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Yellow Floating-Heart

Nymphoides peltata (S.G. Gmel.) Kuntze
syn. *Limnanthemum peltatum, Nymphoides nymphaeoides*

ALBERTA REGULATION: FISHERIES ACT

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Overview:

Yellow floatingheart is a bottom-rooted, aquatic perennial plant with floating leaves.[1] It is a freshwater plant native to Eurasia.[4] It has been introduced around the world as an ornamental pond plant and was first recorded in the Eastern U.S. in 1882.[1] There are records of it being planted in Ottawa ponds in the 1960s.[4] Since then, it has spread into natural water bodies or has been accidentally introduced.[1]

Yellow floating-heart reproduces both by seed and vegetatively through rhizomes, stolons, or broken off leaves with a bit of stem attached.[1] It has two floral morphs - short-style (1-2 mm)[4] and long-style (to 10 mm)[4] - and seed production usually requires cross-pollination. It is capable of self-pollination, but produces far fewer seeds with reduced viability.[1]

Blooming begins early summer and peaks late summer and the individual flowers last only one day. Seeds are released about 32-60 days after flowering.[4] Older leaves decay over the season and are replaced by new growth. The entire pant sinks to the bottom at the end of the growing season and decays.[4] The plant overwinter as dormant rhizomes.[1]

The seeds of *N. peltata* bear hooked trichomes, which aid in dispersal. Seeds attach to each other to form long, chain-like floating rafts, as well they can attach to waterfowl or wildlife.[1]

N. peltata look similar to water lilies (*Nymphaea* spp.) but *Nymphoides* spp. have rounded leaf bases instead of angled, and produce much smaller flowers. Flowers are necessary to distinguish *N. peltata* from other native and non-native *Nymphoides*.[1] No reported hybrids have been found.[4]

As of January 1, 2016, the possession, sale, or transport of this species in Alberta is illegal under the Fisheries Act.

Impacts:

Dense mats of *N. peltata* block sunlight from reaching native plants and algae, and can impede flow in very slow-moving waters, causing stagnant waters, which reduce oxygen concentrations. Mosquitos breed in stagnant water. Mats block the water surface from contacting air and prevents gas exchange.[3]

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A reduction in native aquatic plants from yellow floating-heart infestations negatively impacts aquatic communities, including fish habitat. Dense mats interfere with recreational activities and creates hazardous entanglement; this negatively impacts the aesthetic and commercial value of recreational areas and shoreline properties.[1]

Habitat:

N. peltata prefers slow-moving rivers, lakes and ponds, but it can also grow in damp mud, backwaters and ditches. It occurs most often in eutrophic, alkaline waters less than 3 m deep. It does best in high light and oxygen content, and mineral bottoms of clay.[1]

It requires calcium to produce floating leaves and its Northern limit is approximately the July 16°C isotherm.[1]

Identification:

Stems are long, branching stolons, up to 2 m, that lie just below the water surface.[3] Each node on the stolon produces a multi-leaved plantlet with thread-like roots.[2]

Leaves are circular to heart-shaped, 3-15 cm in diameter, with slightly wavy or scalloped margins. Leaves are green to yellow-green and the undersides are often purple.[3] The floating leaves are borne on long stalks attached to underwater rhizomes. Leaves are alternate at the base and opposite at the apex.[1]

Flowers are bright yellow, 3-4 cm in diameter, and have 5 distinctly fringed petals.[1] Flowers are borne from each node on long stalks above the water; a single flower arises per stalk.[2] Yellow floating-heart flowers from May to October, depending on water temperature.[3]

The fruit is a beaked capsule (2.5 cm), containing many flat, smooth, shiny seeds with margins of stiff hairs[3] that aid in floatation and attachment.[1] Seeds are 3.8-5.1 mm long, 2.7-3.0 mm wide and about 0.4 mm thick.

Prevention:

Yellow floating-heart is spread primarily by human activities - ornamental use or via recreational water equipment. Additionally, water currents can spread seeds and broken plant segments. Waterfowl or wildlife may also transport seeds, which bear trichomes that can attach to fur or feathers.[1] Learn to recognize *N. peltata* and do not purchase or grow it. Never empty any contents of an aquarium into natural water bodies. Bag and dispose of unwanted aquatic plants in landfill-bound garbage. Early detection provides the best chance of control.

Boat engine propellers can facilitate spread within a water body by fragmenting stems, or to another water body when plant matter sticks to boats and trailers. All aquatic equipment should be cleaned, drained, and dried after each use.[1]

Upon leaving a water body check all equipment, clothing, and pets for plant material and leave it at the site. Any material discovered after leaving the site should be disposed of in garbage.

Control:

Mechanical - In New Zealand, hand removal of small infestations is possible.[2] Since *N. peltata* can produce new plants from broken stems/stolons, rhizomes, or separated leaves, it would be necessary to remove all plant fragments in order to be an effective control. All plant material should be bagged and disposed of in landfill bound garbage.

Chemical – Currently, there are no products registered for the control of *N. peltata* in Canada. Pesticide use in water bodies requires special certification and permits. Always check product labels to ensure the herbicide is registered for use on the target plant in Canada by the Pesticide Management Regulatory Agency.

Biological – None researched to date.

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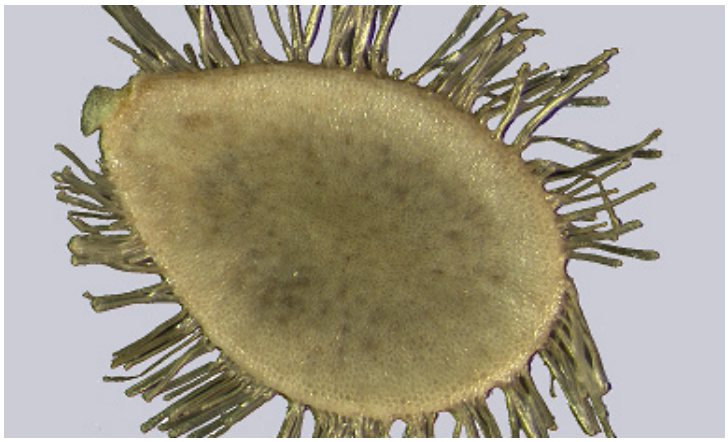

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