

## BETWEEN A POOL AND A DRY PLACE:

### Working to save water howellia with new methods of treating yellow flag iris

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This year, members of The Nature Conservancy's South Sound Program embarked on freshwater wetland restoration with their partners at Ft. Lewis. The goal was to improve habitat for the federally threatened water howellia (*Howellia aquatilis*) by removing invasive, exotic species that create monocultures.

Water howellia is a winter annual in the harebell family. Rarely found in the Pacific Northwest, and nowhere else, it needs seasonally dry kettle wetlands, as it cannot germinate underwater. These wetlands are recharged with winter precipitation and slowly recede through the summer months until most are dry by the fall. They are typically surrounded by forest of Oregon ash, Garry oak, and Douglas-fir. These kettle wetlands are associated with the terminal margins of the ice sheets during the last glaciation. Water howellia germinates in the fall on the newly exposed substrate and remains dormant until the spring when growth continues. Its flowers are apetalous underwater but when the stems reach the water surface (usually by June or July), it displays small white, deeply cleft tubular flowers with spreading bracts. Fruits begin to form soon afterwards (see Figure 2), as the wetlands recede. By September, its environment has generally dried up, and seeds are dispersed.



Being so persnickety about habitat and hydrology, water howellia is susceptible to changes in hydrology and invasive weeds such as yellow-flag iris, which occur in a few of the small wetlands where water howellia occurs on Ft. Lewis. Nature

Conservancy and Ft. Lewis Fish and Wildlife Program staff set out to eradicate the yellow flag iris, without harming water howellia populations. Ft. Lewis staff had previously tried to hand-pull yellow flag iris though the process was slow and tedious, and could only be accomplished when the wetlands had receded sufficiently. However, failure to remove all the rhizome allowed the plant to bounce back, therefore various chemical control methods were reviewed. Yellow-flag iris has a very waxy cuticle that repels water therefore spraying was not an option as it might have run down the waxy leaves onto water howellia plants. Nature Conservancy staff in West Virginia found 98% control of yellow-flag iris when applying 25% glyphosate (as in aquatic approved Aquamaster or Rodeo) to cut stems just after flowering, using a dripless wick system which was the method that we settled on for treatment.



In August of 2006, after getting permits and conducting several trials, we got muddy! Several methods for cutting, and applying herbicide were attempted in disturbed upland areas using gas powered trimmers and machetes to cut the iris leaves. However small hand pruners proved to be the most useful tool for removing the leaves before applying the herbicide (see Figure 3). A backpack sprayer was modified to make the dripless wick by mounting a sponge to the tip and wrapping a cloth over it (see Figure 4).

Believe it or not, not all sponges are created equal, nor rags. Several combinations found that thick, bone shaped “car wash” sponges worked best with simple, cheap, nearly indestructible shop rags. Two zip ties kept the wick tight and allowed us to dab tens of thousands of iris stems. After the iris stem is cut, and the chaff removed from the control area, the wick dabs the cut surface. Dabbing applies pressure to the wick, forcing herbicide onto the iris stem, the wick is kept moist, but not dripping, at all times with low pressure releases from the backpack sprayer. This method worked well, albeit slowly, and it kept the herbicide on the target plant, and out of the water and neighboring native flora.



Preliminary results look promising. Treated iris plants began turning brown in a matter of days, perhaps aided by the core of the plant sending up “resprouts” almost immediately (plants grew an inch within ½ hour of cutting!). This kind of response should prove helpful in translocating the glyphosate to the roots. Several three meter transects were established (see Figure 6) to count the number of iris stems treated.



which can be monitored over time to see the true efficacy of the treatment. The hope is that removing invasive species such as yellow flag iris from the niche habitats that water howellia occupies, will not only allow its survival, but will encourage the expansion of the species into suitable habitat throughout the South Puget Sound region.