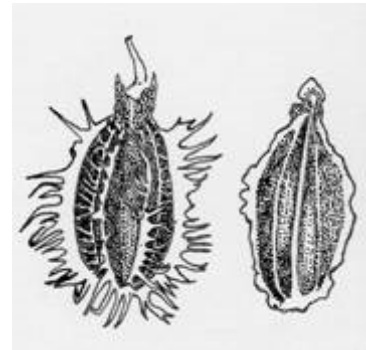




Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Canadian Food Inspection Agency



Our Vision:

To excel as a science-based regulator, trusted and respected by Canadians and the international community.

Our Mission:

Dedicated to safeguarding food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy.



Virtual Seed Identification Referee

Leanne Duncan

Seed Biologist

CFIA, Seed Science and Technology Section, Saskatoon, SK

Canada



Background

Canadian Accredited Seed Analysts and Laboratories

- Minimum List of Species for Seed Identification
 - Species in the *Weed Seeds Order*
 - Crops in the Grade Tables of Schedule I, *Seed Regulations*
 - Other Canadian Weeds

Objectives of the referee

- To conduct a training exercise for accredited labs and seed analysts
- To facilitate labs to identify training needs for maintenance of proficiency in seed identification
- To provide data for a revision of the minimum list





Referee methods

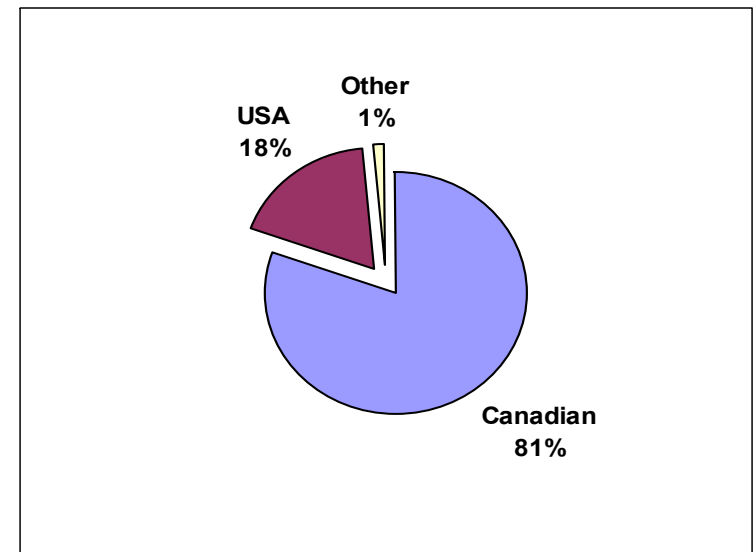
- Species selection:
 - The “minimum list”, part III, other weeds
 - 20 available photographs from various web sources
- Participation
 - Individual analysts, accredited or not
 - Requested that the participants do the identifications independently
 - Resources are allowed, e.g., websites, reference materials
- Results
 - identify to genus, species to best of their ability





Results: Participants

- 57 participants from Canada
- 13 participants from the United States
- 1 participant from Chile





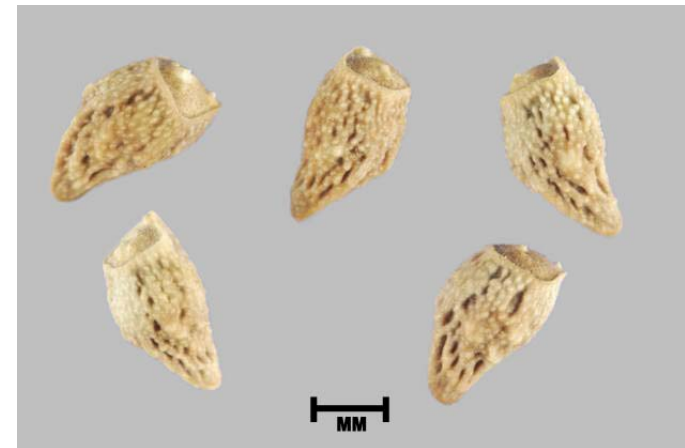
1. *Achnatherum hymenoides*



2. *Arctium lappa*



3. *Bouteloua gracilis*



4. *Buglossoides arvensis*



5. *Carthamus lanatus*



6. *Centaurea cyanus*



7. *Chenopodium quinoa*



8. *Crepis capillaris*

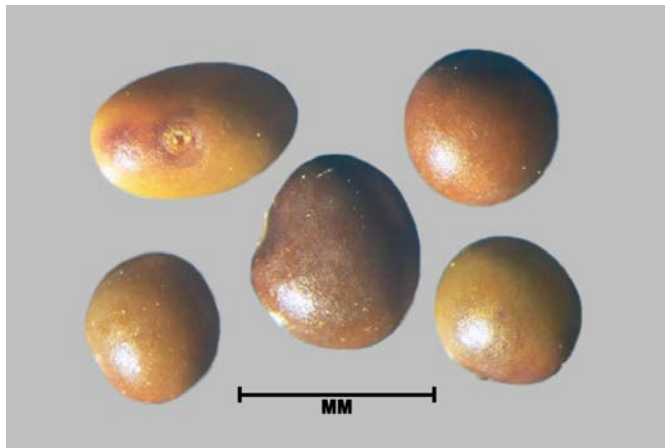




9. *Eleocharis* spp.



10. *Helianthus* spp.

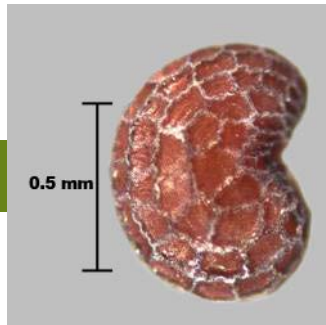


11. *Lotus uliginosus*



12. *Malva parviflora*





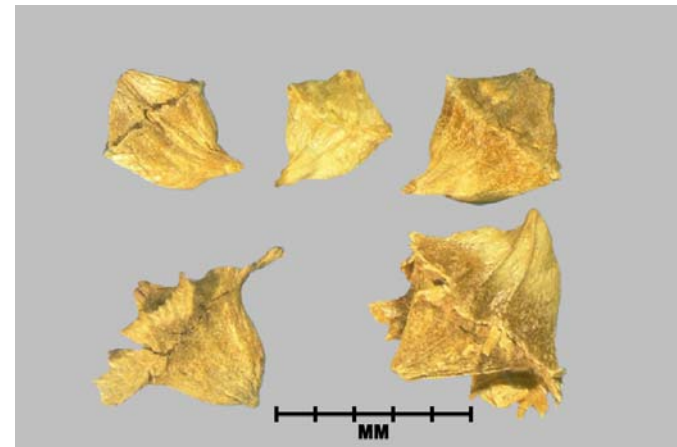
13. *Papaver rhoeas*



14. *Plantago aristata*

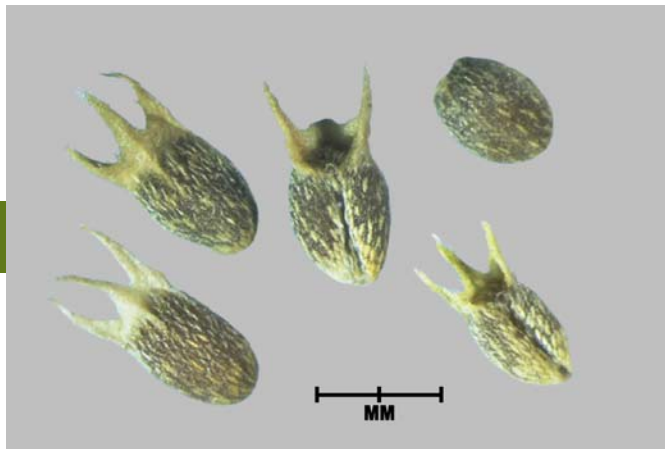


15. *Ranunculus repens*



16. *Sarcobatus vermiculatus*





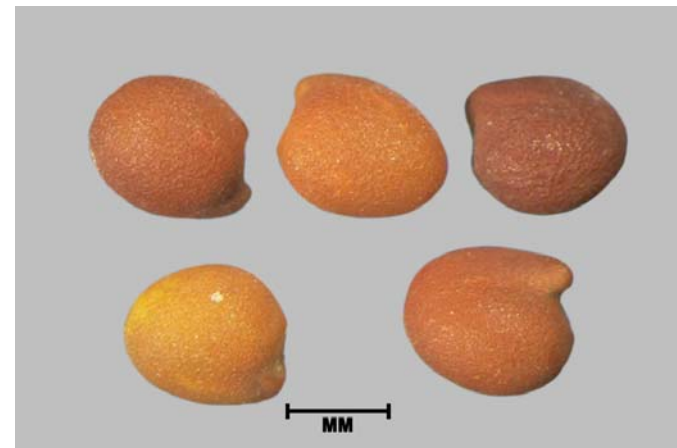
17. *Sherardia arvensis*



18. *Silybum marianum*



19. *Symphyotrichum* spp.



20. *Trifolium vesiculosum*

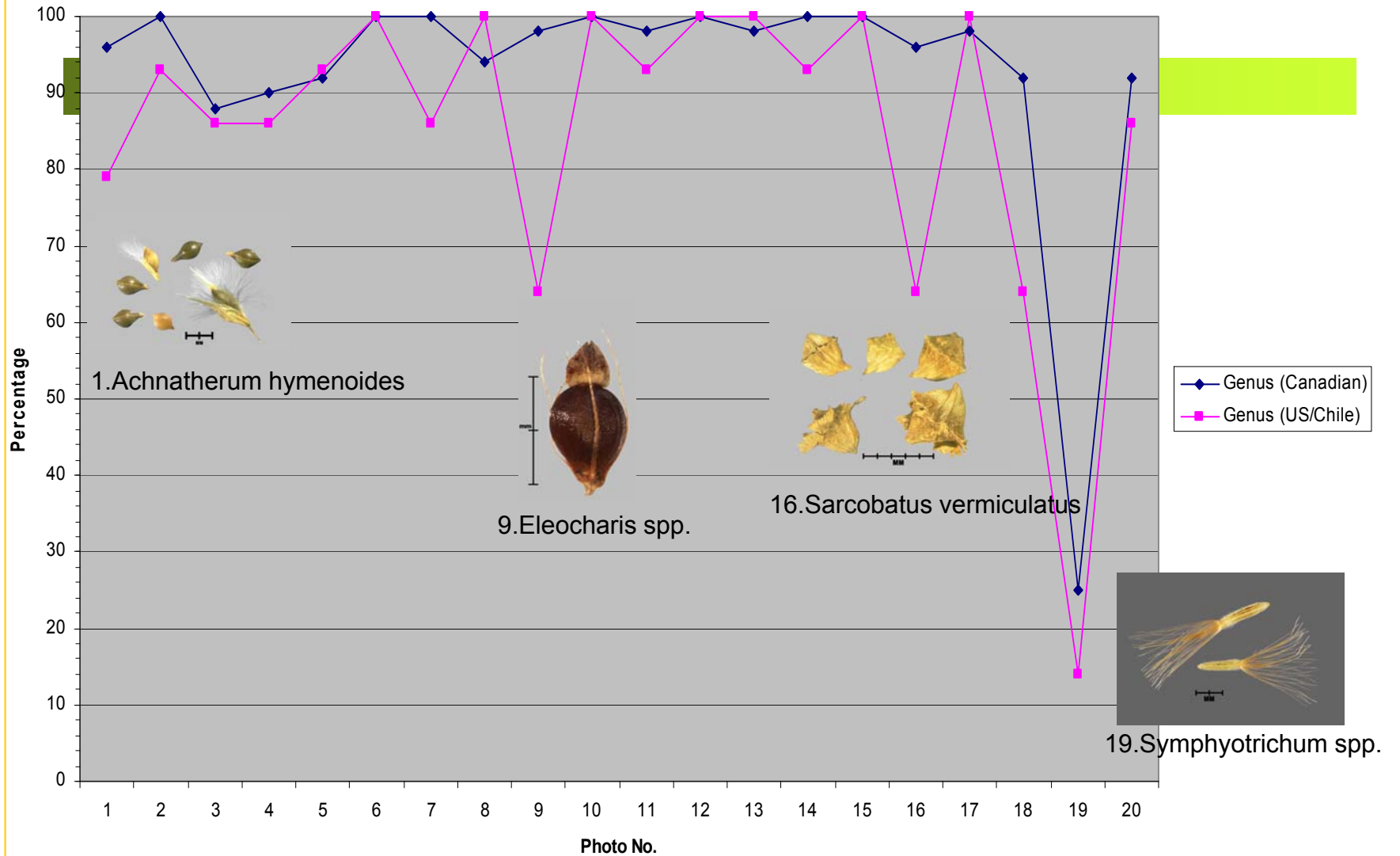


Genus or species level

- Participants were assessed to identify the following only to the Genus level as this is the requirement in our Minimum List .
- *Helianthus* spp.,
- *Eleocharis* spp. and
- *Symphyotrichum* spp



Identification to Genus by Location of Analyst



1. *Achnatherum hymenoides*

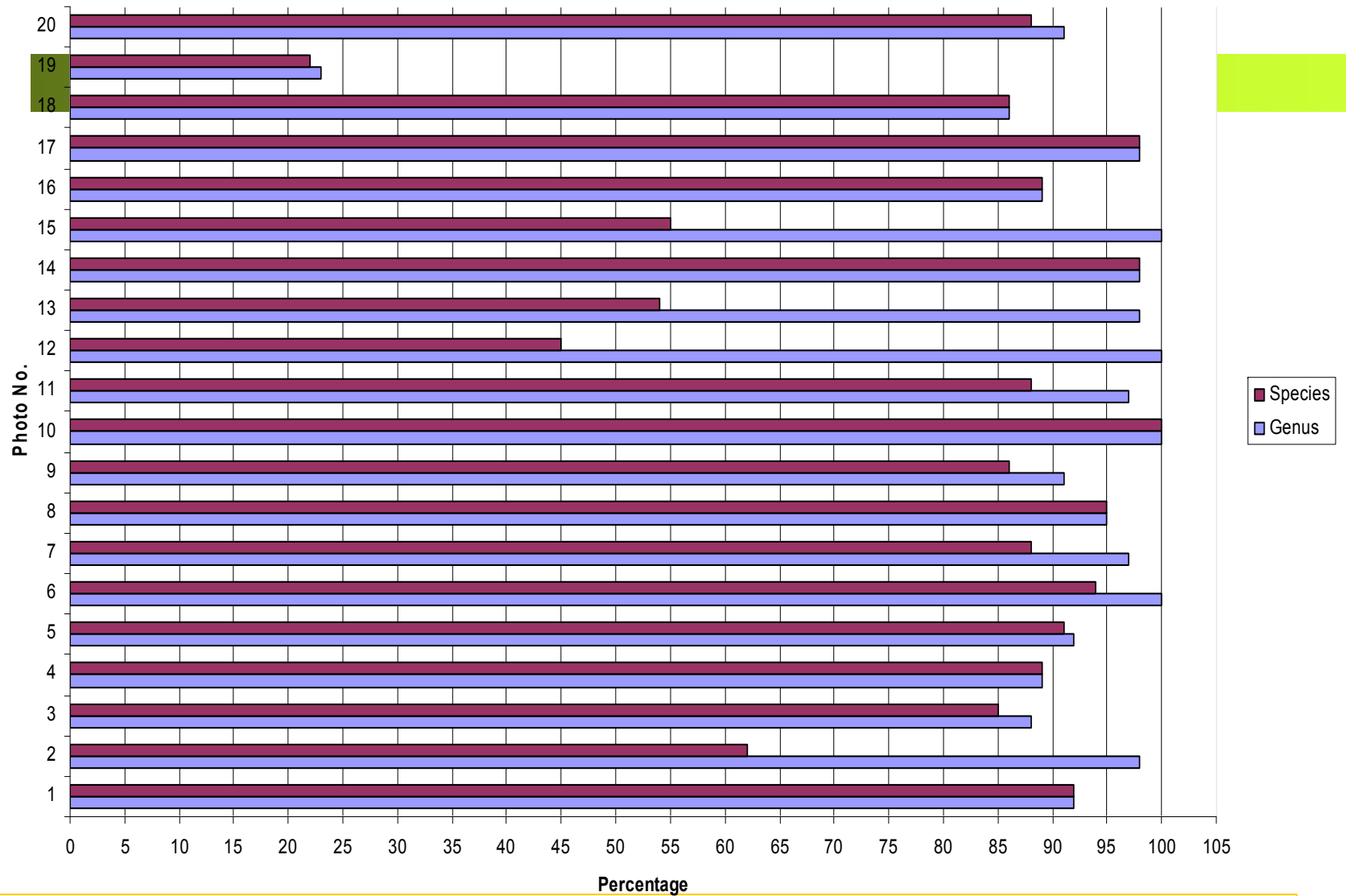
9. *Eleocharis* spp.

16. *Sarcobatus vermiculatus*

19. *Symphyotrichum* spp.

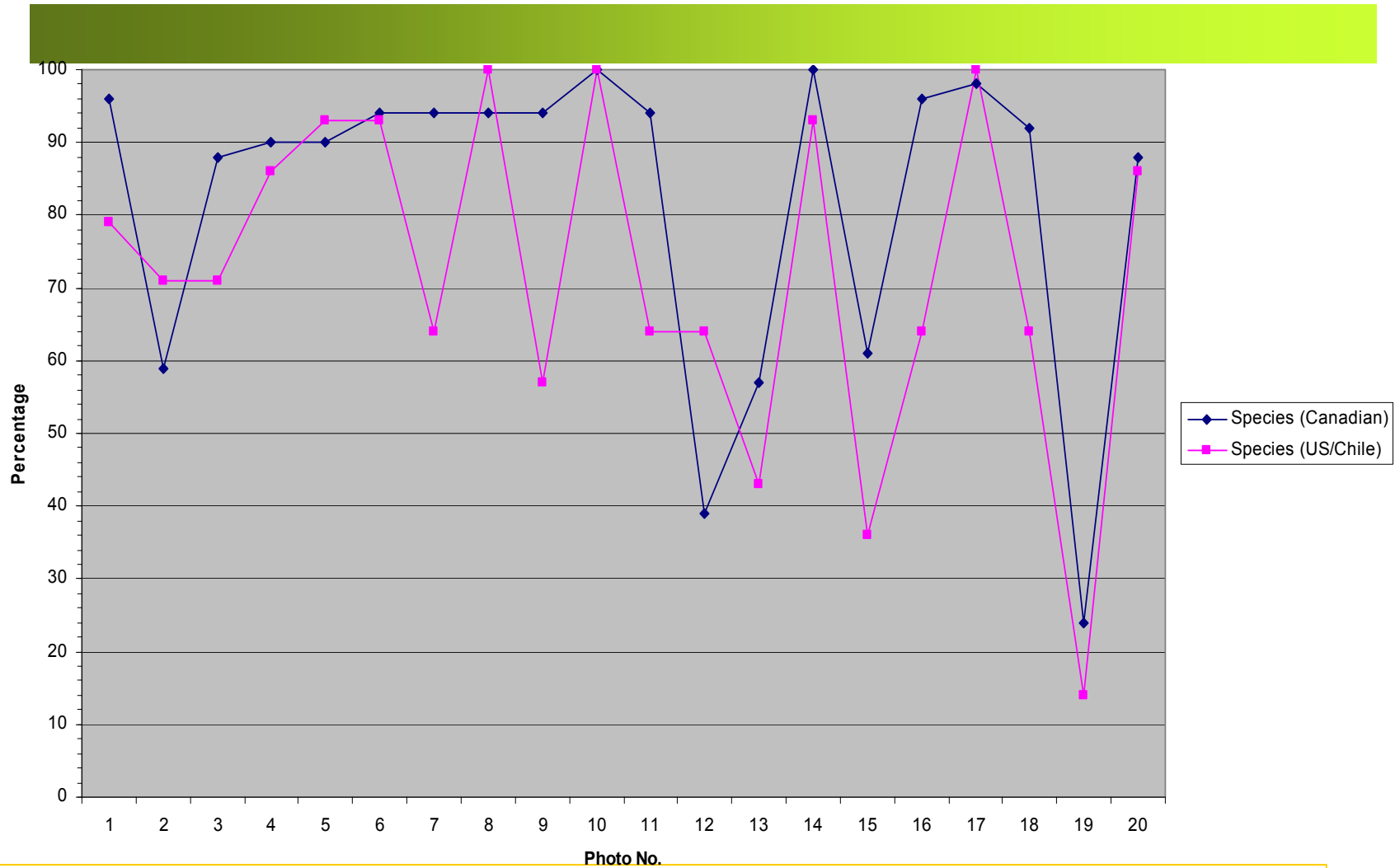


Identification Percentage of all Participants using Genus and Species





Identification to Species or spp. by analyst location





Similar Species

- *Arctium lappa* mistaken for *A. minus*
- *Bouteloua gracilis* mistaken for *Schizachyrium scoparium*, *Danthonia spicata*, *Bothriochloa ischaemum*
- *Crepis capillaris* mistaken for *Sonchus asper*, *S. oleraceus*
- *Centaurea cyanus* mistaken for *C. depressa*, *C. diffusa*, *C. stoebe*





Similar species con't...

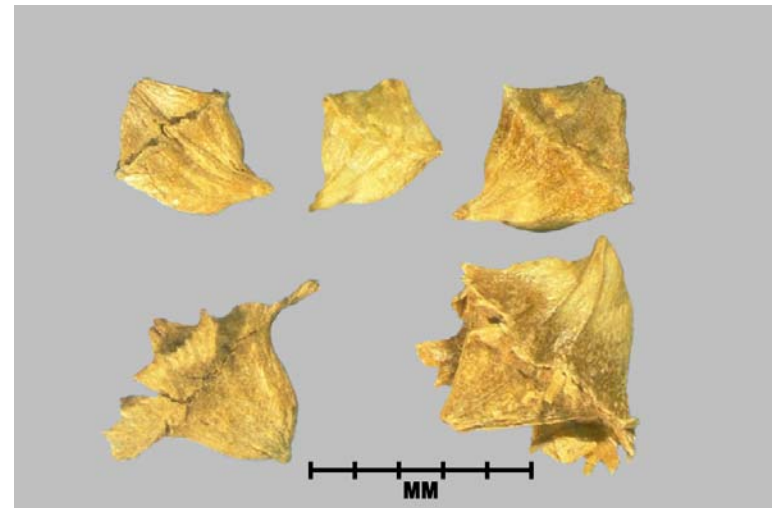
- *Lotus uliginosus* mistaken for *L. corniculatus*, *Trifolium pratense*, *Anthyllis vulneraria*
- *Malva parviflora* mistaken for *M. pusilla*
- *Papaver rhoeas* mistaken for *P. somniferum*
- *Ranunculus repens* mistaken for *R. acris*, *R. aristata*, *R. bulbosa*





Sarcobatus vermiculatus mistaken for...

- *Ambrosia artemisiifolia*
- *Ambrosia repens*
- *Atriplex argentea*
- *Salsola tragus*





Symphotrichum spp. mistaken for...

- *Veronia altissima*
- *Sonchus arvensis*
- *Solidago canadensis*
- *Senecio jacobaea*
- *Senecio vulgaris*
- *Chrysothamnus viscidiflorus*
- *Chrysothamnus nauseosus*
- *Helipterum humboldtianum*





Silybum marianum mistaken for...

- *Carduus acanthoides*
- *Cirsium flodmanii*
- *Cirsium vulgare*
- *Cynara cardunculus*





Additional Notes

- Several participant spelling errors
- Most common error (21% of participants) was the spelling of *Crepis capillaris*, not *C. capillaries*
- Other examples include:
Buglossoides arvensis, not *B. arvense*
Trifolium vesiculosum, not *Trifoleum*



Conclusions

- The seed identification proficiency to genus level for Canadian analysts was 90% or better on 18 of the 20 specimens.
- The seed identification proficiency to species level for Canadian analysts was 90% or better on 13 of the 20 specimens.
- Canadian analysts had difficulty identifying
e.g.: 3. Bouteloua gracilis, 19. Symphyotrichum spp.
- Review whether these species remain on the list or increase training for the identification of these species.





Thank you to all the participants.



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