



Skagit River System Cooperative

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September 12th, 2013

Mr. Bob Ziegler
SEPA Responsible Official
WDFW Habitat Program
600 Capitol Way North
Olympia, WA 98501-1091

Mr. Brian Williams
Habitat Biologist
Washington Department of Fish & Wildlife
P.O. Box 1100
LaConner, WA 98257

sent via electronic correspondence

Re: Skagit Wildlife Area cattail eradication

Dear Mr. Ziegler and Mr. Williams:

The Skagit River System Cooperative represents the fisheries and natural resource interests of the Swinomish Indian Tribal Community (SITC) and the Sauk-Suiattle Indian Tribe (SSIT). As such we take a keen interest in protections for fish and fish habitat in the Skagit basin and beyond. We have reviewed the Determination of Non-Significance (DNS) for the Skagit Wildlife Area invasive cattail control project, and several of the supporting documents, and are writing with our concerns.

While we at SRSC are in favor of replacing non-native species with native species, and would favor doing so at the Skagit Wildlife Area (SWA), we also want to assure that invasive species replacement and ecological restoration do not have unintended consequences. At this point we are unconvinced that the size and scale of the SWA cattail project are appropriate for the experimental nature of the methods to be used. We recommend that either the project is scaled back and better defined to test the methods that are proposed, or else that the DNS be rescinded and an EIS be prepared to examine the effects of this project as described, which has the potential for a significant environmental impact.

As we understand it the proposal is to treat up to 650 acres of inter-tidal marsh where a non-native cattail, *Typha angustifolia*, has displaced native marsh vegetation. The treatments will be primarily crushing with a Marshmaster (an amphibious tracked vehicle), cutting with a boat-mounted sickle bar, or with the herbicides glyphosate or imazaphyr. According to the SEPA checklist and the JARPA for the project, up to 5000 gallons of herbicide mix could be applied in any treatment season (June-October). The treatments are proposed to go for four seasons, from 2013-2016. This represents a potentially very significant impact if native species to not re-colonize the site as intended.

Although the WDFW and the state Department of Natural Resources (WDNR) have had demonstrable successes in eradicating *Spartina* from inter-tidal habitats, and on a similarly large scale, the treatments for cattail are so far mostly unproven. In a recent SRSC study on cattail eradication at the Skagit Wildlife Area (Hood 2013)¹ which was cited by WDFW as a basis for this project, the emphasis was on *a priori* modeling to show where on the landscape cattail mowing would be likely to result in re-colonization by native species. Hood's predictive vegetation model was designed for use in exactly this context, yet it is apparently not being used to predict where the cattail treatments are more or less likely to be successful. Will the treatments work as intended in all or only some of the sites? Will the proposed treatments result in native species re-colonization, or will eradication result in a mudflat, or in colonization by another invasive? Hood's model was designed to shed light on exactly these questions, although it has not been applied yet to the SWA cattail project.

In addition to pre-treatment modeling to predict likely success, it will be important to conduct careful treatment and post-treatment monitoring as well. Because these eradication methods on *Typha* are still experimental, without monitoring it will be impossible to know what impacts might be occurring. As with any experiment, it will be necessary to further refine our knowledge of where the proposed methods (crushing, mowing, and herbicides) are most effective. It should be noted that none of the methods proposed by WDFW are the same as the labor-intensive mowing used in the SRSC research. The research by Hood (2013) did not use any herbicide at all, yet herbicides are a major component of the SWA cattail project. Nor were the SRSC research plots as exposed to wave action as some in the SWA. It is very likely that the depths in the SWA cover a range not tested by SRSC. It is difficult to predict the extent to which soil erosion in the more exposed SWA areas will affect re-colonization by native species, or if the herbicide treatments will favor native re-colonization to the same extent. Despite the favorable findings in the Hood research, there are many, many unknowns in what is being proposed by WDFW for the SWA area². A vigorous monitoring program of what treatments are used, where, and at what elevations, and the results from those treatments, would not only provide assurance that the treatments are working as planned (and permitted), but could guide future work in cattail eradication elsewhere in the state.

¹ Hood, W.G. 2013. Applying and testing a predictive vegetation model to management of the invasive cattail, *Typha angustifolia* L., in an oligohaline tidal marsh reveals priority effects caused by non-stationarity. *Wetlands Ecology and Management* 21(4):229-242

² Heimer, D. 2013. Cattail management plan: restoration of nearshore habitat through invasive cattail (*Typha angustifolia*, *T. x glauca* and related hybrids) control. WDFW draft. September 6, 2013. 6p.

Our primary concerns about herbicide use are the potential toxicity of such a large amount (5000 gallons per year) of herbicide mix, the surfactant used with the mix, and the ecological impacts of removing large swaths of vegetation in such a sensitive area. We understand that the herbicides (glyphosate and imazapyr) have been approved for use in aquatic areas (we use them on our own restoration projects), but we are unclear on the impacts of the surfactant. Moreover, we have to question the almost unprecedented *scale* of the application on cattail. This needs careful scrutiny in the permitting process, and is one reason that a DNS is probably not appropriate in this situation. The other unanswered question is what will happen at the extensive tidal flats waterward of the protective levees if a substantial amount of the vegetation is killed by herbicide? Again, the SRSC research on cattail eradication involved only mowing. Will the herbicide-treated *Typha* root strength diminish rapidly and result in large-scale erosion under wave action, or will native plants re-colonize quickly and re-establish a vegetative cover, or some other result? The re-seeding capability of *Typha* is likely much more robust than the *Spartina* that WDFW and WDNR have successfully eradicated elsewhere. The application documents assume rapid re-colonization by native species, even with herbicide treatments in areas subject to winter storms, but that has yet to be shown in the field.

Another concern is with the potential for large wood pieces in the inter-tidal area to serve as nurse logs for other vegetation, and the likely impacts of both the crushing and herbicide treatments on these nurse logs. Research by SRSC (Hood 2007)³ showed that LWD in tidally-influenced marshes at the SWA was a preferential site for sweet gale (*Myrica gale*) establishment. At low elevations, where tidal inundation is deeper and more frequent, logs tend to be less stable and offer fewer opportunities for shrub colonization. At middle elevations the nurse logs provide favorable conditions for shrub establishment. At the highest tidal elevations *M. gale* gives way to a mixed shrub community including willow, twinberry, Nooktka rose, and other shrubs. It is precisely this colonization by native species that the cattail eradication is meant to encourage, yet the crushing and herbicide treatments may disrupt native colonization if LWD in the inter-tidal areas is not carefully avoided. The SWA cattail project needs to plan the efforts by elevation zone and avoid disturbing LWD and the vegetation growing on it.

In summary, we would encourage WDFW to move quickly on finding methods to eradicate non-native *Typha angustifolia* at the Skagit Wildlife Area, but using a more deliberate experimental approach and, at least initially, at a much smaller scale. Careful pre-treatment mapping of the areas most likely to achieve native species re-colonization, and post-treatment monitoring of the results, is essential to prevent large-scale impacts and unforeseen consequences. The herbicide treatment needs to be better defined spatially, as well as the conditions (*i.e.*, the decision criteria) under which herbicide treatments will be used at all. Some LWD in the inter-tidal region, and vegetation growing on it, needs to be avoided, which seems unlikely given the proposed plan. The probability of native species re-colonization needs to be evaluated in light of the elevations, inundation period, wave intensity, root strength, soil erosion, herbicide residuals, and other factors at this sensitive estuary site. We at SRSC would be glad to assist in developing a suitable plan, but the existing application as it is now written does not merit a DNS and is not ready for implementation.

³ Hood, W.G. 2007. Large woody debris influences vegetation zonation in an oligohaline tidal marsh. *Estuaries and Coasts* 30(3): 441-450

We appreciate the opportunity to review and comment on the Invasive Cattail Control project at the Skagit Wildlife Area. Several staff members at both SRSC and the Swinomish Tribe have helped to review this application. If you have any questions regarding our comments you are welcome to contact me at (360) 466-7308 or thyatt@skagitcoop.org .

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Hyatt", with a long, sweeping flourish extending to the right.

Tim Hyatt
Environmental Protection Ecologist
Skagit River System Cooperative

Cc:

Dave Heimer WDFW
Belinda Rotton WDFW
Greg Hood SRSC
Steve Hinton SRSC
Paul Anderson WDOE