Action C.2

2022 report of early eradication actions

Responsible partner: ANB

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RIPARIAS

Reaching Integrated and Prompt Action in Response to Invasive Alien Species

Introduction

This report describes early eradication actions of emerging plant and crayfish species carried out over 2021-2022 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 can 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 most eradication actions will be initiated from 2023 onwards but a few may already be started before when urgent action is required.

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

RIPARIAS Target species				
Type	**Species name (Latin)**	**Soortnaam (NL)**	**Nom de l'espèce (FR)**	**Species name (ENG)**
Aquatic plant	*Lagarosiphon major*	Verspreidbladige waterpest	Elodée à feuilles alternes	Curly waterweed
Aquatic plant	*Ludwigia peploides*	Kleine waterteunisbloem	Jussie rampante	Floating primrose-willow
Riparian plant	*Koenigia polystachya*	Afghaanse duizendknoop	Renouée à nombreux épis	Himalayan knotweed
Riparian plant	*Lysichiton americanus*	Moerasaronskelk	Faux arum	American skunk cabbage
Crayfish	*Procambarus clarkii*	Rode Amerikaanse rivierkreeft	Écrevisse de Louisiane	Red swamp crayfish
Crayfish	*Procambarus virginalis*	Marmerkreeft	Écrevisse marbrée	Marbled crayfish
RIPARIAS Alert list				
Type	**Species name (Latin)**	**Soortnaam (NL)**	**Nom de l'espèce (FR)**	**Species name (ENG)**
Aquatic plant	*Aponogeton distachyos*	Kaapse waterlelie	Vanille d'eau/ Aponogéton odorant	Cape-pondweed
Aquatic plant	*Crassula helmsii*	Watercrassula	Crassule de Helms	New Zealand pigmyweed
Aquatic plant	*Egeria densa*	Egeria	Élodée dense	Greater pondweed
Aquatic plant	*Pontederia cordata*	Moerashyacint/ Snoekkruid	Pontédérie à feuilles en cœur	Pickerelweed
Aquatic plant	*Saururus cernuus*	Leidse plant	Lézardelle penchée	Lizard's tail
Aquatic plant	*Zizania latifolia*	Mantjoerese wilde rijst	Riz sauvage de Mandchourie	Manchurian wildrice
Riparian plant	*Erythranthe guttata*	Gele maskerbloem	Mimule tachetée	Monkeyflower
Riparian plant	*Houttuynia cordata*	Moerasanemoon	Poivre de Chine	Chinese lizard tail
Riparian plant	*Petasites japonicus var. giganteus*	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 2021 or earlier but are also considered in this report because of their relevance to the LIFE RIPARIAS project or their connection with current management within the project area. Monitoring activities were performed in 2021-2022 and results are being assessed at the time of completing this report. It is therefore possible that the number of eradication actions will increase in the following years of the project, building on the recent results of the monitoring phase.

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

Some of the early eradication actions were already performed in 2021 at the start of the project. However, because of their relevance, they were also included in this report. Only a few populations were eradicated in 2022.

2.1 Action P01

A) Methodology

The eradication of the *Lysichiton americanus* population was done by manual extraction.

B) Performed action

The eradication of the *Lysichiton* population in Grez-Doiceau was performed in April 2021 by digging out the 7 plants manually. The job was done by one person.

C) Result

All plants were removed, the location was revisited in 2022 and no plants were found. The eradication of the population was successful. However, these seeds can be dormant for 7 years, so a check-up once a year is advisable.

2.2 Action P02

A) Methodology

The eradication of the *Lysichiton americanus* population was done by manual extraction.

B) Performed action

The eradication of the population in Lasne was performed in May 2021 by digging out the small population manually. The job was done by three people (representing CRDG, CRS and Municipality of Lasne), additional people were present for educational purposes.

C) Result

All plants were removed, the location was revisited in 2022 and no plants were found. The eradication of the population was successful. However, these seeds can be dormant for 7 years, so a check-up once a year is advisable.

2.3 Action P03

A) Methodology

The eradication of the *Crassula helmsii* population was done by manual extraction.

B) Performed action

The population of 15m² in Court-St-Etienne was managed in July 2021 by two staff members of Province du Brabant Wallon. All visible plants were removed, however there were additional manual extractions needed in the period of August until October 2021.

C) Result

This population needs to be followed up to prevent the species to reinvade the pond.

2.4 Action P04

A) Methodology

The population of *Crassula helmsii* was removed by manual extraction.

B) Performed action

The population of *Crassula helmsii* located in a garden pond in Grez-Doiceau (Wallonia) was removed manually by the staff members of Riverine in July 2021, after they had contacted CRDG for their opinion.

C) Result

Almost the entire population could be removed, however check up in the following years will be needed to prevent the population to regrow from seeds or propagules.

2.5 Action P05

A) Methodology

The small population of *Egeria densa* was eradicated by manual extraction.

B) Performed action

The small population of 10 plants was located in a small remote pond in Jette (BCR) (50.884717 °N, 4.301873 °E). The presence of long-stemmed individuals (typical feature for plants that receive too little sunlight) and unrooted fragments could indicate that these plants originated from an aquarium and were released by a citizen a few months prior to detection by the LIFE RIPARIAS surveillance team. About 10 plants were manually extracted and destroyed in September 2021 by one staff member of BE. A check-up in September 2022 confirmed the full eradication of the population.

C) Result

The small population is eradicated. This was confirmed by inspection in 2022.

Figure 1: Population of Egeria densa in small publicly accessible pond in Jette (before management). © Xavier Vermeersch (BE)

2.6 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 staff members of UCL after they had contacted CRDG.

C) Result

The large population was removed. However, a check-up will be necessary in 2023 to check if there are no plants left which can grow into a new population.

2.7 Action P07

A) Methodology

The population of *Crassula helmsii* was eradicated using an ecosystem switch. The pond was filled up to remove the possible habitat for *crassula*.

B) Performed action

The population of 40 m² located at Grez-Doiceau was eradicated by filling up the pond. The ecosystem switch was performed by Riverine in August 2022.

C) Result

The population was removed; however, it will be necessary to check in 2023 if the whole population was eradicated by this measure and to verify if there are no other populations present in the close environment.

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.

C) Result

Figure 2: Removing the Procambarus clarkii individuals near the fence to prevent them from escaping/dispersing. © Arnaud Monty (ULiège)

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

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.

C) Result

Results are not available yet, because of the recent start of the action.

Figure 4: Procambarus 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.

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4. Conclusions

- **Number of actions**

  As monitoring was still taking place this year, the number of rapid response actions was rather low in 2022. However, it is likely that the number of observations will rise in the coming years, as a follow-up to trainings and information sessions carried out in the three regions (action E2). Provided that these 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.

  It is to be noted that the limited number of actions reported in this report may also be due to the fact that 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. As of next year, an application is expected to be developed by EV INBO (A2) which should help record actions in the field. Some larger populations were therefore considered in this report.

  Several actions were performed before the start of 2022. However, they were followed up in 2022 and were therefore considered in this report as well.

- **Prospects 2023**

  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.

Annex 1: List of eradication actions of emerging species

A) Plants

Table 2: List of eradication actions on plants within the LIFE RIPARIAS project area. (NA = data not available)

Action number	Date	Region	Location	Organisation	Species	Size of population	Eradication method	Manpower	Result
P01	April 2021	Wallonia	Grez-Doiceau	CRDG	*Lysichiton americanus*	7 plants	Manual extraction	1 person	All plants removed
P02	May 2021	Wallonia	Lasne	CRDG	*Lysichiton americanus*	Small population on pond bank	Manual extraction	3 people	All plants removed
P03	July 2021	Wallonia	Court-St-Etienne	Brabant Wallon	*Crassula helmsii*	15m² in a larger pond	Manual extraction	2 people	All visible plants removed
P04	July 2021	Wallonia	Grez-Doiceau	Riverine/ CRDG	*Crassula helmsii*	Garden pond covered	Manual extraction	1 person	Almost all plants removed
P05	September 2021	BCR	Jette	BE	*Egeria densa*	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	*Crassula helmsii*	200 m² (pond almost totally covered)	Manual extraction	NA	NA
P07	August 2022	Wallonia	Grez-Doiceau	Riverine	*Crassula helmsii*	40 m²	Filling up the pond	NA	All visible plants covered

B) Crayfish

Table 3: List of eradication actions on crayfish within the LIFE RIPARIAS project area. (NA = data Not Available (yet))

Action number	Date	Region	Location	Organisa-tion	Species	Size of population	Eradication method	Manpower (hour*person)	Result
C01	2019-2021	Wallonia	Grez-Doiceau		*Procam-barus clarkii*	>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
C02	Sept 2022	BCR	Watermaal-Bosvoorde	BE	*Procam-barus clarkii*	/	Pond drawdown + containment	NA	Start of the action in winter 2022-2023