



YUKON INVASIVE SPECIES COUNCIL

Workshop: Working Towards Managing Invasive Species in Yukon

Report

March 3, 2016
Yukon College
Room T 1023

500 College Drive
Whitehorse, Yukon
Y1A 5K4

MC:

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Yukon Invasive Species Council

Report:

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Welcome and Overview

Marc Boulerice called the workshop to order at 8:58 a.m. and welcomed everyone. Marc acknowledged Ta'an Kwäch'än Council and Kwanlin Dun First Nations, on whose traditional territory the workshop is being held.

- Purpose of the workshop: review previous workshop held in 2012, network and determine what is working and what has been learned.
- Format: presentations with questions at the end. Sticky notes will be provided so people can jot down ideas, and they will be reviewed later during the group discussion.
- Meeting notes will be going out to attendees, who were reminded to provide their e-mail address.
- Coffee break sponsored by EDI and lunch by the City of Whitehorse.



1.0 Reflection: Achievement Since Workshop 2012 – Andrea Altherr

Andrea Altherr was introduced by Marc. She has been involved with the Council for over eight years and has been the hub of the group.

- Andrea welcomed all attendees and expressed appreciation to everyone for taking time out of their busy schedule to attend.
- PowerPoint presentation was used to outline an overview of YISC, a non-profit organization, and work that has been undertaken.
- Andrea acknowledged people who have worked on YISC in the past. The Council is always looking for new Board members.
- Key priorities from the previous workshop in 2012, plus related work since then, were highlighted. Input on success of work on these priorities was encouraged.
- *Yukon Invaders* was tabled and attendees were encouraged to take copies and hand them out to others.
- Twelve species (dirty dozen) have been selected. Target species were noted.

- Workshops have been held with miners, Highways and Public Works and Renewable Resource Councils.
- Current programs and engagement of public groups were reviewed.
- Council is in the process of defining roles of YISC and ISIWG

No questions or comments.

Action #01-01-16: YISC is always looking for new Board members, interested individuals can approach any present members or go to the website and sign up.

Action #02-01-16: Andrea Altherr will provide numbers in the Spotters Network

Action #03-01-16: Attendees were asked for ideas and suggestions about the priorities from 2012

2.0 PRESENTATIONS: What's going on in the IS World in Yukon

2.1 Blowing the Whistle on Creeping Thistle, YISC Projects – Andrea Altherr

- A short overview of the current outreach programs of the Yukon Invasive Species Council. The presentations show how these programs are linked to national programs and ways to adapt them for the situation in the Yukon.
- Funding is project-based, i.e. something has to be produced; eco-action funding will be determined in March. Word on new funding not out before July.
- Agriculture is now involved and are presenting at this workshop.
- Overview of Spotter's Network.
- Last year, reports were received only from Board members and Bruce, suggestion: need an app for easier reporting.
- Future work that will be possible under the program is unknown.
- Andrea Altherr tabled a brochure of alternative species and stickers they use, plus an identification guide.
- The logo is national (consistent).
- Do not have mussels in the Yukon yet, but want to avoid them, because they are very nasty.
- Yukon Environment has a small budget for aquatic invasive species.
- *Play Clean Go* (U.S. program adapted in Canada) targets the public and is applicable to industry working outside of established roads.
- Funding will be received from the YESAA Implementation Fund for the Road Side Survey, and this will be repeated in 2016.
- Weed Week will be targeted for the schools, depending on funding.
- Community groups and the public assist with weed pulls.
- T-shirts are available @ \$20 to support YISC.

Action #04-01-16: Identify communities who may be interested in the weed pull

2.1.1 Questions & Comments – Blowing the Whistle on Creeping Thistle, YIS Projects

- Q At our office, I purchased sheep manure to put in our landscaping areas and we ended up with toad flax. I thought manure packages were sterile.
- Q How do you dispose of the invasive species?
- A Andrea: This will be covered in another presentation.
- Q Can you tell us briefly who did the road side survey and how did they collect the information?
- A Andrea: It was basically two very knowledgeable people, Rhonda Rosie and Greg Brunner. They drove all the highways in their trucks and used a GPS to mark where the spread was. They stopped, especially in gravel pits, because this is often a source of invasive species, and they mapped and identified them all. It then got pulled together in a report, which is actually posted on our website. The repetition will follow pretty much the same model to ensure we actually get a good comparison.
- C Bruce: We learned things last time about what worked and what did not work. For instance, Rhonda didn't have anybody with her, which made it more difficult for her to mark sites. Greg brought his son with him. They stopped at all the places where people could pull out. That was one of the areas that they targeted. There were only a select number of species that were targeted last time, and we wanted to expand to introduce things, but the actual details haven't been worked out. Brett and I have already started looking at it and contacting other people, who have done similar things, to find out if there are ways we can improve so that we can have it done in the same way in the future.
- Q Do you work together with Parks?
- A Andrea: We do with Kluane National Park, yes. Territorial parks have not approached us yet, and we didn't approach them either, but Kluane National Park does their own weed pulls especially on the Asek River Road, to protect their site of Yukon draba, they want to repeat that weed pull next summer.
- C Bruce: There has been a lot of work with Tombstone with the weed pulls up the Dempster. So, that's an exception, but other Territorial parks haven't been as engaged
- Q It's my understanding (and if you could confirm this) that we actually planted invasive species as part of re-vegetation and construction projects along the highway, and now that we have specifically sweet clover, maintenance, like ploughing and things like that, are spreading sweet clover seeds for more than a kilometre. Are there things being done? I'm seeing in this to clean your boat and things like that. Are there things being done through Yukon Government maintenance to reduce the spread of invasive species through highway maintenance and construction?
- A Andrea: This is a very good question. To my knowledge, people at Highways are very aware of the problem. Learn from others, use existing frameworks. So, we are working on providing tools, like best practices, how can you avoid transporting those things? We only can do so much, but Highways is very aware of it, and we provide information for them, as well. It's a very good point
- A Liz Appleby: I'll touch on that a little bit, and it will be in the presentations. We are aware of it, and we're trying to implement certain things through our contract

documents so that contractors are becoming more and more aware of what their responsibilities are in terms of trying not to transport this, and the way we do that is through Transportation and Engineering through our contract documents.

- C Andrea: So, there I see the benefit of that road side survey of the repetition, because is a contractor is working in that area, he knows exactly what he has to deal with.
- C Bruce: And it has come a long way since Highways was hydroseeding smooth brome down the highways. Really, in the late '90s when bison and elk started coming to the road, that was when Highways started looking closer at their mixes. They were still recommending things that grow well in the ditches, and that's what they were trying to do. Now that we've identified that a number of those are invasive species, that doesn't happen any more, and Highways are probably the leaders in setting a good example. For sweet clover, it doesn't appear that Highways actually hydroseeded sweet clover. It seems to have spread from the agricultural, and then, it is moving along the highways, partially due to the equipment; but Highways doesn't want to have sweet clover on the highway, probably much less than we do because of the cost of maintenance. So, they are trying everything to knock that back.

2.2 ISIWG: Update – Elizabeth Appleby (Co-chair) (Highways and Public Works)

- Elizabeth provided an update on ISIWG since its inception in 2012 and where they are at in developing a co-ordinated approach to invasive species management in Yukon and gave examples of departmental initiatives in managing Invasive species within their varying mandates.
- The working group formed in 2004 involved a lot of YG technical personnel.
- Four YG departments are involved, previous committees and role of chair were reviewed.
- Terms of reference, mandate and responsibilities were reviewed.
- Acknowledged that YISC deserves permanent funding.
- Strategic planning workshop was held in 2014, roles need to be clarified. Session was used to update the terms of reference.
- Review of ADM support 2014/2015, each department contributes \$5,000 per annum (\$15,000/year for working on projects).
- Elizabeth updated on the ISIWG work plan, including a risk assessment.
- Engineering does the reconstruction. One of the things we do is following a construction program, we seed as part of the whole reconstruction project. We try to get in as quickly as we can. It's two-fold. We want to deal with erosion and transport of sediments, which means we have to consider both for the road structure itself and for fisheries and what have you. The other things with seeding after talking to reclamation experts Outside, at one time we took fertilizer out of our seed mix. So, we've added that to get the growth coming back a lot quicker, and we try to get in seeding as quickly as we can and even take advantage – if we can – on dormant seeding, which is seeding in the fall; and that's to encourage growth as quickly as we can, again for erosion purposes, but also, to kind of ward off sweet clover. It's just something we have to do. When we do the seeding program, Highways has its own blend that was developed by agrologists, based on former blends; but as part

of the contract, a vegetation contractor has to submit a seed certificate, and in that seed certificate, you'll see if there are weeds in it. What I do at that point is we request that they can't go forward and purchase seed without our okay. What we do when we receive the seed certificate is I fire it over to Bruce and Matt generally to see if they have any problems with whatever is in it. I think it was last year, one had camomile in it, which you said, 'No'. So, we said 'No', and they had to go and find another source of seed for the project. That works for us. I use both Matt and Bruce as the experts to review what we're going to do there, because it's not my background. So, that's how we're dealing internally at Transportation and Engineering with it. With the dormant seeding, it's harder with the large, linear projects; but when we do that, we try to always seed after we disturb ground on our smaller projects. I work in the Environmental unit. So, we're carrying around a sack of seed with us, and then, when the guys are finished, you have your hand seeder, and you can walk around, and you're basically giving it a boost. Wherever we disturb ground, where there is an opportunity particularly for sweet clover, we try and get seed on the ground. It's a different story on the Dempster. Ideally, we want to have natural seed coming in, and often, our projects up there are a little bit later in the season. So, we've actually been able to collect seed on the road, and then, spread natural seed there. That's how we're approaching managing sweet clover. We were also lucky this year, in that the Y2C2 group from Environment come out and help us with the Tatchun Creek project. We knew we were going to get sweet clover there. It was right up to the edges of our project zone. So, I contacted Morris, and he agreed to bring the students out to help us do a weed pull, which was great, because that's not normally what they actually do. And he's said he will come out again this year to help us again with Tatchun Creek, which is really great, because Tatchun Creek is an important salmon stream.

- Funding: \$32,000 for the road side survey; a new map of invasive species will be produced to see if species have expanded in Yukon or not; will be provided to YESAA where hot spots are and where precautions will be needed in the field. Highways is managing the invoicing contracting through YISC.
- Further funding was outlined.

2.2.1 Questions & Comments – ISIWG: Update

- C Matt Ball: It raised the profile of invasive species when the non-profit was formed in 2008 within Yukon Government, and then, it was raised further when the non-profit asked for funding, which really created an opportunity for Yukon Government to create a body to deal with invasive species. So, overall, it was really a positive piece that Yukon Government got onboard with helping to manage invasive species.
- C Bruce may want to clarify is there a need for management action that Yukon Government can take or make a recommendation? Those are the two steps we're working on right now. We have identified the top 12 and come up with actions to manage those. So, we're looking for something broader for all invasive species.
- C Following that process, we will develop an invasive species list.
- C An update on any work on the highways that transfers seeds any vehicles or people working on roads transfer seeds. The mowing program should mow and clear prior to going to seed. Contractors must work between a certain window,

which potentially reduces the weed spread. I talked to most of the foremen in camps to let them know about invasive species. Many have posters in the grader stations and staff are made aware through conferences and personal action on my part. Best practices are being developed at this time on how to deal with invasive species, when is the best time to mow and grade roads, as well as techniques they can use. The reality is seeds do get spread. We're doing the best we can to educate staff and modify practices

- Q How are contractors collecting and disposing of invasive species?
- A: Makenzie Ingram: Just mowing and leaving it there.

2.3 The Bad Weeds – Yukon's Top Invasive Species and How to Manage Them – Brett Pagacz, President YISC

- Learn to identify and manage some of Yukon's top invasive plant species. As part of "The Dirty Dozen" list we will highlight a few species commonly found in disturbed areas around Yukon that can be managed practically. Examples will be presented.
- Brett spoke about five invasive species, all of which can be managed simply if they are in small numbers: Oxeye Daisy, Scentless Chamomile, Common Tansy, Bird Vetch and White/Yellow Sweet clover.
- Topics included: identification, ecological impacts, areas found in Yukon, management,
- Prevention is the best approach!
- Andrea Altherr provided a sample of each plant, all labelled for ease of identification.

2.3.1 Questions & Comments – The Bad Weeds – Yukon's Top Invasive Species and How to Manage Them

- Q Are you able to comment on the types of crop diseases the Oxeye Daisy unleashes?
- A Sorry, no, but we can talk about it later.
- C I can look it up, thanks.
- Q If you pull them out too early, will they come back the next season?
- A They can. One of the traits of invasive species is they're aggressive, they can reproduce rapidly and grow quickly. They have that advantage over a native perennial, which is slow to grow or get a quick start; but once it's in, it's strong. That difference in those traits is why you have to re-monitor and keep eye on these patches of invasive species.
- Q If you cut them, will it kill the root, if you mow them?
- A If you mow them, it will deplete the nutrient reserves in the root stock or the roots. For an annual, if you pull it out of the ground, put it in a plastic bag, roast it in the sun for from three-to-seven days (depending on the intensity of the sun) and kill the seeds, take it to the landfill is the disposal mechanism. For a biennial, it will set out vegetative growth as leaves in the first year, and in the second year, it should flower. Perennials last longer than two years (three years or more), so knowing the life cycle of the plant plays into how you manage it. So, more awareness of species that last longer and going back to those sites and re-visiting them and re-pulling them or mowing them.

- Q Will we ever see sweet clover eliminated from the highway?
- A Those seeds are viable for about 30 years in the seed bank. I'm 30 years old, so we'll see what's happening when I'm 60. There's a point where there's a shift in your ability to eradicate a species or control it. So, depending on your outlook or how optimistic you are, it's very realistic we can control sweet clover or push it back or keep it out of areas where we don't want it, like the Dempster Highway or along the Fish Lake Road.
- C How long do camomile stay, 30 years?
- A I don't remember how long camomile is viable for, do you, Bruce?
- A Bruce: No, but they have very small seeds. So, they're a real problem in agriculture, because they're hard to screen out of any grain crops. We're really lucky that we have very little of this in the Yukon. Most of the dots you saw on that map represent a few plants; and if they are pulled, they don't come back. So, if you can catch it early enough, I don't think there will be any major infestations. Matt may know through agriculture. This is one we're trying to keep out for our agriculture industry, because we have a huge advantage by not having this in our grain crops. It's really, really small at the moment, so that's a really early detection response that we've been able to control a number of early infestations.
- Q When you say 'landfill', do you mean landfill as garbage or compost?
- A As garbage, yes; we want to keep these things out of the compost, because the seeds are really small, and they can remain viable for several years. There's the chance that they can come back or respread.
- Q Is there an opportunity to have some sort of an arrangement with the landfill so people don't get charged for bringing them?
- A I think you can just throw it in with domestic waste.
- Q I understand her to say it is a trigger to make people bring it.
- A An incentive like this makes sense. Suggestion: put up a stickie note as a recommendation.
- Q If you're driving around the highways and you see one of these things and it has gone to seed and you pull it and leave on the side of the road to burn in the sun, is that sufficient?
- A It depends on the species. So, sweet clover you can pull and leave it on the ground. The seeds won't continue to mature. Some species will continue to mature, e.g. south thistle. That's why we recommend those in particular, you bag them; or if you're not sure and it's gone to seed, just bag it regardless.
- Q The simplest camomile doesn't have flowers on it yet and you pull them, they will probably almost certainly die; but if they have flowers on them, they will continue to mature; in which case, just rip off the flowers and put those into your bag and roast them on your fire.
- C I don't drive really drive around with garbage bags in my car. If I do happen to see camomile and I don't have a bag, can I pull the head off?
- C It will produce a lot less seeds if you pull it regardless of whether it matures. This one in particular, there was an infestation on the corner of the Klondike and Alaska Highways, and I just pulled it out. I kept one to confirm its identification, and I've never seen one come back there.
- C Not having a bag shouldn't be a deterrent, I guess.
- A It shouldn't be a deterrent; you do have a trunk, though.



Workshop adjourned at 10:30 a.m.

Workshop resumed at 10:45 a.m.

2.4 Worms to Weevils: What is here now and What may be Coming – Bruce Bennett

- Bruce is a member of the Yukon Conservation Data Centre (CDC) Yukon Environment). The Yukon Conservation Data Centre (CDC) keeps track of all wildlife species in Yukon. They make lists of all wild species in Canada. The database tracks and is able to provide information very quickly and generates maps. The general status of Canada's species is reassessed every five years.
- The first report of an introduced species (plantain) in the Yukon was in 1868 by William Dall.
- Most introduced species occur within the communities, and there is a good record of this and their spread.
- Bruce provided a detailed overview of 13 vertebrates that have been introduced into the Yukon.
- Invasive species need to constantly be on the radar of our growing agricultural sector. Our northern climate constraints offer us some protection from many but not all invasive species. So far most of the invasive-related concerns experienced with Yukon based agriculture have been primarily plant based. With our growing conditions being impacted by climate change this may not always remain true. Being aware of potential invasive threats to Yukon and its agriculture industry is a big part of the challenge. By combining and applying the main principals of integrated pest management (prevention, identification, monitoring, management, treatments and evaluation) we can work together to help keep new pests from

becoming a problem in our corner of this country, and deal with existing pests more effectively.

- Few people know anything about introduced invertebrates.
- Many introduced animals are beetles.
- The introduced animals known to be in Yukon were compared to Alaska. The pathways and implications of these introductions will be discussed.

2.4.1 Questions & Comments – Worms to Weevils: What is here now and What may be Coming

- C Bruce: There are arguments on whether there is one or two rock pigeons left in Whitehorse, but they may be gone after this year.
- Q Are the rock pigeons the ones that were downtown?
- A Yes. There were a couple of things that contributed to their loss. Rock pigeons need to have a food source. They made it illegal for the person who was feeding them all the time to feed them. Without having a reliable food source, they are having a harder time, and the goshawks love them. They need a certain number to maintain their population. I don't remember the last time I've seen a pigeon in town, whereas there used to be flocks of them, especially along 6th Avenue.
- Q How big are the sweet clover weevils?
- A An adult would be the size of my pinkie nail.
- Q Is there a way to tell a weevil from a beetle?
- A A weevil is a type of beetle. We have 800 species of beetles and only a small percentage are introduced (15%)
- A General discussion, re: the characteristics of beetles and weevils (big long hooked nose).
- C If you find something you want to identify, you can send it to CDC, and they will help identify insects, spiders, et cetera.



2.5 Managing Invasive Species to Conserve Yukon's Species at Risk (SAR) – Saleem Dar

- Although the current situation with invasive species in Yukon is not as dire as the situation in southern Canada, invasive species have the potential to create serious impacts to the conservation of at-risk species in the north, particularly in the context of climate change scenarios. An overview of species at risk in Yukon will be presented, focusing on species most susceptible to invasive species. The link between invasive species and disturbance will be discussed, as will be future work required to manage invasive species for the benefit of species at risk, and potential funding options.
- Currently, there are 29 species at risk in the Yukon; three of them are vascular plants (Yukon Draba (mustard family), Baikal Sedge and Yukon Podistera) which are potentially susceptible to threats from invasive species.
- Invasive species can be a threat to SAR
- Traits and attributes of SAR were outlined, recovery strategy, habitat types and approaches to protect them, plus future scenarios that may affect them and challenges.
- There are money pots specifically for SAR.

2.5.1 Questions & Comments – Managing Invasive Species to Conserve Yukon's Species at Risk

- Q Do you have an outline where there is a difference between invasive species being spread by people versus their own dispersal mechanism?
- A No, I don't but that's a good question.
- Q Can you explain why there has been an 80 percent decline in alpine tundra in B.C.?
- A I can give you the reference.
- Q Several factors contribute?
- A Yes, and they use the model over the span of 70-to-100 years.
- Q What to do about endangered species and the Act, you missed out on the NASA research station in Alaska. I missed this on the slide before what to do as options and responsibilities to help the endangered species
- A The list of potential funding sources was not intended to be exhaustive. Good to know about the Alaska research station mentioned.
- Q How do you deal with something like wood bison, which are a species at risk, and the news this morning stated that the hunters haven't killed enough bison? They're concerned they're becoming an invasive species, and they are certainly modifying the landscape on a major scale where they occur.
- A This is a species managed by Yukon Government, and Tom Jung is the contact. Some would call wood bison an invasive species. They used to be here in the Yukon, so they're referred to as a 'reintroduced species'. It's listed under a Federal piece of legislation, the *Species at Risk Act*. So, there is an independent body of experts that assesses species to figure out to rate them, and then, assign a risk category. They look at the national population. At a national level, wood bison are not doing that great; in the Yukon – according to a lot of people – we've got too many of them. They are currently listed as a threatened species, and it is legal to

hunt them, and we can't kill enough cows, and they taste pretty good. Depending on your timescale, you can look back at steppe bison. They were on the landscape, all the way across the Yukon. It's species managed by Yukon Government. Again, with a lot of stuff, we're managing critters but we're also managing people. There is only so much you can do, and some stuff is out of our control.

- C It is interesting to note that invasive species can be native species.
- C Native species that are moved into a novel habitat, such as northern Pike if they moved into the Fraser system. That's as bad as zebra mussels.
- C And that's a whole other discussion on novel ecosystems where they have found a niche within an ecosystem.
- Q Considering with climate change how habitats are changing and evolving, do we have an evolving view, as well, on what is to be considered an invasive species and what is not, because 50 years from now, the climate will be different. Ecosystems change, and who determines that, and what's the process?
- A That's a very big question.

Action #04-01-16: Saleem Dar will provide the reference why there has been an 80 percent decline in alpine tundra in B.C.

2.6 Play Clean Go – Maureen Huggard

- YISC aligns with other organizations, who have the same goals.
- The program was started by the University of Minnesota, and other groups were identified.
- More and more recreationists are escaping into the back country to explore and experience all the Yukon has to offer. The popularity of off-road vehicles has increased over the years as they provide the curious an easy way to access semi-remote places and return home again in a single day. More trail users have resulted in greater risks of introducing invasive species to local forested and alpine ecosystems around Whitehorse. It is important for trail users and campers to make sure invasive species are not accidentally moved from place to place while recreating. Users can take responsibility in the back country and follow some simple rules that will reduce the risk of introducing invasive plant species into these special areas.
- It is important to stay on the trails with off-road vehicles.
- It is important to use weed-free hay with horses.
- Website: playcleango.org. Maureen played one of the promotional videos.

2.6.1 Questions & Comments – Play Clean Go

No questions or comments

2.7 Spreading the Message and not the Mussel – Heather Milligan

- Yukon waters appear to be free of aquatic invasive species (AIS). Zebra and quagga mussels are invasive species that attach to boat hulls and underwater infrastructure, and can cost millions of dollars of damage to infrastructure and possibly alter ecosystems. Adult mussels can live several weeks out of the water

and be easily transferred from one body of water to another. The most cost-effective means of controlling invasive species is through prevention. In 2014, Environment Yukon launched a CHECK, DRAIN, CLEAN campaign that focused on steps that anglers and boaters can take to prevent the spread of invasive species when they move between water bodies. Environment Yukon also surveyed anglers and boaters to inform the development of AIS management. Overall, 85% of respondents have heard of AIS and those most concerned about AIS are more likely to take steps to prevent their spread. Movement patterns of respondents indicate that although the risk of introducing an invasive species is very low, once established in Yukon, AIS could easily be spread within a watershed. These results help to understand the risk of AIS and target communication materials, such as the installation of signage at popular fishing and boat access locations.

- The public can also play an important role in prevention by reporting possible sightings of zebra and quagga mussels. The concern is they live in high densities. They are difficult to get rid of.
- Fisheries and Oceans map of the probability of Mussel invasion identified the risk to the Yukon
- Didymo (algae) has been considered an invasive species in other parts of Canada but may be native to the Yukon. The attributes of didymo were reviewed (rock snot), and there are concerns it changes the benthic community and fish habitat. Studies and data are being done in different sites this year. It is in every one of the water drainages in the Yukon, and it is unknown whether or not it is spreading. It can be spread by felt-soled waders.
- In 2011, Leung and VonFinster put together a report for Environment Yukon that looked at the threat of 16 aquatic invasive species of different types.
- A common thread with AIS is the way their pathway is spread from one place to another is by humans, specifically with recreational activities.
- The most cost-effective way to manage the spread of AIS is through prevention, public education and surveys and questionnaires, i.e. remove weeds or aquatic life from boats and drain any water, clean by power-washing, dry equipment in the sun for a five full days, and freeze items like footwear.
- Heather reviewed the goals and results of the 2014 AIS survey and what they are looking at targeting in the future in relation to people's behaviour and AIS. No matter where the surveys were filled out, there was not a great deal of difference in the responses.
- Signs at boat/fishing access points were the preferred form of public education dissemination.
- The one-week out of the water timeframe is the most likely for the spread of AIS, i.e. using the same boat in different water bodies within a one-week timeline.
- Teams who have worked on this project over the years were acknowledged.
- *Aquatic Invasive Species Survey: 2014 Stop Aquatic Invasive Species* was tabled. Copies will be available on the website.

Action #05-01-16: If anyone sees didymo, bag it and bring it in to Yukon Environment.

2.7.1 Questions & Comments – Spreading the Message and not the Mussel

- C I suspect that is limited to specific zones, because they may not have evaluated further north.
- A I'm not sure why they didn't look at the rest of the Yukon, but our jurisdiction actually wants to do a more detailed risk assessment analysis of zebra and quagga mussels, as there is additional, more detailed information about some of the lakes than was available when they did their assessment several years ago.

Workshop adjourned at 12:10 p.m.

Workshop resumed at 1:05 p.m.

3.0 PRESENTATIONS: Management of IS

3.1 Invasive Plants: A Farmer's Perspective – Krista Roske

- Krista Roske, Sunnyside Farm: they have five years of experience in developing their farm. Krista provided a farmer's perspective on invasive plants, based on recent experiences dealing with them on her farm. She touched on what types of invasive plants have been observed on her farm, what approaches have been taken to deal with them and the proactive steps she and her husband are taking to mitigate these plants in the future.
- Things that had to be done that may have contributed to invasive species: the process of clearing their land, no control when dealing with contractors and their equipment, purchasing hay and soil (peat moss), plus wildlife.
- Have encountered: narrow-leaved hawksbeard, sowthistle, tall hawkweed chickweed and sweet clover.
- How they deal with invasive species: pull weeds out and put them in garbage bags, because do not believe in herbicides, use local feed, pressure-wash their equipment, and they are developing their pastures for perennial forage crops.
- No tolerance for foxtail and anything yellow that is not a dandelion.
- Recommendation: free dumping of weeds.

3.1.1 Questions & Comments – Invasive Plants: A Farmer's Perspective

- C Bruce Bennett: Smooth brome is considered invasive, but in a farm setting it is the best pasture; just not want it being used in reclamation.
- C Bruce: One of the banes of farmers is the narrowleaf Hawksbeard. Talking to the folks at Pelly Farm, they got Y2C2 in to try and remove it. It's the dandelion-like one that you pull out. It has a very small root, but once it gets established, it's almost impossible to get rid of. There was a fellow in Dawson that had the same thing. That's the one I hear of from farmers more than anything else
- A Krista We had patches of it, maybe the size of this table. They weren't big, because we're pretty obsessive about them. We feel that because we have been given the opportunity to own this land and clear it that we are responsible for it. We

don't want to have weeds blowing in, so we pull as much as we can, but this will be a multi-year process, and they grow fast.

- Q The first year after clearing, you didn't seed, is that correct?
- A We seeded some.
- Q Is there any knowledge of seed that would not be invasive but would give nutrition to the land.
- A Oats are the quickest, they establish well, you can turn them under, and they do add nutrient value. There are field peas and forage radishes and other things that one can plant that will mine the soil at different depths to pull up nutrients, which will help with your crop. The first year, we planted around our burn piles. Now that we've burned them, we need to move everything in, and there will be dirt and raw soil again. It's a multi-year process
- C I like your term 'line in the gravel'. This is actually used in larger scale projects, as well. It is called 'containment line'. Maybe that's something Highways could look at when we repeat that roadside survey. They can set a boundary line, e.g. we don't want oxeye daisy going past this boundary or containment line. That would be a nice follow-up with the roadside survey.

3.2 Yukon Agriculture Branch Approach to Invasive Species Management: IPM Considerations for Producers and Garden Owners – Randy Lamb

- IPM = Integrated Pest Management and usually has to do with agriculture crops, as that is where the large losses occur.
- Invasive species need to constantly be on the radar of our growing agricultural sector. Our northern climate constraints offer us some protection from many, but not all, invasive species.
- So far, most of the invasive-related concerns experienced with Yukon-based agriculture have been primarily plant based. With our growing conditions being impacted by climate change this may not always remain true. Being aware of potential invasive threats to Yukon and its agriculture industry is a big part of the challenge.
- Back in the early '90s Randy maintained a log of invasive species coming up the highway. He worked in B.C. as a weed inspector; nobody was interested in this back then; but when they redid the highway and changed the mile posts, oxeye daisy stuck around Rancheria/Watson Lake.
- Unless you buy top quality Number 1 seed, producers are allowed by law to have four to 20 seeds of primary noxious weeds per kilo present.
- Invasive species include weed and insect pests and diseases and pathogens.
- Gardeners encounter new pests every year, e.g. chocolate beetle was identified in Riverdale.
- Sawfly attacks Saskatoon and other berry bushes. Randy noted it will be important to identify the pests of haskaps, which are being grown by the thousands in the Yukon. These could be coming up on imported bushes or developing due to climate change.
- Someone in Yukon is trying to develop a fireweed farm.
- By combining and applying the main principals of integrated pest management (prevention, identification, monitoring, management, treatments and evaluation), we

can work together to help keep new pests from becoming a problem in our corner of this country, and deal with existing pests more effectively.

- Black scurf (fungal) attacks potatoes.

3.2.1 Questions & Comments – Yukon Agriculture Branch Approach to Invasive Species Management: IPM Considerations for Producers and Garden Owners

- Q Bees are an introduced species. Whitehorse used to have two commercial apiaries in the 1980s in the downtown area where Walmart is. Bee hives produced over 200 pounds of honey/hive in the wetland, which is now a parking lot.
- Q In the IPM, prevention came in the treatment section?
- A You're right, prevention and education should be upfront.
- C Thinking of new farmers coming in, buying number 2 seed, in Fort St. John, anyway to change that through regulations?
- A We have a regulatory framework, seed quality and import and export are Federal legislation and they leave it to the Territory to control the plants. Yukon does not have legislation, but the provinces do. Enforcement is difficult. Having internal government committees is a way to look at doing some action plans, and having advisory groups like YISC, flagging it to government and the public and doing public education weed-pulls, in the absence of regulation, is the best way to tackle that, and it seems to be working fairly well so far.
- Q If all of a sudden Krista has a neighbour that brings in Number 2 seed...?
- A At this point, we don't have a way to enforce that. As a weed inspector in B.C., I had the same power as the RCMP to go onto premises. The Agriculture Branch, we would approach the people and work with them. There may be funding to help them deal with the problem before it spreads. Getting it early is important, but it has to be spotted first. The neighbours would identify it.
- C Krista: My husband and I talk back and forth with Matt all the time. It is important to get certified seed. You can't always get it. At minimum, we drive to Grand Prairie or Fort St. John to get our seed, but we're not going to pay a high price for seed from Ontario. That's cost-prohibitive. We get certified Number one seed as often as possible, but with the distances, sometimes it's not possible. As farmers, we have left a perimeter of forest around us for a number of reasons, one being to protect yourself. You have a natural, well-established barrier so the weeds won't blow in.

3.3 Canada Land Reclamation Association – Maureen Huggard

- The Canadian Land Reclamation Association/Association canadienne de réhabilitation des sites dégradés (CLRA/ACRSD) has been a non-profit organization since 1975, started in Guelph. The association encourages personal and corporate involvement where reclamation or rehabilitation of disturbed lands is planned or implemented. The CLRA/ACRSD provides up-to-date technical information to members and interested parties about reclamation through the publication of newsletters, the Canadian Reclamation magazine and proceedings of its annual conferences. The CLRA recognizes the potential threat invasive species pose when planning reclamation programs and supports organizations and educational

programming that works toward the eradication and management of invasive species.

- *Footprints* is a publication they have sponsored.
- They team up with organizations and have awards for reclamation, e.g. Linda Jones Memorial Award.
- Board of Directors and benefits were reviewed. The organizations welcomes input from citizens and is interested to set up 'lunch and learn'.
- *Canadian Reclamation* is published twice a year.

3.3.1 Questions & Comments – Canada Land Reclamation Association

No questions or comments

Workshop adjourned at 1:50 p.m.

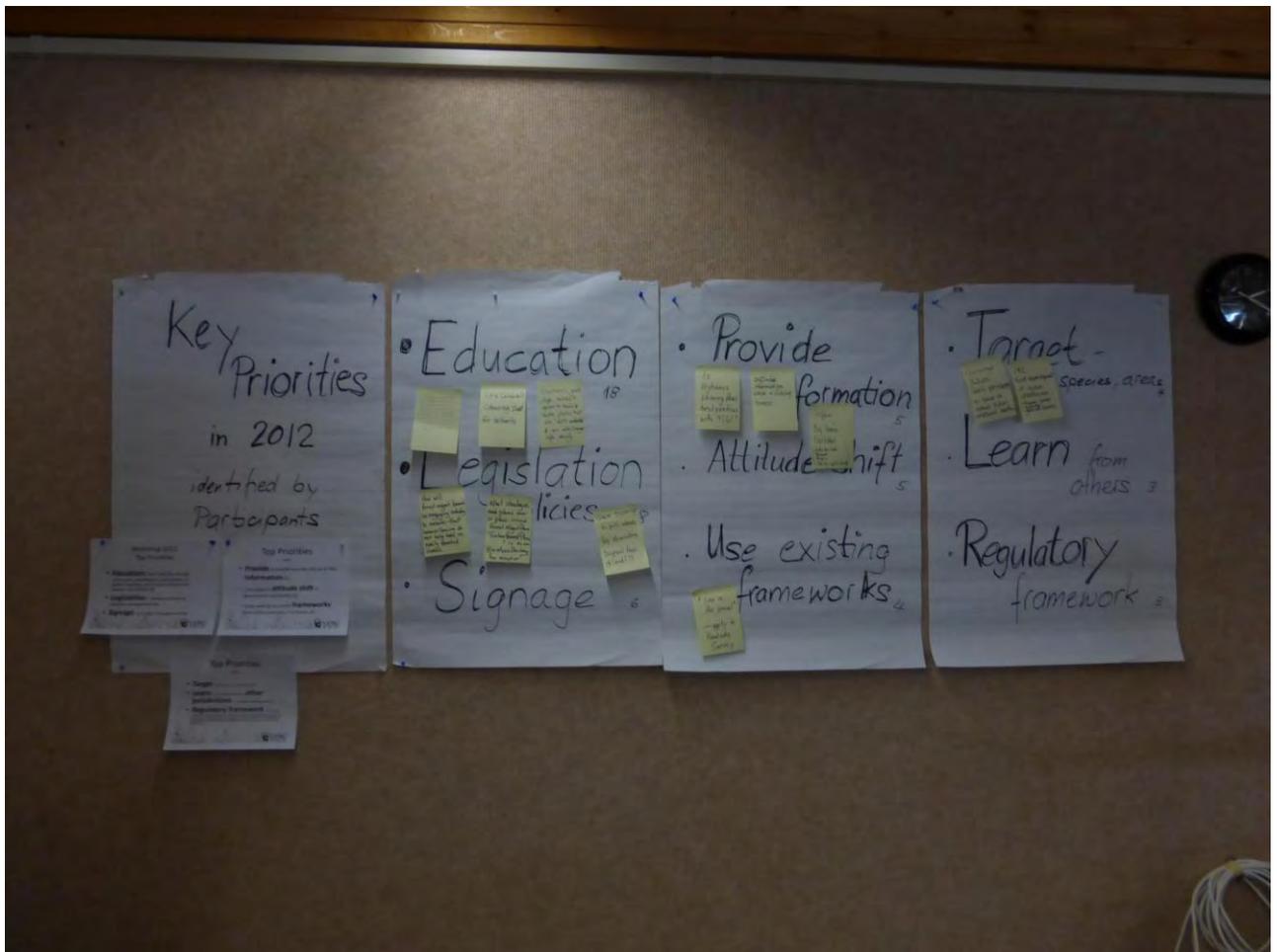
Workshop resumed at 2:05 p.m.



① TAKHINI HOTSPRINGS - weed pulls of Sweet clover + thistle (target spp)
- hired biologist to ID spp on property
- All new subdivision property owners must agree to keep land clear of IS.
SPOTTERS NETWORK
- Participants in 2014 workshops in Haines Junction & Teslin
EDUCATION - Teaching unit on IS in a Biodiversity Loss course @ Yukon College

② - ROADSIDE visibility of sweet clover an issue (broadly)
- Getting reports - Presence/Absence from trained public (spotters, etc.)
- Pest/IS risk assessments (haskaps, potential invasives)
↳ And an action plan to respond to risks quickly
- harnessing new technologies (social media, devices etc.) + current (old) technology (used + works?)

③ - IMPACT OF CLIMATE CHANGE on habitats - increased risk of IS? or 'natural' change in spp. distribution + invasives
- LACK OF GOVMT LEGISLATION + POLICY
- Funding - consistent + sufficient for YISC! ✓
- Interdep. cooperation about concerns on landscape
- Govmt standards on IS mgmt that contractors must also follow (HAW, for example)
- BEST MGMT PRACTICES
- get more grad students involved !!



3.4 Facilitated Group Discussion

Attitude Change – Challenges, Barriers and Opportunities – Marc Boulerice

Marc Boulerice led an exercise to help gain people’s opinions.

A. If you think invasive species is a big concern in the Yukon

Yes = 19
 Medium = 9
 Not concerned = 6

B. What is the biggest sources of invasive species in the Yukon

Farmers = 9
 Gardeners = 6
 Highways = 19
 Outfitters and outdoor recreationalists = 1

C. What is the best method of dealing with invasive species

organized weed pulls = 5

spraying = 1

public education = 15

government involvement (legislation) = 14

D. What is the most threatening invasive species

sweet clover = 22

Canada thistle = 11

oxeye daisy = 2

toad flax = zero

Attendees were asked to return to tables that did not contain their coworkers to engage in group discussions.

- **Q1 Those of you who were present in 2012, do you remember what some of your priorities were then, and what have you done to deal with invasive species since then?**
- **Group #1:** None of us were here in 2012, but we highlighted things people have been doing in the past few years. At the Takhini Hot Springs, they have been doing weed-pulls of thistle and they hired a biologist to i.d. species on their property. When they subdivided the area to new properties, all new owners had to agree to keep their land clear of invasive species. People participated in spotters networks in 2014 in Haines Junction and Teslin. involved in education, teaching a unit on invasive species at Yukon College.
- **Group #2:** Website improvements, development of pamphlets, weed pulls were more common, environmental farm plans came into agriculture. Legislation still lacking. NGO's pulling weeds.
- **Group #3:** None of us were here in 2012. Some things have been done in Teslin, including a student was hired to do an invasive species study and developed an information brochure, the RRC held an invasive species workshop, which has helped raise awareness in Teslin.
- **Group #4:** A few members from 2012, monitoring program hope to get off the ground for Nisutlin Delta, Bruce made his children clear all the sweet clover in cowley Creek and Mary Lake (good progress), hoping to develop policy and legislation – not happened
- **Group #5:** We talked a lot about education and attitude shift leads to behaviour change some stuff worked, could be doing better, heard about reaching out to new sectors, the importance of recreation/tourism sector, important to get outreach materials to work for your audience; details of what would work, posters, pamphlets, info sheets, outreach materials. Mary reported on the Carmacks Renewable Resource Council. So far no materials are available in Carmacks, venues to get the word out; education is a way to stimulate discussion, behaviour change, engage people,

- **Group #6:** I was here in 2012. I don't remember what the priorities were. I don't know what we've done. Changes in work environment: HPW is proposing mitigating conditions. Working on section on BMP for IS. During an environmental briefing staff is talking directly to contractors and employees. It's not just for invasive species but across the board, best management practices. There is a section in our contracts 'mitigating conditions' section on invasive species and what to do. It becomes part of the contract itself and can be enforced; ideally, we want to educate, because it's very obvious most of us weren't brought up with information on invasive species. Our approach is that we need to do a lot of education. In the contract world, we do that by getting out immediately before the contract starts and speak to those issues. We will have a PowerPoint that includes a section on invasive species to try and prevent movement. It's about washing your vehicle between territories, don't park next to invasive species, anything to get it into their consciousness, because it's not really happening for a lot of people. They just don't have access to education. Education is a big thing, and Yukon College has been instrumental in moving things along.

- **Q2 AS a follow-up have those priorities changed? What are you concerned about now, are there invasive species or processes to get this happening now? What are some of the problems you're having right now?**

- **Group #1:** issues: increased roadside visibility of sweet clover and the related issue with wildlife, need to get more data even if a presence/absence knowing there is nothing, identifying the risks of other invasive species that could be coming up to the, e.g. are there any pests associated with Haskaps? Would like to know more about what other invasive species from down south that are causing problems could potentially cause a problem here; having identified the risk, having action plans in order to respond quickly, new technologies and making sure practices here stay in line with what's happening in the rest of Canada and the rest of the world, making better usage of social media.
- **Group #2:** legislation is lacking, maybe have not-for-profit pulling weeds to raise money, similar to the garbage pickup, and volunteers can donate to the charity of choice, have Association of Yukon Communities take a leading role in the municipalities to work on invasive species, having YESAB recommendations on projects include a focus on preventing invasive species. More community/public involvement. Make invasive species an election issue. Collect native seeds.
- **Group #3:** Sweetclover is an ongoing issue.
- **Group #4:** Personal interest to learn more. Hopefully try to initiate legislation and policy, specifically a ban on the sale of invasive species in seed mixes . Get updates on aquatic invasives. Increase stewardship. Dedicated YG staff (position) to coordinate IS.
- **Group #5:** The role government and regulation could play, that's not happening now, limitations of a voluntary approach, need government to step up, e.g. land use development rules regulating best management practices, YESAB applications have explicitly invasive species issues covered off and checked off so they don't get missed and we get more infestations. Demonstrate success, this motivates. Encourage further action, this builds momentum. Government is slow. We need a

coordinator position. ISIWG is a partial failure. Yukon should try to learn from other countries (even Europe).

- **Group #6:** We were actually talking more about the aquatic world and how well Environment is doing on educating people and how well they've delved into the problem. We were impressed with that and with this sign and how they've moved along with invasive species in terms of aquatics and their survey; also, the Federal legislation that's come out as prohibition against the movement of aquatics between areas. That's new Federal legislation and it was done under Harper of all people!
- **Q3 What do you see as a potential concern or problem that is coming up, e.g. a species you've learned about or legislation that will be needed.**
- **Group #1:** Impact of climate change on the habitat and how that might increase risk of invasive species or might lead to changes in species distribution that will allow some species to have a lot more success in establishing, so kind of understanding how climate change will impact us here. Relationship basis and the lack of government legislation currently in place in regards to invasive species, funding from the government that will be consistent and sufficient for a long enough time so we can continue to do the work, interdepartmental cooperation about concerns across the landscape, higher government standards on IS management that will also have to be followed by contractors, having that being done more so that both the Government and people who work with the Government have standard practices on how to address invasive species when they're across the Territory and establishing some best management practices. Get more grad students involved.
- **Group #2:** weed week, schools, increasing opportunities for the public being involved and becoming involved, walking surveys and prizes, incentives by the pound and donating good seeds to people so they know what is good to plant (e.g. Timothy), partnerships with other community groups, community events, being part of the trade show, collecting Yukon seeds and making them more available, making invasive species an election issue (fall). Concerns: climate change, pests, seed contamination of waterways (sweet clover), lack of legislation regarding A.T. disturbance of the land, a recognition that even if there is legislation, it won't help if they don't enforce it, lack of funding for monitoring, getting rid of the siloed approach to a lot of government decisions that reduces their effectiveness to get rid of the problem, conflicting mandates, too many steps, too much bureaucracy to get things done.
- **Group #3:** Sweet clover is an ongoing issue and is a hazard for safety, as well as environmental issue, turning out on the highway and not being able to see wildlife in the ditches, and then, they pop out of the clover; lack of coordination on how the issue is being approached; beetle issue mountain pine/spruce and change in temperature feeding into the problem without really cold consecutive winters; pathogens that are not visible, increased interest in Yukon for recreation from out of Territory people who may be bringing things in. Uncontrolled high population elk, who are some people's food source and other people some can't stand them. Invasive species is 'in the eyes of the beholder', ticks in bison is a similar issue.
- **Group #4:** Concerned with ecosystems and specifically the traditional uses, interested in getting an update in general as where AIS is, a general update, particular interest was management unproductive agriculture land hoping

development in there, major source of seed spread; increased stewardship, hoping to get education out there and have more population interested in invasive species and interested in managing on own reporting and hoping get Yukon Government staff position to coordinate invasive species management concerns increased management costs, climate change with increased habitat and migration invasive species concerns aquatic invasive species come up in boats and people transferring oil shutting down Alberta coming up here, genetic modification resistance herbicides pesticides, super plants (bugs); classic evolutionary changed what invasive species now not considered in future rolling with the punches, new and introduced species, super plants! decreased interest in invasive species

- **Group #5:** Successful (what is working) information and media outreach and education facilitate action and behavior change encourages spreading the message more; gone far can go further, new groups to reach out to get through all different groups in society; if you can demonstrate success, it builds momentum, media outreach – someone came today who had heard about it in the paper/radio, there are different avenues to reach people, e.g. social media, multi approach; problems performance measures to know whether or not successful is the investment good value or return on investment, survey mechanisms interview people what have you done differently? Government is slow, big bureaucracy, lacks political will. It's a disperse problem and necessitates coordinating a bunch of different actors, working group – whether partial fail or success. It's designed to be a mechanism within Yukon Government to deal with the responsibility dispersed multiple parts hard to work towards a concerted goal, room for improvement, opportunity learn from other jurisdictions; concerns in future: bad diseases in the Yukon e.g. white nose syndrome and other diseases, may get overwhelmed with novel and new infestations. If we take the reacting to stuff that happens approach, it's easy to get overwhelmed. If we set up a strategic approach, it's easier to invest resources 'if you see it, kill it'; climate change could make invasive species more likely, worse in magnitude and facilitate the spread proactive versus reactive. Mitigation plans, prioritizing work, aware when invasive species integrated into ecosystem 'novel system' plays into prioritizing; future concerns how we take action and coordinate, lots of biodiversity impacts of invasive species linked wildlife habitat security, connective; unpredictability consequences difficult to plan lots of unknowns; don't have a crystal ball, don't know how climate change new species react; very complex.
- **Group #6:** There was discussion around climate change. Pest may survive. New pests arrive? Seed contamination of our waterways. More recreation in the back country are calling for having the right practises on things like footwear, trying to get the public aware of what could happen if we don't take precautions. Some of us thought the answer was we need more legislation to be used as a tool, even a threat, can bring results. Bring Randy back as the weed inspector! Lack of funding for monitoring. Conflicting mandates are slowing things down. Too much bureaucracy – too many steps. Even legislation won't help without a commitment to enforce at all gov't levels.

4.0 Carrying on the Work that has been done at the workshop in 2012

Marc Boulerice asked for people's e-mail. YISC will provide report and invites all to attend the AGM

Marc handed out card decks with aquatic invaders (Environment Yukon door prize)

Marc Boulerice thanked everyone for spending their day and all who assisted. Everyone was reminded to report their sightings.

Workshop concluded at 3:20 p.m.

Appendix 1

Key priorities in 2012

Education: Start with kids through curriculum, presentations and contests; to public in general, and include Government leaders, and YESAB (made a priority by 18 attendees)

Legislation – Develop policies for adaptive management (made a priority by 8 attendees)

Signage: as a way of engagement (made a priority by 6 attendees)

Provide accessible accurate and up to date information (made a priority by 5 attendees)

Encourage an attitude shift in government and society (made a priority by 5 attendees)

Using existing successful frameworks from other provinces / territories (made a priority by 4 attendees)

Target – species, areas, vulnerable areas (made a priority by 4 attendees)

Learn from strategies attempted in other jurisdictions: e.g. protocols of equipment operation (made a priority by 3 attendees)

Regulatory framework - Identifying economic value to action versus inaction and put on government radar. This goes back to the politicians and legislators knowing about the problems and getting the decision makers to understand the consequences of not doing actions. (made a priority by 3 attendees)

Sticky notes provided during the day:

Education: Cris Caldwell: coloring sheet, electronic guide/app, work with experimental school classes, Yukon College. Make it a responsibility for land owners to look after their property and to reduce IS. Educate new land owners.

Legislation and policies: How will forest management branch be engaging industry to ensure that invasive species do not take hold in newly forested areas? Are there strategies and plans in place?

Legislate to educate

Create incentive to pull weeds by eliminating disposal fees at the landfill.

Establish power washing stations in key areas to increase cleaning between water way systems.

Provide accessible accurate and up to date information: Is highways sharing their best practices. YISC's website could act as a platform.

Include information in fishing licence (at point of purchasing, online)

Provide info at tourism centres.

Attitude shift: inform big game outfitters (ORV user)

Use existing frameworks: Apply containment lines after the road side survey

Target. Encourage Yukon seed producer to have a Yukon native seed mix (get YCS on board for funding) make specific mixes: flower lovers, edibles, ground covers.

Appendix 2

Abstracts and bios

Presentations:

➤ *Blowing the Whistle on Creeping Thistle*

A short overview of the current outreach programs of the Yukon Invasive Species Council. The presentations show how these programs are linked to national programs and ways to adapt them for the situation in the Yukon.

Andrea Altherr works since 2008 as a part time coordinator for YISC. info@yukoninvasives.com

➤ *ISIWG (Invasive Species Interdepartmental Working Group):*

An update on ISIWG since its inception in 2012. Where we are at in developing a co-ordinated approach to IS management in Yukon and examples of departmental initiatives in managing IS within our varying mandates

Liz Appleby Co-Chair Invasive Species Internal Working Group. HPW - Transportation Engineering Branch, Environmental Management Analyst: Works within HPW Environmental Unit to manage environmental components of HPW design and construction projects and highway maintenance projects to meet current regulatory standards and best management practices.
Elizabeth.appleby@gov.yk.ca

➤ ***Troublesome Invaders – Yukon’s Top Invasive Plant Species and How to Manage Them***

Learn to identify and manage some of Yukon's top invasive plant species. As part of “The Dirty Dozen” list we will highlight a few species commonly found in disturbed areas around Yukon that can be managed practically. Examples will be presented.

Brett Pagacz has been involved with the board of YISC for 3 years. Her background is botany and vegetation ecology. Her talk today will cover some of Yukon’s top invasive plant species and management strategies for these species
bpagacz@edynamics.com

➤ ***Worms to Weevils: What’s here and what may be coming.***

Invasive species need to constantly be on the radar of our growing agricultural sector. Our northern climate constraints offer us some protection from many but not all invasive species. So far most of the invasive-related concerns experienced with Yukon based agriculture have been primarily plant based. With our growing conditions being impacted by climate change this may not always remain true. Being aware of potential invasive threats to Yukon and its agriculture industry is a big part of the challenge. By combining and applying the main principals of integrated pest management (prevention, identification, monitoring, management, treatments and evaluation) we can work together to help keep new pests from becoming a problem in our corner of this country, and deal with existing pests more effectively.

The Yukon Conservation Data Centre (CDC) keeps track of all wildlife species in Yukon. The introduced animals known to be in Yukon will be compared to Alaska. The pathways and implications of these introductions will be discussed.

Bruce Bennett is the coordinator for the Yukon Conservation Data Centre with the Yukon Department of the Environment, and has been the co-chair for the Vascular Plant Specialist Subcommittee (SSC) for the Committee On the Status of Endangered Wildlife in Canada (COSEWIC) since 2010. He has been a member of the Yukon Invasive Species Council (YISC) since its inception and has been involved with invasive species in Yukon since 1998. Bruce has lived in Yukon since 1995. His botanical work and interests have taken him throughout the north working and volunteering with a number of organizations including the Canadian Wildlife Service, Parks Canada, Government of NWT, Canadian High Arctic Research Station, University of Alaska, Alaska Bureau of Land Management, and the US Parks Service. He currently resides in Whitehorse. Bruce.Bennett@gov.yk.ca

➤ ***Managing Invasive Species to Conserve Yukon's Species at Risk***

Although the current situation with invasive species in Yukon is not as dire as the situation in southern Canada, invasive species have the potential to create serious impacts to the conservation of at-risk species in the north, particularly in the context of climate change scenarios. An overview of species at risk in Yukon will be presented, focusing on species most susceptible to invasive species. The link between invasive species and disturbance will be discussed, as will be future work required to manage invasive species for the benefit of species at risk, and potential funding options.

Saleem Dar, Canadian Wildlife Service, Environment and Climate Change Canada
Saleem works as a species at risk and liaison biologist with the Canadian Wildlife Service in Whitehorse. His work focuses on species at risk conservation in the north and the implementation of the federal *Species at Risk Act*. saleem.dar@canada.ca

➤ ***Play, Clean, Go***

More and more recreationists are escaping into the back country to explore and experience all the Yukon has to offer. The popularity of off road vehicles has increased over the years as they provide the curious an easy way to access semi-remote places and return home again in a single day. More trail users have resulted in greater risks of introducing invasive species to local forested and alpine ecosystems around Whitehorse. It is important for trail users to make sure invasive species are not accidentally moved from place to place while recreating. Users can take responsibility in the back country and follow some simple rules that will reduce the risk of introducing invasive plant species into these special areas.

Maureen Huggard, BSc, is a Restoration Ecologist with experience in vegetation studies, mine reclamation, invasive species management, and engaging First Nation youth through the collection of data and undertaking restoration projects. Her interest in restoration began in the late 1980's while working as a student on the Washington Creek Riparian Restoration project in Ontario. Maureen sees an opportunity for the development of more research and restoration projects in the Territory to ensure disturbed sites are re-established as part of healthy, functioning ecosystems. Understanding the behavior of invasive plant species is an essential component when planning all restoration projects. She has been a member of the Yukon Invasive Plant Species Council since 2007 and is a past director. She currently sits as a national board member for the Canadian Land Reclamation Association. Maureen is a graduate of the Restoration of Natural Systems program at the University of Victoria and continues to stay current in the field of restoration ecology through her studies. maureenhuggard@gmail.com

➤ ***Spreading the Message and Not the Mussel***

Yukon waters appear to be free of aquatic invasive species (AIS). Zebra and quagga mussels are invasive species that attach to boat hulls and underwater infrastructure, and can cost millions of dollars of damage.

Adult mussels can live several weeks out of the water and be easily transferred from one body of water to another. The most cost-effective means of controlling invasive species is through prevention. In 2014, Environment Yukon launched a CHECK, DRAIN, CLEAN campaign that focused on steps that anglers and boaters can take to prevent the spread of invasive species when they move between waterbodies. Environment Yukon also surveyed anglers and boaters to inform the development of AIS management. Overall, 85% of respondents have heard of AIS and those most concerned about AIS are more likely to take steps to prevent their spread. Movement patterns of respondents indicate that although the risk of introducing an invasive species is very low, once established in Yukon, AIS could easily be spread within a watershed. These results help to understand the risk of AIS and target communication materials, such as the installation of signage at popular fishing and boat access locations. The public can also play an important role in prevention by reporting possible sightings of zebra and quagga mussels.

Heather Milligan works as a project biologist with Environment Yukon. Heather lives in Whitehorse and has a MSc. in Wildlife Biology from McGill University. heather.milligan@gov.yk.ca

➤ ***Invasive plants: a farmer's perspective***

Krista will be providing a farmer's perspective on invasive plants based on recent experiences with invasive plants on her farm. She will touch on what types of invasive plants have been observed on her farm, what approaches have been taken to dealing with them and proactive steps she and her husband are taking to mitigate these plants in the future.

Krista Roske and her husband, Jason own Sunnyside Farm, an 86 acre family farm in Ibx Valley west of Whitehorse that is very much a "farm in development". They currently raise chickens and turkeys, are developing pasture for rotational livestock grazing and have a market garden. Their goal is to sustainably raise and grow affordable food for sale in Yukon which is free from pesticides, herbicides, and synthetic fertilizers. Krista's academic background is a mix of Canadian history, Library Science, and Public Administration. She currently works as a senior policy analyst for the Yukon Government. info@sunnysideyukon.ca

➤ ***Yukon Agriculture Branch approach to Invasive Species Management: IPM considerations for producers and garden owners***

Invasive species need to constantly be on the radar of our growing agricultural sector. Our northern climate constraints offer us some protection from many but not all invasive species. So far most of the invasive-related concerns experienced with Yukon based agriculture have been primarily plant based. With our growing conditions being impacted by climate change this may not always remain true. Being aware of potential invasive threats to Yukon and its agriculture industry is a big part of the challenge. By combining and applying the main principals of integrated pest management (prevention, identification, monitoring, management, treatments and evaluation) we can work together to help keep new pests from becoming a problem in our corner of this country, and deal with existing pests more effectively.

Randy Lamb is currently the acting Agrologist for Yukon government's Agriculture Branch and he has taught the Integrated Pest Management component of the Yukon Master Gardener program for the last 10 years. Plants and insects have always been a big part of Randy's working career and personal life. In previous incarnations, Randy moved north to be a BC provincial weed inspector for 2 summers in the Fort Nelson-Liard Regional district, and spent 6 summers as our

territorial mosquito biologist. Currently in his spare time he helps run the Whitehorse community garden and sweet talks his honey bees into sharing their honey with him. Randy.Lamb@gov.yk.ca

➤ **Canadian Land Reclamation Association (CLRA)**

The Canadian Land Reclamation Association/Association canadienne de réhabilitation des sites dégradés (CLRA/ACRSD) has been a non-profit organization since 1975. The association encourages personal and corporate involvement where reclamation or rehabilitation of disturbed lands is planned or implemented. The CLRA/ACRSD provides up-to-date technical information to members and interested parties about reclamation through the publication of newsletters, the Canadian Reclamation magazine and proceedings of its annual conferences. The CLRA recognizes the potential threat invasive species pose when planning reclamation programs and supports organizations and educational programming that works toward the eradication and management of invasive species.

Maureen Huggard, BSc, is a Restoration Ecologist with experience in vegetation studies, mine reclamation, invasive species management, and engaging First Nation youth through the collection of data and undertaking restoration projects. maureenvhuggard@gmail.com

Appendix 3

List of attendees

Last name	First name		
Allen	Carolyn	Pagcaz	Brett
Altherr	Andrea	Parker	Breea
Appleby	Liz	Parker	Vance
Ball	Matt	Perrin	Alison
Bauer	Julie	Peter	Dennis
Bennett	Bruce	Pitzel	Carla
Boulerice	Marc	Roske	Krista
Burns	Bonnie	Rourke	Gillian
Chouinard	Cory	Sandford	Megan
Clarke	Heather	Sharples	Robin
Clarke	Minnie	Simons	Carolyne
Dar	Saleem	Smith	Brodie
Ferris	Christine	Smith	Susan
Freese	Lloyd	Spencer	Christine
Fulmer	Debbie	Staniforth	Jennifer
Gewer	Sylvie	Suarez-Esteban	Alberto
Gray	Larry	Sutherland	Kathy

Huggard	Maureen	Thom	Adam
Ingram	Mackenzie	Toews	Don
Lamb	Randy	Van Bibber	Jeret
Leung	Maria		
Lutkehaus	Mark		
Maisonneuve	Johanne		
Marjanovic	Meghan		
Martychuk	John		
Milligan	Heather		
Mossop	Dave		