



# *Erythranthe guttata*

## Species description

Monkeyflower (*Erythranthe guttata*) is a perennial riparian plant native to North America. In some situations, however, the plant seems to behave as an annual plant. The species was introduced to Europe, including Belgium, though the horticultural trade as an ornamental plant for gardens. The first records of monkeyflower in the environment in Belgium date back to 1953. Natural spread from cultivation is probably at the origin of its escape into the wild. Today, while emerging and uncommon in Belgium (though increasing), the plant might become a problematic invasive species in the near future. However, the species is not listed as IAS of Union concern under the (EU) Regulation No 1143/2014. It has, therefore, been included in the LIFE RIPARIAS alert list. Monkeyflower can easily be confused with *Mimulus* spp. Its distribution on the Belgian territory is likely underestimated due to a lack of recorded observations, monitoring efforts, and possible confusion with look-alike species.



Fig 1. *Erythranthe guttata*. Photo :  
Andreas Rockstein

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Photo: Christophermluna

# Erythranthe guttata

Monkeyflower thrives in moist habitats such as along streams, rivers, and wet pastures. The species can also colonise disturbed areas, and exhibits tolerance to various types of substrates, including contaminated soils containing toxic substances such as copper. As an increasingly widespread invasive species in Belgium, the plant might soon cause diverse environmental, social and economic impacts. Although assessed as having moderate impacts on ecosystems and biodiversity, this invader can form dense mats that can crowd out nearby plant species. Economic effects will probably include management related costs.

## Biological characteristics, reproduction and spread

Flowering of monkeyflower occurs in summer, approximately between June to October).

Reproduction of monkeyflower in western Europe is partially vegetative through stolons or rhizomes. When the plant breaks into fragments, either naturally or because of human activity, those fragments of a few cm long can form a new plant, and therefore a new population, away from the initial invaded area. The species also reproduces through seeds, which are contained in fruits (a few hundred in each fruit). These fruits burst open to release the seeds by the end of the growing season. Monkeyflower forms a persistent seed bank, with seeds germinating in fall. The spread of the plant is facilitated by the wind and waterways, which can transport both seeds and fragments. The species' high regeneration and dispersal abilities highlight the importance of implementing effective management measures.



Fig 2. Monkeyflower growing in an inhospitable environment and spreading along a stream

### References

- Baus E. et al. (2010) *Invasive alien species in Belgium - Mimulus guttatus*. <https://ias.biodiversity.be/species/show/116> [Accessed: 25th November 2022].
- Branquart, E. et al. (2021) *Belgian alert lists of alien aquatic plants and crayfish*. LIFE RIPARIAS project.
- Centre de ressources espèces exotiques envahissantes. (2016) Base d'informations - *Erythranthe guttata* (*Mimulus guttatus*). <http://especes-exotiques-envahissantes.fr/espece/mimulus-guttatus/> [Accessed: 25th November 2022].
- Dole, J.A. (1992) Reproductive assurance mechanisms in three taxa of the *Mimulus guttatus* complex (Scrophulariaceae). *American Journal of Botany*, 79, 650-659.
- Kerr, D. (2019) *Factors influencing the distribution and spread of an invasive weedy species, Erythranthe guttata*. Master's thesis. University of Canterbury.
- Matthews, J. et al. (2012) Risk analysis of the non-native Monkeyflower (*Mimulus guttatus*) in the Netherlands. University Nijmegen, Institute for Water and Wetland Research, Department of Environmental Science, FLORON and Roelf Pot Research and Consultancy.

## General considerations about management

A few management options have been used to control and eradicate the species, although there is a lack of available literature on this topic. Local eradication of monkeyflower is considered achievable for small populations. Nevertheless, the feasibility of eradicating populations must be assessed on a case by case basis, considering site specificities, and be thoroughly discussed within the management team.

Due to the species' ability to reproduce by seeds and vegetatively through fragmentation, precautionary measures must be implemented before initiating management activities to prevent seed and fragment spread within the managed area or to uninvaded sites. It is essential to initiate management actions before seed production. Managed areas are also isolated by physical barriers (wherever relevant).

The harvested plant material must be safely disposed of away from water systems and moist areas. It can either be incinerated or dried in bags or exposed to sunlight. Material that has been in contact with the plant and with soil that may contain seeds (e.g. shoes) must be checked, cleaned and dried before being taken to another site. It is recommended to restrict public access to the managed area in order to isolate the infestations as much as possible and limit the risk of spread.

Managed and downstream sites must remain under enhanced surveillance for a period of 5 years after the implementation of the last treatment.



Fig 3. Monkeyflower growing in the middle of a shallow stream increases the risk of seed and fragment spread with the current

Tokarska-Guzik, B. and Dajdok, Z. (2010) *Invasive alien species fact sheet – Mimulus guttatus*. NOBANIS.

Truscott, A.M. et al. (2006) The dispersal characteristics of the invasive plant *Mimulus guttatus* and the ecological significance of increased occurrence of high-flow events. *Journal of Ecology*, 94(6), 1080-1091.

Truscott, A.M. et al. (2008) Consequences of invasion by the alien plant *Mimulus guttatus* on the species composition and soil properties of riparian plant communities in Scotland. *Perspectives in Plant Ecology, Evolution and Systematics*, 10(4), 231-240.

Val'hor. (2017) *Code de conduite plantes envahissantes - Erythranthe guttata* (Fisch. ex DC.) G.L.Nesom.

Verloove, F. (2011) *Manual of the alien plants of Belgium - Erythranthe guttata*. <https://alienplantsbelgium.myspecies.info/content/erythranthe-guttata> [Accessed: 25th November 2022].

Waser N.M., Vickery R.K. and Price M.V. (1982) Patterns of seed dispersal and population differentiation in *Mimulus guttatus*. *Evolution*, 36(4), 753-761

# Manual removal

- v Local eradication can be achieved
- v The method is suitable for the management of both small and large populations
- v Manual removal is highly selective and will have minimal impact on ecosystems and other organisms
- x Manual removal is time-consuming, labor intensive and must be conducted until the seed bank is exhausted

## Method description

The principle is to remove the whole plant from the ecosystem. Plants are dug out in a way that all plant material is removed from the soil, including roots. Tearing out the plant with bare hand is not recommended as the plant is fragile and breaks easily, which can increase the risk of fragment spread. Adequate material and tools must therefore be used for manual removal of monkeyflower to ensure the complete removal of the plant. It is also strongly recommended to work with skilled and experienced operators as the species can be challenging to spot and identify. This management strategy is conducted before seed production. Manual removal is repeated over multiple years to progressively eliminate regrowth from remaining fragments, seedlings (until the exhaustion of the seed bank) or plants that would have been overlooked. Operators must avoid leaving the ground bare as it can favour seed germination. Reinforcing and restoring the native ecosystem by introducing native species that will strongly compete with the monkeyflower is therefore recommended.

## Material

**Management:** Waders, spades and gloves.

**Transport:** Bags and buckets

**Precautionary measures:** Containment net and hand net

## References

Le contrat de rivière Lesse. (2022) Mimule tachetée. <https://www.crlresse.be/2019/07/29/mimule-tachetee/> [Accessed: 23rd November 2022].

Deliquaire, S. et al. (2020) *Bilan de la Brigade d'intervention Espèces exotiques Envahissantes 2019-actions réalisées dans les départements de l'Orne, la Manche et le Calvados*. Conservatoire d'espaces naturels de Normandie.

# The impact of management actions on ecosystem services

While the adverse effects of IAS are well-known and provide strong incentives for implementing management actions, the impacts of these management actions on ecosystems and the services they provide are less considered. The matrices are the result of expert assessments of the evolution of relevant ecosystem services (ES) from a highly invaded situation towards a managed situation. ES evolution is considered over 2 given periods of time: 1 year and 5 years after the initiation of management.

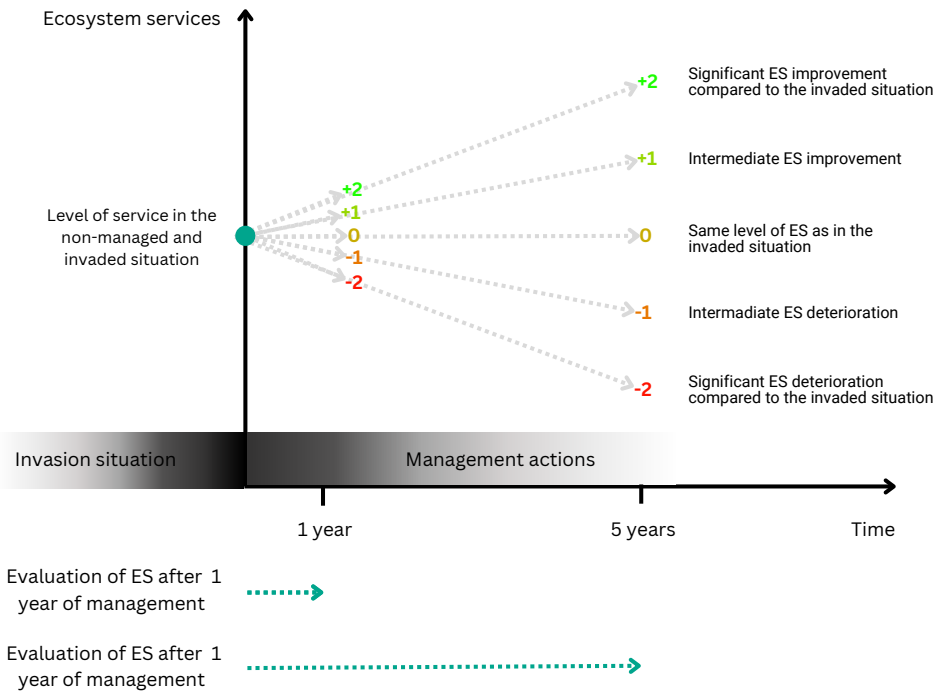


Fig 4. Representation of the survey process

Each matrix displays the average impact scores of management methods on ecosystem services. These scores have been associated to colours to facilitate the visualization of the impacts of every method on every relevant ecosystem service. Green indicates a significant improvement in the ecosystem services (ES) due to management, orange represents no or minimal effect, and red signifies a negative impact of the method on the ES.

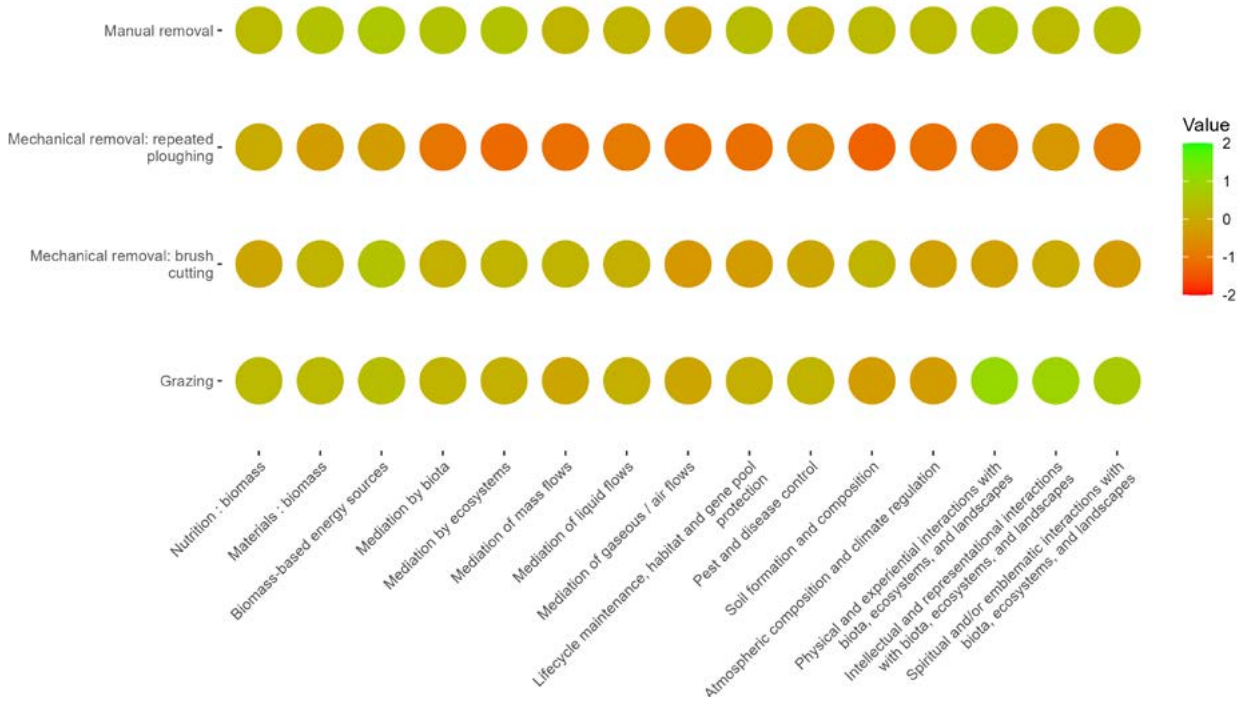


Fig 5. Matrix displaying the impact of management methods for riparian plant species on ecosystem services after 1 year

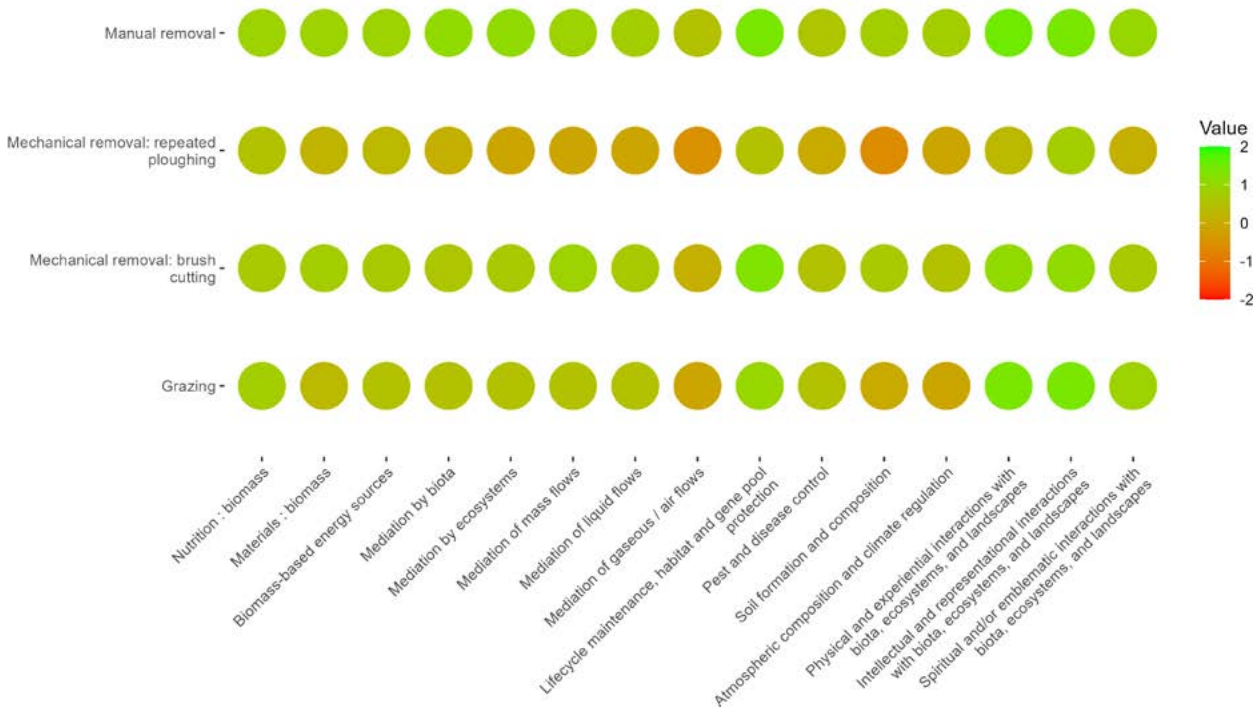


Fig 6.. Matrix displaying the impact of management methods for riparian plant species on ecosystem services after 5 years

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