

# ***LUDWIGIA IN THE LOWER WILLAMETTE***

## *IDENTIFICATION, IMPACT AND CONTROL*



Laguna de Santa Rosa Fnd

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# Delta Ponds - 2008 Ludwigia Population



 Extent of 2008 population



Aerial photography March 2008

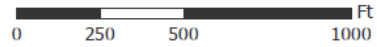
Map created by Lauri Holts, City of Eugene, 08/23/11



# Delta Ponds - 2009 Ludwigia Population



Extent of 2009 population




Aerial photography 2009

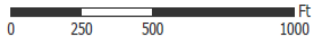
Map created by Lauri Holts, City of Eugene, 08/23/11



# Delta Ponds - 2011 Ludwigia Population



 Extent of 2011 population



Aerial photography 2011



# TARGET SPECIES

“B” Designated noxious weeds in Oregon

**L. peploides ssp.**

**L. hexapetala**

**L. grandiflora**



*L. peploides*



*L. hexapetala*

@ Bob Case



*L. grandiflora*

©JK Marlow



*L. peploides*



*L. peploides*



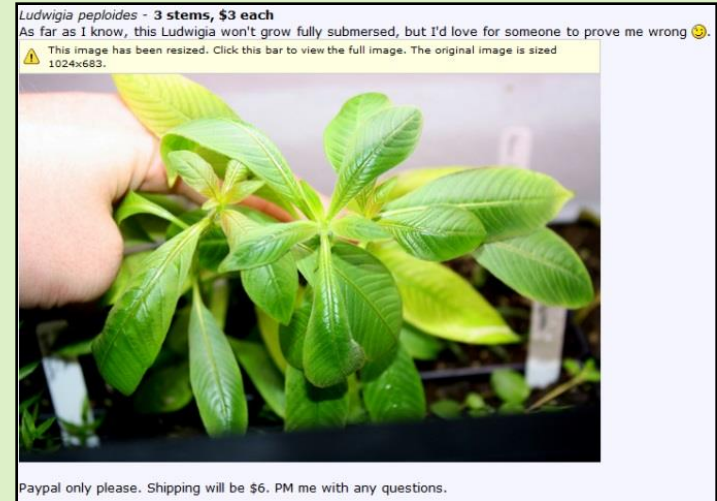
# TARGET SPECIES

Native to South America

Spread to U.S. via ornamental trade

Local spread

Sexual and asexual reproduction



# IMPACTS

## Exponential Growth

- Double biomass in 14 to 20 days
- Increase  $50 \text{ g DM m}^{-2} \text{ d}^{-1}$
- PNW: *L. peploides*  $500 - 700 \text{ g DM m}^{-2}$

## Allelopathic

- Reduces germination
- Anti-algal and anti-bacterial compounds

## Effects

- Clog waterways: streams, rivers, wetlands, ponds, irrigation systems
- Greatly reduces native diversity
- Hypoxia
- Facilitates secondary invasion



# L. HEXAPETALA

**Common Name:** Water-Primrose

## **Identifiable Characteristics**

- **Height:** 0.3 m to 2 m in height
- **Texture:** ±Hairy stems, bracts and capsules
- **Leaf:** Lanceolate leaves, up to 15 cm in length
  - Mucronate tip
- **Flower:** Petals are 18 – 29 mm long
- **Reproduction:** Predominantly asexual
- **Decaploid ( $2n = 80$ )**





# L. GRANDIFLORA

**Common Name:** Large-Flower Primrose Willow

## **Identifiable Characteristics**

- **Height:** 1.4 to 3.1 m in height.
- **Texture:** Generally hairless stem and fruit
- **Leaf:** Elliptic to oblanceolate, up to 13 cm in length
  - Hairy mid-rib
- **Flower:** Petals are 15 - 18 mm long
- **Reproduction:** Dominantly asexual
- **Hexaploid ( $2n = 48$ )**



# DISTRIBUTION

## *Hexapetala*

- Delta Ponds Park: Eugene, OR - 43 acres

- Golden Gardens: Eugene, OR

**Eradication underway since 2013**

- Mainstem of Willamette: Corvallis, OR > 39 acres

**Grants for mapping and management plan in works**

- Willamette Mission Lake State Park: Salem, OR

- Willamette River: West Linn, OR

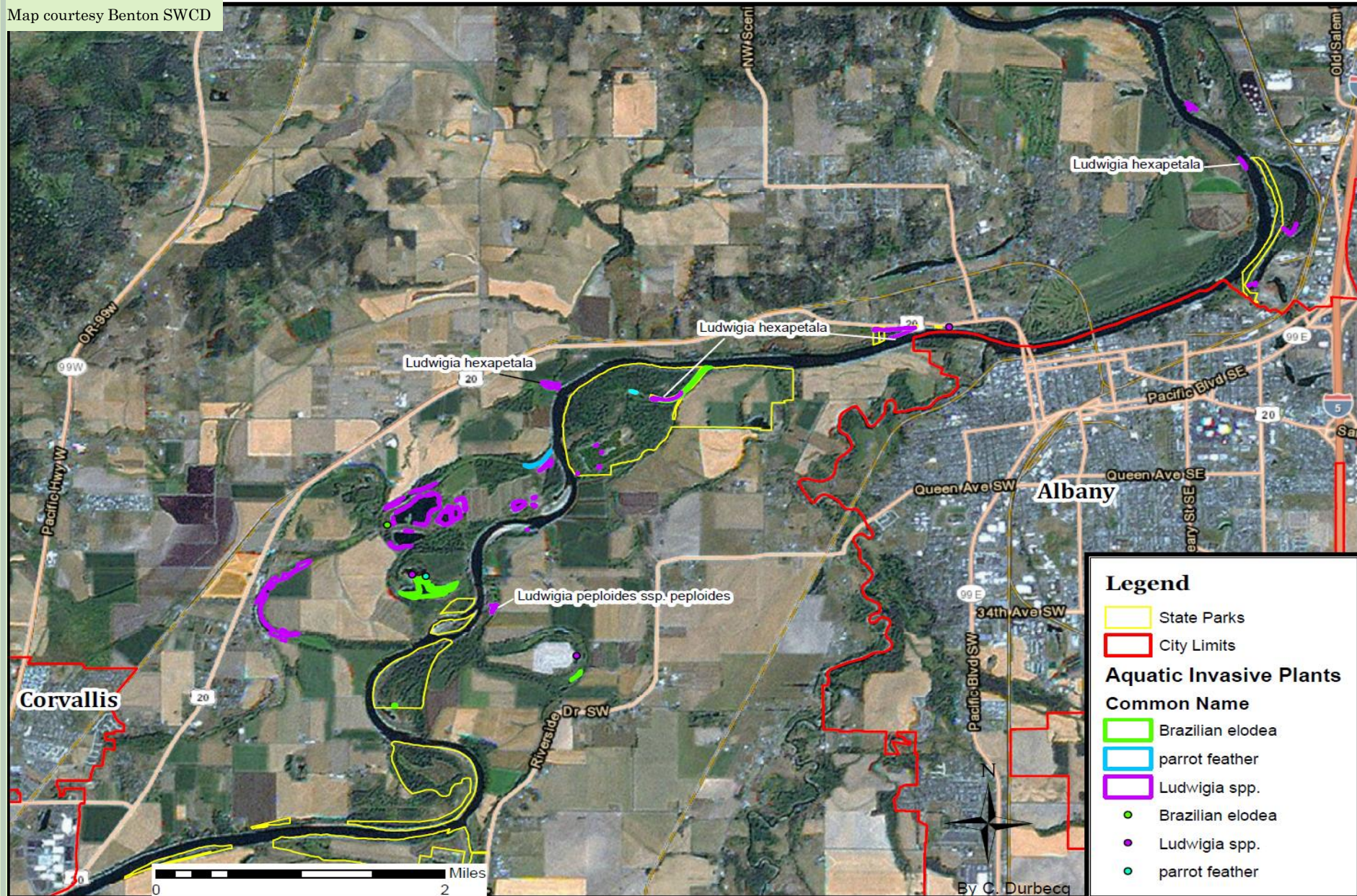
- Kelso/Longview Drainage District: Cowlitz County, WA

**Established for at least 30 years**



# EXTENT OF *LUDWIGIA* MAINSTEM WILLAMETTE

Map courtesy Benton SWCD



# L. PEPLOIDES SSP.

**Common Name:** Floating Primrose-Willow

## Identifiable Characteristics

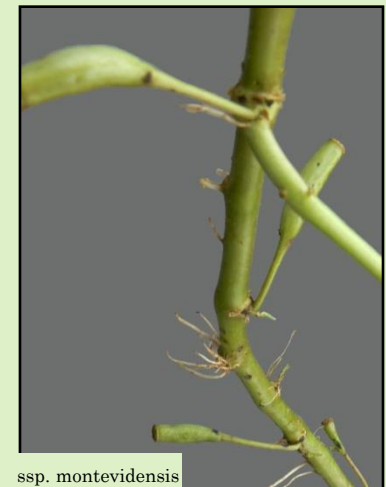
- **Reproduction:** Both sexual and asexual
- **Diploid ( $2n = 16$ )**

### **ssp. peploides**

- **Height:** 0.6 to 1.4 m (up to 2.3 m)
- **Texture:** Hairless
- **Leaf:** NOT mucronate
- **Fruit:** 10 to 17 mm long

### **ssp. montevidensis**

- **Height:** 0.9 to 2.3 m (up to 3.2 m)
- **Texture:** Hairy sepals and stems
- **Leaf:** Tip mucronate
- **Fruit:** 24 to 32 mm long



# DISTRIBUTION IN OREGON

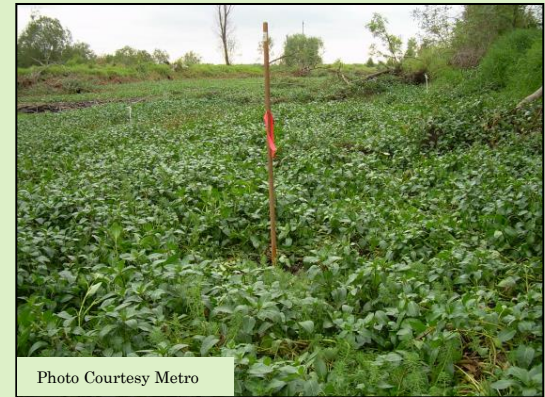
## *ssp. peploides*

- Willamette River: Corvallis, OR
- River off channel: King County, WA

## *ssp. montevidensis*

Only located in Portland

- Smith & Bybee Lakes: N Portland - 10 acres
- Multnomah County Drainage District: Peninsula 2
- Blue Heron Wetlands: NE Portland - 2 acres



# TREATMENT

## ○ Manual removal on bank areas during spring/early summer

- Careful regarding fragmentation
- Stored on dry ground far from water
- Cover and tarp piles if possible
- Use booms to prevent transport



## ○ Herbicide

- 3% glyphosate with 0.5 - 1 % surfactant
- Recommended in late spring/early summer
- Late summer/early fall have yielded positive results
  - Time with flowering
- Triclopyr results in “burn off” with limited success






# L. peploides Range & Density within Blue Heron Wetlands Pre and Post Chemical Application

September 3rd, 2012

August 5th, 2013



Ludwigia Coverage (Acreage)		
Percent Cover	2012	2013
 Sparse (< 5%)	0.508	1.577
 Light (5% - 50%)	0.820	0.322
 Heavy (> 50%)	1.031	0.401

0 100 200 Feet

# TREATMENT



June 1, 2012



August 5, 2013



**Oregon** Invasive Species  
Online Hotline

<http://oregoninvasiveshotline.org/>





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# REFERENCES

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