

Action C.2

2023 report of early eradication actions

Responsible partner: ANB

01/12/2023



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

2023 report of early eradication actions

Introduction

This report describes early eradication actions of emerging plant and crayfish species carried out over 2023 within the LIFE RIPARIAS project area. By reporting these eradication actions and their results, the efficiency of the used techniques in the field can be evaluated based on different field conditions.

1. Goals of action C2

The goals of action C2 are to perform rapid response actions on emerging species targeted by the project and featured either on the list of invasive alien species of EU concern or on the LIFE RIPARIAS alert list (see table below based on latest observations available). By acting fast, higher costs in the future may be avoided, in addition to the prevented loss of ecosystem functions or biodiversity loss affected by the invasive species. According to the grant agreement, the aim is to eradicate “at least 9 isolated populations of emerging plants and 6 isolated populations of emerging crayfish”. It is noted that the management of widespread species did start in May of 2023 as well, therefore the focus can be more shifted to these species.

Table 1: List of emerging species based on the monitoring results of the project.

RIPARIAS Target species				
Type	Species name (Latin)	Soortnaam (NL)	Nom de l'espèce (FR)	Species name (ENG)
Aquatic plant	<i>Lagarosiphon major</i>	Verspreidbladige waterpest	Elodée à feuilles alternes	Curly waterweed
Aquatic plant	<i>Ludwigia peploides</i>	Kleine waterteunisbloem	Jussie rampante	Floating primrose-willow
Riparian plant	<i>Koenigia polystachya</i>	Afghaanse duizendknoop	Renouée à nombreux épis	Himalayan knotweed
Riparian plant	<i>Lysichiton americanus</i>	Moerasaronskelk	Faux arum	American skunk cabbage
Crayfish	<i>Procambarus clarkii</i>	Rode Amerikaanse rivierkreeft	Écrevisse de Louisiane	Red swamp crayfish
Crayfish	<i>Procambarus virginalis</i>	Marmerkreeft	Écrevisse marbrée	Marbled crayfish
RIPARIAS Alert list				
Type	Species name (Latin)	Soortnaam (NL)	Nom de l'espèce (FR)	Species name (ENG)
Aquatic plant	<i>Aponogeton distachyos</i>	Kaapse waterlelie	Vanille d'eau/ Aponogéton odorant	Cape-pondweed
Aquatic plant	<i>Crassula helmsii</i>	Watercrassula	Crassule de Helms	New Zealand pigmyweed
Aquatic plant	<i>Egeria densa</i>	Egeria	Élodée dense	Greater pondweed
Aquatic plant	<i>Pontederia cordata</i>	Moerashyacint/ Snoekkruid	Pontédérie à feuilles en cœur	Pickerelweed
Aquatic plant	<i>Saururus cernuus</i>	Leidse plant	Lézardelle penchée	Lizard's tail
Aquatic plant	<i>Zizania latifolia</i>	Mantjoerese wilde rijst	Riz sauvage de Mandchourie	Manchurian wildrice
Riparian plant	<i>Erythranthe guttata</i>	Gele maskerbloem	Mimule tachetée	Monkeyflower
Riparian plant	<i>Houttuynia cordata</i>	Moerasanemoon	Poivre de Chine	Chinese lizard tail
Riparian plant	<i>Petasites japonicus</i> var. <i>giganteus</i>	Japans hoefblad	Pétasite du Japon	Giant butterbur

The performed eradication actions are listed in Annex 1 and described in more detail below. Per action, the used techniques are mentioned under “Methodology”, the detailed description of the action can be found under “Performed action” and the results of the action (if available) are presented under “Result”.

Some of the actions were already performed in earlier years of the project but are locations to be followed up in 2023 and the follow up of these locations is therefore also considered in this report. The details about these earlier performed eradication actions can be found in the annual report of 2022.

Following abbreviations were used in this report:

Abbreviation	In full	Region
ANB	Agency for Nature and Forests	Flanders
BCR	Brussels Central Region	Brussels
BE	Brussels Environment	Brussels
CRDG	Contrat de Rivière Dyle-Gette	Wallonia
CRS	Contract de Rivière Senne	Wallonia
DNF	Agency for Nature and Forests	Wallonia
VMM	Flemish environmental agency	Flanders

2. Eradication of plant populations

Rapid response actions are carried out from the start of the project because of their emergency and to prevent large growth. In this chapter, the rapid response actions performed in 2023 are described in a structured way. Next to that, the follow-up of management actions performed in 2022 are also mentioned, because it makes clear that this follow-up is important to avoid large regrowth. Populations that were managed for the first time in 2022 or where new plants were present in 2022 were followed up in 2023. Therefore, the follow up of these actions is mentioned in this report. For more information about previous management actions, check the report on early eradication actions of 2022.

2.1 Action P06

A) Methodology

A large *Crassula helmsii* population which covered almost the whole pond was removed by manual extraction.

B) Performed action

The population of *Crassula helmsii* covered almost entirely a pond of 200 m² located in Ottignies (Wallonia). During the summer of 2022, the population was entirely removed by manual extraction by 3 staff members of UCL after they had contacted CRDG.

C) Result

The large population was removed. However, a check-up in summer 2023 showed that 25% of the population remains present. The goal to eradicate is on many places not realistic anymore without drastic interventions like an ecosystem switch. Therefore, new scientific research is looking into the option of ecosystem resilience by breaking dominance of *Crassula helmsii* by one time removal and planting native species to increase the competition. This could be the result of this management action (without planting) as well.

2.2 Action P08

A) Methodology

A population of *Ludwigia peploides* was eradicated using manual extraction.

B) Performed action

The population located at Ottignies was eradicated by manual removal and aftercare. In June 2023, 1m³ of plant material was removed. There were 2 after care interventions, one in July and one in September 2023 during which respectively 0,1m³ and 0,02m³ of plant material was removed. This action was performed by CRSenne in the Summer of 2023.

C) Result

The population was removed; however, it will be necessary to check in 2024 if the whole population was eradicated by this measure.



Figure 1: The pond in Ottignies before management (left) and during management of *L. peploides* (right)

2.3 Action P09

A) Methodology

The small population of *Lysichiton americanus* was eradicated using manual extraction.

B) Performed action

The population of 4 plants located at Oudergem was eradicated by manual removal of the 4 plants. This action was performed by BE in July 2023.

C) Result

The population was removed; however, it will be necessary to check in 2024 if the whole population was eradicated by this measure.

2.4 Action P10

A) Methodology

A population of *Ludwigia peploides* was eradicated using manual extraction.

B) Performed action

The population located at Genappe was eradicated by manual removal in August – September 2023. 120L of plant material was removed. This action was performed by 4 people of CRDG in the Summer of 2023.

C) Result

The population was removed; however, it will be necessary to check in 2024 if the whole population was eradicated by this measure or aftercare will be necessary.

2.5 Action P11

A) Methodology

The large population of *Zizania latifolia* was eradicated using mechanical extraction.

B) Performed action

The population located at Anderlecht was eradicated by mechanical removal of the whole population. A large and a smaller excavator were used to dig out the rhizomes from the pond bank. About 15 truck containers of plant material and infected ground with rhizomes was removed. The presence of stones and geotextile made a second evaluation of the situation and planning of the management necessary. This eradication action was performed by BE in October-November 2023.

C) Result

The population was removed; however, follow-up is planned in 2024 and 2025, to avoid the population to regrow from possible left-over rhizomes.



Figure 2: Machines used to perform the management of *Zizania latifolia* in a public pond in Brussels.



Figure 3: Part of the Zizania latifolia population (before management) in a pond in a public park managed by BE.



Figure 4: The same pond after management took place.

3. Eradication of crayfish populations

Due to the difficulties to eradicate these populations and their low detectability, the number of actions against crayfish has so far been rather limited. The number of actions may increase in 2023, once the results of the increased monitoring are processed. Actions started before 2022 are also considered in this report because of their relevance.

3.1 Action C01

A) Methodology

The management of the *Procambarus clarkii* population was performed by combining different techniques. Trapping, fencing, capture-mark-recapture, and dredging were performed in a pond system in Grez-Doiceau (Wallonia).

B) Performed action

First, a preliminary sampling and trapping was performed from June 2019 to May 2021. The trapped crayfish were removed every 2 weeks in order to reduce their abundance and reduce the dispersion risk. During the lockdown (due to Covid 19), the capture was temporarily stopped.

After the capture, the pond was fenced to prevent dispersal and a capture/mark/recapture study was performed. This resulted in an estimation of the *Procambarus clarkii* population of 750 to 900 individuals in May 2021. On the 27th of May 2021, the remaining fish were rescued by electrofishing. This was difficult due to the amount of mud.

From June to October 2021, the pond was dredged (only partially due to technical problems). The pipe between the two ponds was blocked, so the pond owner had to find a private company to unclog it. The pond was emptied during the winter of 2021-2022. However, the discharge pipe located downstream was blocked at that time, which resulted in a filled downstream pond.

In August 2023, another approach was used to eradicate the species. Lime was applied, sludge settling took place followed by pond restoration with containment measures to prevent escaping. To verify the effectiveness of the measures taken, baited traps were placed in the pond in November 2023, during this period (1 week) no crayfishes were caught. The management success will be verified by further trapping in 2024.

C) Result

There was no follow up of this case due to the absence of personnel. A solution for follow up must be found early next year.



Figure 5: Some of the *Procambarus clarkii* individuals caught during the sampling & trapping phase. © Arnaud Monty (ULiège)



Figure 6: Removing the *Procambarus clarkii* individuals near the fence to prevent them from escaping/dispersing. (left) © Arnaud Monty (ULiège). Liming of the pond (right) © Jérémie Guyon

3.2 Action C02

A) Methodology

The presence of *P. clarkii* was detected in 2022 following intensive crayfish trapping in the framework of the IAS surveillance in the Brussels capital region (Action C1). The management of the *Procambarus clarkii* population will be performed by pond drawdown. Containment measures will be evaluated to prevent crayfish from escaping from the pond. Feasibility of containment is not guaranteed prior to the start of the management given the large surface (3.15 Ha) of the urban publicly accessible pond, located within a city park in the Woluwe valley (50.806734 °N, 4.428029 °E).

B) Performed action

The management will start in the winter of 2022-2023 as a follow-up to the first detection in September 2022. The preparations to eradicate the population in parallel with the planned management of the urban pond were immediately started after the first detection.

The Woluwe river flows directly through the pond, creating an additional difficulty of containment. It is technically impossible to completely dry out the pond since a small stream with a permanent waterflow will continue to flow during the management actions and the pond drawdown period.

In September and October 2023, further containment actions were performed, before the pond was drained in November 2023 by an external contractor.

C) Result

Crayfish captured during the pond-drawdown were euthanised, live fish were collected to be restocked elsewhere. During the pond drawdown, only specimens of *P. leptodactylus* were observed. Prior to the pond-drawdown a surveillance with 20 baited traps was performed in the ponds to detect and assess the population density of *P. clarkii* in the pond. Only a single specimen of *P. clarkii* was

detected during the surveillance period, along with multiple *P. leptodactylus*. After the pond is filled with water again, another surveillance with baited traps will be used to assess if *P. clarkii* is still present in the pond. No *P. clarkii* were detected in ponds in the neighbourhood, indicating that the local distribution of the species is likely limited to the managed pond.



Figure 7: Procamburus clarkii individuals in a trap during the monitoring phase of the LIFE RIPARIAS project. All caught individuals were killed. An evaluation of the eradication options for these populations is still to be performed.

© Niels Schild

4. Conclusions

- **Number of actions**

Provided that observations are recorded on on-line platforms (e.g., I-Naturalist; observations.be), these observations will then reach the managers through the early alert tool (<https://alert.riparias.be/>) and are expected to lead to eradication actions from 2023 onwards. In 2023, around 100 observations of emerging species can be consulted on the early alert tool website. A large part of the observations is from species that are listed as non-priority species, others are many observations on the same sites which are known and sometimes even management is already performed within the same year.

It is to be noted that the limited number of actions reported in this report may also be because some actions on small populations of IAS are carried out during routine management by staff of regional administrations or contractors and may not necessarily be systematically recorded. Therefore, the IAsset tool was developed to solve this issue. Next to that, most of the observations of emerging species are from *P. clarkii*, *P. virginalis* or *C. helmsii*, which are very difficult to eradicate on the known locations and with the current knowledge.

Several actions were performed before the start of 2023. However, they were followed up in 2023. Therefore, the follow up of these actions is considered in this report as well.

- **Prospects 2024**

As regards emerging populations, the rapid response actions (C2) will still be performed based on the observations from the enhanced monitoring (C1) and the early alert tool (<https://alert.riparias.be/>) developed under action A1. More results about performed actions will become available and the dataflow will become even more efficient when more people start using apps like I-Naturalist, Obsmapp, etc. to determine species they don't recognize.

Annex 1: List of all eradication actions of emerging species

A) Plants

Table 2: List of eradication actions on plants within the LIFE RIPARIAS project area. (Legend: NA = data not available, green = population considered eradicated, red = follow up needed)

Action number	Date	Region	Location	Organisation	Species	Size of population	Eradication method	Manpower	Result
P01	April 2021	Wallonia	Grez-Doiceau	CRDG	<i>Lysichiton americanus</i>	7 plants	Manual extraction	1 person	All plants removed
	2022					No more plants	/	1 person	Eradicated
P02	May 2021	Wallonia	Lasne	CRDG	<i>Lysichiton americanus</i>	Small population on pond bank	Manual extraction	3 people	All plants removed
	2022					No more plants	/	1 person	Eradicated
P03	July 2021	Wallonia	Court-St-Etienne	Brabant Wallon	<i>Crassula helmsii</i>	15m ² in a larger pond	Manual extraction	2 people	All visible plants removed
P04	July 2021	Wallonia	Grez-Doiceau	Riverine/CRDG	<i>Crassula helmsii</i>	Garden pond covered	Manual extraction	1 person	Almost all plants removed
P05	September 2021	BCR	Jette	BE	<i>Egeria densa</i>	10 plants	Manual extraction	1 person	Plants removed and destroyed
	September 2022					No plants detected	/	1 person	Plant is eradicated
P06	Summer 2022	Wallonia	Ottignies	UCL	<i>Crassula helmsii</i>	200 m ² (pond almost totally covered)	Manual extraction	3 people	All visible plants were removed
	Summer 2023					25% remains	No actions	/	25% remains
P07	August 2022	Wallonia	Grez-Doiceau	Riverine	<i>Crassula helmsii</i>	40 m ²	Filling up the pond	NA	All visible plants covered

P08	June 2023	Wallonia	Ottignies	CRSenne	<i>Ludwigia peploides</i>	1 m ³	Manual extraction	4 people	All plants removed
	July 2023					0,1m ³	Manual extraction	2 people CRDG	All plants removed
	September 2023					0,02m ³	Manual extraction	1 person CRDG	Eradication complete
P09	July 2023	BCR	Oudergem	BE	<i>Lysichiton americanus</i>	4 plants	Manual extraction	4 people	All plants removed
P10	August – September 2023	Wallonia	Genappe	CRDG	<i>Ludwigia peploides</i>	0,12m ³	Manual extraction	4 people	All plants removed
P11	Oct-Nov 2023	BCR	Anderlecht	BE	<i>Zizania latifolia</i>	Large population in a pond	Mechanical extraction	5 people + truckdrivers	All visible plant pieces were removed.

B) Crayfish

Table 3: List of eradication actions on crayfish within the LIFE RIPARIAS project area. (NA = data Not Available (yet), red = management/follow up needed).

Action number	Date	Region	Location	Organisation	Species	Size of population	Eradication method	Manpower (hour*person)	Result
C01	2019-2021	Wallonia	Grez-Doiceau	NA	<i>Procambarus clarkii</i>	>5000	Preliminary sampling + trapping	125	>5000 individuals caught (06/2019 - 05/2021)
	2021					/	Fencing the pond	40	Dispersion was limited
	May '21					750-900	Capture/mark/recapture	10	Estimation of population size
	June-Oct '21					/	Dredging the pond	/	Empty pond during winter 2021-2022
	August 2023					/	Lime application, sludge settling, ponds' restoration and containment to prevent escaping	160	No crayfishes were caught in the baited traps => management success trapping will continue in 2024
C02	Sept 2022	BCR	Watermaal-Bosvoorde	BE	<i>Procambarus clarkii</i>	/	Pond drawdown + containment	NA	First detection sept 2022 Monitoring of population September 2022
	Sept-Oct 2023					/	Pond drawdown + containment	72	Population density estimation (catch-release method) => prior to pond drawdown.
	Nov 2023					/	Pond drainage	NA	1 <i>P. clarkii</i> caught prior to the pond-drawdown. Results after management are not available yet