characteristics that elevate them above the Atlantic's other fish: boneless slabs of succulent flesh, and a tendency to gather in enormous schools. These two traits made them the most important fish in modern history.

- In the 500 years since John Cabot sailed into Newfoundland, schools of cod became the undersea equivalent of roaming herds of American bison. Societies were built because of them, armies fed on them. And much like bison, there were once so many cod that the men who ravaged them could not imagine their demise.

"In the late '80s we denied reality," said Henry Demone, president of National Sea Products. "We continued to fish and we couldn't believe this was happening."

IN RETROSPECT, just about everybody remembers the omens. Even as National Sea Products executives planned the new Louisbourg plant, signs of stress were showing up in the schools. Boat captains sailed longer for fewer fish. And the cod they dredged up seemed less robust — "slinks," the fishermen dubbed them, 18 inches long and thin as your wrist. Something was awry on the Grand Banks.

Today, theories abound about the disappearance of cod. Residents of the dying fishing villages speak of ozone depletion, pollution, global warming, a population boom of predatory seals and an inexplicable oceanic cooling that has made huge tracts of the sea colder than the fish prefer.

"Personally I think you can eliminate ozone layer, you can eliminate pollution," said Dr. Michael Sinclair, manager of the Marine Fish Division at the Bedford Institute of Oceanog-



**'If there's one thing I can't stand it's the bureaucrats sitting in their offices and telling us what's wrong with the ocean. They couldn't tell a lobster from a haddock.'**

*Jack Troake,  
Newfoundland  
fisherman*

raphy near Halifax. "We're really down to the big three: seals, temperature and fishing."

In the mid-1980s, under pressure from animal rights groups, Canada prohibited the hunting of baby harp seals. Since then the seal population has more than doubled. Now nearly 5 million of the animals live in Canadian waters, and harp seals eat cod, among other things.

As the seal herd grew, an unrelated natural phenomenon was drifting across the Grand Banks. Cod thrive in water about 40 degrees. But since the late 1980s the subsurface water in large parts of the Canadian cod habitat has plunged to near freezing. This cooling appears to have stalled the growth and spawning rates of the fish, key elements of stock recovery. What chilled the water is still being studied; when it will warm up is anybody's guess.

"It could start to warm up in the next decade or so, but we just don't know," said Dr. Kenneth Drinkwater, a climatologist who also works at the Bedford Institute.

Sinclair and Drinkwater agree that the fish might have survived the combination of frigid water and abundant seals. But a third factor — modern fishing — pushed the stocks to collapse.

MODERN FISHING came to Canada soon after World War II when industrialized nations turned to the sea for protein to feed their growing populations. In a race for the fish, Germany, Britain, Spain, Norway and Russia deployed high-seas trawlers that scoured the banks with efficiency that would have been inconceivable to the 20-odd generations of traditional skiff fishermen.

In 1977, citing concerns about the number of high-tech boats, Canada declared sovereign all waters within 200 miles of its coast. The move effectively restricted foreign trawlers. But rather than encouraging conservation, Canada replaced the foreign draggers with ships of its own. A coastal fishing boom began.

This new offshore armada towed massive nets and deployed thousands of gillnets. Near the coast, cod trappers and jiggers crowded the coves. As boats gave up their cargo, heavily mortgaged fish plants worked double shifts to satisfy shareholders. Fishermen probed the depths with high-resolution electronics and navigational aids. Few fish escaped.

Wayne Bonnell remembers the boom at Louisbourg. Soon after Canada took over the fishing grounds, more than 100 local boats plied the sea. Draggers arrived with fish, trucks departed with fillets. To keep pace, the plant employed more than a third of the town's 1,400 residents, and even hired workers' children and college students. Now the workers collect public assistance.

"Nobody left but me," Bonnell says.

A similar scene is played out all along the Canadian coast, where many fishermen blame the government for presiding over a pillage.

"If there's one thing I can't stand it's the bureaucrats sitting in their offices and telling us what's wrong with the ocean," says Newfoundland fisherman Jack Troake. "They couldn't tell a lobster from a haddock — and they were in charge."

Nonetheless, Newfoundland and Nova Scotia are not alone. More than 80 percent of the world's fish stocks are in crisis today. Brian Tobin, the former federal fisheries minister and the premier of Newfoundland, says the United States fishing industry has spiraled almost as far as Canada's.

"One of the great tragedies of what has gone on in this country, and what is ongoing now and is happening in the United States, is that we've done this to ourselves," Tobin said. "And we had our eyes wide open when we did it."

## EMPTY NETS: *Atlantic banks in peril*

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**'One of the great tragedies of what has gone on in this country ... is that we've done this to ourselves. And we had our eyes wide open when we did it.'**

*Brian Tobin,  
premier of  
Newfoundland*



**IDENTITY CRISIS:** *A solitary iceberg floats in Notre Dame Bay off Twillingate, where residents wait with trepidation for 1999, the end of the federal unemployment package.*

Journal Initiative/SUZANNE KEATINGE

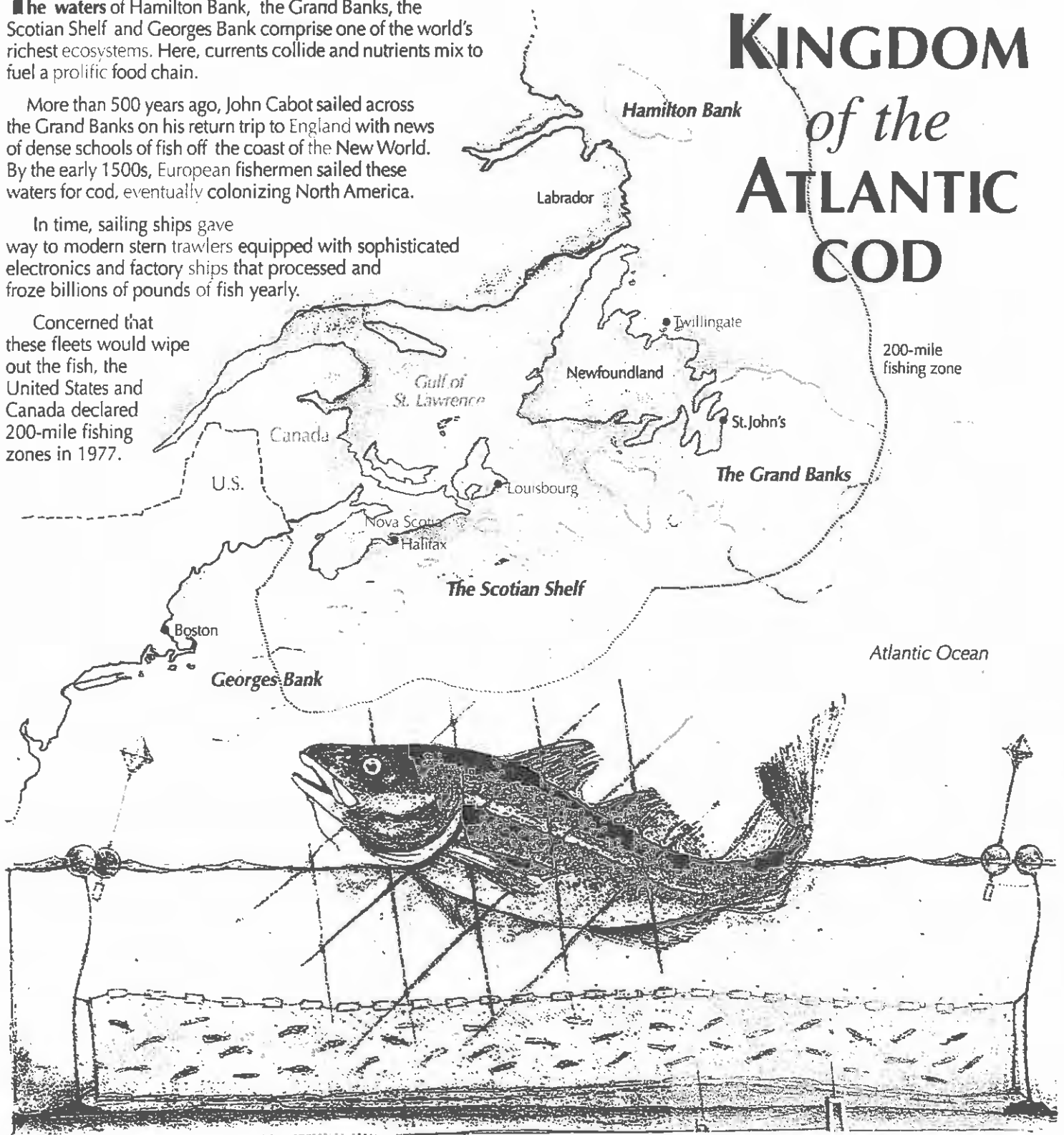
**T**he waters of Hamilton Bank, the Grand Banks, the Scotian Shelf and Georges Bank comprise one of the world's richest ecosystems. Here, currents collide and nutrients mix to fuel a prolific food chain.

More than 500 years ago, John Cabot sailed across the Grand Banks on his return trip to England with news of dense schools of fish off the coast of the New World. By the early 1500s, European fishermen sailed these waters for cod, eventually colonizing North America.

In time, sailing ships gave way to modern stern trawlers equipped with sophisticated electronics and factory ships that processed and froze billions of pounds of fish yearly.

Concerned that these fleets would wipe out the fish, the United States and Canada declared 200-mile fishing zones in 1977.

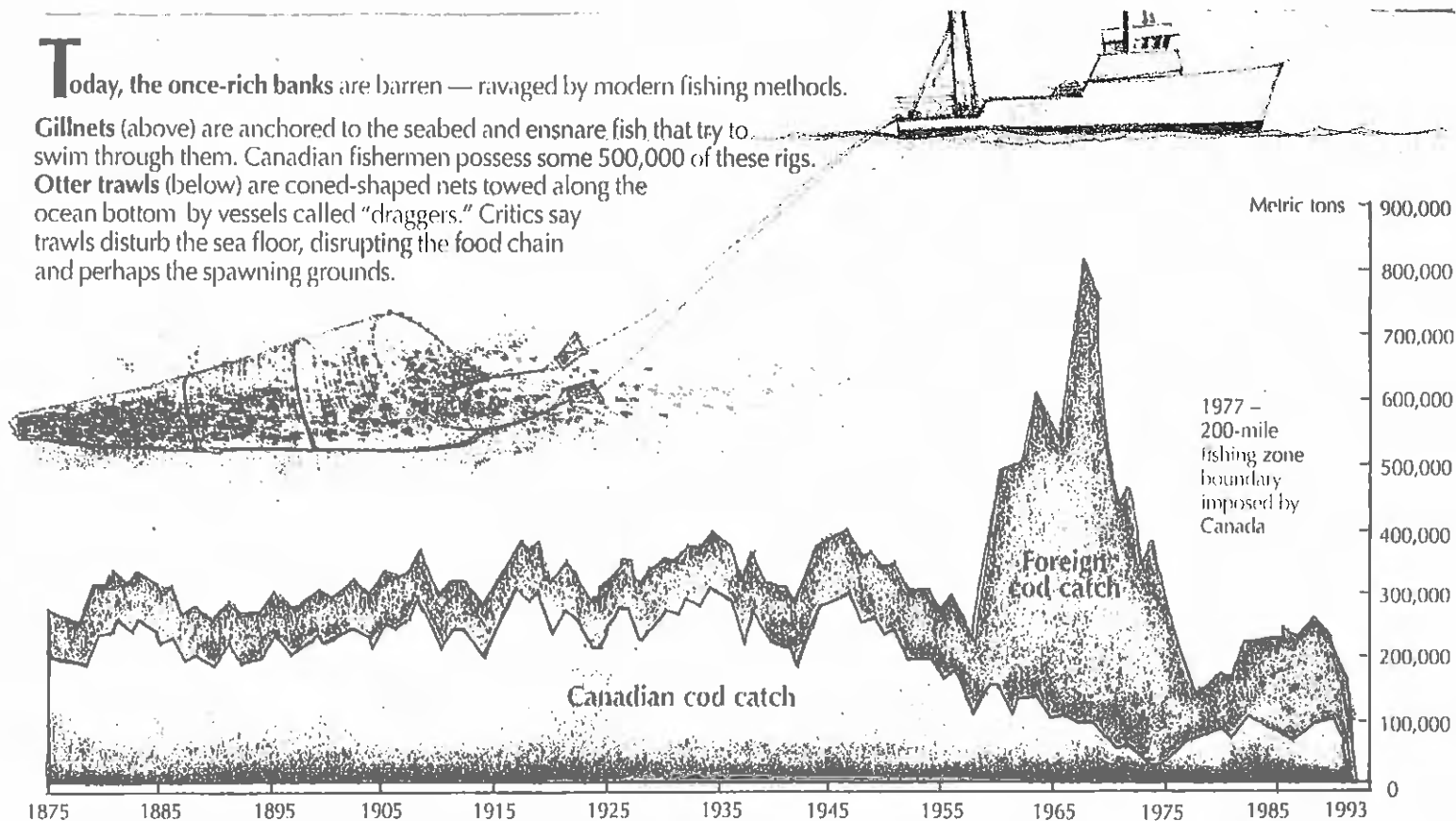
# KINGDOM of the ATLANTIC COD



**T**oday, the once-rich banks are barren — ravaged by modern fishing methods.

**Gillnets** (above) are anchored to the seabed and ensnare fish that try to swim through them. Canadian fishermen possess some 500,000 of these rigs.

**Otter trawls** (below) are coned-shaped nets towed along the ocean bottom by vessels called “draggers.” Critics say trawls disturb the sea floor, disrupting the food chain and perhaps the spawning grounds.



**T**he first determined assault on the cod stocks began in the 1950s when the industrial world unleashed modern draggers in the North Atlantic. In 1977 the United States and Canada curbed the foreign fleets. But rather than encouraging conservation, the two nations continued to overfish the banks. By the early 1990s, the cod stocks had crashed.

SOURCE: Department of Fisheries and Oceans of Canada

Journal Bulletin / FRANK GERARDI

# Its seas barren, a village slowly dies

**EMPTY NETS:** *Atlantic banks in peril*

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By C.J. CHIVERS  
Journal-Bulletin Staff Writer

TWILLINGATE, Newfoundland — Each afternoon, John Anstey adjusts his necktie, unlocks the door to the Anchor Inn, and escorts a group of unemployed townspeople into his lounge.

Wordlessly, the crowd drifts to the bar's five slot machines. No one orders a drink. No one wastes a coin in the jukebox.

"Zombies and drones," Anstey says. "People come in and they just get stuck."

Gone are the big spenders of a few years ago, when Anstey's 170-seat bar was often so packed that he worried about getting raided by the fire commissioner. In their places sit today's regulars: a group of subsistence-check gamblers, staring at slot machines, mesmerized.

Like a bad practical joke, gambling arrived in rural Newfoundland soon after cod fishing left. As one arm of government mailed unemployment checks, another stocked seaside villages with slot machines, making bleary-eyed gamblers another symptom of Twillingate's deepening malaise.

Not long ago, Twillingate was among the world's last cultures living directly off wildlife. Generations timed their lives to seasonal harvests of seals, fish, berries and moose. The town built its infrastructure on the profits.

But in the four years since Canada prohibited cod fishing and curtailed fishing for other species, Twillingate's fish plant has shut down, the hospital has slashed medical service and the nearest community college has been slated for closure. Almost all of the households collect government assistance.

Twillingate, once the business center of icy Notre Dame Bay, has become a welfare village.

A FEW MINUTES BEFORE lunch the procession begins. Men mill about in front of the 390 post office boxes at the Stuckless food market, waiting for their unemployment checks. Pickup trucks idle in the lot outside. A similar scene takes place across town at the Main Street post office, where laid-off fish plant workers stand, hands in pockets, beneath the fluttering Canadian flag.

"What am I going to do, go to the mainland and look for work?" says Kevin Hynes, 32, an unemployed plant worker. "They'd laugh at me. You can't leave here and take a job for four dollars an hour. You can't make it work."

His father, Ronald, enters the post office for the third time.

"Empty," he says, peering through his mail slot into the room beyond, where postal workers sort government checks. "Mail must be late."

Ronald and Kevin Hynes are two of 39,000 Atlantic Canadians receiving the Atlantic Groundfish Strategy, a five-year, \$1.9 billion federal program Newfoundlanders derisively call "the package."

More than an unemployment program, the package has a unique goal: to move half the fishermen and fish plant workers forever out of the fishing industry. It pays a "compensation for lost earnings" while offering job retraining, money for education, or up to \$7,500 to relocate. The average worker receives about \$260 a week.

## *About the series*

Journal-Bulletin reporter C.J. Chivers spent a month traveling in Newfoundland and Nova Scotia, interviewing the Canadian scientists, fishermen and policy-makers who have witnessed the disappearance of one of the hemisphere's great resources.

The project was underwritten in part by a Pulitzer International Traveling Fellowship.

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### **TODAY:**

How Canada and the United States plundered the Atlantic fishing grounds, and how fishing cultures have suffered.

### **TOMORROW:**

Its wild fish populations depleted, Canada redefines its relationship with the sea, including opening a hunting season on Atlantic seals.

### **TUESDAY:**

Once an institution of Yankee independence, the New England fishing industry struggles to avoid Canada's fate.

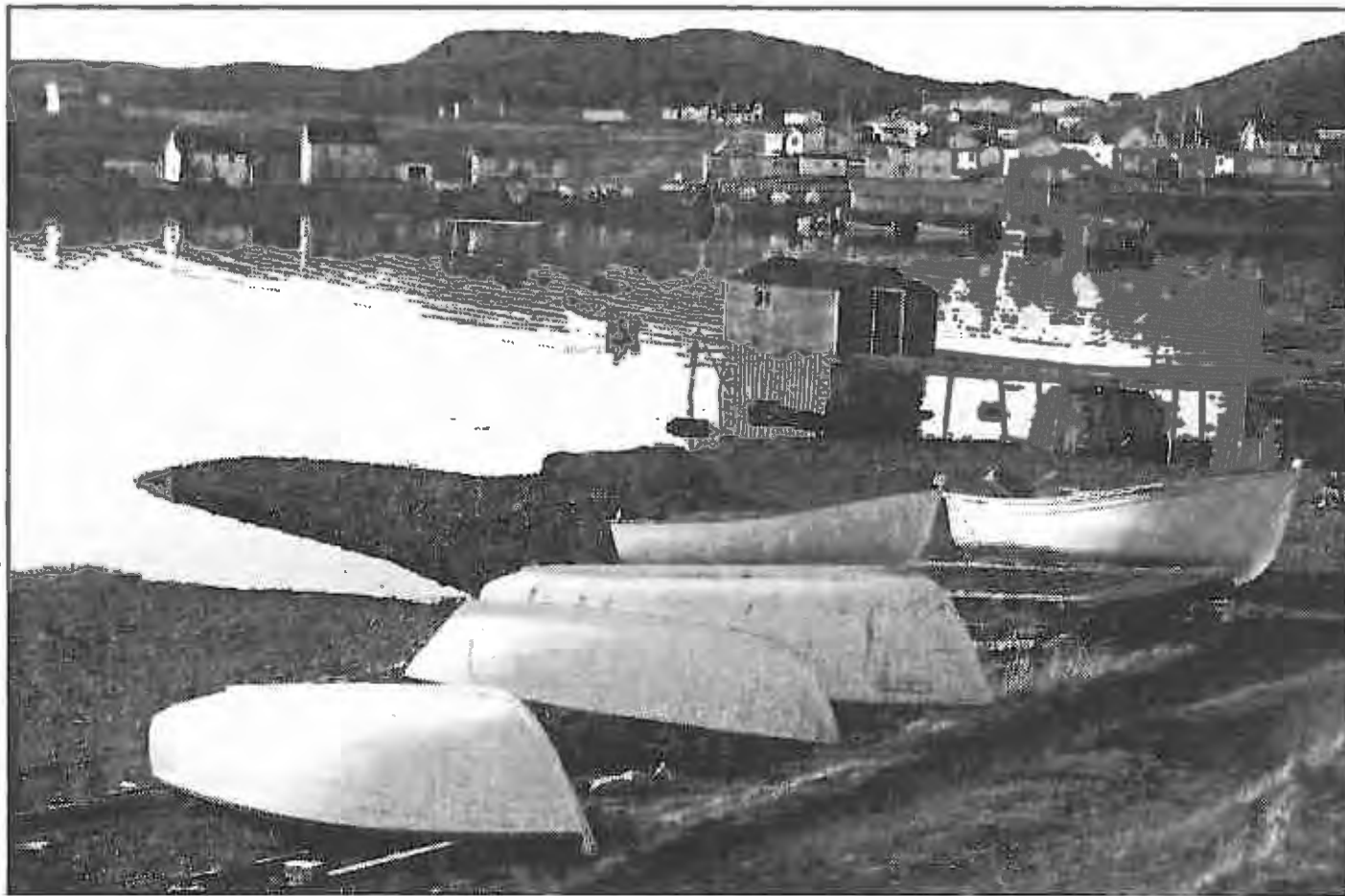
"Right now it means the survival of the town," says Town Councilman Cyril Dalley, a cod trapper who lost more than 90 percent of his income when the cod stocks crashed. "Without this income we wouldn't be a town."

This dependency on government is a new notion in rural Newfoundland, a place built on rugged self-reliance. When fishermen settled the island in the 18th century, they snipped their European roots and created a unique maritime society, complete with their own dialect. Residents still break for English tea by day. At night they drink rum splashed over chips of iceberg ice.

Prosperity came in 1973, taking the form of a causeway that linked Twillingate Island to Newfoundland's northern shore. Access to larger markets spurred the economy and swelled the population. As fish catches rose, the port attracted department stores, groceries, a lumber yard and a national bank. In the mid-1980s the population crested at about 5,000.

For a few years, natural resources withstood the growth. Salmon dashed up rivers after warm rains, and flounder covered the bottoms of coves. In the summer, schools of cod surrounded the town, pushing baitfish against coastal cliffs in boiling frenzies. To the local families, these seas brought more than wealth. They brought street lighting, snow removal, garbage pickup.

"Twillingate was once one of the most prosperous communities on the northeast coast of Newfoundland," says Mayor Harry



**BIDING ITS TIME:** *An iceberg drifts in Main Tickle, a narrow channel that separates Newfoundland from Twillingate Island, a fishing port that has been reduced to a welfare village by the collapse of the cod industry. At left, idle boats line the shore.*

Cooper, sitting in the empty Town Council chambers.

Today Twillingate approaches economic apocalypse.

In May the government began stopping package payments, the first step in the strategy's three-year phase-out. By 1999, a year Twillingate awaits with trepidation, the federal government's \$1.9 billion fishermen's aid program will be spent.

AS THE CASH FLOW dries up, Grayson Watkins, the manager of the local grocery, has his own way of measuring his townspeople's plight. Each week another family stops by his store for boxes, then packs up the belongings of a departing relative.

Lack of work has unleashed an exodus, Watkins says, making Newfoundlanders Canada's nomads, wandering the provinces in search of jobs.

"The young people are all gone, there's none of them left," he says, punching numbers into an adding machine. "There's nothing here to keep them."

Nobody can say for certain just how far the local population has dropped. Mayor Cooper expects this year's census to reveal a 16 percent fall, to about 4,200. Others predict a steeper decline, perhaps to 2,800 — a 44 percent reduction in less than 10 years.

For those who remain, much of the traditional life has been shattered. Fisherman Garry Troake remembers going into Watkins' grocery to buy a block of salt cod, which

had been shipped in from Russia.

"It was the first piece of cod I ever bought in a store," Troake says. "The grocery bagger, he looked at me and he began to cry."

Four generations of Troakes live in Twillingate, including Garry's grandfather, Peter, the family patriarch. A half century ago, in the excruciating instant he will never forget, Peter snagged his pantcuff on the spinning drive-shaft of a Grand Banks schooner. When a crew member found him, he was sitting upright in a pool of blood, his severed leg cradled in his arms.

A doctor reattached the leg with a rod fashioned on a primitive lathe, and Troake spent two years in bed. Miraculously, he survived. Since that ordeal, he has seen Twillingate gradually catch up with the rest of the world. Now his town risks a backward slide.

It begins, residents says, with the collapse of the town's struggling businesses. Many have already failed. Woolworth's closed, as did another discount department store. Two craft shops went out of business, along with a gift shop and an auto garage. At the Anchor Inn, which has 22 guest rooms and a restaurant, business has been halved.



**A CHANGE  
OF COURSE:**

*Since the crash of cod stocks, Garry and Hardy Troake have been forced to fish for other species. Garry Troake recalls the first time he bought cod at a market: "The grocery bagger, he looked at me and he began to cry."*



**PLACING  
HER BETS:**

*At the Anchor Inn in Twillingate, a woman plays one of the bar's five slot machines, hoping for a jackpot. Gambling arrived in rural Newfoundland soon after cod fishing left.*



**DELIVERY:** *Ronald Hynes checks to see if his unemployment check has arrived. Hynes is one of 39,000 Canadians receiving the Atlantic Groundfish Strategy, a five-year, \$1.9 billion federal program Newfoundlanders call "the package."*



**HOLDOUT:** *Four generations of Troakes have fished the waters off Twillingate, including Peter, the patriarch, who nearly lost a leg in a schooner accident a half century ago.*

Photos by  
**Suzanne Keating**

JOURNAL-BULLETIN STAFF

In a spiral that feeds off itself, the erosion of the tax base has intensified Newfoundland's fiscal crisis, prompting the provincial government to cut services.

For surgery, residents must drive 90 minutes to a hospital in Gander. But even some routine services are not available there. Suzanne Carter drove five hours to a hospital in St. John's for her daughter's tonsillectomy. The trip wouldn't bother her so much if it weren't for the new, but only partly operational, 65-bed hospital just behind her house.

"What's happening around here, and I don't think people realize it, is that the government is slowly but surely centralizing services," Carter says. "So you either have to move to a big urban center or get out of the province."

The drawdown has a precedent. In 1967 Premier Joey Smallwood, a former pig farmer, ordered people to leave the province's most isolated regions for areas he identified as "growth centers." The departees received cash payments. Those who remained met a fate unimaginable in the context of modern Canada's generous social system. The government shut down schools, closed offices, and stopped providing services.

The resettlement program, as it was called, left ghost towns. It also left psychic wounds in much of the rural population.

This spring, when Premier Brian Tobin announced deep cuts to the province's education system, rural Newfoundlanders screamed betrayal. Tobin had just ridden into office on the popularity he gathered as fisheries minister, when his high-stakes politics had forced international fishing boats away from Canadian fishing grounds and earned him the nickname "Captain Canada."

But soon after his election, Newfoundlanders began accusing Tobin of engineering another resettlement program.

Tobin waved off the criticism, saying the province simply can't afford its big government. But with medical services dwindling and the stream of unemployment money beginning to dry up, there is a strong sense in Twillingate that rural Newfoundlanders will be squeezed from the coast.

The sentiment rolls through town like the tide, set in motion by each new government announcement or newspaper editorial.

"You hear people talking about it continuously," says Myrtis Guy, principal of the elementary school. "Are they going to shut off the lights on rural Newfoundland?"

#### SUNSET COMES TO THE HARBOR.

For a few moments, the motionless icebergs glow a rich blue, embers of ice in the failing light. Then they fade into the blackness.

Inside the Anchor Inn, the crowd gathers near the window.

"I used to go to work at seven in the morning," says Roy Hamlyn, 47, a former plant worker. "When I got off in the evening I didn't know my own name. It was that busy."

He sips his beer, changes a five dollar bill to one-dollar coins — dubbed loonies in Canadian slang — and limps to an idle slot machine.

"Now it's boring," he says, squinting at his handful of change. "I can't tell you how boring."

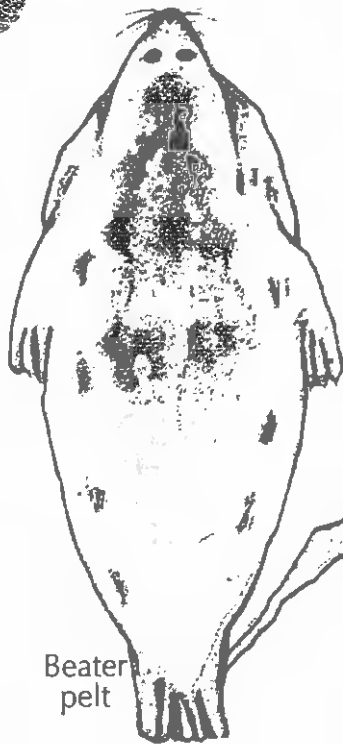
Later, as last call draws near, a group of fishermen slips into the men's room to smoke hashish from a makeshift pipe. Three women begin to dance, their faces awash in the dim glow of the slot machines.

Anstey and Hamlyn say they struggle to imagine 1999, millenium's end. The year promises sights they do not welcome: the last package checks in the post office boxes, the last man waiting the extra day for an envelope lost in the mail. Perhaps the fish will return before that day, perhaps fat cod will be stacked on the docks.

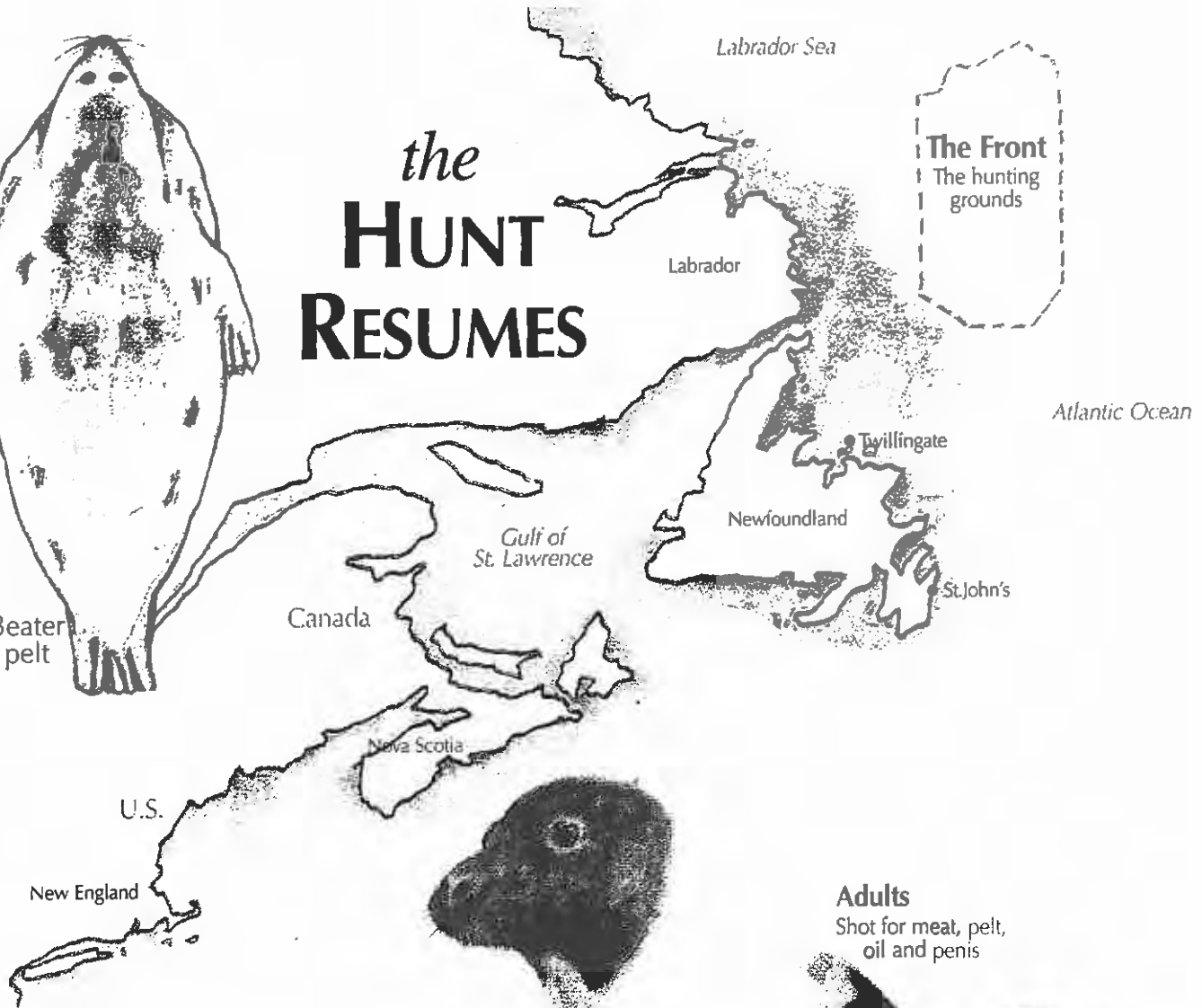
Anstey shrugs, foreseeing another scene. Perhaps, 1999 will be the year that modern Twillingate dies.

"It's evaporating," he says, counting loonies into a roll. "We're going back in time."

# the HUNT RESUMES



Beater pelt



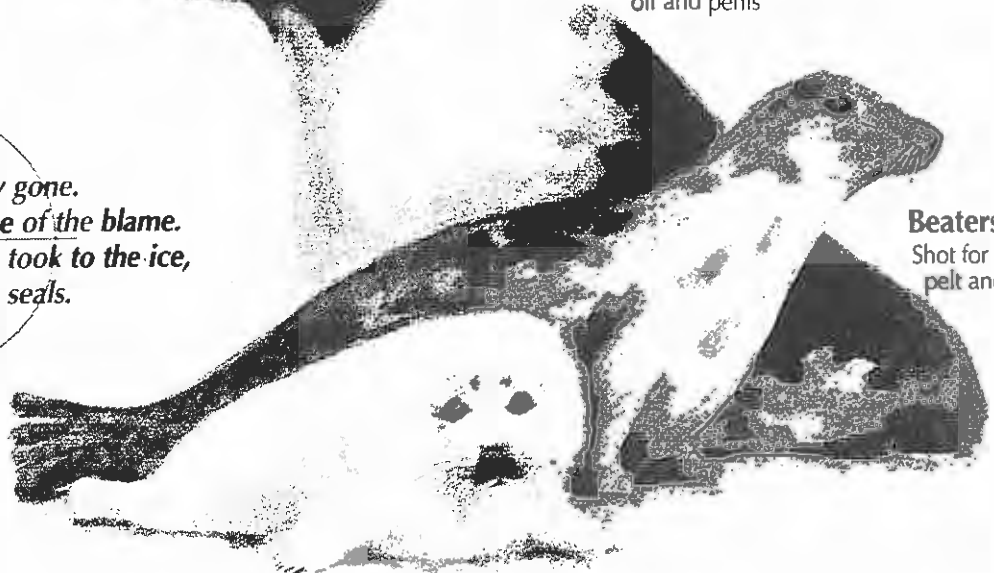
## Adults

Shot for meat, pelt, oil and penis



## Beaters

Shot for meat, pelt and oil



Whitecoats  
Remain protected

*The cod are nearly gone.  
Harp seals have taken some of the blame.  
This year Newfoundlanders took to the ice,  
shooting 242,000 seals.*

EMPTY NETS: *Atlantic banks in peril*

# In a harsh land, seal trade grows

*Second of a three-part series*

By C.J. CHIVERS  
Journal-Bulletin Staff Writer

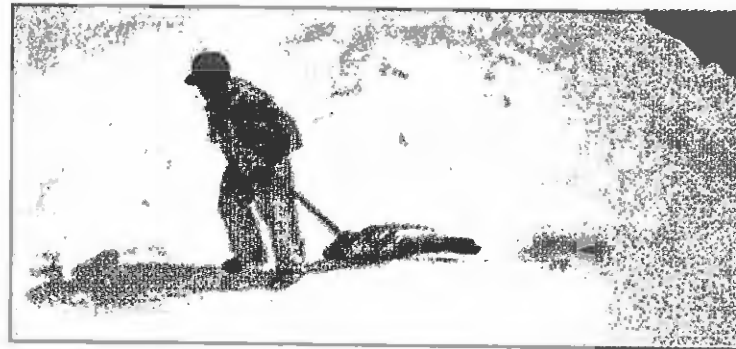
TWILLINGATE, Newfoundland — Wallace Hicks winches his 19-foot speedboat onto a trailer and pulls the drain plug free from the stern. A narrow stream of blood pulses out and splatters on the rocks.

Hicks pays no attention to the spreading stain or the skull nearby. Instead, he nods to the horizon.

"Bad weather's coming," he says. Grabbing a line that leads to the water, he heaves the pelts of three young harp seals onto the dock.

Wallace Hicks is a seal hunter, practitioner of a rejuvenated trade.

Ten years ago, hunters like Hicks faced hard times. A long and bitter campaign by environmental groups had forced Canada to ban the clubbing of baby harp seals, known as whitecoats. Around the world, markets for seal products were drying up under new marine mammal protection laws. All that persisted was a limited hunt for older animals —



*A crewman from the Lone Fisher drags a beater back to the ship. Hunters are seeking respect for their industry — and markets for their products.*

Special to the  
Journal-Bulletin

at best a marginally profitable affair.

It should have been a wildlife success story. With increased protection, the harp seal herd boomed to some 5 million animals, according to government surveys.

Instead, many Canadians have greeted the rebounding harp seals as a scourge. Shore-bound fishermen cringe at the thought of the seals gorging on the remnants of the Atlantic cod, further depleting a species that has nearly vanished.

This spring, in another strange chapter in the history of Canadian sealing, Canada relaxed its limits on seal hunting. Whitecoats remain protected, but some 7,000 licensed hunters shot 242,000 free-swimming seals — the first large-scale hunt of the animals in nearly two decades.

The new hunt followed a simple logic: Kill seals, save cod.

Turn to **SEALS**, Page A-4

## EMPTY NETS: *Atlantic banks in peril*

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Special to the Journal-Bulletin

*Harry Elliott and Hardy Troake maneuver among the ice floes, bringing a load of freshly shot beaters to the Lone Fisher.*



Special to the Journal-Bulletin

*The debate over seal hunting has long been a battle of images. "It's horrible, rotten work," says Jack Troake. "But it's nothing you wouldn't see if you poked your head inside a slaughterhouse."*



*"A protester is nothing more than a confused human being," says captain Jack Troake. "The seals we're taking, they don't even scratch the surface."*

## Seals

*Continued from Page One*

COMPACT AND KNOTTY, captain Jack Troake is a blur in blue coveralls as he moves through his yard along Twillingate's Harts Cove, far north on Newfoundland's northern shore. Troake frolics with his cat, plants flowers in old lifeboat frames, and feeds leftovers to a flock of crows that frequent his dock. Talk of seal hunting breaks the stillness of a chilly afternoon.

"This is a goddamned resource, part of our province," he says, his blue eyes ablaze. "Codfish and seals. Now the codfish is gone, so let's use the seals."

For full-time hunters like Troake, the televised attention of two decades ago was a public relations disaster: lakes of blood, rough-looking men with blunt instruments, and weeping baby seals, so cute they got hugs from Brigitte Bardot. "Skin the hunters, not the seals," the banners read.

Troake rattles off memories of battles lost: long meetings with environmentalists, the dwindling receipts, the woman who spit on his son.

"Lordy me, I'd have given her a punch," he says. "That ain't no lady."

Pacing his shed, he pauses and points to unused cod nets, stacked in the corner.

"A protester is nothing more than a confused human being," he roars. "The reason we got so angry at them is they never told the truth. When you're talking about a harp seal, you're talking about one of the most healthy animals on the planet."

Government scientists agree. Even at the height of the anti-sealing campaigns, surveys reported some 2.1 million harp seals in the northwest Atlantic — a far cry from the Endangered Species list.

"The fundamental argument boiled down to the fact that harp seals are an incredibly attractive young animal, and people were outraged by the visual scenes they saw on television," says W. Donald Bowen, a biologist studying seal-fish interactions at the Bedford Institute of Oceanography near Halifax. "It had nothing to do with the conservation of harp seals. It had everything to do with people, sitting in their living rooms, being fed information that they found visually offensive."

The latest controversy involves just how badly the growing herd hurts cod stocks. While seal numbers have climbed as cod numbers have fallen, Bowen says no study has proven that seals are significantly slowing the recovery of cod

### *About the series*

Journal-Bulletin reporter C.J. Chivers spent a month traveling in Newfoundland and Nova Scotia, interviewing the Canadian scientists, fishermen and policy-makers who have witnessed the disappearance of one of the hemisphere's great resources.

The project was underwritten in part by a Pulitzer International Traveling Fellowship.

"I think the issues are confused," he says. "The quick answer, really, is that we just don't know."

As the research continues, environmental groups express wariness about the latest policy.

"The escalation of the hunt is unacceptable," says Greenpeace campaigner Catherine Stewart. "Seals are being scapegoated for our mismanagement of fish, and hunting them is not going to bring back cod."

IN TWILLINGATE, the self-appointed sealing capital of the world, inshore hunters like Hicks prowl coastal waters in skiffs. But Troake, who risks trips to the open ocean, practices a much more aggressive enterprise.

Troake captains the *Lone Fisher*, a 52-foot vessel with a crew of six, including his two sons. The *Lone Fisher* made six trips this spring to the Front, a vast raft of patchy ice in the waters north of Newfoundland. Here harp seals gather to give birth to their young, and to mate.

The infant pups remain helpless for about three weeks before shedding their white fur and taking to the sea. Then they are called beaters — the primary targets of the open-ocean hunters.

On calm days the Front becomes a rare and beautiful place: the water a pellucid blue, littered with brilliant sheets of white ice, dotted with seals.

Even Troake admits what happens next is ugly.

Stabilizing their forearms on pillows, crewmen lean against a table in the bow and shoot beaters in the head. Then they step

#### TODAY:

Its wild fish populations depleted, Canada redefines its relationship with the sea, including opening a hunting season on Atlantic seals.

#### TOMORROW:

Once an institution of Yankee independence, the New England fishing industry struggles to avoid Canada's fate.





*At a sealers' cooperative in icy Fleur-de-Lys harbor, Aloysious Aylward swings wet pelts into drums, where they are tumbled with sawdust to remove excess oil. After coming out of the drum, pelts are cleaned and folded.*

Journal-Bulletin/  
SUZANNE KEATING

down to the ice, gut the seals, and slice away the skin. On a good day, the Lone Fisher's crew kills more than 100 animals, leaving ice pans awash in red slush.

"It's horrible, rotten work," Troake says. "Dirty, stinking, disgusting work. But it's nothing you wouldn't see if you poked your head inside a slaughterhouse."

By the time the season closed this year the Lone Fisher had returned with some 2,000 seals, about one percent of Canada's 1996 catch.

FIVE HOURS from Twillingate, on a pier in Fleur-de-Lys harbor, a pervasive chill hangs inside a seal processing plant. Steam rises from the workers' fat-slicked rainsuits as Bruno Reichel, the plant's foreman, wanders through the cold rooms in a wool cap. Greasy clots of sawdust clog the treads of his boots.

"Our job is to get the skins ready for market," Reichel says, pulling on a pelt. The pelt jiggles, like lard-colored gelatin.

Inside a fresh seal pelt is a two-inch layer of gummy white blubber. Workers pass these sloppy skins through defleshing machines, then run them through a tumbler of spruce sawdust, which absorbs the remaining oil.

A high-quality pelt, pickled and shipped overseas, eventually becomes an ingredient in expensive jackets, mittens and slippers. A lower quality pelt finds a niche on the leather market, turning up as billfolds, briefcases and belts. The rest of the animals — carcass, oil, flippers, penises — goes to other uses.

Some Newfoundland companies can seal meat, for instance, while others make seal salami, seal pepperoni and seal flipper pie, a traditional food that Newfoundlanders consider a delicacy. Seal penises sell to Asian markets, where they are ground into an aphrodisiac powder.

The fur, however, remains the principal money maker. Prime pelts — smooth gray with charcoal spots — fetch about \$20. This is below a pre-boycott high of \$36, but rising from a recent low of about \$11. This year the total value of the seals came to about \$10.5 million, according to the Department of Fisheries and Oceans.

The potential for even greater value has become a cause for alarm for Greenpeace and the International Fund for Animal Welfare, two of the environmental groups that led the seal wars a few years ago.

"Canada is trying very hard to open new markets for these seal products, and what concerns Greenpeace is the potential for escalation," says Catherine Stewart. "If the government is successful in creating a demand, the hunt will spiral up to meet

it. It's a very dangerous path — once you get something like this started, it's hard to put down."

The potential for profit also worries the International Fund for Animal Welfare, which continued to act as a sealer watchdog during the years of the reduced hunt.

"When you hear the Canadian government telling you that seal numbers are up and that they can sustain this kind



Journal-Bulletin/SUZANNE KEATING, above; AP, left

*Workers pack salted pelts into barrels for shipment to China. Some pelts will be used to make mittens and jackets; others will turn up in the leather trade. At left, seal meat is sold at a Newfoundland grocery.*

of hunt, keep in mind these are the same people who told us that the cod stocks were healthy," says A.J. Cady, a seal campaigner for the Massachusetts-based group. "And now there are no cod."

Jack Troake, sitting at his kitchen table after a traditional dinner of seabirds, shrugs off concern. For years he struggled to break even. Today, with more seals coming to the piers, he sees a chance to expand markets for hunters like himself and Hicks.

"We took some wrecking, some scalding, these last 10

or 15 years," he says. "But we're back to hunting and there's not a thing in the world wrong with it."

Troake says he agrees with the hunt's critics on one matter: The kill should be monitored so the resource doesn't dwindle. He smears jam onto his bread and points toward the water. Barren of cod, teeming with seals.

"I'm not afraid to let the whole world come in and see how we hunt our seals," he says, rocking from one elbow to another over his cup of tea. "The seals we're taking, they don't even scratch the surface."

# Provinces look to fish farms for jobs, profits

By C.J. CHIVERS  
Journal-Bulletin Staff Writer

**JERSEY SIDES**, Newfoundland — Bobbing next to a floating pen, Brian Blanchard steps from his work boat and surveys the moss-lined nets swaying in the tide. Beneath him, hundreds of cod glide in the clear water.

"Watch this," he says, and drops a handful of chopped herring over the side.

Almost instantly, three cod propel from the depths, inhale the chunks and glide across the surface with fins flared.

These fish are the brood stock for Sea Forest Plantation, part of the company's bid to become the world's first full-scale cod farm.

"We could have raised salmon," says Blanchard, one of the farm's managers. "But it was cod, cod, cod. The owner said, 'Don't even think of doing anything else, we want a success story with cod.'"

So does the rest of Canada. After the failure of the Atlantic cod fishing industry, aquaculture represents the seafood business's growth sector. Today Canada hopes to take its place among the nations like China and Japan, the world's leading producers of farmed fish.

"We think it's extremely important," says Newfoundland Premier Brian Tobin, whose province has 28,000 seafood workers on public assistance. "We think it's an area where you can take some of the people who have been displaced from the wild capture fishery, from the traditional fisheries, and see them become reemployed as farmers — fish farmers."

Canada first struck aquaculture gold 10 years ago, most notably with the cultured mussels and pen-raised Atlantic salmon now common in U.S. markets. But ventures such as Sea Forest Plantation represent a second push, as the industry diversifies to



*Brian Blanchard feeds the brood stock at Sea Forest Plantation on Newfoundland's southern shore. Canada hopes fish farms will ignite local economies and complement traditional fishing.*

farm open-ocean species such as cod and Atlantic halibut, the giant flatfish nearly exterminated by fishermen before the turn of the century.

These nascent farms model their efforts on the success of the salmon industry, which went through its own collapse generations ago. Once hobbled by the depletion of wild stocks, the salmon trade today is dominated by farmed fish, which have been received as a premium product by finicky consumers. By the early 1990s, Canadian salmon farms produced 32,500 tons of salmon each

year, with a value, in Canadian dollars, of \$245 million.

**BACK ON SHORE**, Blanchard walks through his company's hatchery, a laboratory-like maze of tubs and tanks inside a defunct fish-packing plant.

Here, employees coax cod to spawn in 10-foot-wide steel drums, a far cry from the swirling open-ocean habitat of the Grand Banks.

But not all aquaculture enterprises rely on hatcheries, and Blanchard says most future cod farms will com-

plement traditional fishing.

Throughout the moratorium, the staff has been driving its brood fish to rural villages for seminars on raising wild cod in pens.

Their message is simple: When the moratorium ends, a cod trapper with a sea cage could maximize income by fattening up small fish for the market. Before the cod collapse, trappers typically discarded the small fish. But a trapper with a floating pen could raise these throwaways until they reach market length — a practice that would be less harmful to the

environment than fishing, and give fishermen a way to make more money on fewer trips at sea.

Many fishermen seem interested. "As soon as the moratorium is over," Blanchard says. "I'd say there will be about 80 cod farms — overnight."

But the Sea Forest Plantation dream of blending fishing with farming represents only part of the equation.

Far south in New Brunswick, near the U.S. boundary, entrepreneur David Raymond has been at work on an idea that could bring jobs to Newfoundland, and new fish to world markets. Raymond strolls across a sun-splashed wharf and recalls his 1992 conversion to fish farmer. He was inland, reading a newspaper article about the end of the cod fishery.

"There were all of these big headlines about the problems with cod," he says. "And the thing that was staring everybody in the face was aquaculture."

Raymond began his research. Two years later he had a plan to sprinkle the coastal provinces with halibut farms.

Today Raymond manages Maritime Mariculture Inc., a joint government-industry venture that hopes to produce a hatchery-driven industry of farmed halibut. In a warehouse on the Bay of Fundy, halibut are kept in darkened tanks and stripped of their eggs, which then are fertilized and hatched in water-filled silos.

This spring Maritime Mariculture raised North America's first large-scale crop of halibut. Raymond expects to transfer some 25,000 juvenile fish to outdoor pens next year, and be selling the adults — weighing perhaps 12 pounds — within three years.

"It looks like we're going to be successful," he says.

As Raymond sees it, Northeast Canada is positioned for an aquaculture boom. The crash of fish-packing

companies has left clusters of vacant wharves and waterfront buildings, many of which are available at low prices. New fish-rearing processes — in development for the last decade — are becoming commercially viable. And because the Atlantic provinces have thousands of miles of pristine coast, many potential fish farm sites are not crowded with recreational boaters and fishermen.

"This is good business," he says. "There's not a doubt in my mind."

Not everybody, however, welcomes aquaculture's eagerness to grow.

"People should realize that aquaculture is not the answer," says Greenpeace's Niaz Dorrey. "If our society really wants fish, we should focus on protecting our ocean resources, not on shifting attention away from the fact that we have devastated entire populations of wild fish. It's simple — aquaculture doesn't address the root problems."

Many fishermen also complain, saying farm-raised fish could flood the market, threatening their livelihood should wild populations rebound. Worse, some fishermen say fish farming threatens the genetic strength of wild stocks, citing studies that show pen-raised salmon often escape and rush up rivers to breed with wild salmon.

Blanchard has heard the criticisms, and discounts them. Sea Forest Plantation's plans depend on wild-caught cod, which minimizes the genetic threat. As for farmed fish flooding the market, Blanchard says there is no way farmers in coves could ever outstrip the productivity of a healthy ocean.

"I don't see what we do as an alternative, I see it as a complement," he says. "We've already seen how bad things can get when we abuse our fishing grounds, but this is something else we can do to coexist with our sea."

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# Survival of the fastest: A company endures

By C.J. CHIVERS

Journal-Bulletin Staff Writer

ARNOLD'S COVE, Newfoundland — Just before 7:30 a.m. the workers at the last large-scale fish plant in Newfoundland slip into lab coats, belly up to stainless steel platforms, and await the blur that defines their days.

Moments later their work arrives: a seemingly endless line of beheaded cod and flounder, rushing toward them on conveyor belts.

The pace doesn't let up for eight hours. Long rows of women slice the meat into portions as it races for the freezer. No wasted seconds. No wasted scraps.

A few years ago, these same employees stood at a "slime line," where they processed tons of locally caught fish at a more leisurely pace. It was a Newfoundland tradition, a sight as old the province: rubber boots, slippery tables and stacks of fresh-caught Atlantic cod. Today the workers clean frozen fish from international markets (most fish comes from Russia), and barely have time to speak.

"This is the future," says supervisor A. Bruce Wareham, scanning the antiseptic, computer-driven chamber.

A controversial future at that. Four years after Canada closed most of its waters to cod fishing, executives at National Sea Products tout the bustling super-plant as a successful survival gamble, part of the company's bid to stop a free-fall.

But the plant also underscores the fishing industry's trend toward high-tech corporatization, which environmental groups say will further erode the remnants of traditional life in fishing villages. Environmentalists are also concerned that industrialized fish plants, and the globe-ranging ships that feed them, will continue to drive down fish populations around the world.

"It's a frightening scene, really," says Catherine Stewart, who campaigns for Green-

peace, an environmental group that promotes fishing ventures that harvest local species on a sustainable basis. "Efficiency is normally thought of as a good thing. But in resource-based industries, it's actually quite destructive."

In spite of their critics, National Sea Products executives say the Arnold's Cove plant helped stabilize a hemorrhaging company — and save at least one Newfoundland village in the process.

"Say what you want about efficiency, but people want jobs," says Karen Gordon, the company spokeswoman. "If we're not efficient we can't provide them."

The company's recent troubles underscore Gordon's remarks.

"The moratorium had an enormous impact on us, an unbelievable impact," says Henry E. Demone, the company's president. "National Sea, in 1986 and 1987, had in excess of \$50 million in cash flow, had 60 trawlers, had about a dozen plants in Atlantic Canada, and had six or seven thousand people."

As the fish vanished, National Sea Products shut its Atlantic plants, lopped its work force and put its fleet of fishing vessels up for sale. Today it runs just three working fish plants (including one in Portsmouth, N.H.) and has 1,300 workers and 12 fishing vessels, half of which dredge for either clams or scallops. Its net profit last year was just over \$5 million.

Arnold's Cove, National Sea Products' last stand in Newfoundland, keeps 210 people working 12 months a year — a rare sight in a province where most former fishery workers collect public assistance.

"You're looking right now at what you'll have to do to survive in this business," Wareham says, standing at the head of the line with a box of Russian cod. "We're just starting to be held up as a model. If it can happen here, why can't it happen anywhere?"



*Tradition meets the space age at Arnold's Cove, National Sea Products' last stand in Newfoundland. The plant processes Russian cod and Alaskan flounder.*



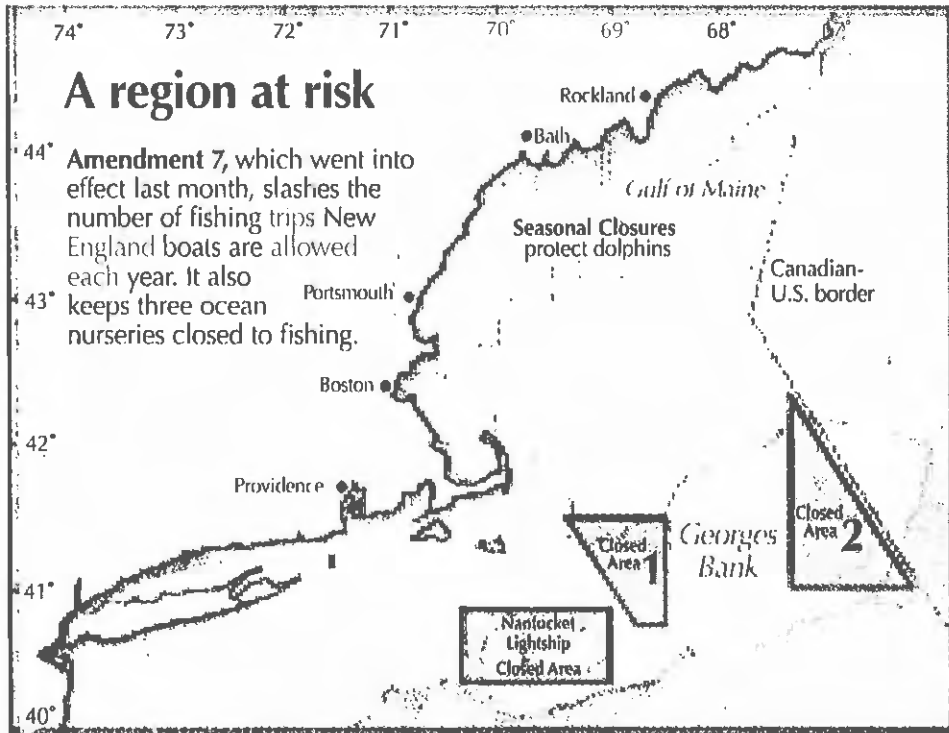
*Lunch provides a welcome break from the pace of the filleting line. Here, workers try their luck at scratch-off lottery tickets. Many of the employees say they are already lucky; 28,000 Newfoundlanders lost their jobs when fish populations crashed.*

Photos by  
**Suzanne Keating**

JOURNAL-BULLETIN STAFF



*The pace is frenetic at the National Sea Products plant in Arnold's Cove, Newfoundland, as women slice cod and flounder on its way to the freezer. The full timecard rack, left, is one of Newfoundland's rarest sights since the 1992 moratorium on cod fishing.*



### A region at risk

Amendment 7, which went into effect last month, slashes the number of fishing trips New England boats are allowed each year. It also keeps three ocean nurseries closed to fishing.

Journal-Bulletin / FRANK GERARDI

## EMPTY NETS: *Atlantic banks in peril*

# Hoping to avoid Canada's fate, New England limits its catch

Last of a three-part series

By C.J. CHIVERS  
Journal-Bulletin Staff Writer

The fish cases in the Captain's Catch fish market in North Providence reflect a changing world. Salmon from Chile. Cod from Iceland. Halibut from Alaska.

Noticeably absent are thick stacks of New England cod, pollock, haddock and sole, which until the 1980s were the most common fish in local markets.

Back then cod sold at \$3 a pound, haddock \$4, pollock about \$2. The fillets were fresher, cheaper and part of the regional economy. Now those species are almost wiped out.

Captain's Catch still sells some local fish. But what shows up in Rhode Island's fish cases today comes mostly from distant ports or fish farms. Often it costs more than steak.

"I believe New England fish is the best quality," says Mark Castelli, co-owner of the store.

"But there's been this huge shift in the last 10 years to aquaculture and world-wide fish."

This shift reflects the crash of groundfish stocks on local fishing grounds, one part of the complicated tale of world fishery declines.

According to environmental groups, in the last two decades nearly all of the world's major commercial fisheries have become fully exploited, and more than a third are depleted. The crisis has been particularly severe along North America's east coast.

Fish shortages suddenly rank among the ringing environmental alarms of the decade, falling in place with ozone depletion, global warming, overpopulation and mass extinction.

Four years ago, Canada confronted its own Atlantic groundfish collapse with a draconian measure: the closure of almost all of its waters to cod fishing. To soften the impact on coastal towns, the Canadian government combined the moratorium with a \$1.9 billion aid program de-

Turn to **FISHING**, Page A-6

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# Fishing

*Continued from Page One*

signed to sustain coastal economies while the fish recovered.

By most measures, the moratorium has not yet worked. The fish have not rebounded, and shorebound fishermen uneasily await their future.

Even as gloom hangs over coastal Canada, a similar crisis ripples through New England's fishing industry. Troubles run from Maine to Rhode Island, where the huge schools of local cod have thinned. By the mid-1980s, most Rhode Island fishermen had begun to fish for more abundant but less lucrative species, such as butterfish, whiting, squid and skate.

In the last two years the groundfish schools have thinned even more, and the crisis has intensified. The remaining New England groundfishermen have been the target of more than \$53 million in Commerce Department aid, a stark contrast to a 1991 projection that a healthy fishery could generate 14,000 regional jobs and an additional \$350 million in annual income.

"It's just horrifying that resources that are supposed to be contributing economically and socially to our coastlines are instead being a drain," says Carl Safina, director of the Audubon Society's Living Oceans conservation project. "Now we have a lack of freshness, ridiculous prices, and few local choices. We've all been robbed, and there's really no other way to put it."

As evidence of this destruction mounted, the task of saving the hemorrhaging industry was forced on the New England Fishery Management Council, a 17-member board that oversees regional fishing policies.

A moratorium was deemed too severe. Instead, the council cobbled together a complex bundle of fishing restrictions that make up its answer to the Northeast's groundfish crisis. The latest rules go by the name of Amendment 7, New England's bid to save what has historically been one of its most valuable natural resources.

A GENERATION AGO, the end of New England groundfishing seemed unimaginable.

Block Island Sound teemed with cod. In the winter, fishermen caught them from Cox's Ledge to the mouth of Narragansett Bay, even from South County beaches.

"Cod used to be prolific all the way to New Jersey," says William Amaru, a member of the fishery council. "These things were once like buffalo, or passenger pigeons — the schools used to go on for miles."

Today it can be hard to catch a keeper. In some waters, cod, haddock and yellowtail flounder have gone the way of Atlantic halibut and salmon — scarce to the point of becoming an oddity.

"It's really melancholy," says George Reiger, conservation editor for *Field & Stream* magazine. "The whole Atlantic Coast is a sorrow."

The decline began soon after 1977, when both the United States and Canada declared sole management authority over all waters within 200 miles of their coasts. The move was designed to wrest prime fishing banks from foreign fleets, which were threatening fish stocks.

But rather than encouraging conservation, the two nations embarked upon a pattern of short-sighted, reckless policies, encouraging the expansion of local fishing effort with low-interest loans and loose fishing regulations. In 1976, there were 775 New England boats licensed to catch groundfish. Two decades later there are 4,000, of which 1,800 still actively fish.

This brief period of expansion and profit thrilled local ports and politicians. But fish populations could not withstand the pressure. Soon fish numbers had plummeted to the point that Canada had to close its fishing to

prevent the extinction of its fish.

Scientists stress that U.S. waters do not suffer from all of the environmental stresses at work on the Grand Banks, where a combination of overfishing, fish-eating seals and unusually cool water have sent fish numbers into a tailspin. In contrast, the water swirling over New England's cod grounds has not chilled, and the seal population remains relatively small.

The chief culprit in U.S. waters has been overfishing: too many people chasing too few fish, usually with gear that's efficient to the point of being destructive.

Amendment 7, which took effect last month, aims to rebuild fish numbers by cutting groundfishing by 50 percent. The plan builds on rules passed in 1994, when the Commerce Department closed 6,000 square miles of New England waters to all groundfishing — a sort of mini-moratorium on areas deemed critical to stock survival.

New restrictions reduce the number of trips commercial boats are allowed each year, and require boats to use lines with fewer hooks or nets with larger mesh, which let more fish escape.

Simultaneously, the Commerce Department has embarked on a \$25 million boat buyout, and state and federal agencies have issued grants to encourage alternate employment or conservation-related research.

New England fishermen have crowded public hearings to say Amendment 7 will put them out of business. But in Canada, fishery experts say the United States is finally confronting issues that Canada belatedly addressed four years ago.

"I think the lesson is simple: There are no ways to avoid the price of conservation," says Brian Tobin, Canada's former fisheries minister. "There are no ways you can try and maintain all the fleets and all the fishermen, and all the killing technology and all the harvesting capacity and still maintain the resource. You can't duck."

HOW AMENDMENT 7 will fare remains to be seen. Fishery experts point to some recent successes, such as the recovery of Atlantic striped bass, herring and mackerel. Scientists hope Amendment 7 will have a similar effect on groundfish, by far the region's most valuable fish.

Nonetheless, most fishermen are cautious

"Look what happened in Canada, I mean, that really blew people's minds," Amaru says. "They did probably the most conservative thing you could do — they shut down the industry. Everybody thought they'd have schools of fish crawling up out the beaches. But here it is four years later, and the fish haven't come back."

Safina says previous fishery successes have taken years.

"We're looking at something on the order of a decade, maybe longer," he said. "That's how long it took for striped bass."

As the wait begins, fish managers are sorting out conflicts between fishermen over who will get to catch the remaining fish and what methods will be allowed used. And as more rules are passed, regulators are haunted by past failures.

"There's a tendency in the press to just blame this on the fishermen," said

David Borden, associate director of the Department of Environmental Management and a member of the fishery council. "But the managers — and I point to myself — we haven't done the job we should have done. And the federal enforcement people haven't done all they could either. It's really been a systemwide failure."

More than money is at stake. If New England's groundfish fail to rebound, the region's most important fishery could all but vanish, taking with it a large part of New England's heritage.

Far north in Newfoundland, in the cool stillness of a dying port, fisherman Garry Troake expresses no surprise over New England's woes.

"I think the people of New England have to understand that they need patience now, that it will take time for their fish to come back," he says.

Today Troake collects welfare and has switched his energies from netting cod to trapping crab and lobster — anything to stay on the sea. Listening to tales of New England's problems, he contemplates the fate of fishing cultures in a world without fish: higher prices, fewer choices for consumers, less freshness in the fish case. But like thousands of Yankee fishermen, Troake fears something else: the extinction of the Atlantic's last bands of sea-faring families.

"I don't think the way to save the planet is to exterminate the cultures that live close to nature," he says. "We have to find a way to make this work."

## About the series

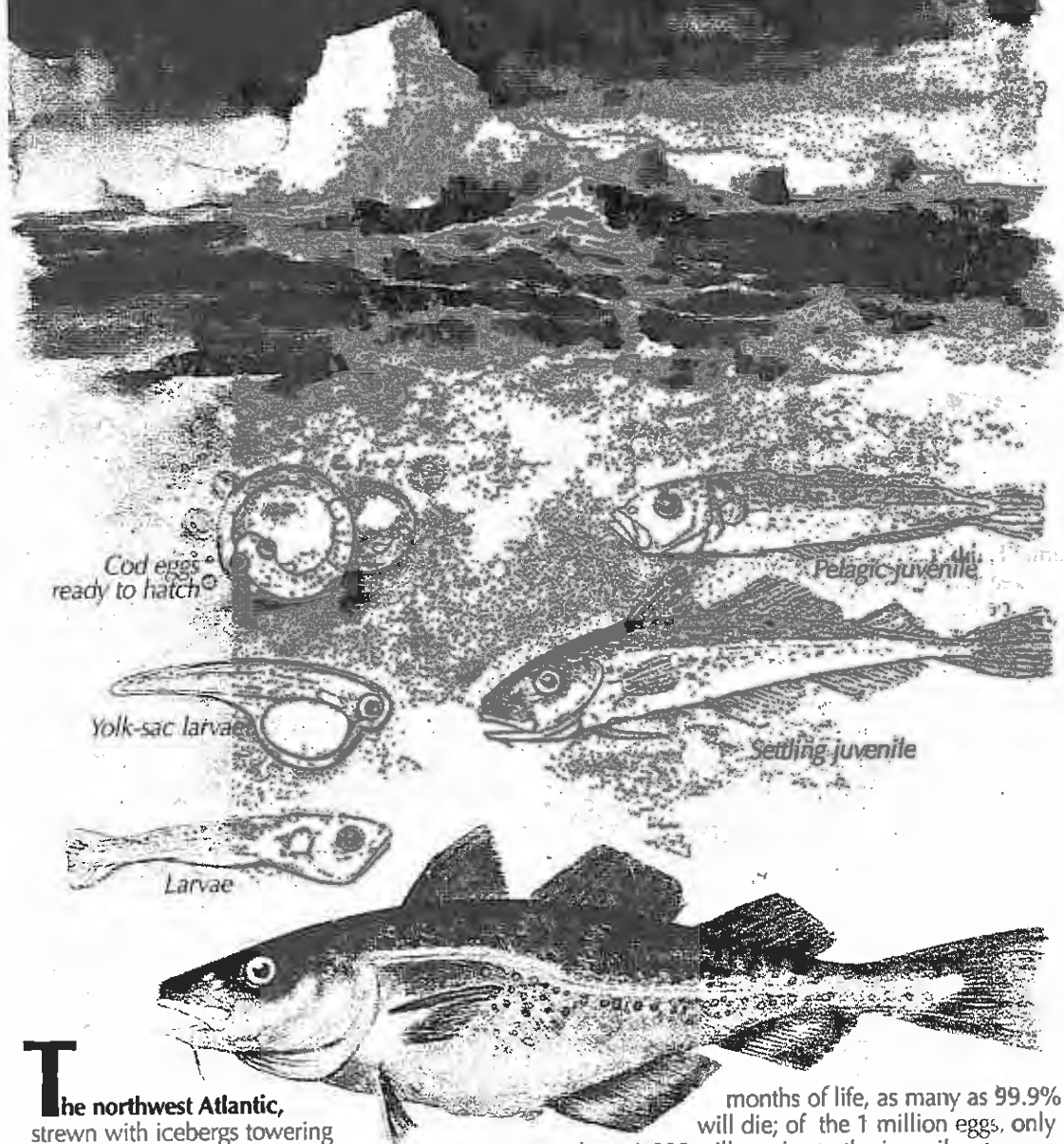
Journal-Bulletin reporter C.J. Chivers spent a month traveling in Newfoundland and Nova Scotia, interviewing the Canadian scientists, fishermen and policy-makers who have witnessed the disappearance of one of the hemisphere's great resources.

The project was underwritten in part by a Pulitzer International Traveling Fellowship.

### TODAY:

Once an institution of Yankee independence, the New England fishing industry struggles to avoid Canada's fate.

# A harsh, hazardous nursery



**T**he northwest Atlantic, strewn with icebergs towering over gale-tossed waves, is an unlikely nursery. Yet between March and May, cod gather in the near-freezing depths of the continental shelf to spawn. A single female cod measuring about three feet long will release about 1 million eggs during a twisting dance with her mates.

The fertilized eggs, small enough to fit through the eye of a needle, float near the warmer surface waters and hatch within three days. These larvae survive by absorbing the stored nutrients in a yolk sac attached to their abdomen.

At the mercy of the currents, the newly hatched larvae (about 1/4- to 1/2-inch long) are fed on by larger predators and each other. In their first four

months of life, as many as 99.9% will die; of the 1 million eggs, only about 1,000 will survive to the juvenile stage.

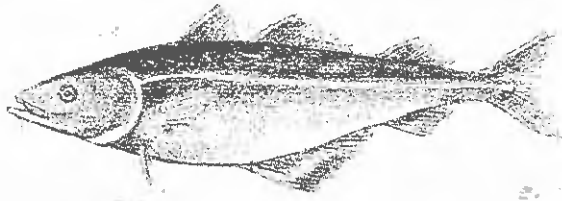
Before the end of their first year, the juvenile cod have reached an inch in length and have learned how to hunt for prey. They then settle to the bottom, where in the relative shelter of rocks and weeds they join the struggle to eat or be eaten.

The juveniles take about three years to mature, replenishing the cycle. By this time, only one cod from the original 1 million eggs will have survived.

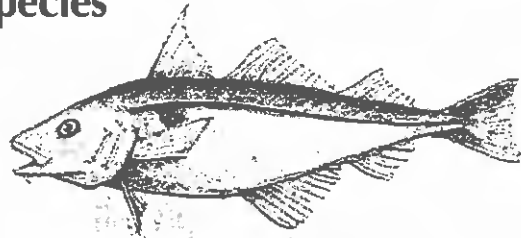
Cod spawn from frigid Newfoundland to the warmer waters off Rhode Island. Scientists hope open-ocean nurseries — such as three protected areas south and east of Cape Cod — will replenish New England's dwindling fish stocks.

# EMPTY NETS: *Atlantic banks in peril*

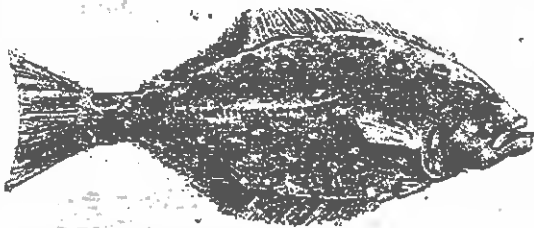
## Other diminishing groundfish species



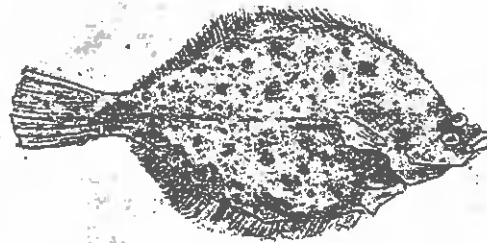
**Pollock**, commonly sold as Boston bluefish, are marketed as frozen fillets and fish sticks. It also serves as a staple in U.S. military mess halls.



**Haddock** belong to the same family as cod and pollock. Haddock stocks for Rhode Island fishermen crashed in 1985.



**Atlantic Halibut** are giant members of the flatfish family, reaching lengths of more than 8 feet. Prized as table delicacies, halibut have been rare since the turn of the century.



**Yellowtail Flounder**, often sold as sole, have long been a restaurant favorite in New England. Amendment 7 restricts their catch.

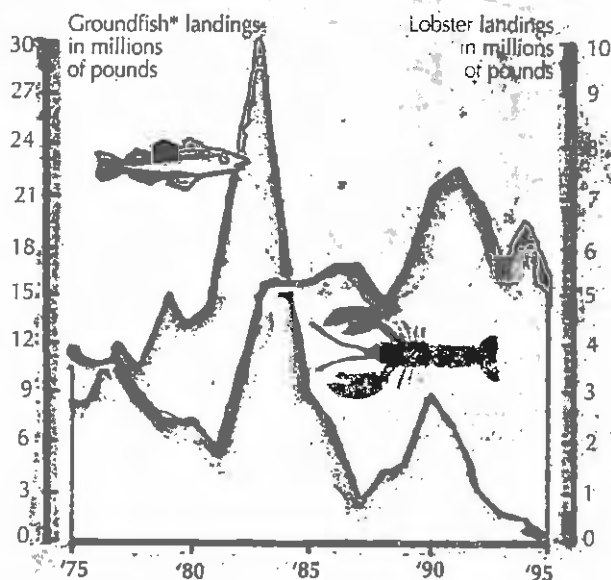
Journal-Bulletin/FRANK GERARDI

## Comparing the U.S., Canadian plights

	Atlantic Canada	New England
<b>Causes of problems in the fishery</b>	Overfishing, lower water temperatures, growing seal population.	Overfishing.
<b>The costs</b>	39,000 jobs; end of a centuries-old Grand Banks culture; disruption of one of the world's richest ecosystems.	14,000 jobs; as much as \$350 million annually.
<b>Environmental solutions</b>	Moratorium; virtual shut-down of cod fishing and severe restrictions on other groundfishing; renewal of controversial seal hunt.	Amendment 7, which slashes the numbers of days fishermen can catch groundfish each year.
<b>Social and economic plans</b>	\$1.9 billion in aid and retraining for fishing industry employees; government funding for aquaculture and new fisheries.	Limited boat buy-back and industry grants.

# In troubled waters, lobster fleet holds its course

## Rhode Island's catch



The groundfish catch has dropped dramatically for boats landing in Rhode Island, while lobster landings have remained fairly stable. Scientists blame overfishing for the decline of groundfish species on the U.S. side of the Atlantic banks.

\*Combined cod, haddock and yellowtail flounder landings

SOURCE: RI Department of Environmental Management

By C.J. CHIVERS

Journal-Bulletin Staff Writer

**NARRAGANSETT** — As empty nets and new regulations embitter much of New England's fishing fleet, the lobster industry continues to flourish, bringing steady receipts to busy captains.

At work is an odd tale of successful resource management: The lobster fleet survives because it is deliberately inefficient. While other fisheries have gone high-tech, the lobster industry has remained old-fashioned, using primitive trapping pots and handling its catch by hand.

"We're a survivor, and we're proud of that," said Robert D. Smith, president of the Rhode Island Lobstermen's association. "We treat lobsters so they'll be around tomorrow."

Lobster pots have many advantages over the gear used to catch cod. They don't disturb habitat. They catch few non-targeted species. They feed immature lobsters with a steady supply of dead fish. And breeding females survive capture for a safe return to the sea.

This is in sharp contrast to the havoc wreaked by tools of the groundfish fleet, which can scuff up the bottom, kill tons of nontargeted species, and leave unwanted fish in such poor condition that few are returned alive.

"The whole way the lobster fishery is conducted virtually ensures that there will always be lobsters to catch," says William Amaru, a member of the New England Fishery Management Council.

Last year New England's lobster fleet landed some \$150 million worth of lobsters. In Rhode Island the catch topped \$20 million, with an economic benefit more than four times that, says David Borden, associate director of the Department of Environmental Management.

"These are really big numbers," Borden said. "And it's surprising because this is an industry that just quietly goes about its business."



# Canadian government plans to charge 101 seal hunters

*Editor's note: Last August, the Journal-Bulletin published a three-part series on how a government-imposed ban on cod fishing was affecting coastal villages of Newfoundland and Nova Scotia. One part dealt with Canada's commercial seal hunt. Last week, the author returned to Newfoundland and found the seal trade once again embroiled in controversy.*

By C.J. CHIVERS

Journal-Bulletin Staff Writer

**TWILLINGATE, NEWFOUNDLAND** — In a decision that stunned Canada's recuperating seal industry, federal fisheries officials said Wednesday that they would charge 101 licensed seal hunters with illegally selling the pelts of seal pups.

The hunters are accused of violating marine mammal regulations by selling the pelts of 25,000 harp and hood seal pups after hunts on the ice this spring.

Neither harp or hood seals are endangered, and many Newfoundlanders regard the province's 5 million harp seals as fish-eating pests. And virtually everybody here considers both species to be renewable

resources.

Nonetheless, the government's announcement drew a quick response from the International Fund for Animal Welfare, an animal rights group whose spokesman denounced the growing hunt as "cruel and criminal" and claimed that the most vocal sealing organization was corrupt.

"They've been breaking every rule in the book and now the Canadian Sealers Association members are being revealed in their true light, as a nest of lawbreakers," said A.J. Cady of the Massachusetts-based group.

Ten years ago, an international outcry over the clubbing of infant harp seals, known as whitecoats, led Canada to ban the whitecoat hunt.

In the interim, the seal herd boomed. Last spring, Canada lifted its strict limits on seal hunting, allowing 7,000 licensed hunters to shoot older, free-swimming seals, while the younger whitecoats remain protected.

Under current regulations, hunters can kill hood seal pups — called bluebacks — for personal use, but

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**A.J. CADY, International Fund for Animal Welfare**

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are prohibited from selling them.

However, a government investigation this spring found some 23,000 blueback pelts being prepared for market.

Government officials also found the pelts of some 2,000 whitecoats.

As fog and gales lashed the north coast yesterday, the charges brought a dour mood to rural communities, where the seal hunt has been a staple of tradition and employment for nearly five centuries.

"All we're trying to do is survive, boy, and that's it," said Captain Jack Troake, who commands the 53-foot sealing vessel *Lone Fisher*. "What kind of crock is this?"

Troake's latest mood was in sharp contrast with his spirits in May, when the season closed. Sealers

seemed hopeful then that they could restore markets and credibility damaged by past protests over the whitecoat hunt. Last week, seal skippers facing charges gathered in Troake's waterfront shed to commiserate.

"This is a real mess, boy, and it's a mess that you never thought you was gonna see," said Captain Stratt Brown, another Twillingate seal skipper.

Many hunters blamed the charges on what they called a government failure to tell the skippers about the

rules until after the hunt.

"It's not like we snuck into the woods and poached a moose — it's not the same thing," Troake said. "This here blueback hunt was done right in front of fisheries officials. They boarded our boats, they flew overhead in airplanes, they had their creatures in orange jumpsuits hopping all over the ice, and they never said a word. They even gave us latitudes and longitudes to where the hood seals were. And now they are charging us?"

Leo Strowbridge, director of Canada's Conservation and Protection office in Newfoundland, said the accused sealers would be issued summonses for court appearances next month and in January.

If convicted, the hunters face fines as high as \$100,000 and the possible suspension of their licenses. The pelts have been confiscated.