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"Mr. Broughton informed me that the part of the coast he had been directed to explore consisted of an archipelago of islands lying before an extensive arm of the sea stretching in a variety of branches." - Capt. George Vancouver, 1792

George Vancouver never ventured into these islands. Instead he dispatched the ship *Chatham* and its crew, commanded by William Broughton, who spent a week exploring and charting the twisting channels, tidal currents and jagged shorelines. No record of Broughton's foray survives, but his verbal report convinced Vancouver that these intricate waters were too risky for His Majesty's ships, and that future explorations would be pursued in small boats. This despite the risk that "such a service in open boats would necessarily be extremely laborious and expose those so employed to numberless dangers and unpleasant situations."

Among those dangers would be hidden rocks, sea monsters and people peddling timeshare condominiums. So forewarned, we sail the sloop *Veleva* into the heart of the islands, around Shaw Island and into Wasp Channel, where a gentle breeze nudges us between Shaw and Orcas islands.

A mile west of the Orcas ferry landing we drift past tiny Bell Island, seemingly uninhabited but posted with signs - two hands cradling a spiny, speckled rockfish and labeled: "No Take." Bell Island and seven similar, small niches of island shoreline are the last refuge for copper rockfish and other bottom fish whose rapidly diminishing numbers have alarmed biologists.

In a region enamored of slick, silvery salmon, bottom fish get precious little respect. Biologists have identified more than 80 species, including halibut, skates, ratfish, cod, pollock, several species of sole, and an array of homely, spine-covered creatures generically known as rockfish.

Hunkered down on the sea floor, rockfish do their best to blend in, rarely if ever visiting the surface. Divers can swim within a foot or two, but rockfish tend to stay put, stone-still, camouflaged with mottled colors and webbed spines, their oversized eyes declaring: "Don't mind me. Just another wad of seaweed and rock. So just move on and find yourself a silver salmon."

Rockfish have dignity. Left alone, copper rockfish may patrol the same watery neighborhood for 60 years, and some species may live up to a century. Cod and pollock are known to migrate substantial distances, but rockfish are homebodies, inhabiting the same rocky habitat for a lifetime.

In Puget Sound, bottomfish are the territory of Wayne Palsson and Robert Pakunski, odd men out in a state fisheries department obsessed with salmon. These unsightly creatures never have been thoroughly understood, Palsson says. State research dollars go mostly to salmon programs, federal dollars to the big-money fisheries in Alaska and the Bering Sea. Now all those years of neglect appear to be catching up with us.

We chatted at the stern of the small, fiberglass boat in which they have spent two weeks working side-by-side with Canadian biologists, conducting bottom fish surveys in the boundary waters. To do this, they had to invent their own tools. Bottom fish, it seems, present a scientific challenge: The fish are way down there, and the researchers are not.

"We used to scuba dive, but you can only do two dives per day," Pakunski explains. "That would take a lifetime."

So the biologists fabricated a frame of iron rebar, attached an underwater video camera on a motorized swivel, hooked it to a remote control, and lowered the contraption to the sea bottom. It looked like something from a Star Wars junkyard, but it worked. In the past few years, they have lowered their gadget more than 2,000 times into the nooks and crannies of Puget Sound, the straits and the islands.

Each "drop" lasts six minutes, during which the camera makes a full revolution, recording on videotape any life within a radius of four meters. More recently, they have added a device that projects laser beams, providing an accurate measure of the size of the subject creature. The researchers note the numbers, species and size of fish on the tape, then extrapolate that data, coming up with what they believe to be reliable estimates of who lives where at the bottom.

The results are discouraging. Rockfish appear to be in steep decline, they say - both in numbers and size. "There are too many areas of ideal habitat where nobody's home," says Pakunski. "It's depressing."

Predation is the problem, they say, and the evidence points to people. With salmon runs in decline, sports fishermen have turned increasingly to bottomfish, figuring a spiny rockfish is better than going home empty-handed. That pressure is beginning to depress stocks of fish, the biologists conclude after studying video of areas where fishing is allowed and "no-fishing" areas such as Bell Island.

The best example is the underwater park in Edmonds, north of Seattle. The park is frequented by scuba divers and is within a stone's throw of downtown Edmonds and its busy ferry dock. Yet there are twice as many lingcod and 10 times more copper rockfish than at similar sites up and down the shoreline. The Edmonds fish also are larger and older. Why? Because there is no fishing allowed, Palsson says.

Research at Bell Island and other no-take areas points to the same conclusion. Where there is no fishing, there are more and larger fish. "Fishermen ask why we're taking it out on them," Palsson says. "And it's true there are lots of stresses on those fish - seals, sea lions, shoreline development, changing beach patterns. . . . But fishing is one stress we have some control over."

In Washington, the mere mention of "no-fishing" can get a state biologist into hot water. Scientists are supposed to be politically objective, interested only in scientific facts, not public policy.

"But our jobs are changing," Palsson says, "from fishery biologists to conservation biologists. It's a subtle and important change from the old days, when we heard the governor telling us: We want to be the sports-fishing capital of the world."

Instead, Palsson and Pakunski advocate designation of more, and perhaps larger marine reserves, where fishing is either prohibited or strongly discouraged. It will take years, but rockfish should begin to recover. "San Juan County voluntarily designated eight bottom-fish recovery areas, and we already can see the difference," Palsson says. "But that's still less than 1 percent of the critical habitat in the Puget Sound area."

In the San Juans, no-fishing areas have become a cause celebre. And there is no more enthusiastic supporter than Dennis Willows, longtime director of the University of Washington marine laboratories at Friday Harbor. "I'm not particularly green, and I'm not a fisherman," Willows says. "But the scientific data is so obvious, it's stunning."

He pulls a tattered file and exhibits a set of graphs, not from Palsson and company, but fishing statistics provided by the state. The graphs show plunging catch rates for rockfish and several other species. Puget Sound and the San Juans are ecosystems that demand systemwide responses, he says. The systems are remarkably resilient, able to withstand overfishing and other environmental abuse - "until some unknown threshold is reached."

"It may still look fine, but in the background there is water quality insult, reproduction insult, . . . and I worry that we are getting dangerously close to that threshold."

Selected fishing closures eventually will provide scientists with critical data, a broader extension of what Palsson has collected with his odd home videos. This, says Willows, is not environmental advocacy; it is a logical extension of good science.

In 1792, Capt. Vancouver and company repeatedly set their nets in Puget Sound - usually with little or no success. They must have wondered where the fish had gone. And so it goes for 200 years. The fish

don't change, but the fishermen get smarter, better-equipped with electronic fish-finders, high-test lines, trolling motors. These days, one can actually buy an off-the-shelf underwater video camera that sounds more sophisticated than the one invented by Pallson and Pakunski.

You look at this stuff, and you wonder how any fish are left out there. But there are. Those grainy home videos are evidence that rockfish, while scarce, are also survivors. There are plenty of rocky shoals and kelp forests ready to be repopulated with some homely bottomfish.

All they ask is an even break.

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