

## **Hanging Sedge (*Carex pendula*)**

Hanging sedge (*Carex pendula*), also called drooping or pendulous sedge, is a large, evergreen perennial sedge introduced to North America from Europe as an ornamental species. It is adapted to forested areas with damp, rich soil such as along creeks, wetlands and drainages. It grows in large clumps and spreads primarily by seed. It has a tendency to self-sow and spread outside of where it is planted. It can produce more than 20,000 seeds per plant and in ideal conditions, more than 90 percent of the seeds germinate. Seeds spread by water as well as other mechanisms of disturbance and by being planted.

### **Local Distribution (excerpted from notes provided by Tom Erler)**

There are a number of infestations around the UW Seattle campus, where it was originally planted in a few landscaped areas. It is weedy in beds, medians, and cracks in sidewalks among central campus. Originally planted in 1988 near Fluke Hall, since then it has established a dense seedbank and has spread to the opposite side of the building where it is in the median on both sides of Mason Road and under big leaf maple trees. It is also dense near previous plantings around the Fisheries building on campus and is also growing along Portage Bay's north shoreline behind UW Hospital.

Staff at the UW Arboretum reported trying to control it on the Arboretum Creek and Tom has seen it growing around the wetlands in the vicinity of the Arboretum. Burke Herbarium collections from this infestation date back to Peter Zika's observations in 1999, 2001, and Barbara Wilson in 2004. Tom collected points from where the plants have reached Lake Washington South to its apparent source at the Japanese Garden pond and stormwater overflow.

At the end of 2019, Tom visited locations reported in iNaturalist or by word of mouth and was able to confirm locations in many areas of King County (Regions 1, 2, 3, 4 and 8), and discovered one new site in Kirkland. In a park in Sammamish, it appears that seeds are moving throughout the drainage during flooding events.

**Types of locations reported:** Riparian systems, wetlands, lakes, trails, parks, roads, drainage outfalls, aging/unmaintained gardens/landscape installations, restoration plantings (seeds moving in with plant material/soil).

### **Invasiveness and Impacts**

A national risk analysis by USDA-APHIS identified nearly all of Washington as susceptible to invasion based on three climate variables. Although the report only found limited evidence of impacts caused by *C. pendula*, the report questioned whether it was due to it not being a significant weed or due to this species being a relatively new escapee without enough time to express its potential impacts or have them documented and reported. Speaking with horticulturists in the area, Tom found that recognition of *C. pendula* in King County seems to be increasing over the past couple years as it is becoming more visible in urban streams.

According to Tom, one local example that shows the invasive potential of *Carex pendula* is on Lyon Creek in Lake Forest Park, where Lyon Creek passes under State Route 522, and flows into Lake Washington at Lyon Creek Waterfront Park. A recent culvert replacement project completed in 2015 is now inundated with *Carex pendula* at varying levels of maturity, and there are dozens of mature plants with evidence of 2019 seeding all the way along the newly engineered areas with a dense infestation in

the floodplain near the mouth of the creek. There were a few mature plants immediately upstream at adjacent private properties that appear both cultivated and adventive, however more surveying further upstream might reveal a larger seedbank.



According to Alexander Wright, former staff botanist, Bellevue Botanical Garden, it is valued by local horticulturalists, mostly because it's big and evergreen. He reported that one garden in Kitsap County has a particular problem with it. He wrote, "I helped remove dozens and dozens of mature plants, and there were seedlings growing solid as a lawn. Seedlings would appear sparsely in the shade, but as soon as the overstory was removed or thinned, the seedlings started appearing more densely, apparently from dormant seed."

From the Carex Working Group, Field Guide to the Sedges of the Pacific Northwest (pg 308): "Although mature plants are truly impressive, *Carex pendula* should not be planted in the PNW because it sets seed abundantly and invades nearby shaded riparian zones. Landowners have found it nearly impossible to eradicate from yards. It has been observed spreading in sidewalk cracks and along shaded creeks in urban parks and nearby rural areas. *Carex pendula* has the potential to become a serious pest in PNW riparian forests."

#### **Identification and similarity to native species:**

Clackamas County's Weed Wise page on *Carex pendula* notes "four key features need to be present to confirm ID: dense tufts or clumped growth form (rather than spreading), large plant size (culms and leaves), wide leaf blades, and long & drooping spikes".

Several species have at least two of the characteristics including *C amplifolia*, *C aquatilis* var. *dives*, *Carex cusickii*, *Carex obnupta*, *Carex utriculata*, and *Scirpus microcarpus*). Of these, only *C pendula*, *C cusickii*, and *C hendersonii* have a clumping form. *C hendersonii* is generally less than half the height of *C pendula*, and *C cusickii* has a leaf generally half the width of *C pendula*.

Tom reported that surveying for *C. pendula* in December in sites where it co occurs with *Scirpus microcarpus* and *Carex obnupta* increased his confidence in being able to distinguish it from those species. In December, much of the *Scirpus* is dormant, while the leaves of *C pendula* are still robust. The structure and leaf shape/size/color of *C pendula* is also pretty distinctive when side by side with *C. obnupta*. When not in fruit with distinguishing long & drooping spikes, and also immature and difficult to determine if it will be large and caespitose (clumping form), the best and fastest method Tom has found for differentiating *C pendula* and *S microcarpus* is that while *Scirpus microcarpus* is shiny on the underside of leaves, *C pendula* is dull and glaucous.

While Tom has found that it can be differentiated once you are familiar with its habitat and look-alikes, taxonomy experts such as Peter Zika, Barbara Wilson, and Stewart Wechsler were not comfortable making an ID with several of the key ID features visible in one iNaturalist report.

#### **Availability locally:**

The Hardy Plant Society at UWBG were trading seeds of *C pendula* as recently as 2012.

Seed Corner, an online and mail order seed company based in Bellevue, WA currently has it available: <https://seedcorner.com/sedge-pendulous-fresh-look-carex-pendula-seeds/>

Fraser's Thimble Farms, Salt Spring Island, BC: <http://www.thimblefarms.com/grasses.html>



### Tom Erler's assessment:

*Carex pendula*'s potential to highly impact and alter riparian systems in the next decade is credible and demonstrable in locations on the West Coast of the US and New Zealand. Having observed known locations in the area, the distribution seems mitigatable in certain situations. Where propagules have reached Lake Washington (Arboretum Creek and Lyon Creek), the need to eradicate/control upstream seed sources are difficult due to disjointed and privately owned properties, but possible given that it seems to be seriously impacting only a few urban streams. There is a dedicated and knowledgeable local group that has been observing and publishing *C. pendula* points around King County for the past few years that seem to be informally surveying in its desired habitat- so much of the ground has already been covered. In the time since tracking these points and travelling around King County to document them, scouring drainages and roadsides along the way, I've only encountered one population not previously known- in a drainage right-of-way in the city of Kirkland. A complicating factor in *C. pendula*'s control going forward is that the most effective means of control (other than digging) appears to be glyphosate- the now limited ability to use glyphosate in Seattle and public outcry over its use in other municipalities and counties around Washington adds another layer of urgency to this threat. Increased and more intense flooding would spread propagules over larger areas, particularly in newly constructed and immature restoration/mitigation project areas. I haven't been with the KCNWCP long enough to have the perspective in classifying emerging threats, but after consultation, both Patrick Sowers and Mattia Boscolo thought a 'Class C Select' designation would be appropriate in this case and I would agree.

### Photos:



(*Carex pendula* on left, *Carex obnupta* in foreground and on right)



(December *Scirpus macrocarpus* in foreground, *Carex pendula* in back)