

A Silent Fall – The Story of the West Falmouth Oil Spill

by E. Graham Ward

Just after midnight on September 16, 1969, John French of Nemasket Rd., West Falmouth, was awakened by a strong smell of oil. He immediately thought that his oil burner had malfunctioned. Others in the area also smelled the oil and also thought of their oil burners, including George

Hampson of the Woods Hole Oceanographic Institution (WHOI) who lived in North Falmouth and would soon be involved in investigating the effect on the marine environment of what had happened. By afternoon the odor of oil had permeated much of the rest of the town, causing concern among residents and raising questions about the source.

But John French had learned the truth the night before, as reported in *The Falmouth Enterprise*. After checking his furnace he had looked out the window and seen the lights of two vessels and heard the sound of engines straining. What he heard was the tug *New York Central 34* attempting to pull the barge *Florida*, loaded with No. 2 diesel fuel, off the rocks near Little Island. The barge and tug, way off course, were headed for the Canal Electric Plant in Sandwich. There was some fog at the time but he could see the blinker at the entrance to West Falmouth Harbor. A southwest wind was pushing an oil slick from the ruptured barge northeast. Mr. French then called the Coast Guard.

When the Coast Guard arrived, they were confronted with two serious problems. First, because of the dangerous rocks in the water, they had to establish themselves on shore. Secondly, they soon discovered that the tug's radio was not working. Capt. John Hume of the Woods Hole base directed his Warrant Officer, Cyril Fennelly, to use a bullhorn to communicate with the



The barge *Florida* on the rocks of West Falmouth. Coast Guard Capt. Hume and Warrant Officer Fennelly at the accident site. Fennelly is trying to contact the tug's captain by bullhorn. Courtesy WHOI Archives.

tug and to tell its captain to answer yes-or-no questions by flashing his lights or sounding his horn (once for yes, twice for no). In this way they established that the tug was sound but there was a hole in the barge. The Coast Guard recommended that the owners have the barge immediately off loaded and that East Coast Services of Braintree be contacted to clean up any spillage.

By then residents began reporting oil washing up on their beaches. Chapoquoit and West Falmouth Harbor were clear but the sand and rocks at Falmouth Cliffs were covered. The oil was still offshore at Silver Beach but coming on shore in patches and the slick was advancing on Wild Harbor and Nye's Neck in North Falmouth.

How the tug found itself two miles off course in the first place is something of a mystery. The fog was evidently not thick enough to obscure vision completely. Some reports stated that, in addition to its radio, the tug's radar had failed and its rudder and towline had broken; but these latter two breakdowns could have happened after the tug hit the rocks. In any case the tug would seem to have been improperly maintained and as a result the owner of the barge eventually sued Narragansett Marine Salvage of New Bedford, which owned the tug, for negligence. After the worst was over, the town of Falmouth also sued both parties involved and received \$100,000 in an out-of-court settlement; but the money would turn out to be small recompense for the damage done.

This oil spill was the second one for Falmouth within three weeks. The first spill had been much heavier oil and the oil had sunk to the bottom quickly, with



On the chart above "X" marks the location of the ruptured barge. The solid triangles mark areas where stations were established to measure the presence of oil and its effect on bottom-dwelling animals. Courtesy WHOI Archives.

no obvious harmful effect. Since much of this new oil spill remained offshore, and Chapoquoit and West Falmouth Harbor were clear, the prospect for escaping serious damage seemed good. The spill occurred on a Tuesday; by Friday, the president of East Coast Services, Russell Delano, announced that "no permanent damage has been done and in a month or six weeks conditions will be cleared up." His men had been busy putting up booms, vacuuming the oil

from the top of the water as well as dispersing it with a chemical emulsifier. An editorial in *The Falmouth Enterprise* commented that "What we had was a nuisance and a bother, rather than a major tragedy."

Friday also saw the arrival of Congressman Hastings Keith as well as Governor Francis Sergeant, who surveyed the area from a Coast Guard helicopter. "It is unlikely he saw any oil," reported *The Falmouth Enterprise*. Congressman Keith took a half dozen dead lobsters with him back to Washington to show his Merchant Marine and Fisheries Committee who were, at the time, considering legislation to address accidental oil pollution.

On the morning of the spill Falmouth shellfish warden George Souza had joined Capt. Hume on the shore in West

Falmouth. Souza was worried about the shellfish in the area, particularly the scallops in West Falmouth Harbor. The scallop season was about to begin and it looked promising, close to 10,000 bushels at \$15 a bushel. In 1969 the rich bottom of this area

contained harvestable oysters, soft-shell clams, and quahogs; lobsters were abundant offshore. By noon on Tuesday dead lobsters began to wash up on the beaches. The tug was freed from the rocks but the barge remained, leaking oil at an estimated 8 to 10

gallons a minute from its 625,000 gallon cargo. It was late Tuesday night before the barge was sufficiently offloaded to float and be towed to New Bedford. The final estimate by WHOI, before the barge was finally freed, was that 175,000 gallons had spilled.

As the week progressed lobster men found dead lobsters in the traps and then no lobsters. One lobster man, John Sampson of Bourne, speculated that the dispersant (Celledial 88, according to *The Falmouth Enterprise*), an emulsifier used to break up the oil on the surface, had

actually sent it to the bottom, mixed with the chemical. The combination may have been fatal to organisms found there. George Souza reached a similar conclusion after receiving a report from the Federal



The curious gather to view oil spill. Courtesy WHOI Archives.



Howard Sanders and George Hampson at the site of the West Falmouth oil spill. Courtesy WHOI Archives.

Water Pollution Administration that Celledial 88 was toxic to shellfish.

But the damage had begun before East Coast Services arrived to put up booms at the entrances to Wild Harbor River and, eventually West Falmouth Harbor. Although not generally known at the time, diesel fuel No. 2 contains toxic substances which had already invaded the bottom. To complicate matters strong winds sent waves of oil over and under the booms and, in places on Old Silver Beach, the crews dumped the emulsifier directly out of barrels into the water instead of spraying it, thus concentrating the toxic chemical. What actually killed almost all life in the rivers and marshes of West and North Falmouth would become a subject of dispute between oil companies in general and WHOI which initially, in the person of George Hampson, had begun its investigation into the effects of the spill.

Subsequently, after discovering it wasn't his oil burner that he smelled that first night, Hampson had read *The Falmouth Enterprise* and found out what had happened; but it wasn't until a friend called and told him that there were all kinds of marine invertebrates and fish washing up on the beaches that he went down to look for himself. What he remembered seeing were "fish swimming on the surface, flounders on the surface, all kinds of invertebrates." He called his colleague at WHOI,

Howard Sanders, a leading authority on benthic (bottom dwelling) creatures. The next day they went up to Wild Harbor River. As he remembers:

What we saw was every kind of conceivable invertebrate that you can imagine coming out of their holes and swimming on the surface... All these animals were moribund, which means they were in the process of dying. And it seemed as if the whole area was of that nature. Everything was coming out of the sediments. The bivalves, the soft-shell clams had their necks sticking out. The shellfish warden, George Souza, was beside himself because he was losing his shellfish crop.

On Wednesday the Mass. Dept. of Public Health closed the spill area to shell fishing. Although the water was blue and clear in West Falmouth Harbor

what Souza saw along the shore line was quite different. His observations were quoted in a lengthy 1973 *New Yorker* article about the spill:

The marsh grass was beginning to die along the creeks in the marshes... The whole marsh was full of dead fish... There were tom cod and blues and bass. There were eels too and they're a tough bird. There were scums of oil all over on the water.

One morning I saw schools of little bait fish coming in and they were eating the scallop meat right out of the dying scallops. So you could see right in front of you that the oil was getting into other animals and the food chain.

There was dead seaweed washing in from off the rocks and jetties... There were crabs with their legs twitching. There were all kinds of things, mixed up like a soup, at the waterline.

You didn't think things could go on dying any longer but they did... You couldn't walk along the shore without a little iridescent patch of oil coming up in every footstep. Ten days after the spill, I was in Silver Beach Harbor and I dropped a match I thought was out onto the shore and the wet mud caught fire.

But seemingly miraculously, when the water cleared after a few weeks, the scallops in West Falmouth Harbor appeared to be healthy again, after initially exhibiting some bizarre behavior immediately after the spill.

On October 23rd Souza decided to reopen West Falmouth Harbor to the taking of shellfish. He was supported in this decision by Arnold Carr, a biologist from the Mass. Division of Marine Fisheries who had sent some scallop samples to the state laboratory to test for the presence of oil. The tests came back negative. Hearing the good news both commercial and family fisherman got busy and scallops were sent off to market. But on the third day of the harvest some dealers refused to buy these scallops because they tasted "oily." Fearing for the reputation of Falmouth scallops, Souza closed the shellfish beds again. West Falmouth had the richest scallop grounds in the town; the weather was mild with light winds – good scalloping days. As Warden Souza told *The Falmouth*



"Closed to Shell fishing – Contaminated Shellfish – Town of Falmouth" sign in West Falmouth Harbor after spill. Courtesy WHOI Archives.

Enterprise, "It [the closing] was the hardest thing I ever had to do in this job."

Now not trusting the state lab's ultraviolet-ray method of detecting oil, Souza looked around for a more accurate test. He didn't have to look far since Falmouth housed two of the premier oceanographic research institutions in the world, WHOI and the Marine Biological Laboratory (MBL). Souza turned to the MBL first and they recommended a man who was an expert in gas chromatography, Max Blumer. Blumer, like Howard Sanders, worked for WHOI and had already shown considerable interest in oil pollution.

A gas chromatograph, at least in Blumer's day, was an instrument that heated and evaporated a liquid sample. The resulting gas produced a graph in a pattern unique to the sample. "Any patch of crude oil has fingerprints in its composition," Blumer told *The Falmouth Enterprise*. This unique composition, Dr. Blumer said, made it possible to trace any sample back to its source. Indeed, the oil companies themselves found gas chromatography useful in identifying relationships between oils and the sediments where they originate. In this case, however, the oil company, Northeast Petroleum, together with the conglomerate it belonged to, had questioned whether the oil found in the spill area was actually from the leaking barge. Diesel fuel No. 2 evaporates quickly, they claimed; there was a possibility of leakage from outboard motors; and many believed the dispersant was the truly toxic agent in the incident. Blumer identified the oil samples as from the *Florida*; proved that they were highly toxic; and, in addition, that the oil had leaked out from the shore into Buzzards Bay and could be found at a depth of eleven feet.

On September 19, the day Howard Sanders joined George Hampson to trawl for bottom samples, what

the two had found were either dead or dying organisms. When they came back a week later they could find almost no organisms alive and the dead ones had rotted and effectively disappeared. As Sanders recalled in the *New Yorker* article:

By October, we were looking at a biological desert in the intertidal area. It was a strange autumn. You could go down to the marsh and there wouldn't even be [bugs]. No mosquitoes, no greenflies, no nothing. And no birds... Even the gulls left... because there wasn't anything to eat. It was absolutely quiet.

This description bears an uncanny resemblance to the opening of Rachel Carson's groundbreaking 1962 environmental study *Silent Spring*. The prologue to that book posits a "A Fable for Tomorrow" in which a town suffers from a blight so severe that the birds disappear, vegetation withers, and all the fish die. George Hampson recognized the similarity and called what they had experienced in West and North Falmouth "silent fall." They had seen "tomorrow."

As these two scientists demonstrated, time was a crucial factor in the investigation. If they had waited a week to begin sampling, most of the organisms would have rotted and been carried out to sea by the tide. Thus no evidence. In order to get started in timely fashion, Hampson accepted "research funding" from Northeast Petroleum. The oil company was willing to hear a report directed to the events of the spill; but when Hampson indicated he was going to write a brief article in *Oceanus*, a WHOI in-house periodical, commenting on the spill's aftereffects, the company objected. Hampson returned the money, wrote the article and went ahead with the sampling, drawing on WHOI's emergency funds. Eventually Howard Sanders received a major grant from the

Environmental Protection Agency (EPA), to support a continuing investigation.

Because the oil companies are often cast as the villains whenever accidents involving oil happen, they respond to criticism defensively, going so far as to attempt to discredit scientific reports unfavorable to their interests. According to Hampson, Max Blumer and Howard Sanders began receiving letters from the Petroleum Institute, insisting that it was the excessive wind and wave action, or the emulsifier, or something else that killed the life on the bottom. One Texas A&M study claimed that the effects of oil were short term and that there actually was an increase in the amount of life on the bottom after the oil spill.

It turns out that, by a biological

quirk, this latter claim was true. After almost all the animals on the bottom had died, what Sanders called the “classic marine opportunist,” a worm (*Capitella capitata*) invaded the area, took over and multiplied enormously, having no enemies. What the Texas study missed was that, during this period, there was an increase in density of life but no diversity; and diversity is a key element in the health of living things.

In 1979 Howard Sanders wrote his final report to the EPA on the results of the WHOI investigation. In it he detailed the mass killing of organisms by toxic oil but he also discussed what he called “sublethal effects.” By this term he meant “disruptions [that] are less obvious than mass mortality [but] in a finely balanced ecosystem they are no less dangerous.” To illustrate his point he singled out the fiddler crab.



Dead fish, crustaceans, and marine worms concentrated in a West Falmouth tidal pool one week after the oil spill. One week later nothing was left. According to George Hampson, “Were it not for the nearness of our labs, we could not have known the extent of the marine kill.” Courtesy WHOI Archives.

His team’s investigation, turned up such sublethal effects in fiddlers as: “disorientation”; “loss of a rapid escape response”; “inappropriate display of mating colors”; and particularly interesting, “abnormally shallow burrows.” The shallow-burrow research had originally been done by Charles Krebs, a scientist from the neighboring MBL. Krebs discovered that as the fiddlers dug down, they encountered a layer

of oil at which point they either stopped digging or dug horizontally rather than vertically. When the winter storms and freezes came, the crabs were not deep enough to survive and they were swept away by the tide. This research continues. Chris Reddy, a chemist at WHOI, and his team are still finding shallow burrows and finding that the oil is only “moderately degraded” since it first made contact with the West Falmouth shoreline.

In a prize-winning study conducted between November '06 and January '07 Matthew Pickart, then a junior at Falmouth Academy, compared two sites in Wild Harbor, one a still "oiled" site and the other non-oiled. After a long series of samplings he concluded that oil contamination from the '69 spill had weakened and reduced the below-ground biomass (living matter in a specific area) at the oiled site. This reduction had led to increased erosion in that area with "potential ecological consequences."

The Sanders report was unequivocal in stating that "the fact that the oil persisted refuted the thought that light oil was quickly dissipated into the environment. The West Falmouth spill emphasized the importance of [this] persistence and the significance of sublethal effects."

The President of WHOI, Paul Fye, in his 1971 Annual Report to the trustees, focused on one subject – "Oceanography and the Environment." He used the West Falmouth spill as one of his examples:

It [the spill] may be the most thoroughly documented case of its kind on record and the findings of this study have been quoted extensively to point up the dangers of oil pollution... It is true that today's oceanographers have uncovered incontrovertible evidence that man, whose expletive carelessness in his non-technological past was easily absorbed by the oceans, is now imposing himself in a clearly harmful way.

Hampson is more explicit than Dr. Fye. He thinks that the oil companies should be more willing to cooperate with scientists because "if they don't, they will have to pay the price." And the price is rising. Oil companies used to pay a fine for spilling oil and

then move on. Now a "you-break-it-you-fix-it" policy is in effect. Currently, the company which caused the oil spill is responsible for restoring the damaged environment, at usually a much greater cost than the fines. The company that owned the barge *Bouchard No. 120*, for example, which also fouled West Falmouth's shores in April of 2003, spent 40 million dollars on the cleanup and then was fined \$10 million more by the federal government for "criminal negligence" – a far cry from the \$100,000 Falmouth received after the 1969 spill, even though at the time that money was the largest sum ever received by a town for negligence.

Biographies

Both E. Graham Ward and his wife, Maria, former teachers at the Brooks School in North Andover, MA, retired to Falmouth in 1997. They joined the editorial board of *Spritsail* in 2005. Mr. Ward has summered in the Quisset area since the late 1930s. He has contributed articles on Falmouth history to such magazines as *Cape Cod Life*, *Offshore*, and *Yankee*. He is also the author of a biography of Frank D. Ashburn, an American educator.

Mrs. Ward, who was the co-researcher for "A Silent Fall," was the founder and editor of *The Cochichewick Chronicles*, a journal of the history of North Andover.

Both Wards have spent many summers, with their children and grandchildren, clamming and exploring both Great and Little Sippewissett Marshes.

Sources:

WHOI Library and Archives, especially librarian Lisa Raymond.

Retired WHOI scientist George Hampson and current WHOI chemist Chris Reddy.

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EPA Decision Series, "A Small Oil Spill at West Falmouth," Howard Sanders and others.

"Effects of Petroleum Hydrocarbons on Salt Marsh Sediments" a monograph by Matthew Pickart