

Port Townsend Marine Science Center's 25<sup>th</sup> Anniversary Lecture Series Presents

“OUT WHEEZING HEART: PUGET SOUND”

by William Dietrich, Nov. 4, 2007

As a journalist, I've occasionally been drawn to long stories about complex problems. Once, when I'd consumed yet another forest of newsprint with exhaustive analysis, my colleague Steve Johnston commented, “That's quite a thumbsucker you wrote there, Bill.”

“What's a thumbsucker?” I asked.

“It's an article so long and complicated, about a problem so convoluted and intractable, that by the time you've finished reading it, the only sensible reaction a subscriber can have is to suck their thumb.”

Point well taken. I'm going to do my best today to keep you from closing your eyes, curling into a fetal position, and sucking your thumb, but Puget Sound – not just the body of water itself but the basin, and the ideas it represents – is a subject so large and difficult that it is an act of will to confront it. This was not an easy speech to write.

Like a subconscious Id, Puget Sound is a repository not only of all the runoff of pollutants and problems from the crest of the Olympics to the Cascades, but of the hopes and fears of Pacific Northwest civilization. It reflects, unmercifully, who we truly are: stewards or wastrels, deep thinkers or merely deep-sixed.

Puget Sound is in danger of becoming a liquid desert, a skin-deep beauty with decay in its heart, a Potemkin Village in which the shiny façade of its sun-lit surface

hides the fact that what lies beneath are only ratfish, a bottom-feeding species one biologist estimated now makes up three-fifths of the fish biomass of our waterway.

First, let me make clear that I love Puget Sound. I grew up on it, in Tacoma, fished it with my Dad and grandfather, live next its Salish Sea extremity on Fidalgo Island today, and feel my greatest peace when sailing on it. From spy-hopping Orca whales to whirling balls of herring or sand lance, I'm thrilled every time the Sound comes alive. I love the dusk in a quiet bay when schools of forage fish are rippling the surface and a seal is making whomping splashes with its flippers at the edge of a cove.

I also remember a Puget Sound ranker than the one we know today. I can still smell the creosote at Point Defiance and see the gigantic Chinook iced in pier coolers next to boxes of herring bait. I played with my cousins on a Port Orchard beach that stank of raw sewage, boated on bays brown from effluent, and joined fishermen casually sinking bottles and beer cans over the side without a second thought.

And I remember a Puget Sound where the massed gillnetters put out a glorious fairyland of running lights when viewed from a surveying Fisheries Department airplane, where a bucket of butter clams was the product of a casual walk, and where bluff and beach sometimes ran for miles without an intruding house.

We are confronted today with a waterway marked by encouraging progress in some areas – I believe the peak of pollution is over, and that we are dealing with is a post-industrial fjord – and by catastrophic decline in others. We are at a balancing point, where Puget Sound could dip towards disaster or rise toward recovery, depending on the decisions we collectively make. So what I want to do today is give you cause for worry, cause for hope, and then suggest things you might do and ways we might go.

So let's start with the bad news. Be afraid. Be very afraid.

Puget Sound should be an ecological showcase. It is in a temperate climate zone of incredible biological productivity: "The Fertile Fjord," author Richard Strickland once called it. Counting the Northwest Straits region of the San Juans, it has 2,500 miles of shoreline, or enough to reach across the United States (which makes you wonder why waterfront property costs so much) and is the deepest estuary of its kind in the Lower 48. Carved by Ice Age glaciers, the Sound averages 450 feet deep, with a basin just north of Seattle dropping to 930 feet. It is fed by 14 major rivers and ten thousand small rivulets, in 19 major watersheds. The Sound has 2,800 square miles of water within a 16,000 square mile basin. And it is but one arm of an inland, T-shaped sea in which three quarters of the tidal water pouring through the Strait of Juan de Fuca – up to thirty cubic kilometers of tide each day – goes north into Canada. The entire system must have seemed, to the pioneers, to be inexhaustible.

The Sound still plays host to a \$3 billion fishery (two-thirds of that shellfish), gets 2,500 cargo ship visits a year, 200 cruise ship sailings, and has 30,000 moorage slips for boats. It's a highway and a playground. There are even 22 commercial craft employed to "watch" some 90-odd whales, just on our side of the border.

But the Sound's very depth creates a problem, because the most productive water is that which is shallow enough for sunlight to penetrate. Much of the Sound is too deep for the eel grass nurseries young marine life depends on. At the same time, shallow underwater sills at Admiralty Inlet here at Port Townsend, at the entrance to Hood Canal, and at Tacoma Narrows, tend to confine the deeper water in place, trapping pollutants and inhibiting mixing. Hood Canal is an extreme, where poor mixing and rising nutrients

have created oxygen-starved bottoms and huge floating mats of filmy algae, choking off other marine life.

I was once able to compare the Sound we are all familiar with to Tatoosh Island on the northwest tip of the Olympic Peninsula. This small rocky island, owned by the Makah Tribe, has for decades been reserved as a scientific research post and ecological preserve, allowing University of Washington scientists to observe nature when it is largely undisturbed. I had the opportunity to visit it once and I was astounded by its fecundity. Mussels were crammed and piled into glistening black reefs. Starfish were wrapped in orgiastic embrace. Kelp created forests like swaying redwoods, and seabirds rose in white, screaming clouds. Every rock and tidepool was a miniature planet of thick, fiercely competing life. And by comparison I would guess that Port Townsend Bay, lovely as it is, is biologically today a pale reflection of what probably filled these waters two hundred years ago.

We have used Puget Sound as a dumping ground and source of swimming dollars for one hundred and fifty years, and the bill has come due. Up to 70 percent of all the original estuaries and wetlands are gone, filled, paved and farmed. The Skagit River, the biggest that pours into Puget Sound, has lost 95 percent of its estuary. By state estimate one third of the original eel grass beds are gone, totaling 20 square miles of lost habitat for young fish. Estimates of contaminated bottom vary somewhat, but about 8,700 acres are highly contaminated and somewhere between 90,000 and 181,040 acres are moderately contaminated, according to the state of Washington. Of 165,000 acres of shellfish harvest area, 28,000 are closed because of pollution.

We deposit a billion gallons of treated wastewater, and hundreds of thousands of pounds of chemical waste, into the Sound each year. We extract 250 billion gallons of fresh water for our own use that otherwise would flow directly through streams and aquifers to renew the Sound. Just diesel exhaust adds another 8 million pounds of particulate the rains into the Sound annually.

The result is shocking. While about 70 salmon hatcheries have propped up some salmon runs and sustained enough of a fishery to allow us to deny reality (about 85 percent of the fish caught in the Sound now are by sportsmen since commercial numbers have collapsed) the hard truth is that wild salmon populations are only at about 8 percent of their historical number. Repeat: wild salmon in Puget Sound have *declined 92 percent* since records began to be kept. That reflects our fundamental failure to sustain stream habitat.

Just since 1992, seven stocks of salmon in the Sound have gone entirely extinct and the number of healthy stocks has fallen from 93 to 81. This July, steelhead joined Chinook salmon as threatened on the Endangered Species list.

The numbers of Walleye Pollock and whiting crashed so heavily in the 1990s here that the commercial fishery had to be closed. Pacific cod is down by 82 percent. The spawning potential of copper rockfish is down 75 percent since 1978, and thirteen species of rockfish have been proposed for listing as threatened. Butterclam and English sole numbers have also collapsed. The sports fishing daily limit for rockfish was finally cut from 15 per day to one, but it didn't matter because you can't find any anyway.

Herring? They've declined 90 percent at Cherry Point since the 1970s. Rockfish eggs? Down 90 percent. Seabirds? Down as a whole by 47 percent in just the last 20

years, and 14 of 18 studied species are down from 65 to 95 percent. Pinto abalone isn't even a commercial species, and yet it has crashed in the San Juan Islands too.

The only critter doing well, seemingly, is the ratfish. Even *dogfish* have declined. Dungeness crab has had some recent peaks, but one theory is that's only because we've wiped out many of the fish and seabirds that used to feed on young crab.

What in the name of Peter Puget is going on?

People, of course.

The population of the Puget Sound basin has doubled since 1960, from 2 million to 4 million, and we're projected to grow to as many as 5.5 million – that's a median projection – by 2025, or nearly 100,000 more of us per year. Jefferson County is projected to grow 55 percent.

As a result, the basin is reeling. Never before in history has nature, both locally and globally, been asked to absorb this many people, this quickly. We all know what's going on every time we get on the roads, but just as an example, between 1991 and 2001, 190 square miles of Puget Sound basin forest was converted to housing and stores. In the same period, 43 square miles became either roof or parking lot, impervious surface.

We all know what flows downhill. Puget Sound is our chemical toilet, and we hope it all sinks out of sight - except it doesn't, totally. Collapsing species tell us what's going on. Puget Sound Chinook salmon have 5 to 17 times the PCB concentration of other West Coast Chinook, the state says. Harbor seal pups have seven times more PCBs here than those in Georgia Strait. Detected levels of the fire-retardant chemical PDBEs have risen 20 times since 1985.

We don't police the exchange of cargos and ballast water well enough and so invasive species like sea squirts and spartina grass have come in to crowd out the natives.

Puget Sound is just plain too dirty. In the summer of 2005, the state reports, 24 of 65 monitored beaches violated water quality standards for bacteria at least once, and seven had multiple violations. The sewage treatment plant on Blake Island, a state park, failed its standards more than 100 times. The Seattle Post-Intelligencer did an investigation and found that 400 discharge permit holders had violated their permits over a three-year-period, an 180 were still discharging heavy metals into Puget Sound. In other words, we have the right regulations, but we don't always obey them.

We're not doing a good job. We overfish, we pollute, we destroy critical near-shore and river habitat, and we're even changing the climate. Global warming is real. Air temperatures in the Puget Sound basin are up nearly two degrees Fahrenheit on average the last 100 years, twice the global rate of increase. Water temperatures at Race Rocks, near Victoria, are also up nearly two degrees on average, and that's just since 1950. Basin snowpack has declined an average of 25 percent since 1950, and we're getting more river runoff in March and April and less in July and August because the mountains don't hold the snow.

Be afraid. This is not good.

But we're on top of the problem, right?

In 1984 – 23 years ago now – the Seattle Times did a hard-hitting series on Puget Sound's decline. In response, the Legislature reacted the next year by creating a Puget Sound Water Quality Authority, an aggressive agency which produced an ambitious plan for reform by the end of 1986. But wait! The plan meant getting tough with both

industrial polluters and the rest of us with our million-odd septic tanks, road runoff, pasture manure, fertilizer, and so on. It named names. So the director, Kathy Fletcher, was bounced out. She went on to direct People for Puget Sound and remarked recently that working on Puget Sound is like the movie “Groundhog Day,” where you repeat the same day, and hear the same things, over and over. The Authority was replaced with the softer-sounding Puget Sound Action Team, with lots of advice and little muscle. It became famous in newsrooms for vague goals and vaguer accomplishment.

Fast-forward two decades. Same mess, except species decline is accelerating. Same newspaper series, from papers all around the Sound. Lots of plans, but disappointing progress. To quote an official on Chesapeake Bay, facing the same problems, “We have done a truly tremendous job of defining the problem, and we have done a truly tremendous job of defining the solution. But we have not yet succeeded in actually implementing the solution.”

How much, total, have we spent on Puget Sound? That seems a reasonable question for any citizen to ask, but I couldn’t find that number. Well, what have we accomplished? I couldn’t find a comprehensive list for our two decades of effort, either. What are we *trying* to accomplish? Here we have a credible list – pollution and storm water control, habitat acquisition, and so on – that came from the new Puget Sound Partnership, with a tentative price tag, none appropriated yet, of \$12 billion to finish the job by 2020. And what is the Puget Sound Partnership? After a new re-arranging of deck chairs on the Titanic, the Legislature this year replaced the ‘Action Team’ with an even- nicer-sounding ‘Puget Sound Partnership,’ following Gov. Gregoire’s 2005 ‘Puget Sound Initiative.’ We’re gone from “Authority” to “Team” to “Partnership.” The new agency,

headed by the son of Congressman Norm Dicks, will come up yet again with a more detailed plan of what we're trying to accomplish by the end of next year. But the Partnership has no real regulatory or taxing authority, and instead is apparently supposed to encourage local and state government to do right by Puget Sound, once they decide what right is.

That means coordinating the 12 counties, 115 cities, 15 tribes, at least 26 agencies, and scores of citizen groups that work on Puget Sound.

Be still my beating heart.

I wish them the best. I hope they succeed. But if history is any guide, the politically palatable idea of protecting Puget Sound without spending too much money and ruffling too many feathers will prove extremely difficult to impossible. On Chesapeake Bay, progress is similarly limited after 19 years of programs and promises, and the estimated cost of fixing that estuary now – which by some measures is less polluted than Puget Sound – is \$28 billion. That's \$10 billion more than the initial cost of the roads-and-transit package Proposition 1 being voted on in the Seattle metro area; and \$16 billion more than the latest Puget Sound estimate.

The test will be to see if the Partnership can come up not just with goals, but with specific goals against which progress can be measured on an annual basis: the notorious benchmarks, if you will. Actually “implementing the solution,” as they said on the Chesapeake.

So what's the good news?

There's a lot, actually. For one thing, we DO have a new agency, with a goal of restoring Puget Sound to health in 2020, and a state Puget Sound budget for the next two

years averaging \$176 million a year. Not enough, but not inconsequential, either. Polls have consistently shown people care about Puget Sound.

For another positive note, on balance Puget Sound is arguably getting cleaner, not dirtier. If some new chemicals in fish flesh are rising, others are flat or dropping, cancerous fish lesions are down, and industrial pollution is dramatically reduced from the 1950s and 1960s. The amount of oil spilled is down, knock on wood. While imperfect, there is a program to control and monitor ballast water. Programs are underway to clean up derelict fishing nets, remove creosote logs, inventory species, restore streams, improve estuarine habitat and rebuild salmon runs. In some cases we are running in place – we remove derelict vessels at just about the rate new ones sink, so years after starting we still have about 100 derelicts out there as at the beginning – but places like Bainbridge Island’s Eagle Harbor or Tacoma’s Commencement Bay have begun to dramatically improve. There are modest experiments with marine reserves and artificial reefs. According to statistics from the governor’s office, since 2000 some 2,500 barriers to fish passage have been removed in this state – many of those in eastern Washington, mind you - and 2,500 new stream miles opened to fish passage. Chum salmon numbers are near historic highs.

Lake Washington, which was girdled by sewers and cleaned up beginning in the late 1960s, is an example of how a body of water, if surrounded by enough rich people, can be sustained in a remarkable level of cleanliness in the midst of a metropolitan area. The state contends that the percentage of watershed basins with “poor” water quality declined from 10 percent in 2000 to just 1 percent in 2006.

Some shellfish areas have reopened after contamination was controlled. At least on paper, counties have programs now to address failing septic tanks. The state Department of Transportation is projected to spend \$105 million more these next two years to protect habitat and control storm water as it builds more highways. Compared to decades past, sewage treatment is better, logging practices have been reformed, fishing seasons are more conservative and land acquisition is more aggressive. Our understanding of the problem is light years ahead of where it was a few decades ago. After seven years of Bush Administration denial and retreat, we're finally paying attention again to the environment.

When comparing such successes to the pace of urbanization, one quickly comes to the point of having to decide whether the glass is half full or half empty. We're in a race between reform and overcrowding. For optimists, the point should be that human societies learn, and progress can be made.

Make no mistake, however. As a society, we still measure "progress" by a narrow economic lens. Pick up any newspaper and 99 percent of the time, our measurement of how good we're doing as a region revolves around the economy and money. As Americans, we emphasize the quantities of life over its qualities. We are in danger, as critics of economists contend, of knowing the price of everything and the value of nothing. We have no good way of putting a "value" on a clean and ecologically thriving Puget Sound, and thus it frequently is overlooked in political discussions. Whether a clean Puget Sound ultimately costs \$8 billion or \$12 billion or \$28 billion, we struggle to justify *any* kind of ecosystem restoration because our society, unlike native American society or even pioneer society, really does not have a direct economic connection to

its health anymore. The costs of damaging the environment to create more human wealth is generally not acknowledged on balance sheets. Neither is the economic advantage a healthy environment gives us in attracting workers and businesses. It's no accident that we spend only about 2.5 percent of the state general fund on all natural resource issues – environment, parks, wildlife – combined.

We also have the problem that, because Puget Sound is the repository of all our actions, fixing it becomes a comprehensive task. We hoped it might be as easy as building a fish hatchery or buying a beach, but if there is no stream for the fish, or if the beach is contaminated by pollutants running off the entire basin, then the restoration of Puget Sound becomes a matter not just of water, but of land use, transportation and even – because of the impact of global warming – of the composition of our atmosphere. It is a Rubik's Cube, where each twist of the colors can misalign progress in another area.

Does all this make you want to suck your thumb?

So, what to do?

One useful action would be to have more thinking and public discussion about what a clean, healthy, fecund Puget Sound is “for.” If we measure only the value of fisheries against, say, the value of a Boeing parking lot with its attendant stormwater runoff, Puget Sound is always going to lose. Half a dozen Boeing planes equals the entire value of the fishing industry. If it's airplanes versus whales, Willy and Keiko are doomed.

But if Puget Sound's death is a precursor to the death of the oceans which in turn ruins the health of our atmosphere and leads to the extinction of our species, we *might* be more alarmed. If a continued collapse of Puget Sound species means not just the death of

the sports fishing industry, but of resorts, boating, and the quality of life that draws software geniuses to Microsoft, then *maybe* the playing field is leveled. If Puget Sound is sold as a place of rejuvenation, and not just a place to work around, it might gain value.

It might help if we would allow ourselves to look at Puget Sound in new and creative ways. Surely the state's first inhabitants, who went everywhere by water, would be scratching their heads at our transportation gridlock when to their minds we've got as many freeway lanes or light-rail lines as we could ever need, already provided by nature: a flat highway of water, once used by the Mosquito Fleet but now perceived only as an obstacle. Does Puget Sound represent opportunities we are missing?

Surely we could "sell" a healthy, thriving Puget Sound as a means of tourism and an attraction for employers. Come to Ecotopia! Puget Sound: first estuary on the planet to actually be saved, restored, and turned around!

I think there is a spiritual dimension to Puget Sound. Because both we and our pollutants collect around it, it is both a mirror of our own behavior – good or bad – and a window to God, higher powers, or life's meaning. Who remains unmoved by a flight of seabirds, swoop of an eagle, or breaching of a whale? Who doesn't take pride in a place of beauty preserved for generations yet unborn? Are we willing to throw the very real satisfaction of a vibrant Puget Sound away for mindless growth and elusive tax savings? I look at the traffic jams, soaring housing prices, rising anxiety and insecurities produced the last few decades of "progress" and wonder just what it is we think we're achieving.

So there is a moral component as well. What is the purpose of life? Well, one purpose, if you're looking for one, is to save or contribute to the lives of others: not just humans, but members of the plant and animal kingdoms who can't speak for themselves.

I suggest that in saving Puget Sound we save ourselves, and in restoring natural grace we earn inner grace.

What if salmon really returned to every substantial stream, their carcasses fertilizing the surrounding forest, bears and eagles feeding, and herons standing sentry in the shallows: and that every resident experienced this annual cycle, first hand, in their neighborhood? If we were all that close to such an annual miracle, how would it affect our society and our sense of ourselves? How would it influence our goals?

We don't put Puget Sound on a high-enough plane. We need to involve biologists as well as politicians, artists as well as editorialists, and ministers as well as accountants. Port Townsend is the perfect example of a community which could generate a dialogue that defines an environmentally sound future, instead of reacting to a growth-troubled present.

What else? One of the most difficult things about Puget Sound, even after a quarter century of working on it, is how little we still know. We should be able to answer three questions. One: What was the biological baseline of what Puget Sound was like – how many fish, how many birds, and so on – before humans arrived? Two: What is the census of species now? And Three: What is a sensible goal for what Puget Sound could become: how many fish and birds, realistically, can we bring back? I don't think we can answer any of those questions very exactly.

One thing that would help is more science. The current two-year budget allocates just two percent of its total, or \$7 million, for scientific research. I question whether that is adequate. In my experience, the same relative handful of biologists, underfunded and overworked, year after year try to keep track of where we are on Puget Sound. I suspect

there is room for more baseline data, and a need to assemble it in a way that the public and politicians can get at it. We need the software wizards of Puget Sound to create an accessible database. A lot of on-line information on Puget Sound is poor, somewhat contradictory, or entirely missing.

I wish we had a yellow submarine – I’ve never seen a good movie of what Puget Sound looks like, below the surface – and a Jacques Costeau to catalyze excitement about marine biology. Can we combine Captain Puget with Captain Nemo?

Another reform would be to create untouched areas – Puget Sound’s Tatoosh Islands, if you will – in which the marine ecosystem is allowed to recover toward its natural state so that we have some means of comparison with what is disturbed. One tactic, being tried in California and around the world, is the creation of marine reserves, or marine protected areas, that prohibit fishing and other exploitation. Not only do the reserves become biological safehouses, but they tend to produce a surplus of fish and other organisms that then migrate to neighboring waters where they can be harvested. Marine protected areas have been shown to produce up to 200 times as many young fish as unprotected areas. A law to create them was passed in 1999, but the last protected areas on the central coast were not established until Sept. 21 of this year. At present, 8 percent of California coastal waters are protected from fishing, and another 10 percent have a lesser degree of protection.

Marine biologists have suggested an eventual goal of putting 20 percent of the world’s oceans into a reserve system. In Australia, 20 percent of the Great Barrier Reef has apparently been set aside in such a system. What would happen if we made reserves out of 20 percent of Puget Sound?

There are huge political obstacles to be overcome for such a move. Tribes often interpret such proposals as a threat to treaty rights, and non-Indian fishermen view them with suspicion. Yet what good is a treaty right when you're guaranteed 50 percent of nothing? What good is a fishing season when every species is collapsing? Let's create a reservoir to restock the rest of our waters. It's the simplest thing we could do: set aside a portion of Puget Sound, sit back, and let it recover on its own.

Besides reserves and obvious moves such as restricting fishing seasons, reforming hatchery operations, and restoring streams, Puget Sound will live or die on decisions about surrounding land use. If the development model for the Puget Sound basin continues to be an auto-centric pattern of sprawling parking lots, spread-out housing, and agriculture to the edge of every creek, we're probably not going to be successful in the long run. Too much gunk will run off the land into the water and undermine our efforts. The Growth Management Act is a good first step. The Shorelines Act could be updated. The real need is to envision a sustainable future in which we have a high quality of material life and a good environment too.

This will likely mean more compact cities, denser housing, more walkable stores, improved public transportation, and a system of buffers and preserves that creates an ecological web between saltwater and mountain crest. Rivers, their banks protected, would become environmental highways for species to move up and down. Wetlands and estuaries would be restored to reconnect sea and land. Some beaches would be bought for preservation in their natural state. Such a landscape will involve tradeoffs; lifestyle changes we would both like and not like. Like it or not, growth is pushing us to a denser,

more urban, more controlled pattern. We can kick and scream, or use the inevitable change to advantage.

There is a real welter of agencies somehow connected with Puget Sound, a Kafka-like sprawl of bureaucracy that makes it a miracle anything gets done, that anyone talks to anyone. Rather than reform old groups, we tend to find it socially and politically easier to simply add new ones, layer upon redundant layer. Making salmon recovery, Puget Sound restoration, land use and transportation planning all coordinated – across federal, state, county, and city government – is a real thumb sucker, but we're in danger of really failing if we can't become more coherent. People are fed up. We also need to acknowledge that half of our overall marine ecosystem is in a foreign country, and talk to the Canadians once in a while too.

So what can *you* do? Do you leave here hopeless or energized?

One simple task is to vote. Can you imagine a Puget Sound basin in which every elected official was elected on a platform, at least in part, to restore Puget Sound? The result would be electrifying. The urgency such unity would create would mirror the unity that followed Pearl Harbor or 9-11. Want to fix Puget Sound? Get politically engaged.

Even better, run for office. There's a paucity of good candidates. Work to find them, elect them, or be them.

If you don't want to do that, become a gadfly, or soldier for the Sound. You can pull spartina grass, muck out a salmon stream, or put out a newsletter. Or, you can monitor what these dozens of agencies are doing and start holding their feet to the fire. In the last two-year Puget Sound Action Team plan, apparently just 20 respondents commented, all of them organizations. Twenty, out of 4 million Puget Sound basin

residents! Who asked hard questions about money spent and results achieved? Credible goals? Common-sense opportunities? Nobody.

At the very least, educate yourself. It's wonderful you're willing to spend a Sunday afternoon at a talk like this, but don't take my word for anything. The Internet has made researching the most arcane biological and political topics accessible to everyone. What's wrong with Puget Sound? Hey – you tell me!

And I mean, *tell* me. I've lived by Burrows Bay for nine years now, and in that time I've received not a shred of information about the bay, its ecosystem, septic systems, its species, native plants, or what I might do to help. I'm a coastal resident with absolutely no responsibility for the coast. We're all pretty ignorant, aren't we? We need to educate each other, and government and science has to do a better job of translating the information they have and delivering it to all of us.

Think by Sound, act by Bay. That's already going on, of course, but if the immensity of Puget Sound has you sucking your thumb, then tackle Port Townsend Bay, or Admiralty Inlet, or even some side lagoon the rest of us don't even know exists. The campaign here to protect eel grass off the waterfront is an excellent example. So is the campaign for marine heritage.

Finally, enjoy the Sound. Let's face it, most of us spend 90 percent of our time indoors. We don't save the Sound because we don't know it, really. We aren't intimate enough to judge its changes, its successes and failures. We can't name its species, recognize its symptoms, eyeball its water quality or adequately explain why it is so precious. Adopt a beach or creek or marsh and make it yours. Then let your enthusiasm infect the world.

Puget Sound *is* going to be saved...because it has to be. If a place as rich and fertile as *this* collapses, then our civilization and our species is doomed. If we can't save an ecosystem as vibrant as *this* one, we can't save anything. The only question is whether we save it now, when it is relatively easy and affordable, or wait until total collapse when it will take centuries to bring back. I suggest now, starting this afternoon.

Thank you.

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