



## Bridging the Gap: Conservation and Commercial Fishing

*Fishermen's daughters work to refine oil from salmon waste into biodiesel*

July 19, 2009 by Geoff Kirsch

Longtime gillnetter Len Peterson, of Juneau, sees little difference in the Taku fishery between 1981, when he bought his first boat, and today. Jev Shelton, also of Juneau, and going into his 38th year fishing the inlet, agrees.

The run sizes are essentially the same and the salmon quality exceptional. The only real change, they say, has been price: lower per pound, higher per gallon.

With fewer families fishing and shrinking margins for those who continue, perhaps the toughest question facing Southeast Alaska's largest natural producer of salmon is how to keep the Taku fishery alive and profitable. A new answer might lie with Peterson's and Shelton's daughters, Heather Hardcastle and Kirsten Walker, respectively, who see a unique opportunity right under everyone's noses.

For the past several years, Hardcastle and Walker have been working on plans to turn commercial salmon "waste" into renewable energy. They believe oil from the heads, skeletons, skin and organs can be refined into biodiesel, and the leftovers can be fermented to produce methane, or "biogas."

Hardcastle and Walker call their project Fishermen's Daughters Ecofuels, after two men who've lent more than just salmon slime to the effort.

"Being a fisherman's daughter is at the core of my identity," says Walker, whose dad took her out for the first time at two weeks of age.

"Our dads taught us to respect the salmon and honor its habitat," Hardcastle said. To her, that means trying to lessen the millions of pounds of Juneau-area commercial fish waste dumped into the ocean yearly.

Raised in Juneau, both women attended Duke University's Nicholas School of the Environment, where classmates often lumped

together commercial fishing with other stereotypically "anti-environmental" industries like logging and mining.

"They'd say 'fishermen aren't educated,' 'fishermen don't care about the environment,'" said Hardcastle, describing how she and Walker became committed to changing such misperceptions. "My dad has a master's in math. Jev has a degree from Harvard - though he probably won't tell you that."

"And fish are a renewable resource," Walker said. "If commercial fishermen didn't respect the environment, there wouldn't be anything to catch."

Receiving master's degrees in 2001, Walker moved to Bellingham, Wash., where she lives with her husband and 18-month-old daughter, directing a community advocacy organization.

Hardcastle spent winters as a sustainability educator on Maui and summers in Juneau, splitting her time as a tour yacht naturalist and gillnetting for her father.

In 2005, while working on a sunflower-based biodiesel project with her students, Hardcastle met Bob and Kelly King, founders of Pacific Biodiesel Inc., one of the first commercially viable biodiesel plants in the United States.

The Kings had just finished a pilot project with Dutch Harbor pollock oil. Hardcastle believed she could apply their process to an idea she and Walker discussed at Duke, inspired by a childhood of salmon guts.

"I grew up here, I love it here," said Hardcastle, who moved back to Juneau full-time with her husband.

Hardcastle's parents founded Taku River Reds, which places specific focus on premium, sustainable salmon and the ultimate goal of no-waste operations.

"It's a great example of how fishing can bridge the gap between industry and conservation," said Walker, who admits a slightly selfish underlying motive behind



*Kirsten Walker and Heather Hardcastle with fish oil*

Fishermen's Daughters Ecofuels: It would give her a reason to come back, too.

For Walker's father, the feeling is mutual. "Anything that brings my granddaughter closer," Shelton said.

Fishermen's Daughters Ecofuels does not yet produce commercially. Hardcastle and Walker call results of preliminary feasibility studies "sobering." Apparently, the same fatty acids that give salmon oil its health benefits complicate its use as fuel.

Other markets for salmon waste do exist, Hardcastle explains, but primarily as food for aquaculture. Harnessing that waste for energy - if not to power boats, then at least to heat homes - would likely be an easier sell to commercial fishers, given prevalent feelings toward the farmed Atlantic salmon industry. Still, both fathers and daughters agree that area gillnetters would gladly recycle their salmon waste, if given the opportunity.

"Salmon are the lifeblood of that watershed," Peterson said. "The very nature of the gillnet fishery on the Taku River is predicated on conservation."

*(Geoff is a freelance writer from Juneau, AK.)*