

Mexican Mosquito Fern (*Azolla mexicana*)

Azollaceae (Azolla Family)

RANGE

- Found in western North America from British Columbia south to Texas, and in central United States
- In B.C., this species is known from 10 sites in the north Okanagan, Shuswap and north Thompson River Valley

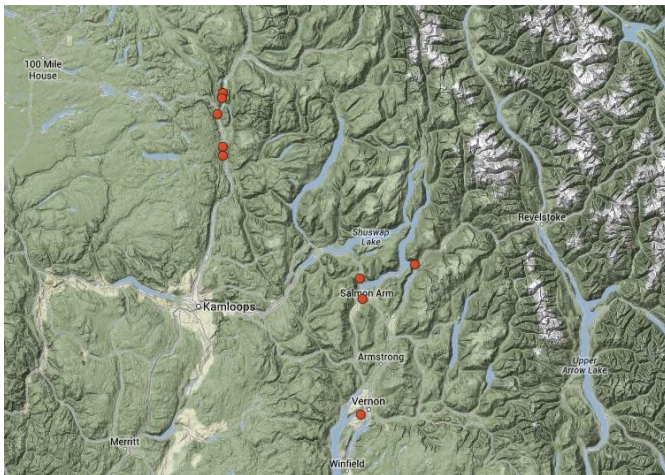


Figure 1 B.C. distribution of *Azolla mexicana* (adapted from BC CDC 2014)

HABITAT

- Wetland species of backwater channels, oxbows, wet ditches and stagnant ponds of the Interior Douglas-fir and Interior Cedar Hemlock Biogeoclimatic Zones
- Associates include reed canarygrass (*Phalaris arundinacea*), common duckweed (*Lemna minor*) and common cattail (*Typha latifolia*)



Figure 2 Wet ditch habitat near Salmon Arm, B.C.



Figure 3 Robust individuals occurring with duckweed

LIFE HISTORY

- Annual aquatic fern that usually dies and decomposes in the late fall through the winter
- Grows in a symbiotic relationship with a species of blue-green algae (*Anabaena azollae*)
- Proliferation occurs vegetatively through fragmentation throughout the growing season
- Late-season spore capsules produce male and female spores that sink to the water bottom and germinate
- Dispersal is through water movement and through vectoring by wildlife

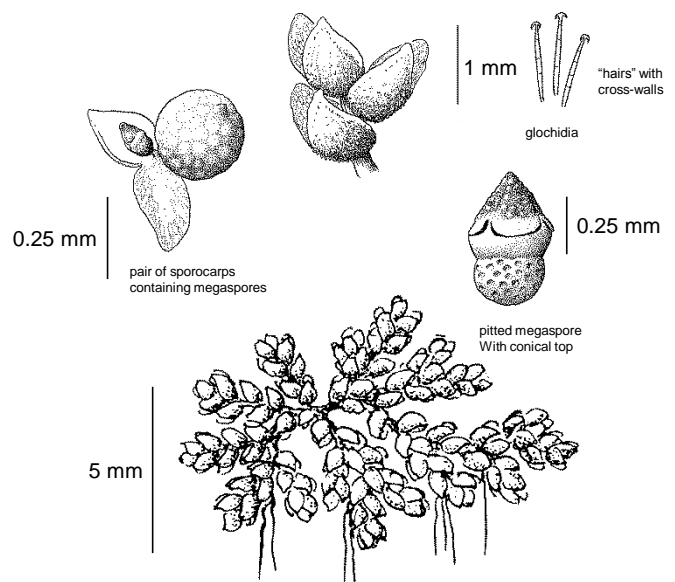


Figure 4 Illustration of *Azolla mexicana* by Jeanne R. Janish (Hitchcock et al. 1969)

Azolla mexicana (continued)

DESCRIPTION

General

- Small annual, heterosporous (producing male and female spores) aquatic fern, 1 to 2 cm wide
- Forms extensive red-coloured mats in various wetland habitats

Leaves

- Fronds usually 1 to 1.5 cm long, pinnately branched from a central axis, dichotomous (forking) only at the edges of the plant
- Leaves often densely overlapping like shingles, most with a thin white margin, upper side papillose

Sporocarps

- Microsporangia (male spore capsules) sack-like, containing numerous male spores, with hooked hairs about 5 to 10 times as long as they are wide, with 2 to 3 cross-walls (septae)
- Megaspore (female spore capsules) inconspicuous, the megaspores essentially free, with a conical top and round, pitted, hairy base



Figure 5 Thick carpet of *Azolla mexicana* with spore capsules

IDENTIFICATION TIPS

- Two *Azolla* species, in addition to *Azolla mexicana*, are known to occur in B.C.
- Carolina mosquito fern (*A. caroliniana*) is distinguished from the other two species by its smaller size (less than 1 cm in diameter), its dichotomously-branched growth form, and its leaves that are usually non-overlapping
- Large mosquito fern (*A. filiculoides*) has fewer, non-septate hooked hairs (glochidia) on the sporocarps, while the hooked hairs of *A. mexicana* sporocarps are longer, more abundant and 2 to 3 septate; other characteristics used to separate these two species have proven incorrect



Figure 6 Close-up of single plant with microsporangia visible

GENERAL THREATS AND GUIDANCE

- **Avoid development in areas with known occurrences of *Azolla mexicana* through project relocation or redesign**
- Protect wetland and wet meadow habitats from disturbance and development, including exclusion of livestock and ATVs through fencing and/or signage
- Follow provincial methods for when and how to conduct plant species at risk surveys
- Follow provincial policy and guidance on how to avoid, minimize, restore and offset impacts to plant species at risk and their habitats
- Report any sightings to the B.C. Conservation Data Centre (cdccdata@gov.bc.ca) and FLNR Ecosystems Section (josie.symonds@gov.bc.ca)

REFERENCES

- B.C. Conservation Data Centre. 2013. <http://a100.gov.bc.ca/pub/eswp/>
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