

Stepping over salmon bones on the *Gwaii Haanas Kayak Expedition*

Written by Ocean Sound Kayaking Guide / Naturalist Navarana Smith

“Would anyone here consider themselves a gardener?” I ask our group as we skirt around a fallen spruce tree the size of a train car. Half of our group raise their hands. As we step into a mossy opening, we stop for a moment to look out over a Jurassic Park forest. I pry a little further: *“Do you ever think of forests as having gardeners?”*

We all have some familiarity with a backyard garden. From petunias to potatoes, it becomes a place where we take pride in the growth of our plants. Here, in an ancient forest deep in Gwaii Haanas, the effect of this same careful tending is clear: These giant trees dwarf our group of eight.

And the gardeners? As we step down the eroded riverbank, we see hints of those responsible. Beside us, *taan* (black bear) claw marks tattoo the grayed bark of the fallen log. Attracted to the productive chum *tsiin* (salmon) that return to this river every year, these bears move from watershed to watershed to fatten up on fish. And in doing so, they effectually fertilize this forest.



After catching a salmon at a stream like this one, a bear will seek out a good mossy worktop to gorge on its meal. Like a dog with a bone, a bear will take its fish away from the river, leaving behind a mess of skin, bone and flesh on the forest floor. By donating a boost of nitrogen to the roots of trees and other plants, in turn the forest thrives.

Just like the giant trees they fertilize, the *taan* of Haida Gwaii are big bears. Considered a subspecies, they are the largest black bears in North America, with massive molars and skulls. These bears are just as comfortable crunching sea

urchins and mussels as they are devouring salmon. And in Haida Gwaii, these gardeners have been working these watersheds at least since the last glaciation.

Today, we decided to take a little detour from our route on our 10-day paddling trip in southern Gwaii Haanas. Landing at the head of Gay (Bag Harbor)—right around the corner from the popular *K'iid* (Burnaby Narrows)—we ditch our kayaks and duck under 800-year old deadfall. This very watershed marks the location where seminal research investigating how salmon fertilize forests took place. And we were all itching to pop off our spray skirts and see it for ourselves.



In the early 1990s, the fiery-haired Dr. Tom Reimchen began work to better grasp how bears and salmon interact in this coastal forest. Equipped with night vision goggles and rubber rain gear, Dr. Reimchen dodged black bears in the dark as he compiled notes along this streambed. His work advanced the magnitude of this ‘gardening’: In a single year, he described 8 bears each catching over 700 salmon, dropping an estimated 1000 kg of fish ‘fertilizer’ to the forest floor. It was an annual pulse of nutrients distributed much like a manure addition to a garden plot at home.

We pass by a *ts’uu* (cedar) tree with a long, clean streak marking a Culturally Modified Tree. We are reminded that up until the 1880s, Haida families would have used this river as an important harvesting area, gardening alongside the bears. Since time immemorial, Haida communities have – and continue to—nourish ecosystems in the sea and forest, from *k’yuu kudhlik’aat’iija* (clam gardens) to *gaan* (berry) patches.

As our group retreats back into the mossy forest, our boots crunch over some salmon jaw bones scattered like cigarette butts. We look at each other in awe: We are nearly 100 meters away from the stream, yet these remnants from last year's activity remind us that this is a forest fueled by salmon. As we launch our kayaks from shore, we can't help but wish we were returning in a few short weeks when the fish start to run. Perhaps even with night vision goggles. Next year?

For more background on the research on salmon-carnivore ecology at Bag Harbor, check out the following paper:

Reimchen, T.E. and C. H. Fox. 2013. Fine-scale spatiotemporal influences of salmon on growth and nitrogen signatures of Sitka spruce tree rings. *BMC Ecology*, 13:38. Accessible here: <https://www.ncbi.nlm.nih.gov/pubmed/24093666>