AFTER LIFE CONSERVATION PLAN

LIFE08NAT/E/000055 PROJECT

Restoration of habitats of community interest in the Basque Country's estuaries

EUSKO JAURLARITZA
GOBIERNO VASCO

INGURUMEN ETA LURRALDE POLITIKA SAILA

DEPARTAMENTO DE MEDIO AMBIENTE Y POLÍTICA TERRITORIAL

ihobe

1. INTRODUCTION: LIFE+ ESTUARIES OF THE BASQUE COUNTRY PROJECT

a. Background information

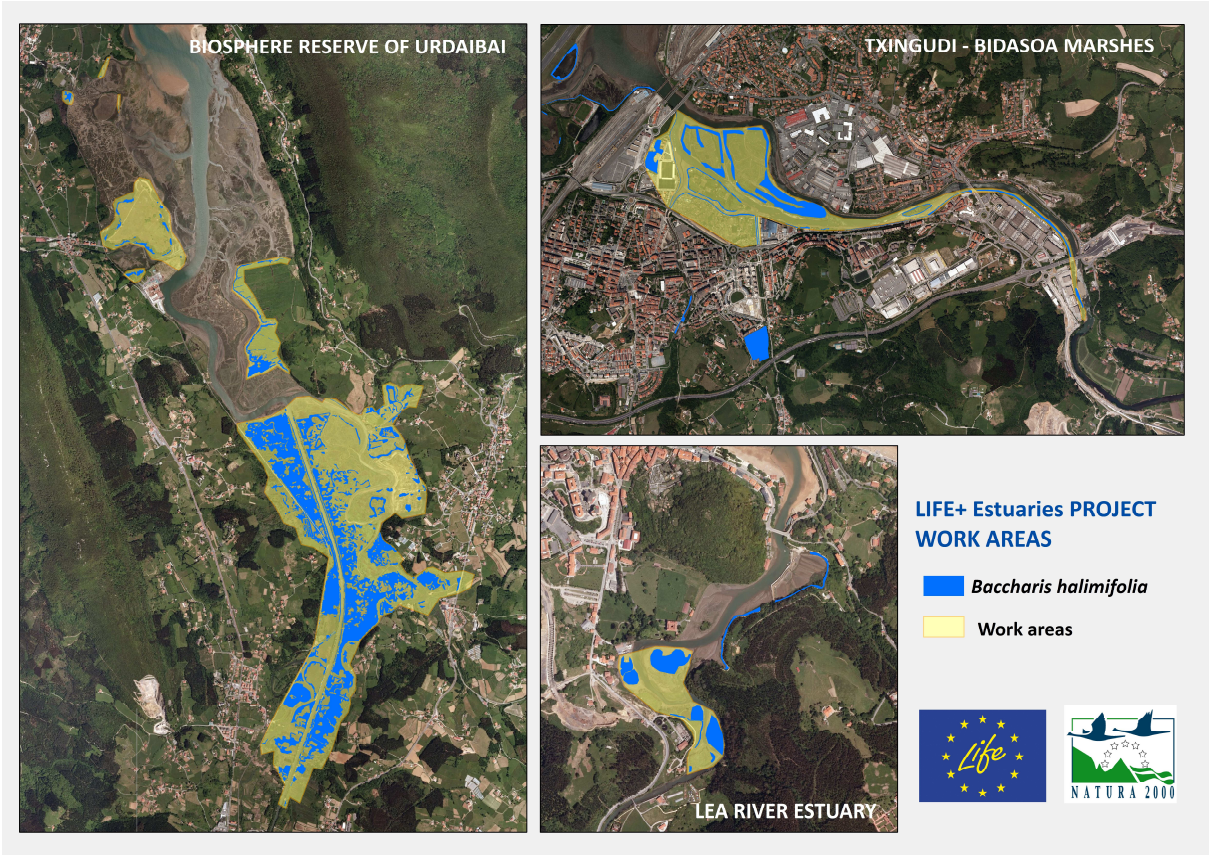
Habitats in estuaries are subject to various pressures and threats, which cause their state of conservation to deteriorate, such as urbanisation, pollution or the proliferation of invasive exotic species. The most dangerous invasive species in the estuaries in the Basque Country is *Baccharis halimifolia*, which invades Habitats of Community Interest (HCI) such as rushes and saline grasslands, and other habitats that are highly important for the conservation of fauna and flora Species of Community Interest, such as reed beds. This species is present in all the estuaries along the Basque coast, but especially in Urdaibai, Txingudi and Lea, which are Natura 2000 Network sites.

This problem affects a large stretch of the European Atlantic coast, from Brittany in France to Asturias in Spain. It has even spread to other coastal ecosystems, such as cliffs and coastal heathland.

In order to tackle this issue and restore the habitats which are being invaded by *B. halimifolia*, the Basque Government launched the Life+ Project "Restoration of habitats of community interest in the Basque Country's estuaries" (LIFE08NAT/E/0055)", thanks to the financial contribution from the European Commission through the LIFE Programme. The Coordinating Beneficiary is the Basque Government and the Associate Beneficiary is its private company, Ihobe.

b. Objectives and actions of the LIFE project

The project's objective is to restore the habitats which were being invaded by *Baccharis halimifolia* in three estuaries on the Basque coast: the Urdaibai biosphere reserve, the Bidasoa Islands in Txingudi and the river Lea estuary.



However, and taking into account the magnitude of the problem and the direct and indirect consequences of this biological invasion, other specific objectives were also set.

- Environmental improvement for the various species of migratory birds, promoting conditions for nesting and resting, mainly rushes and reed beds.
- To develop a global action in those estuaries with greater restoration potential in the Basque Country.
- To apply the best practices learned in pilot projects and scale them up to address the problems in the Natura 2000 sites on the European Atlantic coast, from Asturias to Brittany, by coordinating and promoting activities.
- To educate specialists, management institutions and the general public about the threat posed by introducing invasive exotic species.

The habitats which are the focus of the LIFE project are high marsh habitats that are directly affected by the invasion:

- 1320 Spartina swards (*Spartinion maritimi*)
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- 1420 Mediterranean and Thermo-Atlantic halophilous scrubs (*Sarcocornetea fructicosae*)

Another habitat which benefited from the project was the *Phragmites australis* reed beds, which although not a HCI is essential for the conservation of species of community interest such as the aquatic warbler (*Acrocephalus paludicola*).

The main actions of the LIFE project are implemented to respond to the problem both on a local and global scale:

- Elimination of invasive vegetation in the three project areas. Different methodologies have been used depending on the age of the species and the features of the area in question. In total, a gross area of 780 hectares was treated and a net area of 314 hectares. Methodological tests were also conducted, and preventive measures and measures to monitor the impact of the methods used were also implemented.
- Revegetation on the Bidasoa Islands, by replanting over 9,000 trees and shrubs of species linked to the banks of estuaries.
- Development and implementation of a Follow-up plan in the three areas, which has involved monitoring both the effectiveness of the work carried out to eliminate the invasive vegetation and the restoration of the vegetation that was the focus of the project. In order to do so, 45 fixed plots were set up and 164 random transects were made during the project's three-year duration. At the end of the project, mapping was carried out to determine the extent of the habitats' restoration in the main affected areas, as well as an inventory of the spread of *B. halimifolia* along the rest of the Basque coast.
- Dissemination programme, with actions focused on a diverse target audience.
    - General public: information signs, informative leaflets, website, travelling exhibitions, guided visits, photography competition, press releases, appearances on radio and TV, etc.
    - Technical and specialised audience: technical seminars and thematic days, publications in specialised journals, participation in international meetings and conferences, scientific publications, etc.
- Creation of an inter-institutional working group "The International Commission for follow-up and exchange of experiences with *Baccharis halimifolia*", which has analysed the problem on a European level and identified the need for the issue to be tackled. 26 representatives from 6 regions attended the meetings held throughout the project, including representatives from the national, regional and local administrations, administrators of affected natural areas, researchers and experts in biological invasions, companies from the forest sector, etc.
- Study and implementation of measures to minimise the impact of invasive vegetation elimination methods. Environmental and safety plans were drawn up, as well as a specific toxicity study of the chemical products used, in collaboration with the University of the Basque Country.

c. Results of the LIFE project

The most significant results have been achieved in the work to eliminate *B. halimifolia* in the three project areas. The impact of this invasive species has been reduced significantly and the target habitats are on the road to recovery. Furthermore, its capacity to spread to other non-affected estuaries and habitats has been limited, as the extent to which the treated specimens are able to resprout has been reduced and the source of nutrients from the seed bank has been removed during the three-year treatment. The latest follow-up report contains the project's final results, which were different for each area:

- In the Biosphere Reserve of Urdaibai, the average resprouting percentage dropped from 40 to 25%, although there were clear differences between areas influenced to a greater or less extent by tides. The density of *B.halimifolia* seedlings which have germinated has also decreased in the treated areas, which is a sign of the seed bank's imminent depletion. With regard to the habitats' restoration, the most represented communities are the *Phragmites australis* reed beds (which occupy 40% of the treated area), the *Juncus maritimus* rushes (which cover 18%) and the *Elymus athericus* pastures (occupying 9%). Although there have been significant changes to the landscape and some species are clearly dominant, some areas still remain where *B.halimifoflia* is very dense.
- The treatments have been approximately 95% effective on the Bidasoa Islands (Txingudi Marshes), with very few specimens still sprouting after two rounds of treatment. However, there has been very major recolonisation by germinated seedlings from the seed bank, with densities of more than 300 seedlings per square metre recorded. In this case, significant spontaneous regrowth of the natural vegetations has not been observed (as occurred in two of the other project areas) and, therefore, two plantings of tree and shrub species (among which *Tamarix gallica* dominated, as it occupies the same niche as *B. halimifolia)* were carried out to encourage competition with the invasive species and the restoration of a shrub extract in the island's dykes.
- In the river Lea estuary, the treatment has been 100% effective, with all the specimens eliminated in two rounds of treatment. The treated areas have also experienced significant recolonisation by seedlings, with densities of up to 166.4 seedlings per square metre recorded. Nevertheless, due to the reduced size of the affected areas (3 hectares), it has been possible to perform two repeat treatments and manually eliminate all the young specimens, thereby promoting the occupation of the area by a variety of species connected to estuary habitats such as *Elymus athericus, Atriplex prostrata* and *Juncus maritimus.*

Despite this, the report states that these results should be regarded as preliminary results, due to the short amount of time that has passed since the conclusion of the elimination tasks and the data collection.

The dissemination efforts have also had very positive results, as all facets of society have been reached (specialist audience, citizens, public administration) and the materials created do not have a restricted period of validity and can be used in coming years.

With regard to coordination, the inter-institutional group formed as part of the project may serve as a point of reference for planning and implementing *Baccharis halimifolia* control, with support provided by the Management manual for designing plans to manage the species.

2. ANALYSIS OF THE CURRENT SITUATION

a. Current situation and management needs in the project focus areas

After three years of treatment, the pressure that *B.halimifolia* puts on the habitats in the three estuaries has weakened and has even been removed in some cases. However, as has already been pointed out, the initial results vary in each focus area. Moreover, as stated in the final follow-up report, it would be desirable for an additional data-collection campaign to be launched in order to verify the results, and to more precisely assess the needs of each of the project areas.

Based on the project's final results, the following statements may be made about each focus area:

- **River Lea estuary: the invasive species is in the process of being eradicated.** All the adults species have been eliminated and the seed bank has reduced considerably. An additional follow-up campaign and intensive monitoring for two years would be enough to ensure its complete disappearance. Native vegetation is successfully starting to grow again, and it does not therefore seem necessary to implement further action for this purpose.

- **Txingudi Marshlands-Bidasoa Islands: the pressure from *B.halimifolia* has dropped considerably, with almost all the adult specimens being eliminated.** The large seed bank and the level of anthropisation in some parts of the Islands have facilitated major recolonisation of seedlings, which must be eliminated entirely in the first year, before new seeds can be generated.

  In addition, work has also been carried out in the surrounding area (estuary banks, islets, canals) with other agents that must be followed up until it is virtually eliminated. The most problematic zone is the French riverbank, where containment action has been implemented with annual clearances of the species and riverside vegetation. Continuing this management would help to prevent the dispersion of seeds from affecting the LIFE project focus areas.

  With respect to revegetation, the only planted species which has experienced success in colonising the areas invaded by *B. halimifolia* was *Tamarix gallica*, which did not suffer an attack from another invasive species (*Myocastor coipus*). It would be useful to monitor the evolution of the plantation.

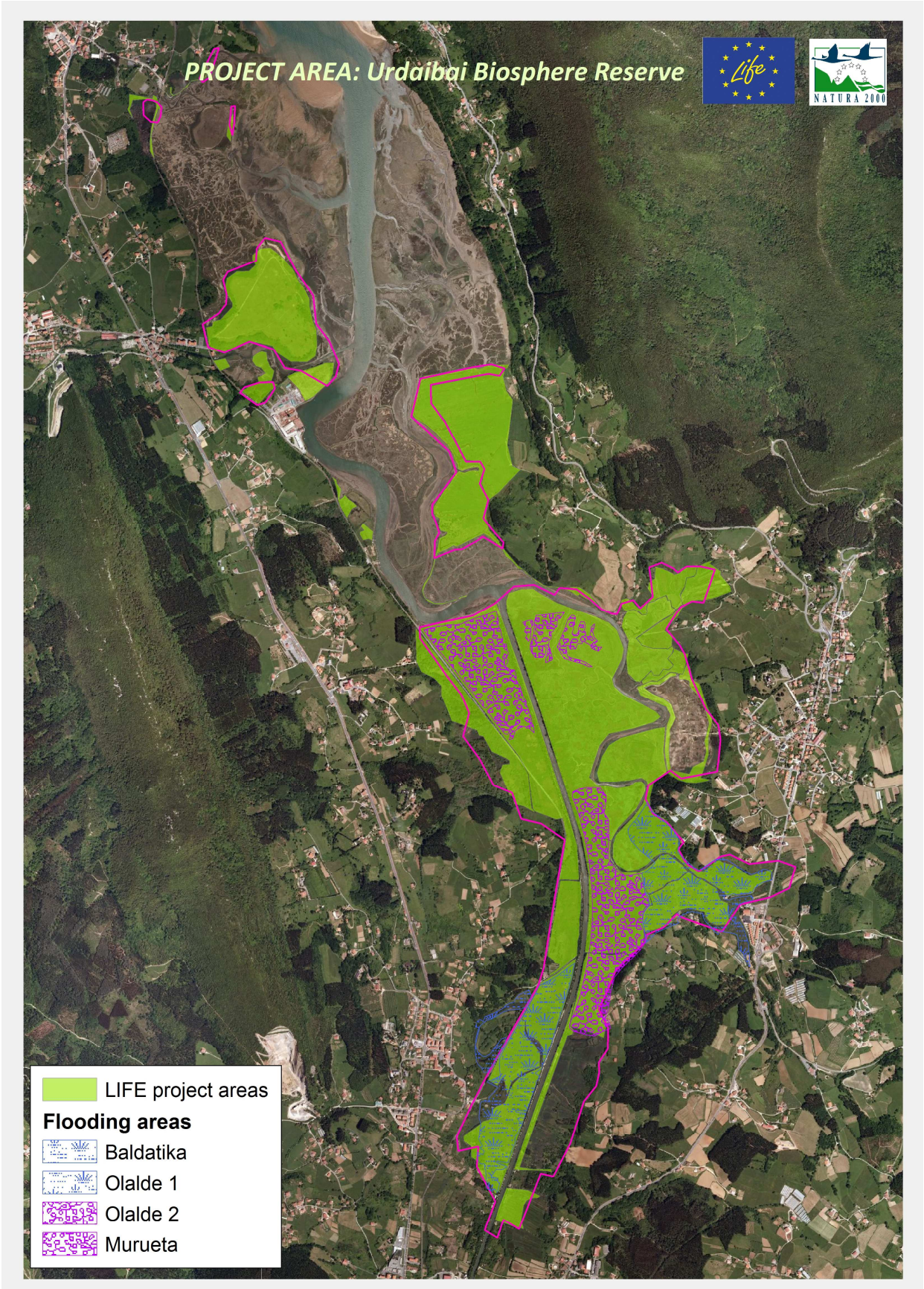
- **Biosphere Reserve of Urdaibai**: the situation is more complex in this focus area. The greater level of pressure that this area was under, due to the complex dynamics, the size of the initially affected area and the level of anthropisation in some parts of the estuary have led to vastly different results that are difficult to interpret and monitor. Nevertheless, significant areas of the target habitats have improved, mainly reed beds, rushes and salt meadows, and the ecosystem's resilience has increased.

  This area is managed through the Biosphere Reserve's managing body, which is organised as a board, in which all the stakeholders in the territory play a role (Basque Government, Vizcaya Provincial Council, municipal representatives, etc.). There are a wide range of instruments in place, such as the PRUG or the Management Plans for Three Special Areas of Conservation, which include measures for the conservation of the estuary's habitats.

  In addition, the Board is designing a comprehensive estuary restoration project, which it is aiming to implement in the coming years. With the objective of restoring the estuary's natural dynamics, the aim is to restore the flood potential in some areas covered by the LIFE project. The project is still pending approval, meaning that a start date has not yet been finalised. In Figure 1 the flooding project sectors are shown.

  In this way, the conservation and restoration of the habitats is guaranteed in the long term, although it does seem necessary to continue with some follow-up steps in the areas treated in the estuary. At least until the comprehensive restoration project is launched, it is recommended that efforts continue to focus on reducing the seed bank, eliminating seedlings before they mature and specimens which have resprouted in areas where a greater level of regrowth has been observed. It would also be advisable to implement containment measures, such as clearing inflorescences, across the board.

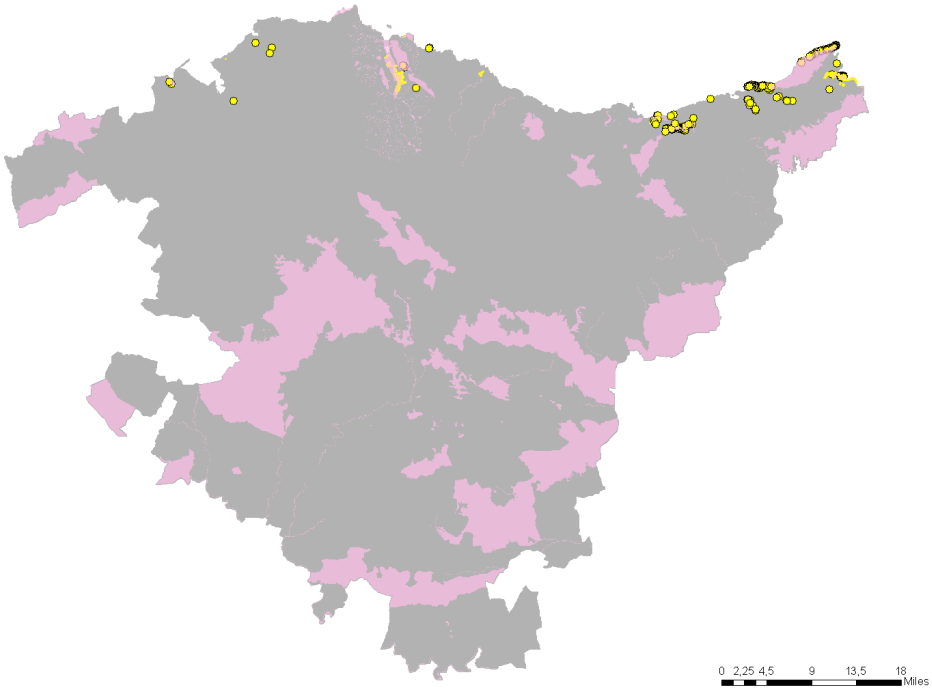
Figure 1. LIFE Project work áreas in Urdaibai and sectors to be flooded by the Oka estuary restoration Project.



b. Current situation on the Basque coast and the rest of the European Atlantic coast

According to the mapping work carried out in 2013, *Baccharis halimifolia* is present to a larger or lesser extent in the major estuaries, except the Deba and Urola estuaries. Other habitats, such as cliffs and coastal heathland are also affected by this invasion.

In the Follow-up report on the state of conservation of the coastal habitats of community interest (Basque Government, 2013), it is highlighted that one of the major threats and/or sources of pressure on the estuary habitats (1130, 1140, 1310, 1320, 1330 and 1420) and the coastal heathland (1230 and 4040*) are the invasive and non-native species (GI01). In the case of the estuaries, the report indicates that one of the most dangerous species is *Baccharis halimifolia*, which is present in Urdaibai (ES213007), Lea (ES2130010), Iñurritza (ES2120009), Oria (ES2120010) and Bidasoa (ES2120018), *B.halimifolia* is one of the most prolific species on the cliffs and coastal heathland in these habitats, and is present in Jaizkibel-Ulia (ES2120017), areas which are part of the Natura 2000 Network.

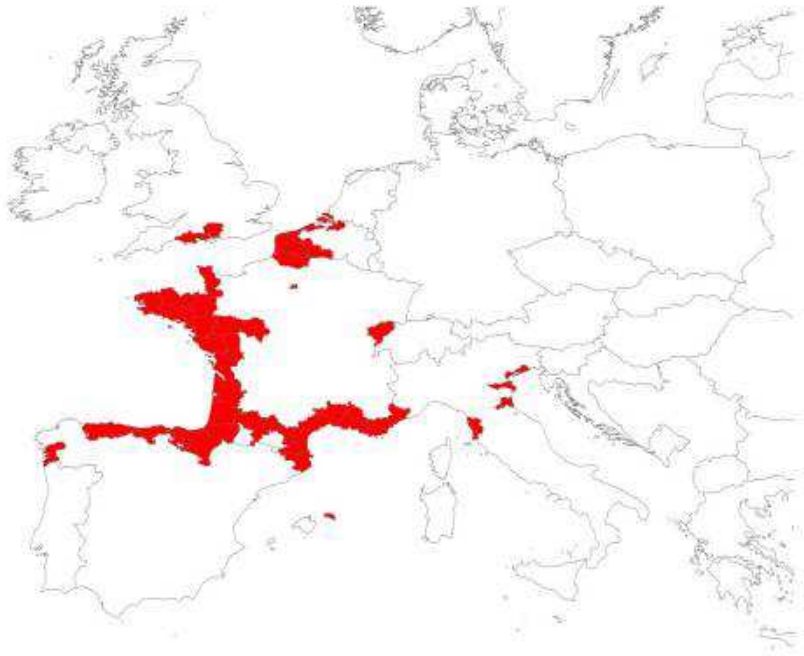


Map of the spread of *B. halimifolia* (yellow) and of the SCIs in the Autonomous Community of the Basque Country (pink).

In addition to the actions implemented by the Basque Government to eliminate *B.halimifolia* as part of the LIFE project in the Txingudi, Lea and Urdaibai estuaries, other stakeholders have launched projects and actions in different sections of the Basque coast. The most important of these are:

- Elimination of exotic invasive species in the Land and Sea Public Domain (DPMT) of the Txingudi-Bidasoa estuary (Gipuzkoa Provincial Coastal Service) Txingudi-Bidasoa SAC
- Elimination of *B. halimifolia* from the cliffs and coastal heathland in Jaizkibel and from some parts of the Txingudi Bidasoa estuary (Gipuzkoa Regional Government) Jaizkibel-Ulida SAC
- Elimination of *B. halimifolia* and restoration of the Cladium mariscus fen (Hondarribia Town Council) SAC Jaizkibel-Ulia
- Restoration and elimination of *B. halimifolia* in the Vega de Saria-Usurbil (Provincial Council of Gipuzkoa) SAC Ría de Orio
- Elimination of *B. halimifolia* in the restored Iñurritza area (Provincial Council of Gipuzkoa) SAC Iñurritza
- *B. halimifolia* elimination campaign in the Barbadun estuary (Provincial Council of Vizcaya) Sac Barbadun Estuary

As to the situation in the rest of the European Atlantic coast, it is worth pointing out that the main area where *Baccharis halimifolia* has spread stretches from Asturias to Brittany, although it has not yet invaded regions with a notable presence of habitats of community interest.



Inventory and restoration work has also been conducted in these regions, especially in Cantabria, Asturias and some protected areas along the French coast. It must be highlighted that the Txingudi-Bidasoa estuary is the natural border between Spain and France, and that management of biological invasions is not coordinated; one of the border areas, known as the Domaine d'Abbadie (SCI) could be one of the centres of invasion spreading across the border. Measures have not yet been introduced to manage the invasive plant in these areas.

c. SWOT Analysis.

WEAKNESSES • The elimination methods used are generally expensive, and some are not entirely effective. • The factors that affect the response of *Baccharis halimifolia* to the treatment are not known. • The adult stems that are able to generate seeds have not been fully eliminated. • New invasive species have been identified in the LIFE project focus areas.	**THREATS** • *Baccharis halimifolia* has a great ability to resprout and reinvade. • *Baccharis halimifolia* invades different coastal areas of the Natura 2000 Network in the Basque Country, as well as border regions such as Aquitaine and Cantabria. • This invasive species is spreading and causing harm to other habitats, such as cliffs and coastal heathland. • *B. halimifolia* is still marketed as an ornamental species on the internet and some nurseries in France. • The end of European funding is threatening the continuation of the work in the long term.
STRENGTHS • The most affected estuaries along the Basque coast have been treated, thereby limiting their ability to expand further. • The estuary habitats are currently in the recovery phrase following the elimination of the invasive vegetation, which has increased their ability to withstand reinvasion. • A lot has been learnt about planning *B-halimifolia* management action, and this has made it possible to set realistic objectives and manage the available resources more efficiently. • Sufficient experience has been acquired to repeat the elimination projects in the rest of the affected estuaries. • The administrations and bodies that make up the International Commission are carrying out work to manage this species, or have shown interest in implementing such projects in the short term in affected areas of the Atlantic coast.	**OPPORTUNITIES** • The management plans for Nature 2000 areas affected by this problems including measures aimed at managing this biological invasion. • There are projects and plans in place to restore the main estuaries (Urdabiai, Txingudi, Oria, etc.) which also tackle the problem posed by this invasive species. • Various initiatives and plans are already in place which may respond to the need for management, follow-up and dissemination of information about the issue of biological invasions in coastal habitats. • Significant progress is being made on legislation focused specifically on invasive exotic species at the autonomous community level (the future Invasive Exotic Species Strategy in the Basque Country), the national level (Spanish Decree on Invasive Exotic Species) and the European level (proposal for a European regulation on Invasive Exotic Species). *B. halimifolia* is included in the main lists of invasive species subject to the regulation. • The knowledge acquired and contacts made with other affected regions have made it possible to move forward with a strategy to tackle the issue at the national and European level.

3. SCOPE AND OBJECTIVES OF THE AFTER-LIFE CONSERVATION PLAN

The Basque Government's long-term objective for the estuary habitats is to ensure their conservation, by eliminating as far as possible all the communities and isolated specimens of *Baccharis halimifolia* in the coastal areas of the Basque Country, and limit its spread along the European Atlantic coast.

Due to this invasive species' ability to spread and the fragility of the estuary habitats, the After-LIFE Conservation Plan must cover the other areas affected by *Baccharis halimifolia* in the Autonomous Community of the Basque Country, in addition to the areas included in the LIFE project (Urdaibai, Txingudi and Lea estuaries). Efforts must also target border regions affected by this invasion, with the aim of ensuring the restoration and conservation of the estuary habitats across the entire European Atlantic coast. The importance of halting the spread to other regions, such as Asturias or Galicia, which have not suffered as much must be stressed. For this reason, this plan includes action aimed at maintaining and improving the results both within and beyond the LIFE project focus areas.

Both concrete conservation action and the evaluation of the results obtained must be based on a monitoring programme that covers the whole Conservation Plan. In this respect, it is desirable to make use of existing instruments, such as the annual monitoring that the Basque Government performs of the conservation state of coastal habitats.

Furthermore, managing the invasive species requires contact and coordination between all actors concerned, in order to optimise resources, set common priorities and undertake coordinated action. The working group created must, therefore, be the starting point for planning and coordinating the steps to take along the rest of the coast. It must also serve as a point of reference for exchanging information and experiences on this and other species which invade coastal habitats, and for developing joint strategies.

Finally, and as has already been done by the Basque Government, the After-LIFE Conservation Plan includes a series of information dissemination actions aimed at different groups, with the aim of continuing to raise awareness about the issue and presenting the results achieved.

In this vein, the following **objectives have been set for the After-LIFE Conservation Plan:**

- O.1. Contribute to the conservation of habitats of community interest in the LIFE project's three focus areas, which are still threatened by the invasion of *Baccharis halimifolia* and other invasive species.
- O.2. Prioritize the conservation of coastal habitats of community interest affected by the invasion of *Baccharis halimifolia* and other invasive species along the Basque coast.
- O.3. Strengthen coordination between the Autonomous Community of the Basque Country's administrations and institutions in managing biological invasions.
- O.4. Strengthen coordination with other regions to tackle the problem of *B. halimifolia* along the whole of the Cantabrian and European Atlantic coasts.
- O.5. Promote awareness and involvement of the general public and interest groups in the problem and management of biological invasions.

In order to achieve these objectives, it is essential that all actors involved in the management of the territory collaborate at all levels. The following organisations have been identified as **key actors** for the success of the plan:

- The Ministry of Agriculture, Food and Environment (MAGRAMA): as well as enacting the framework regulation for managing invasive species (Royal Decree 630/2013), it manages the Invasive Exotic Species Working Group. This group is the framework for developing national strategies to manage invasive species.
- Gipuzkoa Provincial Council (GPC): administration with competence in the management of flora and fauna, as well as of Natura 2000 network areas in Gipuzkoa. It is one of the most active players in managing invasive species, such as *Fallopia japonica* and *Baccharis halimifolia*. It targets the latter species in Txingudi-Bidasoa, Jaizkibel, Oria and Iñurritza.
- Vizcaya Provincial Council (GPC): administration with competence in the management of flora and fauna, as well as of Natura 2000 network areas in Vizcaya. It has carried out work to eliminate *B. halimifolia* in the Barbadun estuary.

- Demarcation of the Coasts of the Basque Country (DCPV): competent administration for management of the Land and Sea Public Domain. Before the LIFE Project, it carried out pilot projects to eliminate *B-halimifolia* in Urdaibai.
- Provincial Coastal Service of Gipuzkoa (SPCG): delegation of the Demarcation of the Coasts of the Basque Country in Gipuzkoa. It is an active player in managing invasive vegetation along the Gipuzkoan coast, especially in Txingudi and the mouth of the river Urumea.
- Basque Water Agency (URA): the Basque Government's public agency responsible for implementing water policy in the Autonomous Community of the Basque Country. Among other functions, it coordinates the management of invasive species which affect the public water domain, such as the zebra mussel. It has also carried out water to eliminate invasive vegetation in the same area.
- The Board of the Biosphere Reserve of Urdaibai (PRBU): body responsible for the application of the specific regulation concerning this protected natural site. As it is the main area affected by *B. halimifolia* on the Basque coast it has a key role in managing the problem. Among its main short to medium-term projects, the comprehensive restoration of the Oka river estuary which covers the areas included in the LIFE project is noteworthy. Coordination with this body is essential for the plan to be accomplished.
- Town councils in the affected areas: they are very involved and have a growing interest in managing invasive species, using their own resources or mainly through subsidies granted by other administrations (Basque Government, provincial councils). Moreover, it is the main connection between the administration and citizens.

All these players have been involved in the International Commission created as part of the Basque Country Estuaries LIFE+ Project. Other organisations which have a closer link to study and research must be considered in the Plan:

- University of the Basque Country/Euskal Herriko Unibertsitatea (UPV/EHU): the Department of Plant Biology and Ecology has been working on the study of invasive flora species in the Autonomous Community of the Basque Country, and particularly on the study of the spread, ecology and impact of *Baccharis halimifolia* on the Basque coast.
- Aranzadi Society of Sciences (SCA): as part of the LIFE project monitoring team, it has developed a monitoring plan and conducted various campaigns in the target areas.
- European Plant Protection Organization (EPPO): as well as conducting a Pest Risk Assessment for invasive species in Europe, it has made recommendations on managing invasive species to the member states.

The administrations involved in the management of this and other invasive exotic species in the coastal habitats of the regions affected on a European scale:

- Government of Cantabria
- Principality of Asturias
- Government of Galicia
- The Pyrénées-Atlantiques departmental council.
- Coastline Conservation Authority (delegations in Aquitaine, Centre Atlantique and Brittany)
- South Atlantic Botanical Conservation Authority

4. ACTIONS

The proposals for action to be implemented in the After-LIFE Conservation Plan shall be described below and are grouped into the following categories:

a. Conservation action
b. Coordination action
c. Dissemination action

The following information is provided for each action: name, the objective which it contributes to, description, priority, time scale and regularity of its implementation, those responsible and the participants.

A. Conservation action

A.1. Prevention and surveillance

ACTION 1 Surveillance and conservation of the coastal habitats by the Basque Government	**PLAN OBJECTIVE:** O.1, O.2

DESCRIPTION

The Basque Government's Department of the Environment and Territorial Policy monitors the state of conservation of coastal habitats of community interest periodically[1]. This monitoring action analyses the pressures and threats on the habitats (1130 Estuaries, 1140 Mudflats or sandflats not covered by seawater at low tide, 1310 *Salicornia* and other annuals colonizing mud and sand, 1320 *Spartina* swards, Atlantic salt meadows and 1420 Mediterranean and thermo-Atlantic halophilous scrubs) in the coastal Natura 2000 sites in the Basque Country, including all the sites affected by the *Baccharis halimifolia* invasion and other species invading coastal ecosystems. One of the sources of pressure that was identified was invasive species.

The monitoring is intended to be completed by including a specific component on the presence and impacts of the invasive species, both known and new species, as an early-warning system for these ecosystems. Proposals for action to remove the threat of these invasive species and restore the damaged habitats have also been included.

There is no additional budget for this action, as it is included in the exiting monitoring programme.

PRIORITY	**TIME SCALE/REGULARITY**	**COORDINATOR**
High	2014 onwards High	Basque Government

ACTION 2. Set up active surveillance programme in collaboration with other actors	**PLAN OBJECTIVE:** O.1, O.2, O.3

DESCRIPTION

Intensive surveillance in coastal areas would involve major investment in economic and human resources. Nevertheless, other administrations have actors who work in the field, conducting surveillance work, maintenance, etc. With basic training in identifying priority invasive species in coastal areas, it would be simple to ensure constant basic surveillance and monitoring. This would require communication channels to be set up and information to be centralised; the collaboration model established during the LIFE Project would be suitable for use.

The full implementation of this action would entail establishing an early-warning and rapid-response system, which could be complex and beyond the scope of the current Plan, but it could serve as a first step or trial for a more complete system in the future. In fact, small specific actions related to the Txingudi site have been carried out, which involved information on *Baccharis halimifolia* being provided by the Gipuzkoa Provincial Council's maintenance service responsible for overseeing the LIFE Project, and have resulted in coordinated action.

This will take place over the period that the Plan is in place, and will consist of a priori the following concrete action:

- Contact with identified administrations
- Agreement on the procedure for exchanging information and selecting invasive species to be put under surveillance
- Basic training (if required) for the on-site actors to identify invasive plants
- Evaluation of the surveillance system and possible extension to other habitats and/or species

This action will be partly developed through the International Commission (Action 6) and a cost of 1,000 euros is estimated for holding the training days.

[1] http://issuu.com/ingurumena/docs/07_habitat

PRIORITY	**TIME SCALE/REGULARITY**	**COORDINATOR**
Medium	2014-2020 Constant	Basque Government **PARTICIPANTS** DFG, DFB, DCPV, URA, TOWN COUNCILS

A.2. Control, elimination and containment

ACTION 3 Control of *Baccharis halimifolia* in the Basque Country LIFE+ Project areas	**PLAN OBJECTIVE:** O.1.

DESCRIPTION

After completing the action planned in the LIFE project, the situation in each of the three project areas is different. However, a need has been identified to launch at least one campaign with the same intensity as the one carried out during the LIFE project. After each campaign, and depending on the results obtained in the monitoring phase (Action 5), the need for repeat procedures will be assessed.

In the light of the evolution of each of the areas during the project, achieving complete elimination of the communities in the Lea and Txingudi-Bidasoa estuaries is feasible during the After-LIFE Conservation Plan time scale. The following target areas have been considered a priori:

- **Lea Estuary**: elimination of emerging communities or specimens which have germinated from the seed bank. A final repetition and intensive surveillance over the next two/three years.

- **Txingudi Marshes-Bidasoa Islands**: elimination of young specimens that were not eliminated in the LIFE project and follow-up of any potential resprouting of adult specimens. In this case a second follow-up may be necessary during the next campaign, probably to eliminate new young specimens. In the rest of the Txingudi area, collaboration with other administrations will be necessary in order to complete the relevant follow-up tasks. In this respect, both the Gipuzkoa Provincial Council and the Gipuzkoa Provincial Coastal Service have shown their willingness to continue the elimination work which has been carried out in recent years.

In the **Urdaibai** area, due to the scale of the initial invasion, the complexity of the site and the results obtained, the management objective must be aimed at conservation and restoration of habitats of community interest rather than on eradicating the invasion. The Board of the Biosphere Reserve of Urdaibai has also designed a comprehensive restoration project for the estuary which would involve flooding some of the plan's focus areas. The project has not yet been definitively approved, but in any event it will not start before mid-2015, and from that time different scenarios will be considered.

- Complete implementation of the project, which would involve flooding 91.40 hectares (all the sectors shown in Figure 1), with more intensive follow-ups on approximately 30 hectares.
- Partial implementation of the project, which would involve flooding 46.60 hectares (Baldatika and Olalde2 sectors), with more intensive follow-ups on approximately 70 hectares.

In any case, the work in Urdaibai will be planned and implemented in cooperation with the PRBU management. To date, the work for 2014 has already been planned and a proposal for the second scenario for partial implementation of the project in 2015.

With regard to methodology, it would be preferable for the protocols followed in the LIFE project to be applied, which are:

- Protocol 1: Manual removal
- Protocol 2: Cut and application of herbicide
- Protocol 3: Selective cutting

Protocol 3 will be implemented annually with the aim of containing invasion in areas in which it has not been possible to carry out work to eliminate plants.

It is difficult to plan elimination work in detail beforehand, as each year's specific results are not known. The actions required to achieve the objectives set shall be designed in line with the results of the monitoring phase (Action 5), although the following estimate has been made:

Area	Action	Protocol	2014	2015	2016*	2017*	2018*
Lea	Seedlings elimination	1	3 ha	1 ha			
Txingudi-Bidasoa Islands	Seedlings elimination	1	4 ha	4 ha	4 ha	2 ha	
	Sprouting elimination	2	1 ha	1 ha			
Urdaibai	Sprouting elimination	2	52 ha	45 ha	45 ha	45 ha	45 ha
	Seedlings elimination	1	13 ha	11 ha	11 ha	11 ha	11 ha
	Containment	3	30 ha	10 ha	10 ha	10 ha	10 ha

*Estimated surfaces

The least positive scenario has been considered for Urdaibai, which would involve repeating the treatment annually with the same intensity after the flooding project. Although this situation is not expected, it does make it possible to calculate the maximum budget needed. The specific areas to follow-up works and methodologies will be annually detailed, which also will depend on the success of the works undertaken and the results of the flooding project. However, the foreseen work areas for 2014 and 2015 are attached in section 6.

The work will be carried out by annually contracting companies specialising in the elimination of invasive vegetation in sensitive natural areas, and the same guarantees shall be demanded as for the work conducted in the LIFE project. The work will be managed by technicians from the Basque Government and/or Ihobe.

In addition, with the aim of acquiring more cost-effective methodologies that can be implemented in the long term, such as control and/or containment methods, the pilot projects launched under the LIFE project shall continue (selective clearing, fumigation, etc.).

The cost estimates are calculated according to the average costs in the LIFE Project:

	URDAIBAI	LEA	TXINGUDI
Manual removal	1,700 €/ha	1,650 €/ha	8,250 €/ha
Sprouting elimination	1,000 €/ha		
Selective cutting	650 €/ha		

PRIORITY	**TIME SCALE/REGULARITY**	**COORDINATOR**
High	2014-2016 Annual	Basque Government **PARTICIPANTS** DFG, SPCG, PRBU

ACTION 4 Control of *Baccharis halimifolia* on the Basque coast	**PLAN OBJECTIVE:** O.2, O.3

DESCRIPTION

According to the mapping of *B.halimifolia* carried out along the Basque Coast in 2013, the following sites have been identified as priority areas requiring the elimination of the invasive species, as they belong to the Natura 2000 Network and affect habitats of community interest:

- Among the estuaries, the affected Natura 2000 sites are:
  - Orio Estuary SAC (ES2120010)
  - Iñurritza SAC (ES2120009)
  - Barbadún Estuary SAC (ES2130003)
- On other coastal sites, the main affected habitats are coastal heathland (4030, 4040*), and small *Cladium*

mariscus fens (7210*). The affected Natura 2000 sites are:

- Jaizkibel SAC (ES2120017)
- Ulia SAC (ES2120014)

In addition, there are other estuaries and affected coastal areas on the Basque Coast which do not belong to the Natura 2000 Network.

Since 2012, various administrations have started work to eliminate *Baccharis halimifolia* in some of these areas. The aim of the action is to treat all the areas identified while the Project is in progress, with collaboration and cooperation with these institutions, which have already included some of these actions in their work programmes.

The following table indicates the type of invasion in each site, and the accessibility and affected habitats:

Site	Type of invasion	Specimen features	Accessibility	Habitats
Jaizkibel SAC	Dense and scattered nuclei Isolated specimens	Large plants Seedlings	Difficult Cliffs, rocky areas, lack of pathways	Coastal heathland Coastal cliffs
Ulia SAC	Dense and scattered nuclei Isolated specimens	Large plants	Difficult Cliffs, lack of pathways	Coastal heathland Coastal cliffs
River Oiartzun	Dense nucleus Scattered specimens	Large plants Seedlings	Easy	Dumps and wasteland Edges of infrastructure Coastal cliffs
Urumea River SAC	Scattered specimens	Large plants	Easy/Medium	Riverbanks
Mendizorrotz	Isolated nuclei	Large plants	Easy/Medium	Meadows Coastal cliffs
Oria Estuary SAC	Dense and scattered nuclei Isolated specimens	Large plants Seedlings	Easy	Rushes and reed beds Banks of rivers and canals Wasteland and dumps
Talaimendi (Aia-Zarautz)	Isolated specimens	Large plants	Easy	Meadows Coastal cliffs
Iñurritza SAC	Dense and scattered nuclei	Large plants	Easy	Banks of canals Vegetable gardens Urban areas Reed beds Threatened flora species
Ea Coast	Isolated specimens	Large plants	Difficult	Meadows Coastal cliffs
Laga (Estuary and coastal zones of Urdaibai SAC)	Isolated specimens	Large plants	Difficult	Coastal cliffs
Butrón	Isolated and scattered specimens	Large plants	Difficult	Wetland Estuary shores
Getxo coast	Isolated specimens	Large plants	Easy	Coastal heathland
Nervión	Isolated specimens	Large plants	Easy	Wetland Threatened flora species

Barbadún Estuary SAC	Isolated specimens	Plants eliminated in 2013 (repeat)	Easy	Estuary shores

The key players which conduct work in this field are the Gipuzkoa Provincial Council (DFG), the Gipuzkoa Provincial Coastal Service (SPCG), Vizcaya Provincial Council (DFB) and the Basque Water Agency (URA). The following table presents the initial planning phase which the administrations are intending to implement, as well as the Basque Government's participation in some of the affected areas:

Site	2014	2015	2016	2017	2018	Actors
Jaizkibel SAC						DFG
Ulia SAC						DFG
River Oiartzun						DFG
Urumea River						SPCG
Orio Estuary SAC						DFG GV
Iñurritza SAC						DFG
Butrón						DFB
Getxo coast						DFB
Nervión						DFB
Barbadún Estuary SAC						DFB

Funding is also granted on an annual basis to local entities (town councils, local authority associations) for projects related to biodiversity through a series of subsidies from the Coordinating Beneficiary, and in which proposals related to invasive species and particularly *B.halimifolia* are regularly presented. For this reason, the involvement of these actors will be promoted in order to complete the treatment in the affected areas of the Basque coast.

Costs have only been calculated for the work to be carried out by the Basque Government, based on the average costs in the LIFE Project.

PRIORITY	**TIME SCALE/REGULARITY**	**COORDINATOR**
High	2014-2018 Annual	Basque Government **PARTICIPANTS** DFG, DFB, DCPV, URA, TOWN COUNCILS

A.3. Monitoring

ACTION 5 Monitoring plan for the treated areas	**PLAN OBJECTIVE:** O.1, O.2

DESCRIPTION

It will be applied to all of the areas in which the Basque Government conducts work to eliminate *B. halimifolia.* This proposal is structured in two phases:

Phase 1. Annual monitoring: annual monitoring of the effectiveness of the elimination work and the evolution of native vegetation. It will follow the Monitoring plan from the LIFE Project, although the preferable time for data collection will be changed to the spring following the implementation of the elimination work.

2nd phase. Final mapping of the habitats: it will take place in the final year of the Conservation Plan. It will consist of mapping the plant communities and/or habitats which are restored in the invasive vegetation treatment areas.

Phase	2014	2015	2016	2017	2018
P1. Monitoring					
P2. Mapping					

Specialised staff will be responsible for monitoring and will be contracted on an annual basis. This action will be partly integrated in Action 1 in years that the coastal habitats monitoring will be carried out, which is expected to be every two years.		
PRIORITY High	**TIME SCALE/REGULARITY** 2014-2020 Annual	**COORDINATOR** Basque Government Ihobe

B. Coordination action

ACTION 6 International follow-up and exchange of experiences commission	**PLAN OBJECTIVE:** O.2, O.3, O.4

DESCRIPTION

The working group created under the LIFE Project shall continue as the coordinating body of the management actions of *B. halimifolia* and other invasive species on the Basque coast. The work outlined in Action 4 will be planned through this group.

Regular meetings will be held between the participants from the International Commission for the Autonomous Community of the Basque Country, which will involve office work and technical visits to some of the target areas. The work carried out will be assessed during the meetings in relation to the work planned, the results obtained, problems faced and actions needed in the future. Action to foster contact and coordination with other affected regions, in particular the Cantabrian regions (Cantabria, Asturias and Galicia) and Aquitaine, will also be proposed.

Among the specific work to be carried out, this group will take part in designing the National *Baccharis halimifolia* Strategy (Action 7.) and designing the active surveillance programme (Action 2). Action aimed at improving management of other invasive species in the coastal habitats may also be proposed and implemented.

A cost of 1,000 euros per year is estimated, to cover the travel costs and daily allowance for the participants.

PRIORITY Medium	**TIME SCALE/REGULARITY** 2014-2020 Annual	**COORDINATOR** Basque Government **PARTICIPANTS** DFG, DFB, DCPV, SPCG, URA, PRBU

ACTION 7 Development of the National *Baccharis halimifolia* Strategy	**PLAN OBJECTIVE:** O.4

DESCRIPTION

Royal Decree 630/2013 establishes that strategies to fight against exotic invasive species included in the Spanish list of invasive species may be developed, in coordination with the Ministry of Agriculture, Food and the Environment. The strategies will be drawn up within the framework of the Working group on exotic invasive species created by the Flora and Fauna Committee.

This action consists of drawing up a document in coordination with affected regions on the Spanish coast and with the administrations involved, containing, as a minimum, the following content (according to RD630/2013):

- Definition of the target species and diagnosis of the problem
- Risk Analysis
- Analysis of entrance routes
- Action-oriented measures and definition of the strategy to follow: management, control and possible eradication
- Spread and abundance
- Coordination action among the different public administrations
- Action to monitor the effectiveness of the strategy implemented
- Awareness-raising and environmental education action on the issue of invasive exotic species
- Economic analysis of the costs of applying the strategy to third-parties or facilities unwillingly affected by the presence of invasive exotic species

The following steps are proposed for its implementation:

- Contact with affected regions through the working group on invasive exotic species
- Contact with the administrations with competence in the Autonomous Community of the Basque Country through the International Commission
- Drafting of a document in collaboration with the regions and/or administrations which wish to participate
- Presentation of the draft in the working group on invasive exotic species

Then it will be the Ministry of Agriculture, Food and the Environment which approves the strategy if appropriate

It is anticipated that this action would be completed in 2014, although the subsequent procedures could be extended. No cost has been estimated to implement it, as it will involve staff from the administration itself.

PRIORITY	**TIME SCALE/REGULARITY**	**COORDINATOR**
High	2014 One-off	Basque Government **PARTICIPANTS** MAGRAMA DFG, DFB, DCPV, SPCG, URA, PRBU Government of Cantabria Principality of Asturias Government of Galicia

C. Dissemination actions

ACTION 8 Maintenance and enhancing of LIFE website	**PLAN OBJECTIVE:** O.5	
DESCRIPTION The website created for the LIFE project (www.euskadi.net/life_estuarios) shall be maintained for at least 5 years, with the content being updated regularly with the new action implemented under the After-LIFE Conservation Plan. The updates will be both technical (information on species, impacts, spread, control and monitoring work conducted) and informative (photo galleries and videos, communication material created). Further additions will also continue to be made to other channels such as ISSUU (Power Point presentations), Youtube (videos) and social networks (Facebook, Twitter), which are managed by the Communication office of the Basque Government's Department of the Environment and Territorial Policy. There is no additional cost for this action, as the Coordinating Beneficiary's own staff are responsible for it.		
PRIORITY High	**TIME SCALE/REGULARITY** 2014-2018 Continuous	**COORDINATOR** Basque Government Ihobe
CONNECTED LIFE+ PROJECT ACTIONS		

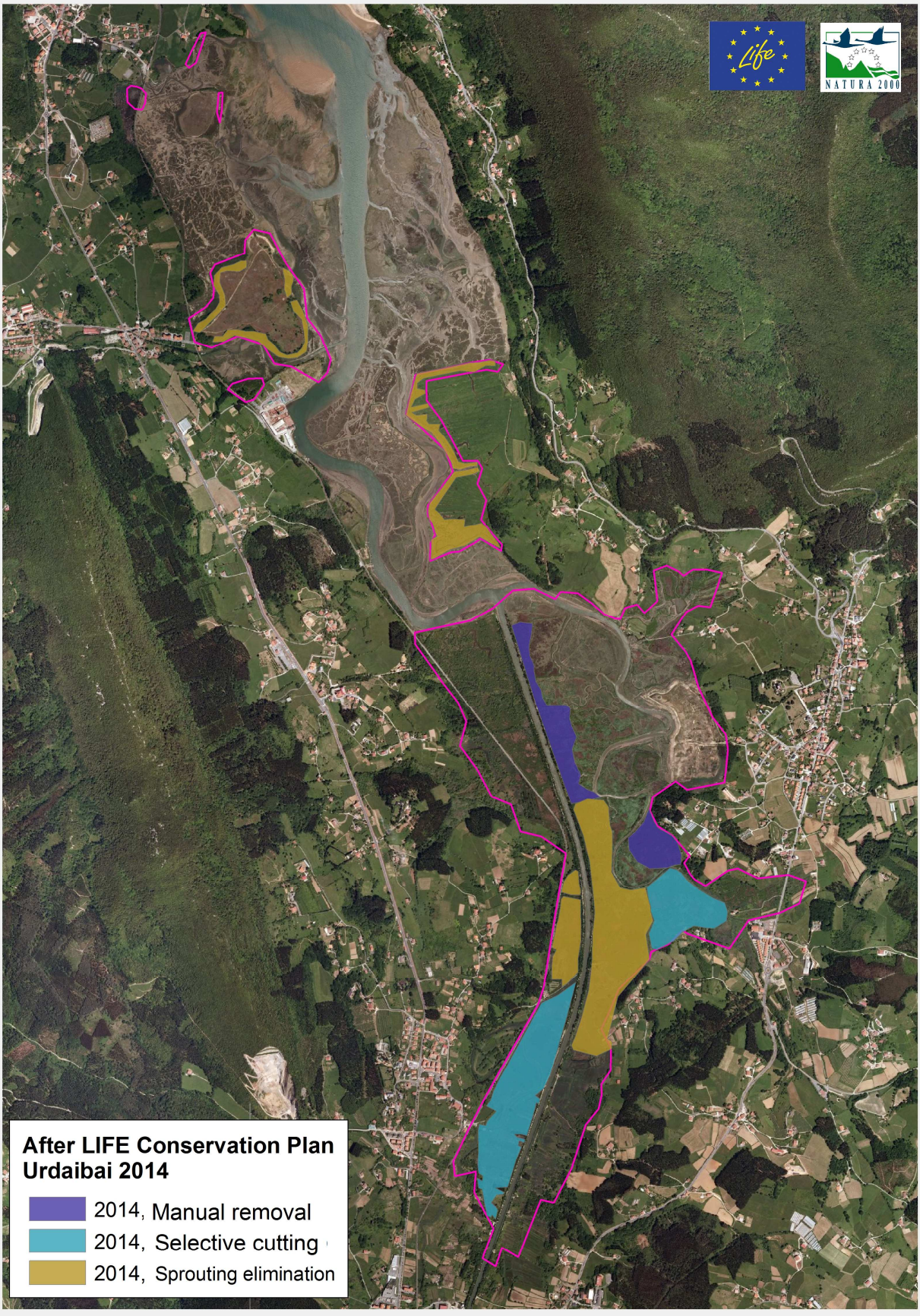
ACTION 9 LIFE educational component and guided tour in the GV centres	**PLAN OBJECTIVE:** O.5	
DESCRIPTION The educational component created under the LIFE project, "Invasive species and loss of biodiversity: *Baccharis halimifolia*" will continue to be used in the school programme run by the Basque Biodiversity Centre along with guided tours for primary, secondary and vocational schools. The educational component will also be used in the Txingudi Ekoetxea centre run by the Coordinating Beneficiary and located in the Txingudi SAC. In addition, the content will also be supplemented to address the problem of other invasive species which threaten habitats of community interest in estuaries. In order to do so, the specific content to incorporate will be analysed with those responsible for environmental education in both centres and adapted to the various educational levels. Finally, the possibility of creating an educational module on the management of invasive species with agricultural schools will also be studied, in order for it to be included in their training programme in the forestry and gardening fields. A cost of 1,500 euros has been estimated for designing the educational component. The guided tours do not incur any costs as they will be conducted by the Coordinating Beneficiary's and Associate Beneficiary's staff. A budget of 5,000 euros has been anticipated for putting together the educational module on the management of invasive species.		
PRIORITY Medium	**TIME SCALE/REGULARITY** 2014-2018 Ongoing	**COORDINATOR** Basque Government Ihobe

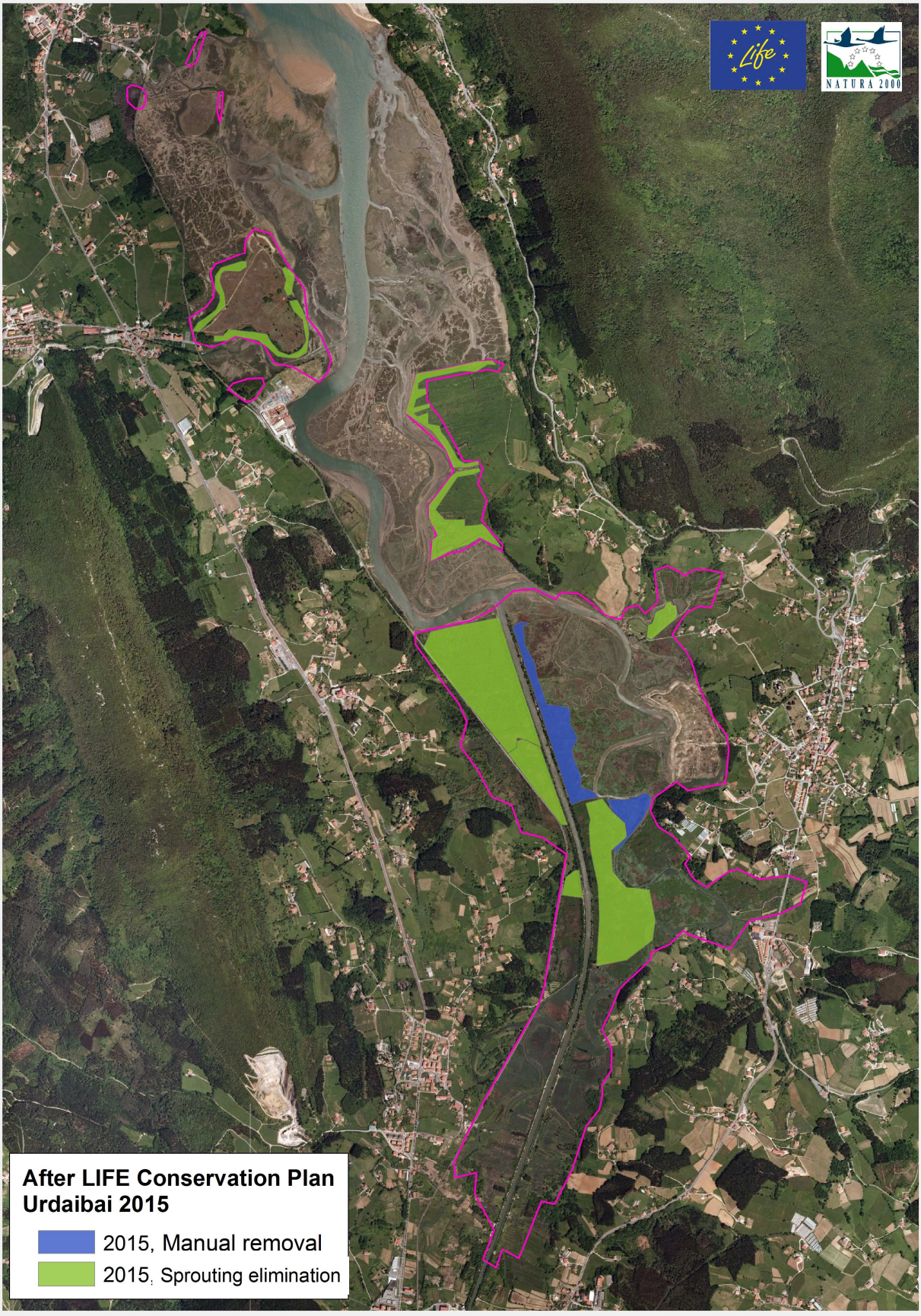
5. BUDGET

The following table presents the approximate maximum budget for each action in the After-LIFE Conservation Plan, for the period 2014-2018. This budget is an indication, since the scope for Action 3 and Action 4 (highest budget) depend on the results obtained in previous years, the development of complementary projects, as well as on collaborations with other stakeholders to carry them out:

ACTION	2014	2015	2016	2017	2018	TOTAL
Action 2			1.000			**1.000**
Action 3	133.000	104.850	103.200	86.700	70.200	**497.950**
Action 4		30.000	15.000	10.000		**55.000**
Action 5	9.000		9.000		14.000	**32.000**
Action 6		1.000		1.000		**2.000**
Action 9	1.500	5.000				**6.500**
TOTAL	**144.500**	**150.850**	**128.200**	**106.700**	**85.200**	**555.000**

6. ACTION MAPS IN URDAIBAI




Life
NATURA 2000
After LIFE Conservation Plan
Urdaibai 2015
2015, Manual removal
2015, Sprouting elimination