

Western, Oregon and Winged Floaters

Anodonta spp. (*kennerlyi*, *oregonensis* and *nuttalliana*)

Note: Taxonomy for *Anodonta* spp. is still under investigation. Chong et al. (2008) consider *A. californiensis* and *A. nuttalliana* to be a single clade, and *A. kennerlyi* and *A. oregonensis* as another single clade. Differentiation based on morphology is difficult.

RANGE

A. kennerlyi is known throughout B.C. to 56° N lat.
A. oregonensis is found throughout southern B.C.
A. nuttalliana is known in B.C. from the Lower Mainland to the east Kootenays and north to Lac la Hache.

HABITAT

Preferred habitats includes shallow silty, muddy or sandy substrates in slow rivers and lakes, although they have been observed in soft substrates between large cobbles/boulders.



Figure 1. Cobble/boulder substrate.



Figure 2. Silt habitat in an aquatic plant bed in Skaha Lake, B.C.



Figure 3. Silt habitat in Okanagan Lake, B.C.

GENERAL DESCRIPTION

Size: *A. kennerlyi* and *A. oregonensis* can be up to 12.5 cm long and *A. nuttalliana* up to 18 cm
Shell: Shell is thinner and more fragile than *Margaritifera falcata* or *Gonidea angulata*
Teeth: None

LIFE HISTORY

- *Anodonta* sp. are thought to be a fast-growing species with a short life expectancy (10-15 years).
- They reach sexual maturity in four to five years and are considered generalists in their reproductive requirements.
- Some have been found to be hermaphroditic, although this is not the norm.
- The glochidia are relatively large, with ventral hook-like projections on each valve that enables them to attach firmly to the fins or gills of host fish.
- Host fish are unknown in western North America.
- In eastern North America, *Anodonta* are thought to be not highly host-specific.

GENERAL GUIDANCE

- Avoid developments in areas with known occurrences of *Anodonta* spp. through project relocation or redesign.
- Use a qualified professional when undertaking work in potential mussel habitat areas.
- Protect known habitat areas from disturbance through education and development design features.
- To determine the presence of mussels and appropriate mitigation for proposed works, read *Guidance for Freshwater Mussel Detection and Relocation in the Okanagan* <http://www.env.gov.bc.ca/okanagan/esd/bmp.html>

Anodonta spp. (continued)

Note: It is difficult to distinguish the following two species (*A. kennerlyi*; *A. oregonensis*) in the field. Taxonomic work is still needed to determine if they are genetically distinct.

Western Floater – *A. kennerlyi*



Figure 4. *Anodonta kennerlyi* from Okanagan Lake, B.C.

A. kennerlyi is elliptical or elongate in shape (length to height ratio is near or >2). The beak (raised, rounded area) does not project or barely projects above the hinge line. It is laterally inflated (fat) primarily along the posterior ridge (the end farthest away from the beak) region. Shell is yellow to brown in colour and smooth and shiny. The nacre is white or blue-white with some pink toward the centre.

Oregon Floater – *A. oregonensis*



Figure 5. *Anodonta* sp. in Summit Lake, B.C.

A. oregonensis is elliptical in shape (length to height ratio is near or >2). The shell is light to dark brown and smooth and shiny. The nacre is white. The beak does not project above the hinge line and it is laterally inflated (fat) primarily along the median region.

Winged Floater – *A. nuttalliana*



Figure 6. Tagged *Anodonta nuttalliana* from Skaha Lake, B.C.



Figure 7. *Anodonta nuttalliana*.



Figure 8. *Anodonta nuttalliana* from Okanagan Lake, B.C.

A. nuttalliana is elliptical or ovate in shape. The top margin is raised to form a “wing” (length to height ratio is <1.5). The shell is olive, yellow, red-brown or black. Nacre is white or sometimes pink or blue.

REFERENCES

- B.C. Conservation Data Centre. 2014. Species Summary: *Margaritifera falcata*. B.C. Ministry of Environment. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed Feb 5, 2014).
- Chong, J.P. J.C. Brim Box, J.K. Howard, D. Wolf, T.L. Myers, and K.E. Mock. 2008. Three deeply divided lineages of the freshwater mussel genus *Anodonta* in western North America. *Conservation Genetics*, 9(5): 1572-1578.
- Freshwater Mussels of the Pacific Northwest. 2009. The Xerces Society for Invertebrate Conservation. http://www.xerces.org/wp-content/uploads/2009/06/pnw_mussel_guide_2nd_edition.pdf
- Gelling, Lea. 2009. Identifying Freshwater Mussels in B.C.. B.C. Conservation Data Centre.

ACKNOWLEDGEMENTS

Anodonta spp. Mussel Fact Sheet was developed by Lora Nield (FLNR), Lea Gelling (CDC), Jenny Heron and Greg Wilson (MOE), and Wendy Pope (FLNR) and is based on information from [Freshwater Mussels of the Pacific Northwest](#). Photos from UBCO, FLNR, and CDC.