

AlaskaDispatch

News and voices from the Last Frontier

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Main Image:

[elodea 01.jpg](#) ^[2]

Main Image Caption:

An aggressive invasive aquatic weed, Elodea, is poised to spread throughout Alaska, where it will degrade fish habitat significantly. Can it be stopped? Should it be?

Two species of Elodea, aquatic plants commonly known as Canadian and Nuttall's waterweed, have been found in recent years in a handful of lakes and sloughs near Fairbanks, Anchorage, Cordova, and Kenai. Native to some states in the Lower 48, these two species are the first invasive aquatic weeds in Alaska.

Unlike some terrestrial weeds that seem to be content hanging around towns and highways, Elodea is fully capable of spreading into slow-moving water bodies throughout Alaska. It has already begun. Alaska's vaunted sport, commercial and subsistence fishing industries may eventually be the weed's first victims.

Plant that takes away your fish

The big concern is that the alien weed will degrade fish habitat for species such as salmon, trout and grayling. Until the 1990s Fairbanks area anglers considered Chena Slough to be a productive arctic grayling stream. However, in recent years, anglers believe the fishery has declined substantially. Some scientists attribute the decline to Elodea.

There's a lot to lose. In 1997, by some estimates, Chena Slough supported up to 50 percent of the grayling spawned in the Chena River system. Worse than that, the slough is a tributary of the Tanana and Yukon rivers, raising the possibility of the weed spreading downstream into one of North America's largest river systems.

Alaska's first confirmed sighting was in Eyak Lake, near Cordova, in 1982. Where Elodea has become invasive it grows fast and clogs lakes and slow-moving rivers. It thrives in cold water, even growing under the ice. Without prompt human intervention, the aquatic weed will spread throughout the state. The problem is, control efforts aren't keeping up with Alaska's armada of floatplanes, boats and boat trailers ^[3], all of which can snag and transport fragments of the weed.

Floatplanes are a diabolically effective way for the plant to colonize new lakes and streams. In September, Steve Swenson, with the U.S. Forest Service, conducted an aerial survey looking for insect and disease-damaged forests. His pilot landed on Martin Lake, an Elodea-infested lake on the Copper River Delta. Before departing, Swenson carefully removed fragments of the invasive weed entangled in the rudders of the Cessna 206 floatplane.

About 15 minutes into the flight to Hinchinbrook Island, Swenson looked out the window and saw a piece of Elodea dangling from one of the rudders. Once you're airborne there's not much you can do but worry about where the fragment will fall. Shortly before landing at Hinchinbrook Island, Swenson looked back. The Elodea was gone. A thought crossed Swenson's mind: "Wow, if it happens to us, it could happen to anybody."

But how did Elodea get into Alaska's lakes in the first place? Waterweed is a common aquarium plant. Every expert I've asked blamed the problem on people dumping the contents of aquariums into local water bodies. Don't think so? A turtle was spotted in Sand Lake last summer. Anyone who would toss a turtle into Sand Lake would pitch anything else contained in an aquarium. Fish and fish eaters aren't the only ones liable to be affected. Because the weed chokes waterways it can also decrease water flow and increase sedimentation, impede boats and floatplanes, and reduce property values.

Establishing roots in Southcentral, Interior Alaska

After Elodea was found in Eyak Lake, it was subsequently discovered in several other water bodies on the Copper River Delta. Elodea's ability to colonize these remote, unconnected water bodies suggests that weed fragments are being dispersed by floatplanes.

Another infestation was found in Fairbanks' Chena Slough in 2010. By the end of 2011 scientists had found a dense concentration of Elodea in the lower 10 miles of the slough as well as in Chena River and Chena Lake. The Fairbanks Soil and Water Conservation District is actively combating the weed. They used federal funding to purchase a suction dredge mounted on a barge and operated the barge with some success last summer.

However, according to Darcy Etcheverry that experience led the agency to believe it will take six years of hard work to significantly reduce, but probably not eliminate, Elodea in Chena Slough using the dredge alone. She said the district is considering herbicides, but needs more information from experts and stakeholders before proceeding. While most Elodea infestations in Alaska are currently confined to lakes and ponds, Chena Slough will be a challenging environment for herbicides because the water is flowing. Hearing the bad news from Fairbanks, Cecil Rich, the regional fisheries and aquatic invasive species coordinator for the U.S. Fish and Wildlife Service, wondered if Elodea was established in Anchorage-area lakes. In 2011 he searched the main floatplane lakes -- Lake Hood and Spenard Lake -- and found nothing. But when he visited Sand Lake, he found lots of Elodea. Subsequent trips discovered the water weed in Delong and Little Campbell lakes.

Last year Elodea was found in Stormy and Daniels lakes on the Kenai Peninsula south of Alaska's largest city. In January, several state agencies signed a memorandum that ceded primary responsibility for dealing with Elodea to the Alaska Department of Natural Resources.

DNR's division of agriculture oversees the state's Invasive Weeds Program. DNR also supports local soil and water conservation district programs. The Alaska Legislature has funded the Fairbanks and Anchorage soil and water conservation districts to assist in education, outreach, and eradication of Elodea in Alaska. The Anchorage district has received \$115,000 in legislative appropriations and the Fairbanks district \$70,000.

Getting to the bottom of Sand Lake

In October, the Anchorage Watershed and Natural Resources Commission, wanting to learn more about invasive weeds, invited Ryan Stencel to talk at their monthly meeting. Stencel, operations manager of the Anchorage Soil and Water Conservation District, focused her presentation on Sand Lake's Elodea.

It soon became obvious that one of Stencel's chief concerns was federal overreach.

Some Sand Lake homeowners own floatplanes. The U.S. Fish and Wildlife Service, concerned that Elodea will hop a flight to Lake Hood, the largest floatplane base in Alaska, and from there jump to any number of lakes throughout Alaska, was recommending that the weed be eradicated immediately -- by herbicide, if necessary.

Notwithstanding the likelihood that most of the homeowners around Sand Lake use weed-and-feed or other lawn herbicides, Stencel raised the specter of poisoning the lake.

Her agency wasn't planning to kill Elodea with an herbicide. Instead, she had found someone who would provide "100 percent naturally occurring microbes" to kill the weed. Other details regarding the microbial treatment were sketchy, but Stencel told the commissioners that a newsletter her agency published last July for Sand Lake homeowners could provide more information. The newsletter wasn't very helpful in that regard, however. The "good article regarding specific microbes" that Stencel touted in the newsletter was entitled "Be an Expert on Biological Lake Treatment in 5 Minutes!"

The website didn't mention "specific microbes" like Stencel promised, unless she considers "bacteria" to be a specific microbe. Instead, it claimed to use the "right" microbes "in very high concentrations and at the right price." The author of the website claimed his company had switched from treating ponds with chemicals to using his proprietary bacteria "without the customer even knowing it in many cases." That ought to raise the hair on the back of your neck.

Oddly, the website never even mentioned invasive species. It did refer to "nuisance weeds," but a weed isn't necessarily invasive, it may just be a plant growing in the

wrong place, like fireweed in your potato patch. Astonishingly, the website's author concluded with the statement that his undisclosed method of lake management "has taken me a long time to figure out and has not been published in scientific journals." I have no objective means to assess his claims. And neither does anyone else.

Stencel claimed the water in Brentwood Canal, a shallow channel projecting from the east end of Sand Lake used for floatplane and boat access, has a pH of nearly 12. [4] That's higher than the pH of ammonia.

The regulatory threshold for fish habitat in Alaska is a pH of less than 8.5, which may not vary more than 0.5 pH units from natural conditions, because high concentrations of ammonia are toxic to fish. Far from being a panacea, adding bacteria to Sand Lake to accelerate the decomposition of Elodea might actually increase the ammonia concentration [5].

Hopefully no microbes in "very high concentrations" will be dumped into Sand Lake until someone with real expertise ensures that this website's claims weren't written by a snake-oil salesman.

Is Elodea native to Alaska or not?

What Stencel said next confounded the commissioners even more: she claimed that Elodea was native to Alaska. "It's a pretty plant," she said. Her Sand Lake newsletter went further than that, claiming that Elodea is "an important, uniquely beneficial plant" in ecosystems where it occurs naturally. Contradicting the state agencies' memorandum of understanding, until Elodea is proven to be an invasive weed (to her satisfaction) Stencel opposes eliminating it from Sand Lake.

Another person invited to talk to the municipal commission was Lindsey Flagstad, an ecologist with the Alaska Natural Heritage Program. Flagstad manages the Alaska Exotic Plant Information Clearinghouse, a collaboration of several federal, state and local organizations. Initially, Flagstad had been patiently waiting her turn to speak, but she was obviously getting a little antsy listening to Stencel's presentation. The claim that Elodea was native to Alaska went too far. Flagstad told the commissioners that no reputable experts believed the Elodea in Sand Lake was a native aquatic plant.

Flagstad had a copy of a letter, written in April 2013, from Tricia Wurtz and Nick Lisuzzo to the Alaska Division of Agriculture's Plant Materials Center detailing nine reasons why Elodea isn't native to Alaska. Wurtz is the invasive plant program manager for the U.S. Forest Service in Fairbanks. The authors reviewed more than 140 scientific articles and other documents.

They found Elodea listed as an invasive species in a guide to invasive freshwater plants in Alaska published by state and federal agencies. The weed is not yet widespread.

The University of Alaska's Museum of the North has documented only two collections of Elodea -- from Eyak Lake and Chena Slough -- among more than 1,500 aquatic plant specimens collected from 1923 to 2010. Elodea is not found in the Yukon (except, I should add, in aquariums), which is convincing evidence that it was brought into Alaska by people. The upstream extent of Elodea in Chena Slough begins at a specific point, suggesting that its progenitors were dumped into the slough.

Creating an impasse

These specific points were not discussed in the commission meeting. However, undeterred by Flagstad's assertion that Elodea was not native to Alaska, Stencel continued. In her opinion, Elodea has bloomed in Sand Lake because of the "muck" and a decline in water quality. Then she launched into a muddled explanation of how the bottom of Sand Lake used to be sand and gravel, kept clean of sediments and organic matter by natural flow. A previous administration -- here she paused dramatically and rolled her eyes -- had allowed the lake's outlet to be altered, which slowed the water flow, increasing the accumulation of organic matter and letting the "native" Elodea get out of control.

Flagstad and Dan Bosch, a fisheries biologist with the Alaska Department of Fish and Game, were bemused by the idea of a lake where water flows fast enough to flush sediments. "That would be a river," Bosch remarked.

Stencel didn't agree, but she changed the subject by dropping another incendiary bomb.

She told the committee she doesn't personally believe Elodea can be transported by floatplanes. After all, she said, floatplanes fly from Sand Lake to Lake Hood all the time and, as far as we know, Lake Hood is still Elodea free.

Flagstad disagreed. The weed was first documented in Sand Lake in 2011. That didn't give it many summers to move elsewhere. It's not unusual, Flagstad cautioned, for an invasive species to exhibit a lag between its introduction to a new environment and subsequent rapid spread.

Stencel deflected that argument by claiming that, based on her interviews with property owners, Elodea was present in Sand Lake by the 1960s. But "present" doesn't mean abundant, and it's unlikely that any Sand Lake property owners were adept at identifying aquatic plants in the 1960s. The lake has native aquatic plants that, decades later, homeowners could have easily confused with Elodea.

Failing to gain traction with that response, Stencel blamed another culprit. In 2009, Fish and Game treated Sand Lake with rotenone to kill northern pike, another invasive species. Stencel claimed homeowners have told her that the "beginning of the explosion of Elodea overgrowth coincides with this timeframe." Her Sand Lake newsletter stated bluntly, "Dead fish fall to the bottom of the lake, decompose, and add incredibly high-value 'fertilizer' to the lake's sediment." Bosch wasn't buying that one either. He later

told me that the Elodea in Delong Lake also added a lot of biomass during summer 2012, and Delong Lake was not treated with rotenone. Basing a broad claim on a sample size of one, Bosch pointed out, is pseudo-science.

Much of this back and forth boils down to a choice between two management strategies. Either Elodea is a native species and is, at worst, a local issue in several lakes, or the weed is not native to Alaska and it is a potential scourge to fish and fish eaters statewide. If it's a local problem, we can dither, study it for a few more years, and try a few unproven methods to reduce, but not eliminate, it. If Elodea's an invasive species, it's a looming statewide catastrophe -- and now is the time to eradicate the weed before it spreads out of control.

Clearly, it's the latter. Stencel is no scientist, and she appears to be attempting to exploit uncertainty and fear of federal "overreach" for political purposes.

Political science is not a natural science

In its Sand Lake newsletter the Anchorage Soil and Water Conservation District lauds itself for "rational, non-emotional, science-based project management." In fact, the agency's mission is: "Supporting self-governance and private property rights, to assist landowners and land managers with conservation and development through technical, financial, and educational programs." Science seems to be taking a back seat in the operation of this quasi-governmental agency.

For example, several years ago, when federal funding was available for Alaska's soil and water conservation districts to hire invasive plant coordinators, most did. But the Anchorage district adamantly refused to take the money. Now Stencel isn't even listening to expert advice from other agencies.

Stencel ran for the Anchorage Assembly in 2007. She stepped down to avoid splitting the conservative vote with another candidate. It seems as if Stencel is letting her political persuasion cloud her scientific perspicacity. You cannot stuff a politician and a scientist into the same pair of hip waders.

Far from overreaching, the federal agencies and universities involved in the Elodea issue are simply offering advice and technical assistance. Experts in these agencies have identified the problem, suggested solutions, and tried to facilitate communication between scientists and land managers -- all designed to nip this potentially devastating invader in the bud. Unfortunately, in Anchorage, the local soil and water conservation district is in the driver's seat. It's becoming increasingly evident that the agency doesn't have the expertise to deal with a biological, social, and economic issue of this kind and magnitude.

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