

Dr. Erik Silldorf is elated! *Podostemum ceratophyllum* is alive and well and living in our lower Delaware, and that makes Silldorf as happy as a freshwater clam.

*Podostemum ceratophyllum*, known more familiarly as horned riverweed or simply riverweed, is an unprepossessing blob of stringy green stems, skinny leaves, and tiny flowers that parks itself on solid rocks in fast-moving well-aerated fresh water. It had not been reported south of the Lehigh since the 1870s, but a flotilla of kayaking snorkelers led by Silldorf spotted the plant in six separate locations between Upper Black Eddy and Point Pleasant in September.

Riverweed certainly doesn't rate as a gorgeous specimen of flowering plant life. It has no roots, but clings to rocks with a sticky lump of tissue; its leaves are long, thin and resemble the threads of algae; its flowers are inconspicuous, its seeds small and sticky. Though the plant produces both seeds and clones, scientists don't know much about how it spreads.

If riverweed is so non-descript, why is Dr. Silldorf so excited? First, it is a foundation species. Ecologically, this is a species that forms the base for the structure of a biological community. It has a disproportionately strong effect on all the organisms around it and is key to the resilience or long-term viability of that community. Second, it is threatened or endangered in many parts of its eastern United States habitat, due to pollution, so the healthy populations in the Delaware are a good sign that the river is clean. Third, according to Silldorf, it may be the most sensitive plant in our entire ecosystem. If riverweed can thrive in the lower Delaware, that is good news for everything that depends on it.

Who depends on riverweed? It forms the very center of the riverine food web. Tiny invertebrates, such as freshwater jellyfish, flatworms, true worms, and fleas hide in its greenery for protection; freshwater snails graze the foliage; turtles, beavers, and even white-tail deer munch the leaves. Small fish prey on the smaller organisms hiding within its branches, and these in turn become fodder for larger fish, eagles and osprey, and meat-eating animals.

Riverweed also filters the water, removing dissolved chemicals such as nitrogen, phosphorus, calcium and zinc, which, although necessary to life, may become toxic in high concentrations. When individual leaves die at the end of the season, they fall to the bottom, disintegrate, and become food for slugs, water springtails, bacteria, and other detritus eaters.

The day long search was a thrill for at least one additional volunteer. Cindy Kunnas, Project Director for Delaware River Greenway Partnership, exulted: "It was an exciting discovery." "We set out to search for *Podostemum* which had been notably absent from the Lower Delaware River. To our delight, we found a substantial amount in several locations. I'd call that a very productive search."

Silldorf says "The survey was successful beyond my wildest dreams". Six populations are evident in the survey region, four on the New Jersey side and two in Pennsylvania waters. With this kind of success, Silldorf expects that future surveys will discover still more populations. He concludes that "...water quality has crossed a threshold such that fragments washing down...now have a chance at successful colonization and growth".

Though there are still threats to water quality – flooding events, recreational overuse, erosional transport of mud, chemical contaminants and debris – the fact that supersensitive riverweed and its fragile concomitant community are alive and well and living in our river is good news for the

rest of us. Over the years, the Fish Consumption Advisory has gradually lowered the restrictions for fish caught from the Delaware. The return of riverweed gives us hope that one day we will, like the original Lenape inhabitants, be able to drink the water right out of the river.