Hi Mike, I hope this finds you and your family well in these trying times.

I'm writing to ask you about information that came out at the last meeting on June 18 of the Town of the Blue Mountains Agricultural Advisory Committee. The ongoing issue of Wild chervil control was being discussed and Wayne Dewitt quoted you as saying to Chris Raynsford (both are Town weed inspectors) "as an inspector it is whether or not there is a pathway for seed to spread from the infected property to agricultural land. These seeds are mainly spread by humans and animals, wind could only move the seeds a few meters at most. So for areas not in close proximity to agricultural land the inspector has to evaluate if there are laneways, trails etc that would facilitate the spread of seeds by animals or humans. If the parcel of land is fairly isolated and there are no heavily trafficked pathways you may choose not to enforce control on these parcels."

The farmers at this meeting were surprised by this comment as the consensus amongst them is that wild chervil seeds are spread in many ways not mentioned in your comment:
Water - we have many streams, creeks and rivers running through the Town, and wild chervil is spreading quite aggressively down our waterways.

Mike’s response: as per the Biology of Canadian weeds, the seed itself doesn't float, but dead plant material can, and therefore seeds still attached to dead plant material is a potential pathway for movement. This may or may not be a significant source of seed movement in your area, but that's why its important that the Weed Inspector's investigate and identify the most prolific path for seed movement in the area that they enforce the Weed Control Act.

Wind - we often have very strong winds in the town, in fact a few days before this meeting, a strong wind storm had moved trees in the Town, so the question was raised if the wind can move trees, why can’t it move seeds. Just a note that this storm happened when the chervil was heavily going to seed.

Mike’s response - Wild chervil seed itself is not conducive to dispersal by wind...no matter how strong the wind, it is unlikely to move seed more than a few metres from the mother plant. A greater distance of movement by wind could happen, if as in the case of water, the seed was still attached to the dead plant material, which could be moved further distances by wind then the actual seed itself.

Animals- dogs, cats, deer, coyotes, rabbits, raccoons, squirrels, chipmunks. Do the animals know to stay on a pathway. We know that deer and coyotes can and do travel great distances all around our Town.

Mike's response: Again, as you've directly quoted in my e-mail reply to Wayne and Chris, part of the task of determining if control can be enforced under the Act is identifying the greatest sources of seed movement. Although animals do move seed, it is typically a pretty low percentage of all pathways of movement in studies that have evaluated the introduction of invasive species into new areas. Humans are by far the greatest spreaders of seed. If we look at another excerpt in the Wild Chervil profile in the Biology of Canadian Weeds, there is evidence to show that animal grazing can be beneficial in reducing populations, presumably because top growth is grazed and seed production is therefore reduced, and/or perhaps the rumen of grazing livestock destroy seed viability...

Birds - self-explanatory.

Farm animals - move the seeds on their bodies, eat it and it ends up in the manure which gets spread all over even on our roads as the manure trucks go by.
Mike's response:
From the Biology of Canadian Weeds Series: "In Sweden, where cattle have been excluded from meadows, particularly for fall grazing, A. sylvestris populations have increased (Hansson and Persson 1994). Wagner (1967) suggests that grazing while plants are in a strong spring growth stage is advantageous. Spring grazing of young foliage in Nova Scotia has helped to decrease A. sylvestris populations."

Hay - up here hay is harvested full of wild chervil gone to seed and those seeds are spread by vehicles transporting the hay all over. As well it's eaten by animals and ends up in the manure.

Mike's response: The Weed Control Act prohibits the movement of noxious weed seed. Orders to destroy noxious weeds should be given to hay fields infested with wild chervil so that they are cut prior to flowering and so that this pathway for seed movement is reduced. If what is being described in the above statement is happening, then this would be a significant source of seed movement and should be proactively dealt with under the Weed Control Act.

Farm machinery and town maintenance vehicles - can move seed great distances.
Humans - not everyone stays on a path or trail, what about those four wheelers.

Mike's response: I'm a little frustrated with the comments around "not everyone stays on a path or trail" or "do animals know how to stay on a pathway". Once again, I've stated that humans will be the primary movers of wild chervil seed and so you must identify the largest potential source of seed movement in the community. A path or walking trail may be one avenue by which seed could be spread from one property to the other but it was not suggested as the only method. It was but a singular example.

It was evident in the comments by Mr. Dewitt that your comments seem to give the town weed inspectors permission to not enforce the Weed Act. It was clear listening to the agricultural committee members that they believe that if there is wild chervil anywhere in the Town, that there is potential for it to go anywhere in the Town, and that the weed inspectors must enforce removal on private property.

Mike's response: Again, happy to be involved in future calls to answer specific questions. The Act prohibits the movement of noxious weeds and weed seeds. So if there are sources of noxious weeds seeds on private property that have a high risk of moving off site and infesting agricultural land, then the Act should be enforced on those properties. Based on the feedback from your advisory committee, one example that should be enforced under the Act is the cutting of hay fields where wild chervil has gone to seed and that could be transported through bales and silage. An order to destroy noxious weeds should be issued in those instances so as to allow the landowner the opportunity to cut and harvest the forage crop before wild chervil sets seed. Since humans are the biggest traffickers of seeds, enforcement of wild chervil control should focus on the most productive ways to minimize that pathway of movement.

Would you please comment.
Thank you for your time.

Marlene Lawrence

(See Mike Cowbrough’s response on next page)
Thank you for your e-mail Ms. Lawrence. I think it's important to look back at my opening statement that you have quoted. "As an inspector it is whether or not there is a pathway for seed to spread from the infected property to agricultural land." Just so that there is no confusion, the term "pathway" was not intended to be interpreted as a literal pathway, but rather it is important to observe how the weed is spreading in the community so that enforcement can focus on reducing or eliminating those pathways that facilitate seed movement.

The Biology of Canadian Weeds series, along with other scientific papers on dispersal of weed species, point to human aided movement as the greatest means by which propagative material is moved around. I have copied and pasted the summary of documented dispersal mechanisms for wild chervil below. I will also address point by point, the queries raised by the Agricultural Advisory Committee in your original e-mail below (so please scroll to your original e-mail and refer to the "Mike's response" sections). If you feel it would be productive for me to participate and answer any questions in future meetings, let me know.

From the Biology of Canadian Weeds series (a copy can be found here: http://www.weedinfo.ca/media/pdf/darbyshire-et-al-1999_the-biology-of-canadian-weeds-111_anthriscus-sylvestris.pdf)

"Seed production and dispersal - Seed ripens in late June through July and disperses slowly. Production is from 800 (Fournier 1947) to 10 000 (Keller et al. 1934) seeds per plant. The seeds have no obvious dispersal mechanism. Floatation experiments in both fresh and salt water indicated that mature seeds sink rapidly and are unlikely to be dispersed by water. Dead stems, however, contain many air spaces. Seeds attached to dead stems that are broken late in the season can float in water for several days. Observations in Nova Scotia and elsewhere suggested that the wide dispersal of seeds is primarily mediated by human activity, either by attachment to machinery or by soil transportation."

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