

Living on the Estuary

By Tom Gaskill

An Introduction

The story of William and Beth Seelander is the story of an old and wise couple retired to a cabin in the wooded mountains of the coast range. The Seelanders lived for many years along the shores of the bay. He has tried his hand at many types of work over the years, from fishing for salmon, lingcod, and flounder to building boats and back to fishing. She has worked as a mother and mender of fishing gear, crabbing and clamming to help feed a family of five. They are both 72 years old (born in 1935) and have lived on the coast their entire lives. The Seelanders have seen many changes over their lifetimes, including a world war, the coming of television, and the mechanization and growth of technology in the fishing and timber industries. They have seen booms and busts in the economy of the region. Together they traveled to the east coast of the United States and to Korea, China, and Italy, each time visiting the coastal fishing communities in these places. They both finished high school and a couple of years of college, but fishing has always been their way of life. He has also worked in a lumber mill and briefly as a logger.

They now have grandchildren and wish very much to have their grandchildren know the rich, wild, and healthy outdoor lifestyle that brought such great rewards to them. They view the inheritance of the natural heritage of the coast as very important. Healthy forests, streams, estuaries, and oceans mean a great deal to them, and they hope that someday the jobs which they have had throughout their lives will still be an important part of the economy of the region. They wish for their grandchildren to learn the skills which will help them to understand the sea, the land, the rivers and bays, and the way that people, the region's economy, and their quality and way of life are tied to the health of these places.

Chapter 1 – The View from the Cabin

The view from the cabin is extraordinary! Looking to the west, the couple can see the Pacific Ocean in the distance. They are just barely able to make out the breakers on distant sand beaches where they recall how the salty spray builds a thin coat of brine on the windows of houses exposed to the sea air along the lower bay. Up on this ridge however, the air is fresh and clear, washed by nearly 120 inches of rain each year with an occasional snow shower thrown in.

Smoke curls from the stubby cobblestone chimney as the old couple makes their morning tea and steps out on to the porch to take in the view, high up in the coastal mountains of southern Oregon. The morning is cool but mild, like it often is along this stretch of the North American coastline, where temperatures seldom drop below 40 degrees Fahrenheit and reach 70 degrees only on very calm, sunny days. Of course, up here at 2,000 feet, the cabin sees some snow, and summer days a person can watch the fog belt roll in off the Pacific Ocean while they bask in the sunshine and warmth that sometimes pushes 90 degrees. But this morning is like many mornings in the spring; rain has saturated the earth over the past few days, soaking the rich green conifer forest of Douglas fir, Western hemlock, Western red cedar, and a dozen other species of trees. Eventually the precipitation will filter down through a forest soil thick with a layer of humus, the spongy living carpet that covers the forest floor. The rain will dampen a maze of needles, branches, moss, and fungus and then, if enough falls, it will flow into the sandy, rapidly draining soils where it will reach sandstone bedrock and may eventually begin a long, slow return to the sea through creeks, lakes, rivers, and the estuary.

The creek that runs down the slope just below the cabin is fed by a spring year round. This special kind of wetland is nourished by groundwater where the soil and bedrock can no longer hold the water below the surface. During frequent winter storms, this little creek may swell to many times the summer flow as runoff rapidly fills the streambed, bringing sediment, bits of decaying plants and nutrients with it. Down where the creek grows in size and flattens out a bit, spawning salmon will seek beds of gravel to lay eggs and renew an ancient cycle of life that has fed the black bear, the eagle, and the people of the region for thousands of years. This cycle also feeds the stream with nutrients that, in turn, support a chain of diverse creatures like the aquatic insects, amphibians, fish, ducks, otter, mink, and bobcat the Seelanders have encountered over the years.

For now, the couple's attention is drawn to a large, crow-sized, red-headed woodpecker carefully mining insects from a tall, dead Douglas fir tree trunk, called a snag. This Pileated woodpecker not only feeds on the insects that are breaking down the snag, but she will also seek out or create a hole for a nest in an old, decaying tree as a place to raise her young. Snags, like the tall and graceful living trees and the dead logs that fall to the forest floor, play an important role in the ecology of the watershed. Ecology is the complex of relationships between the living and non-living parts of an ecosystem. The coastal forests of this basin or watershed contribute a great richness of nutrients, minerals, and sediment to the distant estuary where the flowing waters of the river will meet the churning, salty tides of the ocean. Though we are gaining in our knowledge through the efforts of science, we still know very little about the ecology of the watershed, estuary, and ocean environments.

An early morning wind driven by the sun-warmed air rising from the valley below stirs the tops of the trees, 200 feet or more above the forest floor. Chattering a prehistoric call, the Pileated woodpecker abandons the snag as a handsome brown and white Osprey lands on the remnants of a broken branch near the top of the dead tree. The couple smile now, as they closely watch their friend the Osprey, recently returned from migration, a sign that spring is indeed moving on towards summer. Sometimes, as they watch this noble bird dive to the river, powerful talons open and seeking a slippery fish, they are reminded of the many young Osprey that they have watched fledge from the nest to search out new territory over the years. Feeding along the shores of the rich bay these young birds have, no doubt, found a wealth of herring, young salmon, surf perch, and sculpin swimming unaware beneath the shallow waters of the estuary. A rich harvest for a wary hunter!

This morning, the adult Osprey has a shining silver Coho salmon in his talons, another reminder of the powerful connection from river to estuary and beyond, to the great ocean. To follow a Coho salmon of the Pacific Northwest coast on the journey from birth to death is perhaps one of the best ways to understand how the watershed connects through the estuary to the ocean. As the morning sun finally tops the ridge, the old woman and the old man finish their tea, wave a quiet goodbye to the Osprey, and leave the cabin. Today, they will spend time volunteering for a project which they hope will keep the wild and beautiful Coho salmon runs returning for many centuries still to come. We will follow them as they explore the many parts of the salmon's world and learn about the connections between the land, the sea, and the people that come to the coast and that live here. Welcome to the richest place on earth, the estuary!

Chapter 2 – At the Shore’s Edge

As they drive along the twisting roads down the river to the bay, William and Beth recollect how the tides once ruled their lives. Coastal waters can be difficult to navigate and a mistake can cost time, money, or worse. The tide was very low early this morning, a sign that the full moon last night is still having its way with the waters of the ocean and the bay. A few late clam diggers are retreating, buckets in hand, as the rising flood of salty seawater reclaims the flats. When they lived along this shore, the Seelanders spent many mornings exploring the muddy expanses for clams to fry or make chowder with. Occasionally, they would chance upon a raccoon working the edge of the water in search of food. His nimble paws carefully digging, the raccoon used his sharp teeth and powerful jaws to break open the clam and scrape the tasty flesh out.

Today, they see a family of River otters heading across the channel to a safe refuge on a dredge spoil island. Beth remembers when the dredges put that island out in the middle of the bay. The huge metal jaws of the dredge splashed down through the water to be driven deep into the mud and then pulled back up. The thick stew of oozing, watery goop was dumped on a barge and then brought over to the spoil site to be dumped. The water near the dredge was cloudy for a long time afterwards and the mudflats nearby were buried beneath a new layer of sediment, plants, burrows and all. They no longer dump dredge spoils in the bay. Instead, the barges take it out to the ocean or suck it up and dump it out on the land where it can be contained. Scientists determined that the spoils contained too many poisons to be dumped back into the estuary. Besides that, the more the bay is filled, the less bay there is for the estuary.

The job today is to drive down to the mouth of the bay and meet up with a couple of scientists, and then travel by boat up the estuary into a quiet, backwater arm called Mealticket Slough. Here, as volunteers, Will and Beth are going to help out the scientists with a research project that has been going on for almost a decade. The work they do is mostly helping to identify and count plants. They work as a team. Beth is the botanist, a scientist that specializes in the study of plants, and Will is the recorder, although he favors calling out the birds he sees rather than the plants when they are in the field together.

As they drive along the shore of the bay, Will reminds Beth of the first time that he came to call on her at her parent’s old house way up on Cedar Slough. The tides had been just barely high enough for him to row his boat up to their dock without too much of a fight. She had agreed to go with him to town and visit the Saturday market where they could get fresh vegetables, fish, and some other goods the family needed. As they rowed along the narrow inlet, they waved to their neighbors and laughed with surprise as a few fish jumped out of the water near the boat. Beth nearly fell overboard when a Harbor seal poked an inquisitive nose out of the water right behind her and then splashed her as it dove beneath the surface.

Hours later, for they had lost track of time, they struggled against the last of the outgoing tide. But then they noticed the wavy blades of eelgrass in the shallows along the edge of the channel standing up straight, a sign that the tidal current had become slack and would now begin to flood, propelling them up the inlet towards home. Yet the mudflats were still exposed when they reached the shore near Beth’s house. So Will, gentleman that he was, climbed out and dragged the boat through the shallows and across the brown, sticky mud sinking nearly to his knees. What a first date!

Fortunately, they had learned a thing or two about the tides since that time. Today's journey is timed perfectly to allow them to reach the place where the research work will be done and then carry them back out to the mouth of the slough at the end of the day, riding the tides all the way. As they approach the dock, Mary Finbeck and Charlie Teal are waiting with the boat. They greet each other and began loading the gear for the day. Mary and Charlie are both scientists that have been studying the estuary for the past decade as a part of a large project to understand how to restore tidal habitat. They train volunteers to help monitor the changes after the restoration work is done, so that they can determine how successful the projects have been or if additional work is needed. Sometimes this work is terribly messy and sometimes the information about what the area once looked like back before it had been damaged is hard to come by. This is where Will and Beth really shine. They can remember many places along the shore before they had been changed to make way for "progress". Sometimes this "progress" just tore up the marshes and tide flats or sometimes these low, wet places were just filled in, never to be seen again.

Once, Beth had watched as a crew bottled up an entire creek into an underground tunnel called a culvert, put a big flapper door called a tide gate on one end and drove away. She remembered how the salmon stopped coming to that creek, since they could no longer get upstream to the place where generations of their ancestors had spawned for thousands of years. Nobody had really understood how much damage all the filling, diking, draining, and dredging had done to the estuary. In fact, nobody had called it an estuary at all. Most people just figured the bay was a stinky, mucky, mosquito breeding ground that would be better off the sooner it was filled in or dug out. But some people saw the connections and realized that something must be done to protect the estuary before it was too late. She still wondered sometimes if they had acted soon enough.

Today, they are part of a different kind of crew, one that is working to bring back the bay and make it healthy again. The morning air smells clean and fresh with a slight tinge of ocean salt making the case that the sea is nearby. The morning sunlight bounces off the water as they watch huge, swirling rafts of debris called wrack floating up the slough. Will has always been fascinated by these matted clumps of sea grass, kelp, driftwood and sticks. He often tugs a handful aboard the boat in search of tiny aquatic animals called isopods and amphipods. In the spring, he usually searches for the little crab larvae called megalopae. Some years, the wrack is teeming with them, a good sign that three years out the crabbing will probably be good. But mostly, he just wonders about all the different kinds of life he finds in these floating micro-worlds brought in by the tides.

As they climb into the skiff and head away from the dock, the surface of the bay is glassy. On the way up the slough, Will skims a crab molt from the water and proudly holds it out to Mary for her sniff of approval. He never grabs a dead crab, since you can usually smell the stink from far away. But the molts, the shell that is shed as the animal grows, don't really smell at all. He is pleased to announce that the Dungeness crab that left behind this amazing reminder of how big it had been was probably just now getting into position to climb into one of the crab pots his friend Dave put in the water this morning!

Chapter 3 – Into the Muck with a Smile and a Plan

As the boat arrives at the study site, Charlie jumps from the bow and guides them to shore. Here the mud is a light brown on the surface and an oily, smelly black underneath. The surface layer seems to shine a lovely golden green in the sunlight and well it might, for growing across the top is a thin carpet of microscopic algae. These single-celled plants are masters at photosynthesis as they trap the sunlight and grow so quickly that a single afternoon can change the look of the mud from dull gray to bright green. Yet, just beneath this lively layer, a dark, black and odorous slime persists where no oxygen can penetrate. Beth recalls how this sticky mud used to stain their clothes when they got in over the tops of their boots. Mary had explained to her how the lack of oxygen only allows certain kinds of bacteria to grow. These so-called anaerobic bacteria can survive where other kinds of life cannot. They breakdown the chemical compounds in the mud and release chemicals rich in sulfur, giving off the odor of rotten eggs.

Fortunately today's work does not require them to stomp around in this sticky goop for long. The job for today is to monitor a recovering salt marsh that was restored two years ago. Will actually worked on the crew 50 years ago that originally built this levee, blocking the tides from flooding this particular marsh. Back then the job was to get the logs from the surrounding hills down to the mill where they would become lumber to build houses for the new families that were moving to the area. Back then, lumber from Oregon was being sent all over the world and no matter how fast it was cut, there always seemed to be a need for more. But many of the hillsides near the bay had been harvested and never replanted, leaving patches where no trees grew. The harvest had been hard on the land as well. Big logs were cut and dragged down the steep slopes until they could be skidded no further. Sometimes, a dam was built to make a pond where the logs were held until the pond was full. Then the dam was blown apart sending the whole shooting match in a big flume down to the water's edge. The mass of logs scraped the soil, trees, brush and everything from the hillside and creek bed until they became jammed somewhere downstream.

Will's job had been to make a landing where the logs could be dumped into the slough and then rafted and dragged by tug boat to the mills down along the bay. The work had been very difficult and the first time he heard that scientists were planning to break apart the levee, he thought they were crazy.

But the more he thought about it, the more sense it made. The marshes had been rich and lush before the levee had been built and the creek had meandered back and forth before they dug a ditch to hold it. As the years had gone by, he had watched the marsh disappear as the cattle mowed it down each season and it stayed flooded for a longer time each winter. In the past few years, running cattle on it didn't even make sense since it cost more to keep the ditch clear and fertilize and seed the field than the money the farmer made off the beef. Now, he understood what had been happening.

When they blocked the tides from flooding the marsh and dug the ditch, they cut off the natural fertilizer brought in by the tidewater. As the marsh plants died and decayed, the surface of the marsh became lower and lower each year, until it was too low and too compacted to grow much of anything. When the farmer, Mr. Oldson, finally gave up and sold the land, it looked more like a wasteland than a farm field.

That had been a hard pill for Mr. Oldson to swallow and Will and Beth understood why. But they had tried to help him to understand what had happened and how restoring the marsh would bring about a different kind of productivity. The farmer liked to fish for salmon and the idea that this “habitat restoration” might help to increase the declining numbers of salmon made him feel a little better.

As Will stepped out of the boat, he reminded Charlie and Mary that they should invite Mr. Oldson back to see how the project was coming along. They all agreed that would be a good idea and hoped that he would approve. Maybe they would even be able to show him some of the data they had collected demonstrating how young fish were using the restored tide channels.

Beth began calling out names of her favorite marsh plants like she was greeting old friends. Many of the plants were just coming up out of the marsh this early in the spring, but a few had pushed above the rest and above the brown mat of wilted vegetation from last year spikes of bright green were emerging. A line of wrack had washed up on the marsh from the previous high tide and much of the drift was made up of drying blades of eelgrass. Will noticed that the young leaves had been cut, and he wondered whether the Brant geese had chopped down the grass or if the dredge had done this.

As the crew began to spread out their gear and lay out the sampling line or transect, Charlie groaned. He realized that he had forgotten to bring his field notebook. Luckily, Mary had included a couple of extra data sheets in her pack. They would have to transfer the data to Charlie’s notebook when they got back which meant a bit of extra work, but at least the expedition was not going to be thwarted. Beth chided that she knew who would be transferring that particular batch of data!

Now the real work commenced with Beth on hands and knees identifying and counting plants within each sample plot while Will recorded the data using the codes that Mary and Charlie had given him. Although the work was repetitive and slow at times, they had to work quickly to stay in front of the rising tide. Charlie and Mary replicated the work along another transect further out in the marsh edge.

After about an hour, it began to rain. The four investigators continued their work uninterrupted, only pausing briefly to pull on rain gear and hats. When the sun came back out, they peeled off the layers. Charlie decided to grab a snack from the boat and as he jumped from the edge of the marsh onto one of the seats, he lost his footing and fell into the shallow water. At first everyone laughed, but then Beth noticed that Charlie was bleeding from a scrape on his arm. Luckily, the cut was not too serious and the first aid kit held just the supplies Mary needed to fix up Charlie’s arm. Never the less, Charlie was embarrassed by his carelessness which would have cost the group valuable field time had it been more serious. He apologized to everyone, knowing that if the trip had been cut short it might have meant a gap in the data and too many gaps would make the whole effort meaningless. As the day wore on, they completed their collection of the data and loaded up to head back to the docks with smiles on their faces and mud on their boots.

Chapter 4 – Because Now We Know

As they made their way back down the slough, Beth and Will cuddled close in the boat to stay warm. The wind had picked up and the clouds promised a dowsing if they didn't get down the bay soon. Even with his hat pulled down tight over his ears, Will heard the chirping call of the Osprey before anyone saw it. Suddenly, it plunged into the choppy water right in front of the boat and pulled a wriggling fish from the estuary. Pinning the slippery salmon tightly in its talons, the large brown and white bird flapped gently away to a broken topped tree near the shore where it dropped the meal neatly into a nest. Meanwhile, a second Osprey began to hover above the spot where the first hunter had found success. The four tired researchers watched in wrapped amazement as the bird dove into the water, this time coming up without any prize to show for its effort.

After the performance, Will turned to Mary with an angry face and growled something about how the lousy birds were eating all the fish that were benefiting from the marsh restoration. Then he began to grin as he saw the shock on her face. She realized that she had been tricked! Will knew better than most how the Osprey were a sign of the returning health of the estuary. He had fished most of his life and had seen so many changes over the years. He remembered when gill netters were allowed to take as many salmon out of the bay as they could net. He remembered how for a few years they had fished for scallops and then the scallops had disappeared. He knew that some years, the sardines were here and some years they weren't. He had fished salmon until the salmon numbers declined and then he had fished rockfish with everybody else until the rockfish were almost gone. Now he believed firmly that the tool of science, carefully planned, conducted and interpreted by trained scientists with the help of trained volunteers like he and Beth, held the answers. Not all the answers, of course, but perhaps some that would help to bring back the beautiful and rich bay he had spent his entire life on.

Now Mary was laughing at her folly as they continued on down the slough towards the docks by the mouth of the bay. As they got closer to the docks, the boat gently rose and fell on the backs of ocean swells coming in through the mouth of the estuary. The swells were a reminder of the unyielding power of the sea and a late season storm approaching the coast from the south. Winter weather had not yet succumbed to the wind and fog of summer.

Beth and Charlie, the botanists of the group, had been discussing the results of today's work. They were happy to see many different kinds of marsh plants beginning to colonize the restoration site. So far, no invasive, non-native species had shown up. This was a good sign since exotic plants and animals often take advantage of disturbed parts of the ecosystem to gain a place to begin to grow and dominate the native species. Their discussion was interrupted by a shout from one of the docks.

Across the water, sitting in his lawn chair with a cooler by his side, Will's friend Dave yelled a greeting out to the researchers and jokingly asked them how many crabs they had caught today. Then he held up a beautiful, large Dungeness crab for them all to see with a look of pride in his eyes. Will grinned and shouted back that for all his troubles all he'd ended up with was an empty shell, but he knew that big old crab was around somewhere and now he knew where.

By the time they got back to the dock, tied up the boat and unloaded the gear, the sun was low in the sky. As Will, Beth, Mary and Charlie were saying their goodbyes, Will's friend Dave came walking up to the group to say hello and show them his catch for the day. He was pleased by their compliments and invited them all over for a crab feast at his house that evening.

During dinner, Dave listened intently as Will tried to explain what he and Beth and the scientists had been up to. Finally, Dave asked Will why he would spend so much time doing something that didn't end up putting a crab in the pot or a fish on the table. Will looked into his eyes and didn't say anything for a moment. Then he spoke quietly, but with great conviction, explaining how he felt that because now know so much more than we once did about the estuary, we have an obligation to work to restore that which has been damaged if we expect the estuary to keep providing for us.

Deep down, he truly felt that what had once been hidden from his eyes and the eyes of the other people he had lived and worked with, was now plain as day. The changes that had taken place during his life had made the place he now lived very different from what it had once been. Many of his favorite places and favorite things to do had become more and more difficult to do as poorly planned development, over-fishing, pollution, and forces from other parts of the world seemed to have conspired to change his way of life.

But now he saw a ray of hope, a way to restore the damaged areas with the benefit of knowledge that they had never imagined all those years ago. And he was proud that he and Beth were a part of the important work that was going to help restore the luster to this faded jewel of a place. In fact, the more he thought about it, the more he realized how many other people he knew were getting involved and helping to bring about the kind of changes that would respect the watershed, the estuary and the coast for their beauty and their bounty. As the sun dropped beneath the horizon, he and Beth expressed their thanks for the fine meal, said farewell to their friends and headed back upstream to their cabin in the woods.