WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD
(December 1999)

Scientific Name: *Ludwigia hexapetala* (Hook. & Arn.) Zardini, Gu & Raven
Ludwigia uruguayensis (Camb.) Hook
SY = *Jussiaea grandiflora* Michx., *non* Ruiz & Pavon
SY = *Jussiaea michauxiana* Fern. (excl. type)
SY = *Jussiaea repens* L. var. *grandiflora* M. Micheli
SY = *Jussiaea uruguayensis* Camb.
SY = *Ludwigia grandiflora* (M. Micheli) Zardini, Gu & Raven
SY = *Ludwigia hexapetala* (Hook. & Arn.) Zardini, Gu & Raven
SY = ?*Ludwigia uruguayensis* var. *major* (Hassler) Munz

Common Name: water primrose

Family: Onagraceae

Legal Status: Class B, designated for control everywhere except in the Longview/Kelso Diking District of Cowlitz County (T8N R3W S14 of Cowlitz Co).

Description and Variation:
Water primrose is an aquatic perennial herb. The stems are glabrous to sparsely pubescent, and they sprawl, or grow horizontally on water or mud. The leaves are alternate. Early growth consists of rosette-like clusters of rounded (suborbicular to spatulate) leaves on the water surface. At flowering the leaves lengthen to a willow-like shape (lanceolate or elliptic). The stems also lengthen at flowering, and grow upright. Flowering stems can rise to 3 feet above the water surface.

The flowers are bright yellow, growing from the leaf axils, on 2-3 cm peduncles (stalks). The sepals are persistent, 8-19 mm long, and the yellow petals are 15-30 mm long. The fruit is a cylindrical capsule. The roots are feathery at the nodes, and they dangle into the water. White, spongy aerenchymous roots are also found at the nodes.

Water primrose (*L. hexapetala*) can be confused with other introduced non-native water primrose species. However, our native primrose is *L. palustris* – and it is distinctively different from the introduced species, especially when flowering. The native *L. palustris* has tiny flowers found in the leaf axils, and there are no petals. The native plant grows upright, it does not sprawl.

NOTE: There is some taxonomic confusion in the *L. uruguayansis* complex. There is a group of 8

aquatic species in the section *Oligospermum,* which are widespread and phenotypically plastic. There is a lack of a genetic barrier between species, and their characteristics are extremely variable. A difficult group to identify, taxonomically. "One of the most widespread and variable entities in this section is the species known until now as *Ludwigia uruguayensis*." (Zardini et al. 1991). This whole complex is weedy, and non-native.

Our native *Ludwigia* does not fall into this complex. (Personal conversation with J. Parsons).

There are 28 species in the genus *Ludwigia*. Most are tropical herbs. Chromosomal studies found that this *L. uruguayensis* complex has two ploidy levels, hexaploid (*L. grandiflora*) and decaploid *(L. hexapetala*). "The formal taxonomy requires the application of two new names for the plants that hitherto have been known collectively as *Ludwigia uruguayensis."* (Zardini et al. 1991). Hybrids have been found in Southern Brazil between *L. grandiflora* and *L. hexapetala*. Where there is an overlap in the range of these two species, other hybrids with a range of morphology can be expected. (Zardini et al. 1991).

For positive identification, contact Jenifer Parsons (360-407-6679; jenp461@ecy.wa.gov).

Economic Importance:
Detrimental: Water primrose is an aggressive and invasive aquatic species, forming extensive mats that impair water flow and shoreline activity. This species has the potential to dominate the shoreline vegetation if introduced to lakes, river, ponds, ditches or streams. This species is very difficult to control once established.

Beneficial: This plant is pretty, and showy, and it is sold as an ornamental species. Lake residents were strongly discouraged from planting water primrose in lakes, private ponds with an outlet or in a flood zone, or in natural water bodies.

Habitat: Water primrose is an aquatic herb, found growing and rooted in areas of shallow water to about 1 m deep. It can withstand slowly flowing water. It favors the margins of lakes, ponds, ditches and streams.

Geographic Distribution: *L. hexapetala* is native to southern South America, where it is widely distributed. It is also native, and widespread, to the southeastern U.S. Populations are also scattered, and probably introduced in other areas of the U.S. It is locally common in California (Zardini et al. 1991). Water primrose is considered a nuisance in its native southeastern US range, and there is research underway for biological controls of *L. grandiflora* (McGregor et al. 1996).

History: In Washington, a field infestation is known from the Longview/Kelso Diking District in Cowlitz County, growing in the ditches. It has been in the area for about 25 years. There is a

herbarium specimen dated 1956, from the "Longview Toll Bridge".

Water primrose dominates the ditch margins in this area, leaving only a small amount of open water in the middle (dominance rating of 5, on a scale of 1-5 with 5 being high). Associated species in this area include the noxious weeds *Myriophyllum aquaticum* (parrotfeather), *M. spicatum* (Eurasian watermilfoil), *Egeria dense* (Brazilian elodea), and *Cabomba caroliniana* (fanwort). This species does not seem to be spreading naturally to other areas, or sloughs.

Water primrose was placed on the 1997 Monitor List to gather information on distribution and plant biology. Water primrose is known and sold as an ornamental pond plant. In King County, this plant was found growing in an outdoor nursery pond. A single cutting in 1997 resulted in this plant taking over that pond. The King County Weed Board requested that this plant be placed on the 2000 state noxious weed list. San Juan County reported finding this species for sale in 1999. The nursery owner agreed to not sell it since it was being proposed for the 2000 state noxious weed list.

Growth and Development: Water primrose is an perennial aquatic herb that grows roots in areas of shallow water to about 1 m deep. It grows in dense mats along shorelines and out into the water. It favors the margins of lakes, ponds, ditches and streams. It blooms throughout the summer. It can withstand slowly flowing water.

Reproduction: Water primrose spreads by seeds and by plant fragments. It is easily dispersed by shipping, waterfowl, and human activity.

Response to Herbicide: Rodeo may be effective (DOE Bulletin).

Response to Cultural Methods:

Response to Mechanical Methods: Cutting or covering with opaque materials may be effective (DOE Bulletin).

Biocontrol Potentials: Grass carp would not find water primrose palatable (DOE Bulletin).

References:

References available from the Washington State Noxious Weed Control Board Office in Kent.

*Hitchcock, C.L. and A. Cronquist, M. Ownbey and J.W. Thompson. 1961. Vascular Plants of the Pacific Northwest. University of Washington Press. Seattle and London. Part 3, page 494, *Jussiaea uruguayensis*.

*Department of Ecology (DOE) Informational Bulletin. Invasive Nonnative Freshwater Plants – Water primrose (*Ludwigia hexapetala*). Washington DOE Website information: http://www.wa.gov/ecology/wq/plants/weeds

*McGregor, M. A., D.R. Bayne, J.G. Steeger, E.C. Webber and E. Reutebuch. 1996. The Potential for Biological Control of Water Primrose (*Ludwigia grandiflora*) by the Water Primrose

Flea Beetle (*Lyathia ludoviciana*) in the Southeastern United States. J. Aquat. Plant Manage. 34:74-76.
*Monitor List Records Form. 1998. J. Parsons, Sponsor. Available from the WSNWCB office in Kent, WA.
*Zardini, E.M., H. Gu and P.H. Raven. 1991. On the Separation of Two Species within the *Ludwigia uruguayensis* Complex (Onagraceae). Systematic Botany. 16(2):242-244.

Rationale for Listing:
Ludwigia hexapetala is well established in the Longview/Kelson diking ditches of Cowlitz County. This species forms extensive vegetative mats, it impairs water flow and hampers shoreline activity. It is very difficult to control once established. This species has the potential to dominate the shoreline vegetation if introduced to lakes, rivers, ponds, ditches or streams. In the Longview/Kelso diking district, this plant has a dominance rating of 5 (on a scale of 1 to 5, with 5 being highest). *Ludwigia hexapetala* is dominant in the presence of the following noxious weeds: *Cabomba caroliniana* (fanwort), *Egeria densa* (Brazilian elodea), *Myriophyllum aquaticum* (parrotfeather) and *M. spicatum* (Eurasian watermilfoil).

As a Class B noxious weed, control of *Ludwigia hexapetala* will be required by law, in all areas of the state except the Longview/Kelso area of Cowlitz Co, where it is already established. In this area of Washington, containment, control and eventual eradication are the goal.