





RAPID

Reducing and Preventing
Invasive Alien Species Dispersal

LAYMAN'S REPORT

RAPID LIFE



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Image © Kenrina Maidment Photo Credit: Kenrina Maidment

White-clawed crayfish (*Austropotamobius pallipes*)

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Project Details

LIFE CODE: LIFE16 NAT/UK/000852

Full title: RAPID LIFE: Holistic management of invasive species in freshwater aquatic, riparian and coastal environments

Coordinating beneficiary: Animal and Plant Health Agency

Associated beneficiaries: Bristol Zoological Society and Natural England

Website: www.nonnativespecies.org/rapid





INTRODUCTION AND PROJECT OBJECTIVES

IN THIS SECTION

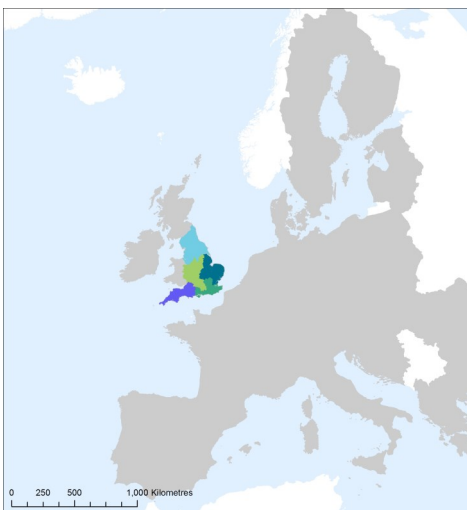
- Information on IAS
- Project Background
- Project Objectives

BACKGROUND

The RAPID LIFE Project

Globally, invasive alien species (IAS) are considered to be one of the most significant causes of biodiversity loss, second only to habitat destruction. The economic impacts are also severe, with an estimated annual cost of at least 12 billion euros across Europe, including a cost of 1.7 billion pounds to the British economy. Freshwater and marine habitats are particularly vulnerable because of interconnectivity and widespread use for recreation and business.

RAPID (Reducing and Preventing IAS Dispersal) LIFE was a three-year project (2017-2020) in England that piloted innovative approaches to IAS management. It delivered a package of measures that aimed to reduce the impact and spread of IAS in freshwater aquatic, riparian and coastal environments across England.



The RAPID LIFE Project took place in England.

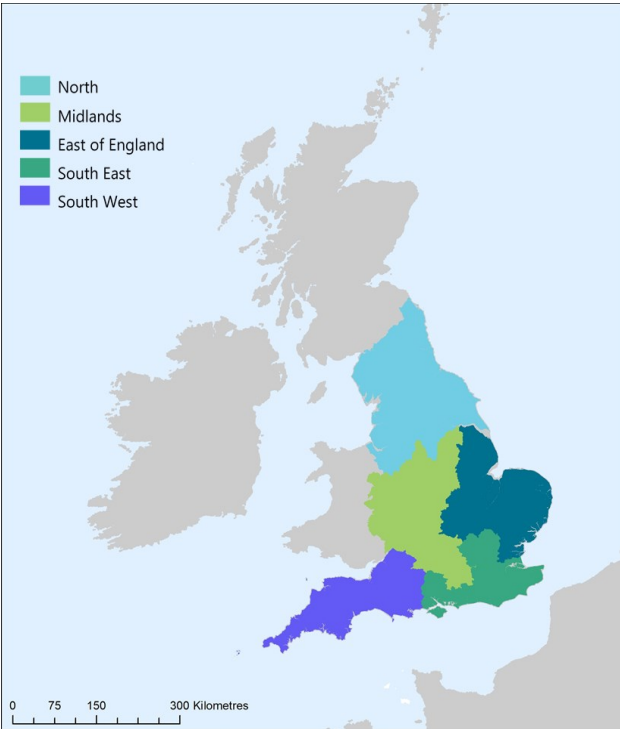
RAPID LIFE sought to bridge the gap between high level strategies (such as GB IAS strategy) and action on the ground at a local level. By sub-contracting work to locally based experts in each region, the project hoped to engage local communities in strategic and effective IAS management and help them coordinate and collaborate with neighboring regions, facilitating a bottom up approach.

“Economic impacts [of IAS] are also severe, with an estimated annual cost of at least 12 billion euros across Europe”

The aim for the long term effects of RAPID LIFE is mostly for behaviour change. This behaviour change is largely aimed at helping people to become more aware of biosecurity (in order to prevent the spread of IAS), but also helping people to improve techniques to manage established IAS on the ground. This awareness raising was specifically tailored to certain groups, to make it as relevant as possible and to maximise uptake and engagement.

Actions of RAPID LIFE included supporting the revision and update of the Check Clean Dry (CCD) biosecurity awareness-raising campaign, producing a variety of useful resources related to biosecurity and IAS management, running training workshops and developing Regional IAS Management Plans (RIMPs). As well as behaviour change, the project included

demonstrative conservation work that aimed to have a wide reach targeting all the 'RAPID regions' in England. This work mostly consisted of reducing numbers of invasive species through good practice management (especially Himalayan balsam, Japanese knotweed and signal crayfish).



For the purposes of the project, England was split into 5 "RAPID regions" — the North, the Midlands, the East of England, the South West and the South East.

Project Objectives

The RAPID LIFE Project aimed to prevent the introduction and reduce the spread of IAS through:

- **Establishing a regionally-based framework across England to deliver more effective IAS management, facilitating the production of Regional IAS Management Plans.**
- **Preventing the introduction of novel IAS to the project's target environments by increasing biosecurity awareness amongst**

target audiences through a coordinated programme of engagement at England wide and regional levels.

- **Increasing awareness and efficacy of GB-level early warning and rapid response systems within England and establishing localised rapid response protocols.**
- **Eradicating and controlling established IAS in high-priority areas whilst demonstrating strategic and best practice approaches.**
- **Sharing our approaches throughout European and international networks.**

The RAPID LIFE Project hopes to disseminate information about IAS issues far and wide, both nationally and internationally and to highlight replicability for its approaches, ultimately helping to slow the spread and prevent introduction of new IAS in England.



The invasive plant Himalayan balsam (*Impatiens glandulifera*) taking over a river. Photo credit: GBNNSS



PROJECT ACTIVITIES

IN THIS SECTION

- Awareness-raising, Networking and Training
- Production of RIMPS and IAS Management Toolkit
- Demonstrative Good Practice Conservation Projects

MAIN PROJECT ACTIONS

Awareness-raising, Planning, Networking and Training

Check, Clean, Dry (CCD) is a campaign originally launched in 2011, which focuses on stopping the spread of invasive plants and animals in UK waters. The campaign is run by partnership of key stakeholders including the GB NNSS (Great Britain Non-native Species Secretariat) and focuses on raising awareness about IAS issues through providing biosecurity guidance for recreational water users, such as anglers and boaters.



The RAPID LIFE Project supported the campaign by using to funds to revise and update the campaign materials, as well as distributing these materials and incorporating them into training workshops. We also supported CCD's border biosecurity programme, displaying awareness-raising posters at key locations at ports.

A series of training workshops were run through RAPID LIFE, with the majority focusing on raising



Photo credit: GB NNSS

Example of one of the CCD biosecurity awareness raising posters at a port.

awareness of biosecurity and IAS issues amongst water asset managers and with additional workshops focused on helping the general public, as well as relevant stakeholders, to identify different invasive species, what to look out for and how to report them.



Photo credit: Wiltshire Wildlife

Training workshops on biosecurity and IAS management.

A crucial part of successful invasive species management is working across geographic boundaries to stop their spread. Throughout RAPID LIFE, our team worked on creating and improving relationships with a wide variety of international stakeholders, particularly in France and Belgium. Two international workshops were held during the project and co-hosted by RAPID LIFE with high profile international counterparts, increasing knowledge-sharing and collaboration amongst key stakeholders.



Photo credit: RAPID LIFE

Conference in Brussels on exchanging experience on managing IAS in Europe

Production of Regional Invasive Species Management Plans (RIMPs) and IAS Management Toolkit

RIMPs are documents that are intended to bridge the gap between high-level strategies such as the [GBNNS Strategy](#) and work carried out at a local level, by stakeholders such as LAGs (Local Action Groups). Via stakeholder consultation, experts in each region have produced Regional IAS Management Plans (RIMPs) for each of five regions in England: the North, the East of England, the Midlands, the South East and the South West.



These are freely available to download and it is hoped that as 'living documents' they will be regularly updated in future.

The RIMPs are intended to deliver consistent but regionally tailored recommendations on prevention, early warning, rapid response, eradication and control of IAS throughout England. It collates useful information such as regional contacts, useful resources and regionally important organisations, as well as flagging up IAS that are likely to be a problem in each region. Alongside the RIMPs, RAPID LIFE has supported the expansion of a web platform for recording IAS called "INNS Mapper", which now covers all of England, which will hopefully increase reporting of IAS.

Results :

- **5 RIMPs produced, together covering all of England**



Two of many tailored CCD signs installed at sites during the RAPID LIFE to raise awareness of biosecurity and IAS issues

- **35 biosecurity workshops delivered, as well as 9 other workshops**
- **305 CCD signs installed at key sites**
- **A network of 227 distribution points for CCD materials established**
- **4 estuary-level biosecurity plans produced**

In addition to the RIMPs, a comprehensive IAS Management toolkit has been created. This toolkit is freely available online and consists of a variety of materials including information for planning and training stakeholders on biosecurity and IAS, tailored to different user groups. It also includes good practice management guides for a range of IAS and videos on awareness-raising.



Volunteers using good practice management techniques to manage American skunk cabbage

Pilot Waterbodies Accreditation Scheme

AQUA (Aquatic Quality Award) is a biosecurity accreditation scheme that was trialled as a regional pilot in the South West region of England through the RAPID LIFE Project. It was run by Bristol Zoological Society (alongside South West Water and the Animal and Plant Health Agency) through RAPID LIFE and is designed to help reduce the spread of invasive alien species.



The scheme is a way to reward water asset managers for excellence in biosecurity and be recognised as actively conserving their site to maximise native aquatic diversity. There are the three levels of the award, bronze, silver and gold - so there is opportunity for participants to gain a bronze level of accreditation and work towards the silver and gold levels. During the lifetime of the RAPID LIFE Project, we were able to accredit 45 sites. It is hoped that this scheme could eventually be rolled out further elsewhere.



Examples of CCD signs (tailored to specific user groups) that were put up through RAPID LIFE. Having CCD signage present on site is a criteria of the AQUA scheme.

Demonstrative Good Practice Conservation Projects

Sub-catchment (small-scale) projects

Three sub-catchment IAS management projects were carried out in priority areas during the RAPID LIFE project and covered three species: American skunk cabbage (*Lysichiton americanus*), giant hogweed (*Heracleum mantegazzianum*) and floating pennywort (*Hydrocotyle ranunculoides*).

This work was carried out using good practice techniques and was managed through representatives of LAGs with support from volunteers.



Photo credit: GB NNSS

The invasive plant, giant hogweed (*Heracleum mantegazzianum*), is a hazard to human health, as well as negatively impacting biodiversity

Catchment (large-scale) projects

Two catchment-scale IAS management projects were carried out during the RAPID LIFE project and involved two species: Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*) in the Bristol Avon and the River Wensum catchments. In both catchments, Himalayan balsam was the predominant IAS present and the majority of treatment effort was on this species, with hand-pulling the most commonly used method.



Corporate volunteers working on the large-scale project in the Avon catchment

Japanese knotweed is more commonly treated by spraying with herbicides and is therefore unsuitable for most volunteers. The majority of this control was therefore undertaken by professional licensed contractors.

abundant than anticipated and emphasises the importance of good baseline data in project planning.

Catchment Project Results:

- **Across both sites, 41 000 m² of Himalayan balsam and 1640 m² of Japanese knotweed were removed.**
- **In both catchments, treatment of Himalayan balsam significantly exceeded the project targets.**
- **The target for removal was not met for Japanese knotweed. Feedback from the contractors indicated that this was because Japanese knotweed was less**



Photo credit: GB NNSS

Japanese knotweed (*Fallopia japonica*), one of the target species of the catchment scale projects, can have significant economic impacts, as well as ecological impacts on their surrounding environment.



Signal crayfish (*Pacifastacus leniusculus*)

Native to North America, the invasive signal crayfish is unfortunately well-established in Great Britain, as well as several other European countries. It was originally introduced to be farmed for food. Negative impacts from this species include outcompeting and preying on native species, as well as erosion of river banks through burrowing. The main concern is its role in spreading the deadly disease “crayfish plague”, which has decimated native crayfish species across Europe. This crayfish is lobster-like in appearance and at a maximum size of 18cm, is much larger than Great Britain’s only native crayfish, the endangered white-clawed crayfish. The signal crayfish is easily identified by turquoise/white marks on the underside of its red claws.



CASE STUDY: CRAYFISH



WHITE-CLAWED CRAYFISH CONSERVATION AND INVASIVE SIGNAL CRAYFISH MANAGEMENT

Case Study Crayfish

The RAPID LIFE Project has supported Bristol Zoological Society (BZS) in a double pronged approach to crayfish conservation in the south west of England. This has included the re-introduction of native white-clawed crayfish and control of the invasive signal crayfish

White-clawed Crayfish Conservation

Due to the widespread establishment of the invasive signal crayfish and its potential for transmitting the deadly "crayfish plague" to our native white-clawed crayfish, white clawed crayfish were only released at "ark" sites. These ark sites are safe refuges for the white-clawed crayfish and are chosen because there are no invasive crayfish there and are isolated from other sites.

BZS breed and rear white-clawed crayfish in their purpose built hatchery at the zoo, fit pit tags (for monitoring purposes) on the animals and then release them into ark sites.



Photo credit: BZS

Release of white-clawed crayfish at one of RAPID's ark sites.

For more information on BZS's work with white-clawed crayfish, please see: <https://bristolzoo.org.uk/save-wildlife/conservation-and-research/white-clawed-crayfish-project>

Signal Crayfish Control

Management of signal crayfish was carried out for 18 months at two sites in the South West. As well as trapping, techniques included de-watering (temporary drainage) of control sites, and sterilisation and then re-release of male signal crayfish. It was thought that by releasing large sterilised males, these males would monopolise females, preventing smaller males from being able to breed. However, during the RAPID LIFE Project, other signal crayfish projects suggested that male sterilisation wasn't as effective as originally thought (the smaller males were possibly sneaking past the sterilised males and breeding with females!). So we focused on the other methodology and explored predatory perch introductions (fish predation may help target smaller animals that can be missed by trapping).

Results During the RAPID LIFE Project

- **1100 white-clawed crayfish hatched at BZS**
- **2500+ signal crayfish and 19 700 signal hatchlings and eggs have been removed and humanely killed**
- **Two new ark sites for white-clawed crayfish created and two existing ark sites supplemented**



Rust fungus infection on a Himalayan balsam leaf (*Impatiens glandulifera*)

Native to the foothills of the Himalayas, India and Pakistan, Himalayan balsam is a widespread invasive species in Britain and elsewhere in Europe. This species is very damaging, causing erosion to river banks, and forming dense stands that increasing likelihood of flooding and reduce or suppress native plants, as well as negatively impacting other biodiversity. Whilst Himalayan balsam is an annual plant, its high level of seed production and vigorous seed dispersal means that it is highly invasive. Each plant produces at least 500 seeds, which can be propelled up to 7 metres from the parent plant by seed pods that are explosive to touch. The biological control agent used for Himalayan balsam is a rust fungus, (*Puccinia* species), which infects the stem and leaves of Himalayan balsam throughout the growing season.



CASE STUDY: BIOCONTROL



DEMONSTRATING AND MONITORING THE USE OF BIOLOGICAL CONTROL AGENTS

Case Study: Biocontrol

The RAPID LIFE Project has supported CABI's work on biological control of Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*) across England.

Japanese Knotweed

The biocontrol agent used by CABI for control of Japanese knotweed is a psyllid insect (*Aphalara itadori*). It is a knotweed specialist and sucks sap from the leaves, damaging the plant. More information on CABI's work with Japanese knotweed can be seen here: www.cabi.org/japaneseknotweedalliance



Photo credit: John Musham

A psyllid on a Japanese knotweed plant at one of RAPID LIFE's biocontrol sites.

Psyllids were released and monitored at 13 sites across England through the RAPID LIFE Project. The psyllids have struggled with overwintering due to

England's cold, damp weather, so for future releases, CABI are considering other psyllid strains better adapted to this kind of climate.

Himalayan Balsam

The rust fungus biocontrol agent was released and monitored at 15 sites through the RAPID LIFE Project. Through RAPID it was discovered that there are actually three different biotypes (same species, but with regional differences) of Himalayan balsam in England and the rust fungus we used was incompatible with biotypes in the South East and South West. This means that Himalayan balsam has likely been introduced to England on at least three separate occasions. This a very useful finding and for future projects CABI will try to source other strains of the rust fungus that will better target these other biotypes. More information on CABI's work with Himalayan balsam can be seen here:

www.himalayanbalsam.cabi.org



Photo credit: CABI

A sub-contractor applying the rust fungus to some Himalayan balsam plants one of RAPID's training days.

DISCUSSION

IN THIS SECTION

- Discussion of Results
- After-LIFE

REFLECTING AND LOOKING TO THE FUTURE

Discussion of Results

The RAPID LIFE Project has met all of its objectives. We have completed our Regional IAS Management Plans and they are freely available to download and will be kept updated for at least five years. We have supported the revision of the Check Clean Dry campaign and distributed materials, signage and carried out workshops all to increase awareness about IAS and biosecurity. Five practical IAS management projects have been carried out, as well as supporting crayfish management through BZS. RAPID LIFE has also built on existing international networks and hosted two conferences overseas with a variety of relevant stakeholders, where we shared our knowledge gained through RAPID.

Only one aspect of one objective was not met in the way that we had originally envisaged. During RAPID LIFE we have run alert/priority species workshops to raise awareness and help people know what to “look out” for and where/how to report it. However, we have not directly increased the efficacy of GB rapid response systems because rapid responses are currently run nationally by national organisations (the GB NNSS, DEFRA and Natural England).

Due to the nature of both IAS ecology and the process of encouraging behavioural change, it will likely take years to be able to see the full impact of some of the work that has been carried out for the RAPID LIFE Project. Evaluation of the cost-benefits of knowledge transfer/coordination of activity through RAPID LIFE has proven difficult. The collaborative nature of the project is inherently positive, such as creation of useful resources and tools with stakeholder input. That being said, it has proved difficult to attribute specific costs and benefits to individual activities. Monitoring during the After-LIFE phase will be useful to see any ripple effects of change from the project’s activities.

RAPID LIFE’s work on IAS, both practically and in terms of awareness raising will likely have both short-term and long-term benefits, as IAS are considered a serious environmental and economic problem. They are considered to be one of the most significant causes of biodiversity loss, (Convention for Biological Diversity) and it has been estimated that the economic impact of invasive species (Great Britain) was approximately £1.7 billion per year (Williams et al., 2010). However, the total damage is estimated to be much larger, particularly after including other indirect effects that are difficult to quantify economically (Pimentel et al., 2005).

Though management of existing IAS is important, prevention of new IAS arriving is considered both more effective in the long run, hence the focus on biosecurity awareness-raising as part of RAPID LIFE.



Photo credit: Yorkshire Dales Rivers Trust

Two of many tailored CCD signs installed at sites during the RAPID LIFE to raise awareness of biosecurity and IAS issues

As well as awareness-raising, the project’s focus on strengthening collaboration and coordination between relevant stakeholders will likely significantly aid future IAS management in Great Britain and elsewhere. Approaches used in RAPID are easily transferable further afield.



Photo credit: RAPID LIFE

RAPID LIFE's "Cross-border Information Exchange" conference in France, co-organised by The French IAS Resource Centre

Collaboration and networking through the project has already revealed interest from other EU member states to run similar biosecurity campaigns to CCD (so far Spain and France) and reproducing resources such as the RIMPs.

Key Lessons Learnt from RAPID LIFE

- **Good baseline data is essential in project planning and for monitoring.**
- **Data access is a complex issue that requires careful consideration in planning stages**
- **Timelines, budgets and objectives must be planned carefully, but with flexibility too.**
- **Availability of expertise, as well as levels of engagement can vary geographically and this needs to be considered early on.**
- **It is important to ensure continuous stakeholder engagement with a project over several years.**

After-LIFE

The value of any project is ultimately dependent on its legacy status. The coordinating beneficiary of RAPID LIFE, The Animal and Plant Health Agency, will oversee the After-LIFE plan for at least 5 years, as well as safeguard and build on the project's legacy. The breadth of future actions will depend to a certain extent on available funding, but APHA are already committed to maintaining and doing minor updates to RAPID's online resources, including the RIMPs via stakeholder consultation. APHA will also assess the efficacy of AQUA, the pilot waterbodies accreditation scheme and map RAPID LIFE's deployment of CCD biosecurity signage and materials. Furthermore, APHA will continue to support Local Action Groups as much as possible, so they can continue their amazing work on IAS management in Great Britain. APHA also hopes to maintain and build on the valuable networks, both national and international that have been forged throughout the project.



Photo credit: Neil Green

Volunteers hard at work pulling Himalayan balsam plants for the South West catchment scale demonstrative project on the Bristol Avon as part of IAS management for the RAPID LIFE Project

ACKNOWLEDGEMENTS

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PROJECT DETAILS

LIFE CODE: LIFE16 NAT/UK/000852

Full title: RAPID LIFE: Holistic management of invasive species in freshwater aquatic, riparian and coastal environments

Duration of project: 01/07/2017—03/06/2020 (extended to 31/12/2020)

Total project budget: 1,136,663 Euro (EU financial contribution = 59.97% of total eligible budget)

Coordinating beneficiary: Animal and Plant Health Agency

Associated beneficiaries: Bristol Zoological Society and Natural England

Website: www.nonnativespecies.org/rapid

