



free-floating. Pinkish flowers are whorled around the round stem as a spike. Male flowers have four petals and four sepals which are entire; both male and female flowers are on the same plant. Flowers are emergent and upright. Fruits are 4 ribbed or grooved and ultimately break apart into four, one-seeded nutlets. Seeds are viable; seed longevity is unknown. Stems and leaves senesce in fall. It forms very dense mats on the upper portions of water. Roots, delicate stems, leaves and leaflets easily fragment; the smallest of fragments easily disperse, root at the nodes, and colonize new sites. Autofragmentation occurs after each flowering period, which occurs twice: mid-June and mid-July. Vegetative reproduction is the main means of spread.

Eurasian watermilfoil, *Myriophyllum spicatum* L., is a perennial highly invasive aquatic species. Its stems are about 4 mm long, entirely submerged, and range in color from pinkish white, green to brown. Stems can be as long as 9 feet. Leaves are whorled around a round stem, usually four total, but can have three to five leaves per whorl. Leaves are opposite; when dissected in a cross-section they are at right angles. Leaves are pinnately compound, divided into linear leaf segments or leaflets. Leaflets are usually paired but can range from alternate to opposite; there are usually 12 or more leaflet pairs per leaf. The leaf margins are smooth; under high magnifications leaf margins may be finely toothed. Turions are absent. The overall leaf architecture gives it a feather-like appearance. Long slender roots are able to grow at leaf nodes. The plant roots on soil at the bottom of water bodies, and can survive

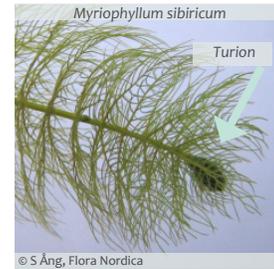
Native to Northern Europe and Asia, it is cold-water adapted and overwinters in Colorado. It also has the advantage of green-up and growth in the spring earlier than native aquatic species, allowing it to outcompete natives for sun and space. It colonizes a wide spectrum of aquatic conditions: depths 1-30 ft., pH 5.4 to 11, alkaline water, disturbed water, nutrient rich, abundant recreation activities, fresh and brackish water, slow and fast currents, lentic and lotic systems. It looks similar to and can hybridize with its native sister species, *Myriophyllum sibiricum*, which is wide spread throughout Colorado, from 4870 to 11,590 feet in elevation. Hybrids have intermediate number of leaflets. *M. spicatum* can also

be confused with another native aquatic, *M. verticillatum*.

Eurasian watermilfoil is designated as a “List B” species in the Colorado Noxious Weed Act. It is required to be eradicated; some populations may be contained or suppressed depending on state regulations. For state regulations described for each county, refer to the most recent Rule, or visit www.colorado.gov/ag/coweedcontacts for details.



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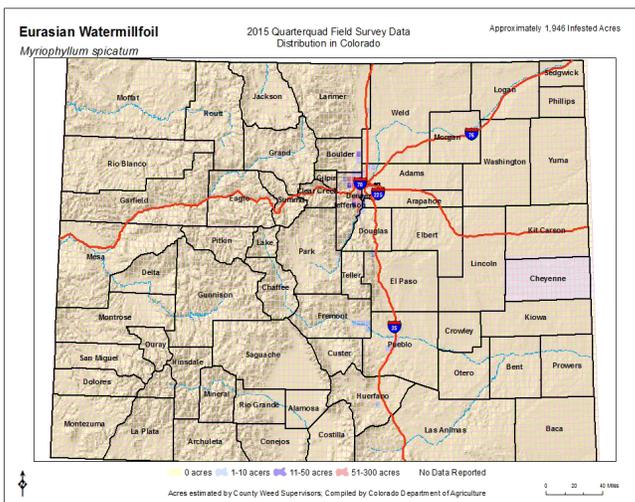


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Eurasian Watermilfoil

Myriophyllum spicatum L.

2015 Quarter Quad Survey



Key ID Points

- 12 or more leaflet pairs are present.
- Turions are absent.
- Male flower bracts are entire.
- Delicate stems, leaves and leaflets.

Integrated Weed Management Recommendations

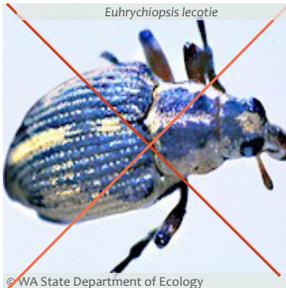
Effective integrated management means using a variety of eradication methods along with restoration, prevention of dispersal, and monitoring. Maintain healthy native waters. Prevent vegetative fragmentation and dispersal, such as on boats, swimming attire, equipment, etc. Infested water bodies can become very dangerous to humans, clog water infrastructure and equipment. Use methods appropriate for the site and with a full understanding of the species' biology.



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CULTURAL CONTROL METHODS

Cultural methods, such as seeding, revegetation, fertilization, and irrigation are not applicable to aquatic environments such as lakes, rivers and streams. There are no known cultural control methods that would be effective against Eurasian watermilfoil, especially since this species hybridizes with native watermilfoil species.



Euhrychiopsis lecotie

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BIOLOGICAL CONTROL METHODS

There are known biological control agents for Eurasian watermilfoil that were considered elsewhere in the USA, but issues preclude their use. For instance, grass carp, *Ctenopharyngodon idella*, is not host specific and feeds on native watermilfoils. The fungus, *Mycoleptodiscus terrestris*, is difficult to obtain. A weevil, *Euhrychiopsis lecotie*, is a native species that is not host specific and feeds on native watermilfoils. There are no known host specific biological control agents available or authorized in Colorado. For more information about biological control agents, visit the Colorado Department of Agriculture's Palisade Insectary website at at www.colorado.gov/ag/biocontrol.



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MECHANICAL CONTROL METHODS

Use of mechanical methods such as cutting, rotoation, hand pulling, raking, harvesting come with a high risk of spreading infestations since Eurasian watermilfoil fragments and roots easily. Such methods should be used only in closed systems, such as ponds, with no outlet, or in limited situations. If this method is used, all plant fragments need to be removed and dried. Equipment needs to be thoroughly cleaned and dried before its used in another water body. Physical water level manipulation that allow roots to freeze or plants to dry out for several weeks can be effective. Burn, compost or bag and throw away plants.

CHEMICAL

NOTE: The following are recommendations for herbicides that can be applied to aquatic systems. Rates are approximate and based on equipment with an output of 30 gal/acre. Follow the label for exact rates. Always read, understand, and follow the label directions. The herbicide label is the LAW!

| HERBICIDE | RATE | APPLICATION TIMING |
|---|--|---|
| 2-4-D (Aqua-Kleen, Navigate, DMA 4 IVM; Use only aquatic approved products) | Determined by herbicide concentration within the water column. | Actively growing plants or manufacturers specified recommendations. |
| Fluridone (Sonar or Avast) | Determined by herbicide concentration within the water column. | Actively growing plants or manufacturers specified recommendations. |
| Imazamox (Clearcast) | Determined by herbicide concentration within the water column. | Actively growing plants or manufacturers specified recommendations. |
| Triclopyr (Renovate 3) | Determined by herbicide concentration within the water column. | Actively growing plants or manufacturers specified recommendations. |

Eurasian Watermilfoil

Myriophyllum spicatum L.



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