LIFE+RIPISILVANATURA

RIPISILVA

LIFE13 BIO/ES/1407

LAYMAN'S REPORT

"The RIPISILVANATURA project has received funding from the LIFE programme of the European Union"

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Acknowledgements: Miguel Ángel Ródenas, Mario Urrea, Jesús García, Francisco Almagro, Juan Pedro López, Manuel Carballo, Lope Lorenzo, Manoli Rosal, Luisa Moreno, María José Fernández, José Manuel Arcís, Pilar Hurtado, Carmen Fernández, José Cascales, Raquel Zapata, Joaquín Martínez, Rosa Parra, Miguel Ángel García, Pablo Nazim, Pablo Albaladejo, Sabrina Oliveira, Juana María Mirón, Víctor Hernández, Francisco Almansa, Pepe Barahona, Joseba Villanueva, Rosa Olivo, Ricardo Zarandona, Miguel Ángel Gil, Alberto Corbalán, Antonia Gil, Jesús Martínez, Hortensia Alcaraz, Minerva Avilés, Ascensión Luna, Elisa León, Enrique Ochando, José Blanco, Marta Bravo, Felipe Serrano, Ettore Emmanuele Dettori, Laura Castreño, María Huertas, Nuria Prior, Borja Pérez, Itxaso Mora, Ainhoa Darquistade, José Álvarez, Cristóbal Ginés, Dorte Pardo, José Vélez, Ricardo García, Antonio Tamayo, Amador López, Ana Navarro, Félix Carrillo, Faustino Martínez, Pedro García, Carmen Martínez, Vicente Hernández, Pilar Pérez, Pilar Martínez, José Antonio Bellido, Leticia Bernal, Elena Aldegunde, Miguel Ángel Ruiz, Ginés Soriano, Pepa García, Jesús Cano, Ana González, Victoria Arcenegui, José Iborra, Virginia Tarín, Francisco Martínez, Tony Herrera, Tasio Fernández, International River Foundation, CIREF, 7RM, TVE, El Escarabajo Verde, QUERQUS, Agrícola la Sultana, La Vega del Segura S.C., Manuel Bermúdez Segura, Fundación Religiosa Santuario la Esperanza, Pedro Luis Rubio, Unión Electro Industrial de Crevillente… and so many other volunteers, experts, proffessionals, studends, teachers and human beings who contributed their efforts.

THE PROBLEM

Alien Invasive Species (AIS) are the second cause for extinctions worldwide, and they also create health issues and vast economic costs.
Project **LIFE+RIPISILVANATURA** was born to fight the AIS problem in the river and riverbanks, demonstrating solutions that will allow public administrations the management, control and possible eradication of AIS, while generating social awareness on the subject.

One of the invasive plants generating more problems in the Segura River Basin is the Giant Reed *(Arundo donax)*, which takes over the riverbanks occupying a space naturally home of native plant species.

Project **LIFE+RIPISILVANATURA** aims to fight the Giant Reed invasion in the middle stretch of the Segura River, and to recover native plant species on its riverbanks.

MAIN GOALS

Recovery of RIPARIAN VEGETATION.

Creation of ECOLOGICAL CORRIDORS.

Control of ALIEN INVASIVE SPECIES.

WILDFIRE prevention.

LAND STEWARDSHIP AGREEMENTS.

AWARENESS RAISING and DISSEMINATION.

THE TEAM

LIFE+RIPISILVANATURA has gathered a multidisciplinary team where all administrative levels are partners (State, Regional and local authorities), together with the scientific community and an environmental NGO.

The coordinating beneficiary is the Segura River Basin Authority, and associated beneficiaries are the Regional Government of Murcia, the City Halls of Cieza and Calasparra, the University of Murcia and the Association of South Eastern Naturalists (ANSE).

GOBIERNO DE ESPAÑA
MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO
CONFEDERACIÓN HIDROGRÁFICA DEL SEGURA, O.A.

Región de Murcia

AYUNTAMIENTO DE Cieza

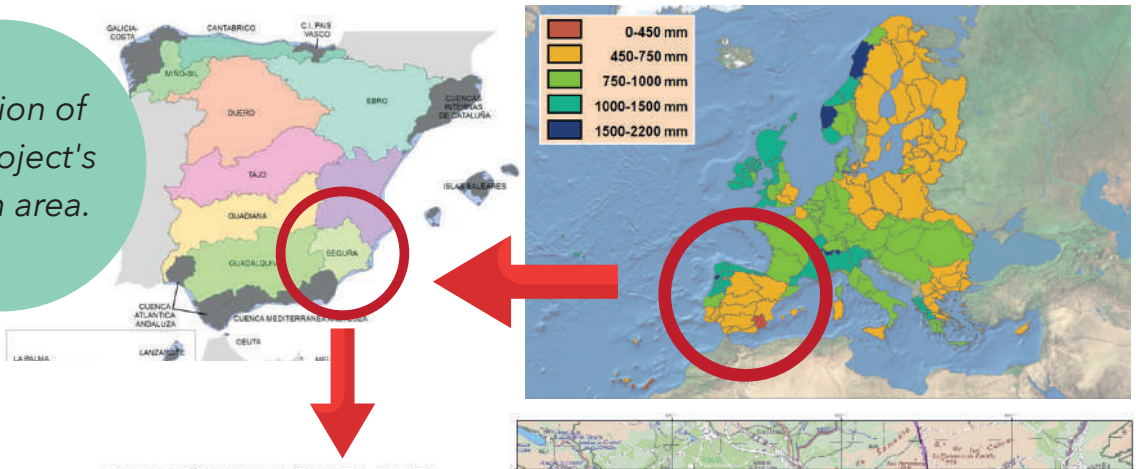
Ayuntamiento de Calasparra

UNIVERSIDAD DE MURCIA

ANSE

THE PROJECT

Location of the project's action area.



Intervention plots (in red) & Natura 2000 Site of Community Interest (in green).

LIFE+ RIPISILVANATURA started off in September 2014, and a 5 year journey has taken us to the end of the project in August 2019. In the meantime, 2.454.611 € well spent in more than 24 different actions, implemented in a 50km river stretch comprising from the Calasparra municipal limits to downtown Cieza.

PROBLEMS GENERATED BY THE GIANT REED

The Giant Reed is a very invasive species that creates several negative effects on the river and on society.

- ✖ Giant reed beds host a small number of different species: it has low diversity.
- ✖ In the event of a flash flood, the reeds are released, building up in the river with ease and creating dangerous blockades.
- ✖ In the Summer, when dry, reeds are easily flammable, increasing fire hazard.
- ✖ It consumes lots of water to grow.
- ✖ It creates giant walls that keep us from seeing and enjoying the river.
- ✖ It does not retain sediments nor pollutants, because its roots are shallow.
- ✖ It does not provide shade for the river.

Problems caused by the Giant Reed: Flood caused in the September 2019 flooding episode.

SERVICES PROVIDED BY NATIVE RIPARIAN FOREST

The recovery of a healthy native riparian forest provides direct benefits for all of us:

- Native riparian forest hosts plenty of different species: it means BIODIVERSITY.

- The deep root system and evolutionary adaptations to flash floods allow native species to retain soil and sediments in the event of flash flood, preventing suspended matter to increase the flow rate and slowing down the water.

- Native riparian forest stays green during the summer and prevents the propagation of wildfires.

- Native species consume less water than Giant Reed; they also shade the river, thus preventing evaporation and increasing oxygen contents of the water.

- Since it includes both trees and shrubs, it allows easy access and sight of the river.

- It retains a good part of the pollutants that can reach the river, improving water quality.

MAIN ACTIONS TO FIGHT GIANT REED AND TO PROMOTE RIPARIAN FOREST

How can we slowly change giant reed for native species?

Giant reed quickly re-sprouts after trimming, and in only under a month it reaches a similar height to the starting one.

That's why it is no use to trim it once a year, as we used to.

Example of the rapid regrowth of the Giant Reed once cut. The Giant Reed was cut on 13/07/2012 and, as shown,in a short period of time" (2 months) it resprouted.

The tested technique includes the plantation of native species after an initial trimming, and then repeated trimming of the reed for more than 2 years in order to weaken it, and specially to allow some time for the native species reintroduced to grow and to compete with the reed.

New method used to fight the Giant Reed.

The technique is cost-efficient, both compared to other management options (no action against giant reed, which would imply environmental costs and higher damages in flash flood events, among others), and to other Giant Reed fighting techniques. The following chart shows a comparison of the costs of different techniques used by the Segura River Basin Authority in several projects:

PROJECT	m2	Costs (€)	€/m2
DGA/PIMA Adapta Molina de Segura PUHD Plastic Cover	112.000	900.000	8,04
LIFE+RIPISILVANATURA Repetitive trimming and plantation	98.000	500.000	5,10
LIFE+RIPISILVANATURA Rhizome extraction (riverbanks)	3.100	36.000	11,61
ANSE/AGUAS DE MURCIA (Anti-mulch ground cover)	4.600	27.600	6,00

The Project is replicable for other areas within the Segura River Basin, and transferable, provided the right set of native plants is used, anywhere in the world where the Giant Reed is present as an invasive species, chiefly in the Mediterranean Region.

Worldwide distribution of the Giant Reed (Arundo donax). Source: GBIF/USWS.

ACHIEVED RESULTS

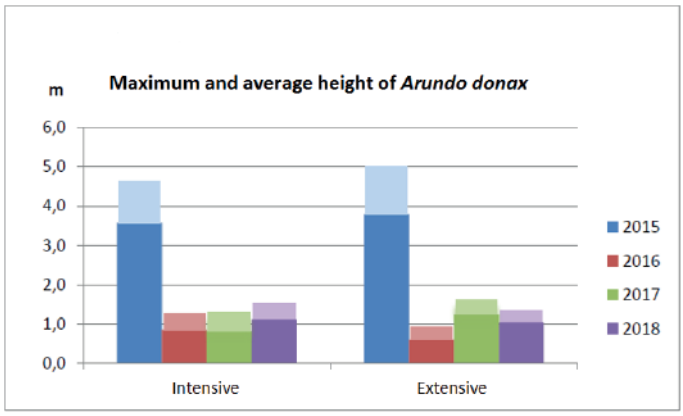
- ✓ 10 hectares of riverbanks planted with native species.
- ✓ 10 km of riverbanks in length restored.
- ✓ 14.500 native plants used + 2.500 extra replacements.
- ✓ 31 different species.
- ✓ Reduced density, height and thickness of the reed.
- ✓ Increased biodiversity of plants… and also birds, insects, etc.

Nursery of the Valley, CARM. Plant production for the **RIPISILVA project.**

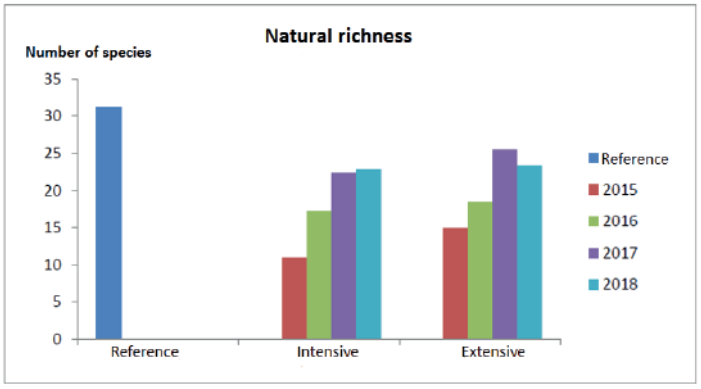
Number of species planted throughout the project.

SPECIES	QUANTITY
Arbutus unedo	141
Celtis australis	386
Cladium mariscus	392
Rhamnus alaternus	600
Crataegus monogyna	608
Ephedra fragilis	141
Ficus carica	58
Fraxinus angustifolia	259
Genista spartioides retamoides	141
Juniperus oxycedrus	141
Juniperus phoenicea	141
Nerium oleander	2.895
Olea europaea var. *sylvestris*	141
Pistacia lentiscus	141
Populus alba	307
Populus nigra	202
Rhamnus alaternus	141
Rosa canina	653
Saccharum ravennae	1.178
Salix atrocinerea	210
Salix fragilis	332
Salix triandra	72
Salix neotricha	46
Salix purpurea lambertiana	2.220
Sambucus nigra	1.585
Scirpus holoschoenus	887
Scirpus maritimus	154
Smilax aspera	141
Tamarix canarensis	215
Tamarix boveana	55
Ulmus minor	210
	14.793

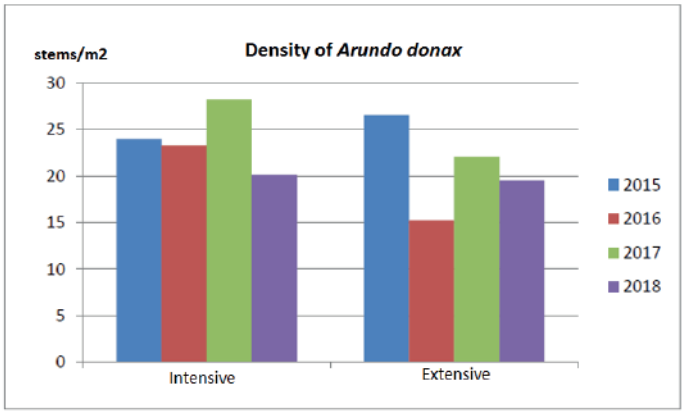
Variation in average maximum and minimum height in the different frequencies of trimming.



Variation in woody plants in monitoring stations during 4 years of sampling, comparing different frequencies of trimming and the reference station.



Variation in average density of reed stems in the different frequencies of trimming.



OTHER ACTIONS AND RESULTS OF THE PROJECT

On top of fighting giant reed and recovering native riparian forest, the Project has achieved:

- **Creation of an app** for any citizen to report the presence of AIS. **Crowd sourced science!**
- **Design of an AIS management plan** at a basin scale, drafted by experts coordinated by the University of Murcia, to be included in the next River Basin Management Plan.
- **30.000 visits to the project's website.**
- More than **100 appearances** in general media; an 8 page feature in a specialized magazine; a National Television show; and several news in regional and national TV.
- More than **300 talks on the project,** including awareness raising with students, capacity building seminars with workers, volunteering, work camps, university courses, workshops, an international seminar on AIS and the celebration of the 3rd edition of the Iberian River Restoration Conference in Murcia, comprising an International Seminar on Riparian Forest and a visit to the projects actions.
- **600m of embankment removed in Cieza,** improving the flood hazard in the area.
- **2 bird watching** platforms installed, together with information panels and fire prevention signposts.
- Over **700 volunteers** collaborated in the Project.

"Exotic Murcia" application to report the presence of invasive alien species.

LAND STEWARDHIP ACTIVITIES

Land stewardship is a set of strategies and legal techniques to involve land owners and river users in the preservation of natural resources, landscape values and cultural assets.

River stewardship is a special application of land stewardship, with the aim to improve the river ecosystem, in which environmental volunteering is specially relevant, since it allows the participation of society.

Project **LIFE+RIPISILVANATURA** has achieved:

- **2 Land stewardships signed for public domain land (+2 in progress).**
- **15 land stewardship agreements for private land.**
- **6 verbal agreements on private land.**
- **986 hectares subject to land stewardship agreements, of which 781 public land and 205 private estates, of which 109 are by oral agreement.**
- **Land stewardship database (200 owners, 30 visits).**

VOLUNTEERING

One of the impacts we feel prouder of is to have achieved the involvement of a part of society in the restoration and monitoring tasks.

On top of the actual help, it generates a feeling of ownership of restored areas, which is the best guarantee for future preservation.
We developed 58 volunteering activities, with more 768 people. **And only twice an activity had to be cancelled… on account of the weather!**

Also, during the summers of 2016 and 2017, work camps were organized, where for over a week, young volunteers from all over Spain learned about riparian forest, alien invasive species and… **about how great it is to help!**

Work camp carried out within the framework of the **LIFE+ RIPISILVANATURA project.**

MONITORING

A Project is not complete if we don't monitor what we are doing, in order to see if it works.

With that in mind, an extensive monitoring program has been implemented, starting in 2015, before any action had started, and continuing all the way until after the implementation had finished. It is based in several ecological indicators including physical-chemical quality of water, plan diversity on riverbanks (with quantification of presence of IAS), riparian quality and fauna monitoring. Among fauna groups monitored are three large categories: birds, mammals and water invertebrates. The monitoring evidenced that the positive effect of implementation can be detected from the start, although further monitoring in the following years will probably show even better evolution.

Bird banding in order to carry out the monitoring program.

IN SHORT

Riparian forest is a unique ecosystem, especially in a semi-arid area such as the Region of Murcia, providing valuable and assorted ecosystem services, such as improvements in water quantity and quality, riverbank protection in flash floods, and ecological corridor function for a number of creatures.

The techniques put to the test in **LIFE+RIPISILVANATURA** show good results, but a lot of restoration work is left to be done.

It is of paramount importance that people knows and values this special habitat, and that they collaborate as far as possible in its protection. One of the simplest measures is to be vigilant to prevent the introduction and spreading of Alien Invasive Species, whether plants or animals.

All together we can continue the restoration works and... who knows? Maybe one day a squirrel will be able to go from Calasparra to Cieza walking on the poplars, without even touching the ground!

Upper reaches of the river Mundo.
Photo by Lope Lorenzo.