

Columbia Basin CWMA Meeting Notes

12 November 2020

Panelists: Jenifer Parsons (WDOE, co-chair), Jennifer Andreas (WSU, co-chair), Leah Elwell (ISAN, Coordinator), Jeremy Varley (ISDA), Craig McLane (MTFWP), Tim Butler (ODA), Nicole Kimmel (ABE), Becky Brown (BC-FLNRORD), Virgil Dupuis (Salish-Kootenai College), Stephen Phillips (Pacific States Marine Fisheries Commission), Damian Walter (ACE), John Gaskin (USDA ARS), Bradley Sartain (ACE), Danielle Blevins (Colville Tribe)
(76 attendees on meeting)

Updates from the Columbia Basin states and provinces, including management plan progress since completion.

1) Jeremy Varley (Idaho State Department of Agriculture)

- 1062 points taken in 6 water bodies
- Looking in new areas (especially Snake River), not a lot of expansion
- New points in southern end of Lake Pend Oreille near navy base
- 2020 treatments (3)
 - N. Idaho CWMA: \$20,000 landowner cost share (herbicide/contract service). Spring emergent growth treatment. Appear to be successful but report not received yet
 - Statewide contract for dive removal – Blackfoot Reservoir (treated for first time)
 - ISDA removal (hand-pulling) on Blackfoot and Snake Rivers and American Falls
- Blackfoot Reservoir
 - Drawdown continuous after spring run-off – used only for irrigation
 - Flowering rush (FR) growing as emergent and upland
 - Able to pull large amounts in some areas
 - Plan to go back next spring
- New population in Idaho County – small ornamental pond, county weed program taking care of it with landowners
- Future plans: more attention on Blackfoot River. Dynamic situation because of land ownership. Working with local tribe to foster relationships and improve control activities

2) Craig McLane (Montana Fish, Wildlife and Parks)

- AIS crew based out of Kalispel responsible for west of Continental Divide
- Survey 330 sites covered over most waters in basin – only looked at high risk sites (e.g. boat ramps). No new locations
- Shoreline surveys – 7 lakes near Flathead Lake. Circumnavigated lakes and portion of Flathead. No new locations.
- Flathead Lake
 - Surveyed portions of lake – noted patches (size/density)
 - West side: small, discrete patches
 - East side: denser populations on side of lake with private landowners/marinas
 - Still a lot of sites that need surveying. Difficult conditions limited surveys.
- Montana distribution
 - No new water bodies added

- Suspect in Flathead Valley and irrigation canals but needs confirmation. Challenging area to survey.
- Future plans:
 - Finish Flathead Lake surveys
 - Survey Kalispel area, more waters adjacent to Flathead Lake
 - Survey irrigation ditches in Flathead Valley – time/cost prohibitive

3) Jenifer Parsons (Washington State Department of Ecology)

- Distinct populations (Yakima, Spokane, Pend Oreille, Lake Roosevelt, Lake Entiat)
- Yakima River
 - Treating emergent since 2015 – seeing good declines near Prosser but some areas can't be reached. Barely holding own though treating annually. Using glyphosate.
- Columbia River off Yakima
 - Did some hand-pulling near McNary Dam in area where plants are just pioneering. Found that pulling earlier in the year (August) seem to be getting the whole plant. Plants may be less brittle, possibly less breakage.
- Lake Entiat
 - On Columbia River but genetically distinct from other populations
 - Chelan PUD found patch on Chelan County side
 - Hand-pulling with scuba divers annually
- Spokane River
 - Avista and Spokane County Noxious Weed Control Board found source population – Hangman Creek/Rock Creek
 - Definite end not found but likely around Rockford – adds 30 miles of creek to population (now approximately 100 miles total). Hope to formulate plan this winter.
- Pend Oreille River
 - No new populations found
 - River Bend area has been declining after consistent hand-pulling
 - Kalispel Tribe also controlling
 - Spokane City Light is controlling near the US/Canada border

4) Tim Butler (Oregon Department of Agriculture)

- Budget cuts – lottery revenues are down and funding cut by over 80%. Haven't been able to do much work. Mark Porter has not been able to do anything except for some work related to grants.
- Rich Miller was able to survey on OR side. From Rich “surveyed several areas in the Bonneville Pool around Cascade Locks and around Hood River. Also a little below Bonneville Dam near Rooster Rock. Up in the Umatilla I surveyed from McNary Dam downstream below the Umatilla River, the McNary Wildlife ponds, and in the Boardman area, all on the Oregon side. Pleasantly surprised to find no FR.”
- Klamath county: outlier site in koi pond. Pond has been drained and previously treated plants down plus new treatments this year. Continue to monitor.

5) Nicole Kimmel (Alberta Environment)

- Heavy infestations noted in 2014

- Begins growing much earlier in the season before other vegetation
- FR is scrapped by ice heaving
- No chemical regulations for submerged plants
- Found in all types of water bodies
- Control methods utilized:
 - Clipping flowerheads initially – seed production very low
 - Cutting by hand – done by volunteers
 - Digging by hand – small populations
 - Barriers – haven't been effective
 - Steaming – not effective
 - Mechanical dredging – not effective
 - Mechanical harvester – just to keep access
 - DASH – hard to use because of visibility issues
 - Only Diquat available, can use imazapyr as emergency measure
- Lake Isle
 - Hoping to spray half of lake in 2021
- Bow River and Saskatchewan River have quite a bit – haven't been able to look at canals off river

6) Becky Brown (British Columbia – Forests, Lands, Natural Resource Operations and Rural Development)

- Four contained areas
 - Eradication goal province-wide – under Invasive Plant EDRR Program
 - Only one site in Basin
 - Targeting aquatic plant survey since 2012
 - Reporting in provincial reporting systems (apps and online)
 - Conduct targeted surveys and updates, public meetings and signage
- Hatzic Lake – Fraser Valley
 - First reported 1978 and first visited 2012
 - Containment is goal – prevent entry to Fraser River (tidally influenced)
 - 2019 – prohibited harvesters on lake and installed screen **missed the type**
 - 2020 – containment boom installed (6 year process to get installed). In place for 8 months/year. Requires a lot of maintenance. Extends into water 30cm based off assumption that propagules travel in top part of water column. *Does anyone have information about this?*
 - Manual removal downstream of barrier for 2 years. Challenging area for removal because of tidal-influence.
 - May use water drawdown and if possible, spray with diquat
 - May be a good area for future biocontrol efforts.
- Bouchie Lake (Caribou region)
 - Genotype 2
 - Managing extensively – seeing good results with DASH and digging
- Whistler golf course pond
 - Private waterbody – can use herbicides, 3 years of diquat
 - Hard to get good contact because mixed with cattails

- Site is contained
- Naksup public ornamental pond
 - Isolated pond, not connected
 - 6-10 plants – mechanically removed 2019
 - *How long to monitor before the population can be considered eradicated?*

Flathead Lake Control Project

Virgil Dupuis, Salish Kootenai College

- Started working on FR in 2000. Spent 3-4 years surveying Flathead River and Lake
- 75% of littoral zone subject to invasion
- 10-20' depths could be infested
- 2009 – herbicide trials (Clearcast/Habitat)
- Trying to document impacts
- Assisting some landowners with control (plant ID and permits)
- Focusing on south end of lake
- **Mentioned 6 driving issues but I missed them**

Water Resource Development Act legislation and flowering rush project implementation update

Stephen Phillips, Pacific States Marine Fisheries Commission
Damian Walters, US Army Corps of Engineers & Damian Walters, US Army Corps of Engineers

- WRDA funds:
 - 2017 - \$1 million
 - 2018 – FR added, \$1 million to control, excluded OR, 50/50 match
 - 2019 – “The Expansion” – other regions now eligible to apply
 - 2020 – monitoring and surveying added to language so OR can now participate
 - 2021 – appropriations this year-completed in House, added Hydrilla and non-chemical methods was added, already passed; Senate likely to pass, conference committee to finalize, then president signs – looks likely to pass but not certain. New additions now include Arkansas and Russian River. Report language filed 9 November 2020.
- Damian: want to do review of 2021 scopes of work while they get the letter report review finalized, so revised scopes of work will be needed soon

Update on molecular strains of flowering rush

John Gaskin, US Department of Agriculture, Agricultural Research Service

- 7 genotypes
 - 1: most common especially in west
 - 2: Bouchie Lake, B.C.
 - 3: Central WA (Entiat) and Klamath Falls, OR - diploid
 - 4: main interest from eastern NA – diploid
 - 5: Minneapolis
 - 6: Saskatchewan population (2 plants) – have been eradicated
 - 9: pond in Calgary
- New site in Nebraska (genotype 4)
- New site in ID County in a pond (genotype 1)

- Looking in native range (particularly northern EU), will receive herbarium samples to test
 - Samples from China not a match
 - Need samples from Russia, Kazakhstan, Japan, etc.
- Harms et al. 2019 paper:
 - Diploid higher propensity for disease when growing at higher latitudes
 - Triploids at higher latitude had less disease
 - Different genotypes had different attack rates by disease

CABI Biocontrol development for flowering rush: progress and next steps

Jenn Andreas, Washington State University Extension

- Additional funding needed for 2021/2022 season
- Three potential agents (*Bagous nodulosus*, *Phytoliriomyza ornata*, *Doassansia niesslii*)
- *Bagous nodulosus*
 - Leaf- and rhizome-mining weevil
 - Adults primarily underwater, larvae will leave plant and swim to other plants
 - No-choice oviposition (egg-laying) tests on 45 test plant species demonstrate a very narrow host-range (no plants other than FR were accepted for oviposition)
 - No-choice larval establishment tests on 41 test plant species follow similar pattern. There was some feeding & alive larvae found on *Limnobium laevigatum* (South America), *Hydrocharis morsus-ranae* (EU) & *Alisma plantago-aquatica* (EU), however none of these species was attacked in single-choice tests. Some tests on native NA *Limnobium* species may be necessary.
 - Future plans:
 - petition for field release will be drafted this winter and hopefully submitted next spring.
 - conduct supplemental single-choice tests with few species that had moderate feeding
 - continue improving rearing method
- *Phytoliriomyza ornata*
 - Leaf- and flower-stem-mining fly
 - Plants wilting 2-3 weeks after exposure to 1 female (up to 11 pupae emerged)
 - Host-specificity tests (2019-2020): 17 test plant species, no development on test plants found so far
 - Impact experiment with 10% biomass reduction (could increase with longer exposure time)
 - Future plans:
 - maintain a rearing colony & measure impact
 - continue host-specificity tests
- *Doassansia niesslii*
 - White smut
 - Work being conducted by CABI-UK: Carol Ellison began pathogen work but passed away in 2020, work is now being conducted by Sarah Thomas and Daisuke Kurose
 - Two spore types – attack the plant in different ways
 - Adapted to aquatic habitats, able to infect plants underwater
 - 1 NA (Bouchie Lake) & 3 EU populations successfully inoculated: plants dead
 - 3 additional NA & 2 EU populations were resistant
 - Netherlands site match to genotype 1! - more surveys needed to find additional strain(s)

- 8 test plant species were immune
- Future plans:
 - conduct targeted field surveys to find most common NA strains in Europe – focus on Netherland sites
 - compare herbarium samples to NA genotypes
 - investigate culturing techniques

USACE bubble curtain technology advances to control flowering rush

Bradley Sartain, US Army Corps of Engineers

- Bubble curtains use small bubbles from a hose placed on the lake bottom to form a barrier and slow water exchange
- Trials in the Columbia River near Pasco, WA (Osprey Point) initially used dye to test the effectiveness of the bubble curtain in prolonging the time dye remained behind the curtain compared with no bubble curtain
- The results showed the bubble curtain extended the time the dye was contained in the area.
- Then tests using dicot on submersed flowering rush were started in 2019. Even though contact time was low, results were promising.
- In 2020 a repeat treatment was tried, but contact time was less, perhaps due to lower vegetation biomass in the water column to help slow water exchange (lower biomass of flowering rush holding over from the 2019 treatment).

Lake Roosevelt Collaborative Management Efforts

Danielle Blevins, Colville Tribe & Jen Parsons, WA Department of Ecology

- Lake Roosevelt – just below confluence of Spokane River – verified in 2019
- A coalition of partners from the 5 agencies that manage the reservoir and other interested parties surveyed as much of the shoreline as we could in 2019 and mapped flowering rush in spotty locations between the confluence with the Spokane River and Grand Coulee Dam.
- The largest patches were directly across from where the Spokane River joins the Columbia, providing evidence that this population likely came from the Spokane River population.
- We had put together permits and planned to treat during the spring drawdown in late April or early May, but the pandemic shut down all the treatment.
- Treatment plans not possible for 2020
- Colville Tribe:
 - Early monitoring was done in early May
 - Survey by contractor in Sept-early October (Grand Coulee Dam to Barnaby Island on Colville side of reservoir)
 - FR found in higher boat traffic areas (possibly because of the substrate)
 - Cows fed on FR
 - Population coming from Spokane River