

Water-Primrose

(*Ludwigia* (all species))



Family name: Onagraceae (Evening Primrose family)

Common name/s: Water-Primrose, Primrose-Willow, Creeping Water-Primrose



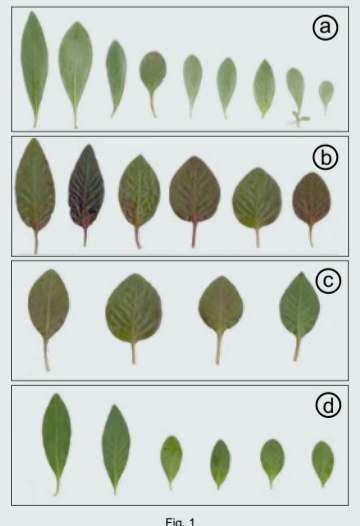
Water-Primrose (*Ludwigia* spp. (includes *Ludwigia grandiflora*, *Ludwigia peploides*, *Ludwigia hexapetala*, and others)) is an invasive aquatic plant known for its bright yellow flowers and ability to form dense mats in freshwater habitats. In Ireland, it poses a high risk to lakes, rivers, and wetlands due to its rapid growth and capacity to outcompete native vegetation. The plant spreads primarily through seed dispersal and vegetative fragmentation, making management difficult. Control measures include mechanical removal, herbicide application, and preventative actions to limit its spread. If left unmanaged, Water-Primrose can significantly impact biodiversity, water quality, and the functionality of water bodies.

Description - Water-Primrose encompasses several species of aquatic or semi-aquatic perennial plants noted for their bright yellow flowers and vigorous growth. Water-Primrose's have spread to many parts of Europe, including Ireland and the UK, where they are considered highly invasive.

These plants can form dense mats on the water's surface, which can outcompete native vegetation, alter aquatic ecosystems, and impede water flow.

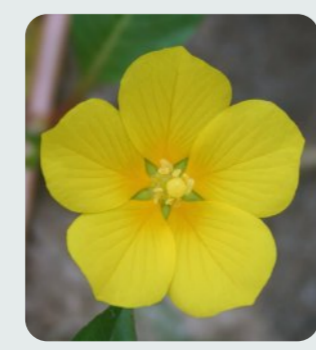
Key characteristics include:

Size: Can grow up to 1 metre tall when emergent or form floating mats on the water surface.



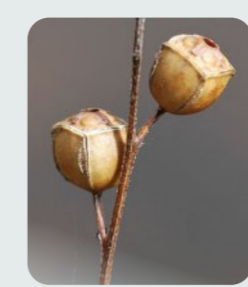
Leaves: Leaves are oval to lance-shaped, measuring 3-10 cm in length, and arranged alternately along the stem. They are typically bright green and can vary in shape and size depending on species and growing conditions.

Morphological variation of the leaf blade for *Ludwigia grandiflora* (Fig. 1, a–d). a. Erect leaves in flood-free soil; b. floating leaves on flooded environment; c. leaves prostrate in terrestrial environment; d. emergent in the aquatic environment.



Flowers: Produces bright yellow, five-petaled flowers, typically 2-5 cm in diameter. Flowering occurs from June to September, depending on the species and local climate.

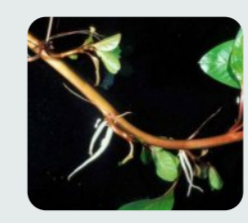
Fruit: Forms a capsule containing numerous small seeds, which can be dispersed by water, animals, or human activity.



Stem / Stolon: Can be erect, creeping, or floating, often rooting at the nodes where they contact the substrate. Stems are usually green or reddish.



Roots: Has an extensive fibrous root system that can anchor the plant in sediment or allow it to float freely.



Habitat - Water-Primrose is native to North and South America, where it thrives in a variety of freshwater habitats. In its introduced range, it can be found in:

- Lakes, Ponds, and Slow-Moving Rivers: Commonly grows in shallow, nutrient-rich freshwater, where it forms dense mats that cover large areas.
- Wetlands and Marshes: Can establish in marshy areas, ditches, and wetlands, particularly in regions with fluctuating water levels.
- Canals and Irrigation Channels: Frequently found in man-made water bodies such as canals, drainage ditches, and reservoirs, where it can spread rapidly.

The plant prefers nutrient-rich waters and can tolerate a range of water conditions, from shallow standing water to deeper, slow-moving systems. It grows well in full sun but can also survive in partial shade.

Status in Ireland - In Ireland, Water-Primrose is considered a high-risk invasive species, particularly in lakes, rivers, and wetlands, where it can outcompete native aquatic vegetation and significantly alter the ecosystem.

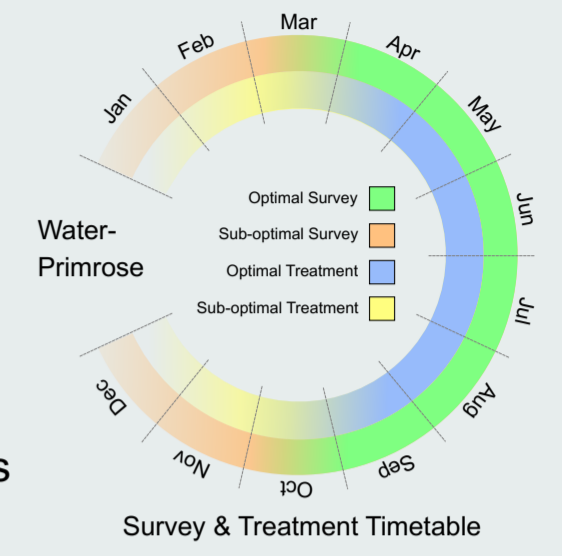
The species is regulated under the European Communities (Birds and Natural Habitats) Regulations 2011, making it an offence to introduce, plant, or cause its spread.

Reproduction and Spread - Water-Primrose spreads through both seed production and vegetative propagation:

- Seed Dispersal: The plant produces numerous seeds that can be dispersed by water currents, animals, or human activity. The seeds can remain viable for several years, enabling long-term colonisation.
- Vegetative Propagation: Spreads extensively through fragmentation and rooting at stem nodes, where even small plant fragments can form new colonies. This makes it highly invasive and capable of rapid expansion.
- Human Activity: The plant can spread through the movement of boats, fishing gear, or contaminated soil, leading to new infestations in uncolonised areas.

Management and Control - Controlling Water-Primrose is challenging due to its rapid growth, extensive root system, and ability to regenerate from small fragments. Management strategies include:

- Mechanical Control: Manual removal or mechanical harvesting can help reduce biomass, but all plant material must be removed to prevent regrowth. Repeated efforts are often necessary for effective management.
- Chemical Control: Herbicides approved for aquatic use, such as those containing glyphosate, can be applied to manage infestations, though multiple treatments may be required. Care must be taken to minimise impacts on non-target species.
- Biological Control: Some efforts are being made to explore biological control options, but no widely accepted biological control agents are currently available.
- Preventative Measures: Avoid introducing Water-Primrose to ponds or water gardens, and clean boats, trailers, and fishing gear before moving between water bodies to prevent accidental spread.



Ecological Impact - Water-Primrose can have significant ecological impacts, particularly where it becomes invasive:

- Competition with Native Species: Forms dense mats that block sunlight, reducing the growth of submerged aquatic plants and affecting the aquatic food web.
- Alteration of Water Quality: The dense mats can lead to reduced oxygen levels in the water, impacting fish and other aquatic organisms.
- Impeding Water Flow: Can block waterways, irrigation channels, and drainage systems, leading to flooding and increased maintenance costs.
- Interference with Recreational Activities: Can impede boating, fishing, and swimming, making water bodies less accessible for recreational use.



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