Review of observations 2021-2022

Action C1 : enhanced IAS surveillance

The RIPARIAS project has received funding from the LIFE Programme of the European Union

RIPARIAS

Reaching Integrated and Prompt Action in Response to Invasive Alien Species

Beneficiaries responsible for the implementation of action C1:

Main action responsible: SPW-ARNE.

Other beneficiaries directly involved in IAS field surveillance: BE (Brussels), ANB & VMM (Flanders), CRD, CRDG & CRS (Wallonia).

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EXECUTIVE SUMMARY

30 LIFE RIPARIAS target species (plants and crayfish) were actively searched for in aquatic and riparian habitats through intensive field surveillance conducted by regional focal points and naturalists within the Dijle-Dyle, Mark-Marcq and Zenne-Senne river basins in 2021 and 2022. This includes in particular 13 plant species listed under EU Regulation No 1143/2014 and 9 plant species from the LIFE RIPARIAS alert list[1], on which this report focuses. The results of crayfish surveillance carried out over 2021-2023 will be addressed in the next review of observations in 2024.

The surveillance was organised based on a dedicated plan designed by LIFE RIPARIAS partners focusing mainly on historical sites where target species were observed during the 2000-2020 period and on priority river sub-units (Branquart *et al* 2021)[2].

3663 plant observations were collected and recorded in Invasive Alien Species (IAS) databases thanks to enhanced surveillance. This led to a strong increase in IAS annual detection rates and allowed detecting 18 out of the 22 target plant species, among which 3 alert list species and 2 EU-listed species were detected for the first time within the LIFE RIPARIAS territory.

Water bodies in private domains were identified as potential hotspots for emerging EU-listed and alert list aquatic species, suggesting that awareness raising of private owners should be a priority for preventive actions.

The data harvested by the field survey allowed the project team to update species distribution maps to be used to identify management priorities and to assess the effect of future management actions.

[1] These species were listed in a report "Belgian alert lists of alien aquatic & riparian plants and crayfish Improving data flow for early detection (A1)" available on https://www.riparias.be/358/

[2] Branquart E., Adriaens T., Beck O., Colard F., De Jonghe C., D'hondt B., Dumortier A., Goffette J., Gosse D., Guyon J., Latli A., Monty A., Scheers K., Stas M., Van Onsem S. & Vermeersch X. (2021) LIFE RIPARIAS surveillance plan – Partim Life team enhanced surveillance (C1.2 & C1.3). Report prepared in support of implementing action C1 of the LIFE RIPARIAS project LIFE19 NAT/BE/000953, version 1.3, 21 pages.

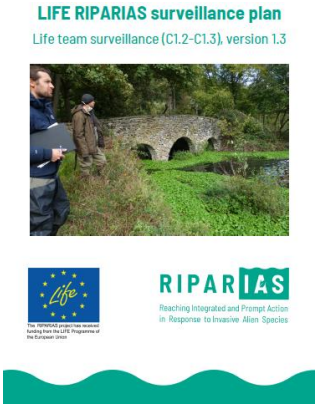
1. Introduction

This biennial review of observations focuses on 22 LIFE RIPARIAS target invasive plants including 13 aquatic plants and 9 riparian plants from the list of Invasive Alien Species (IAS) of Union concern and the LIFE RIPARIAS alert list. Crayfish observations will be addressed in the upcoming review, due to be published in 2024, taking into account enhanced surveillance conducted in 2023 using both baited trapping and eDNA results.

Target species from the IAS list of Union concern pertaining to EU Regulation No 1143/2014 are: *Cabomba caroliniana*, *Heracleum mantegazzianum, H. persicum, H. sosnowskyi, Hydrocotyle ranunculoides, Impatiens glandulifera, Koenigia polystachya, Lagarosiphon major, Ludwigia grandiflora, Ludwigia peploides, Lysichiton americanus, Myriophyllum aquaticum* and *Myriophyllum heterophyllum.*

Alert list species were identified through a horizon scanning exercise based on plant catalogues of aquatic plant producers and retailers in Belgium (Branquart *et al* 2022)[3]. They are detrimental species with a limited distribution within the LIFE RIPARIAS territory, for which dedicated surveillance and monitoring are recommended to foster prompt response in the case of detection in natural environments. Alert list plant species identified are as follows: *Aponogeton distachyos, Crassula helmsii, Egeria densa, Erythranthe guttata, Houttuynia cordata, Petasites japonicus, Pontederia cordata, Saururus cernuus* and *Zizania latifolia*.

2. Methodology



A surveillance plan was designed to identify priority areas for surveillance within the LIFE RIPARIAS territory (Branquart *et al* 2021). They include:

1/ **historical sites** where project target species were observed between 2000 and 2020,

2/ **priority river sub-units** wherein management of widespread IAS is likely to be conducted during the RIPARIAS project, due either (i) to high conservation value (extent of riparian zones benefiting from an official protection status greater than 10% of river linear within individual RSU) or (ii) to upstream location within river basins

According to this plan, surveillance was focused on the riparian zone covering all habitats included in floodplains, rivers and riverbanks as well on remote ponds where historical observations were recorded.

[3] Branquart E., Adriaens T., Devisscher S., D'hondt B., Denys L., Dumortier A., Latli A., Packet J., Scheers K., Vanderhoeven S. & Willeput R. (2022) Belgian alert lists of alien aquatic plants and crayfish. Report prepared in support of implementing action A1 of the LIFE RIPARIAS project LIFE19 NAT/BE/000953, 15 pages.

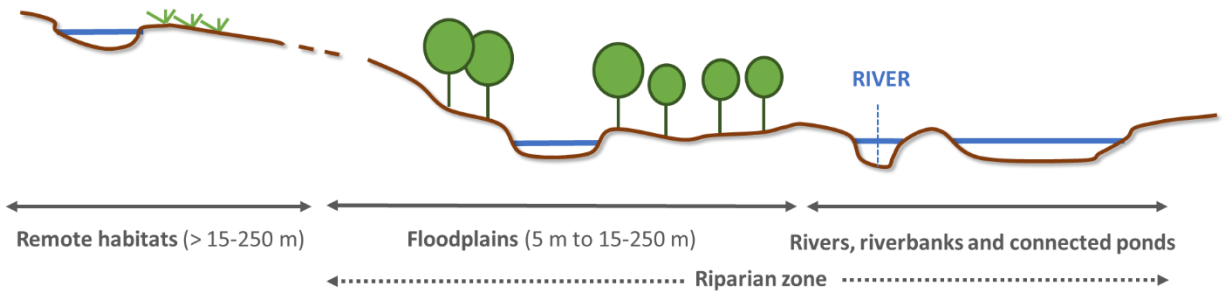


Figure 1 - Spatial units considered in the LIFE RIPARIAS surveillance

Regional focal points were designated to prepare field maps, coordinate data acquisition from the field, play the role of regional contact point for citizen science activities, coordinate data recording and produce regional reports. These focal points are as follows: Brussels Environment for the Brussels-Capital Region, Agentschap Natuur en Bos and Vlaamse Milieu Maatschappij for Flanders and Contrat de Rivière Senne for Wallonia.

An identification guide including species fact sheets[4] was produced to help with the determination of the 22 target species. These fact sheets are available in three languages (Dutch, English and French) on the LIFE RIPARIAS website. Training sessions dedicated to naturalists and field managers were also organised in June 2021 and 2022 to increase their capacity to recognise the different invasive plants targeted by the project.

250 field days were allocated to surveillance by regional focal points from April to November 2021 and from April to November 2022. Additional surveillance was carried out by naturalists and field managers who recorded their observations on citizen science smartphone applications such as iNaturalist, Obsidentify and Obsmapp. Depending on the target groups, surveillance was initiated in different steps within the priority areas defined in the surveillance plan to maximise the probability of species detection in the field, i.e. from 01/04 for giant hogweed, from 01/06 for aquatic plants in ponds and from 01/07 for Himalayan balsam.

Observation data were recorded in different databases including dedicated professional systems and citizen science platforms. All the collected data were published afterwards on the Global Biodiversity Information Facility (GBIF) and are available on the LIFE RIPARIAS early alert tool.

3. Results

A total of 3663 observations of target plant species were recorded in 2021-2022, out of which 44% came from citizen science and 56% from the RIPARIAS consortium. Enhanced surveillance allowed to strongly increase the monthly rate of observations collected across the LIFE RIPARIAS territory, especially for the most widespread species (figure 2).

[4] Monty A., Patinet M., Gosse D., Guyon J., Delaporte M., Latli A., Branquart E., Vermeersch X. and Limet F. (2022) Invasive Alien Plants of Aquatic and Riparian Environments - Identification Guide. LIFE RIPARIAS Project, 36 pp.

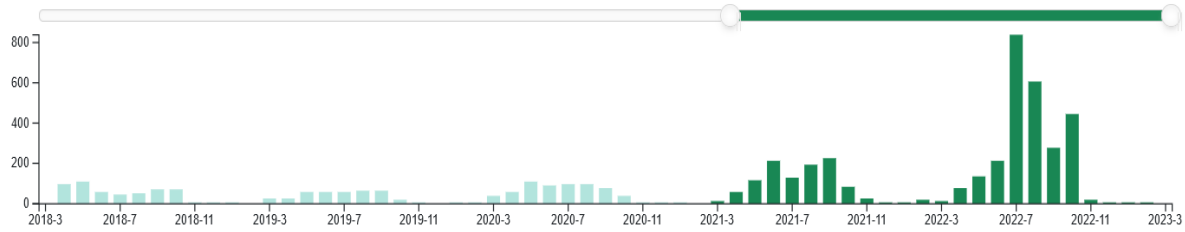


Figure 2 – Trend in the monthly observation rate of target invasive plants from 2018 to 2022 within the LIFE RIPARIAS territory.

The watercourse network was surveyed extensively except for areas outside priority RSUs like the western part of the Zenne-Senne river basin (figure 3). Logically, the map also shows that most of the observations were concentrated along the river system. Downstream sections of rivers are more heavily invaded than upstream areas.

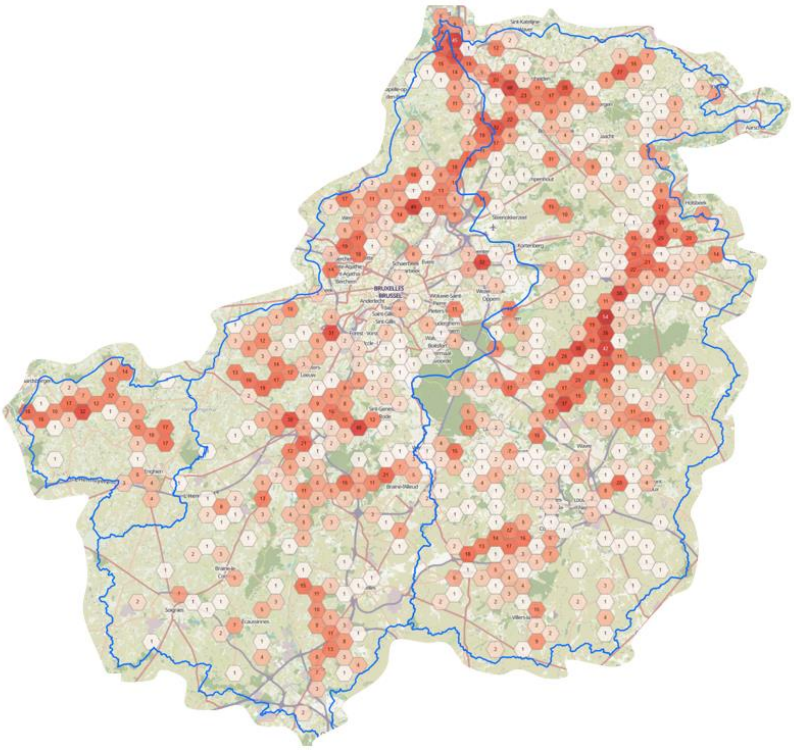


Figure 3 – Density of observations of target IAS in 2021-2022 across the LIFE RIPARIAS territory. The number of observations collected is proportional to the size of the river basin: 51% of them were collected in the Dijle-Dyle river basin, 42% in the Zenne-Senne river basin and 7% in the Mark-Marcq river basin. Source: LIFE RIPARIAS early alert tool.

As detailed in the Appendix and in figure 4, 18 out of the 22 target plant species were detected during the enhanced surveillance period. Only 4 species without any historical observation, i.e. *Cabomba caroliniana, Heracleum persicum, H. sosnowskyi* and *Myriophyllum heterophyllum* were not found.

Riparian plants were the most frequently observed species; Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*) alone accounted for 86% of the observations. On the contrary, detection of most submerged secretive species like Elodeas was also rather low.

Enhanced surveillance allowed to detect the presence of all alert list species, but usually at a low frequency (< 25 observations/species) except for *Crassula helmsii* (n = 58) and *Pontederia cordata* (n = 50). The presence of some of them such as *Houttuynia cordata, Egeria densa* and *Saururus cernuus* was unconfirmed within the RIPARIAS territory before the start of the project. Also 2 EU-listed species, *Lagarosiphon major* and *Ludwigia peploides*, were recorded for the first time during the LIFE RIPARIAS survey.

Field observers noted that most observations of emerging plants of the EU and the alert lists are concentrated in and nearby water bodies in private domains. Frequent and repeated introductions of exotic water plants are often conducted in these conditions. Awareness raising actions could usefully target this specific audience.

Data collected showed a strong geographic expansion in recent years of several plant species such as the water primrose (*Ludwigia grandiflora*), indicating that urgent action is needed in the field to avoid further dispersal. On the contrary, the LIFE RIPARIAS survey suggests that populations of floating pennywort (*Hydrocotyle ranunculoides*), giant hogweed (*Heracleum mantegazzianum*) and Himalayan balsam (*Impatiens glandulifera*) declined thanks to ongoing management actions conducted in the field.

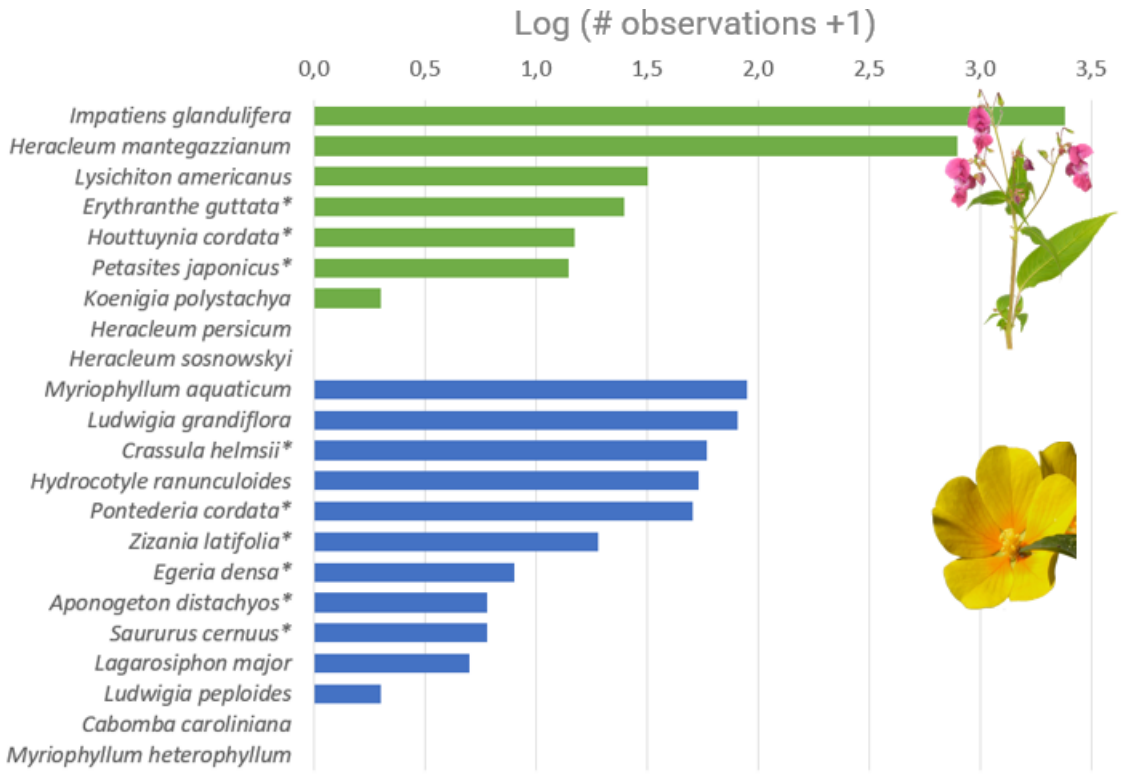


Figure 4 – Observation frequency of the LIFE RIPARIAS target plant species during the enhanced surveillance period 2021-2022 (in green: riparian plants, in blue: aquatic plants). Alert list species are marked with an asterisk.

Figure 5 – *Houttuynia cordata*, *Zizania latifolia* and *Petasites japonicus*:
three alert list species detected within the LIFE RIPARIAS territory. Pictures: Dido Gosse.

4. Conclusion

Enhanced IAS surveillance conducted in 2021-2022 strongly increased detection rates and improved our knowledge of plant distribution across the LIFE RIPARIAS territory. The updated distribution baseline will allow to assess the effect of future management actions conducted during the project.

Prevention through increased public awareness and rapid eradication actions must be emphasised to prevent the spread and reduce potential damages of emerging aquatic plants.

Appendix – Number of plant observation data collected in 2021-2022 per river basin within the LIFE RIPARIAS territory (last accessed by 16/01/2023)

Plant species	Dijle-Dyle	Zenne-Senne	Mark-Marcq
Impatiens glandulifera	1230	922	227
Heracleum mantegazzianum	367	357	8
Myriophyllum aquaticum	35	36	4
Ludwigia grandiflora	41	23	9
Hydrocotyle ranunculoides	26	19	0
Crassula helmsii	32	18	0
Pontederia cordata	24	24	1
Lysichiton americanus	12	19	0
Zizania latifolia	10	21	0
Erythanthe guttata	5	19	0
Houttuynia cordata	11	3	0
Petasites japonicus	7	7	0
Egeria densa	0	3	2
Aponogeton distachyos	2	2	0
Lagarosiphon major	1	1	2
Saururus cernuus	2	2	0
Koenigia polystachya	3	0	0
Ludwigia peploides	1	0	0

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