



RIPI SILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

LIFE+RIPI SILVANATURA

*Strengthening associated biodiversity of habitat 92A0 and control of Alien Invasive Species (AIS) in
the Segura River (South Eastern SPAIN)*

actions developed against riverine Alien Invasive Species

Jaime L. Fraile, Segura River Basin Authority



MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.



Biodiscoveries

Mata da Machada e Sapal do Rio Coia



LIFE+BIODISCOVERIES

Lisboa, Portugal

March 23rd, 2020





PRESENTATION OUTLAY

1. Introduction: main project features
2. Actions developed to fight AIS:
 1. Direct removal
 2. Management tools development
 3. Dissemination and awareness raising
3. Conclusions





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Main project features: a little background

1. General data, SRB

Segura River Basin

365 mm/year

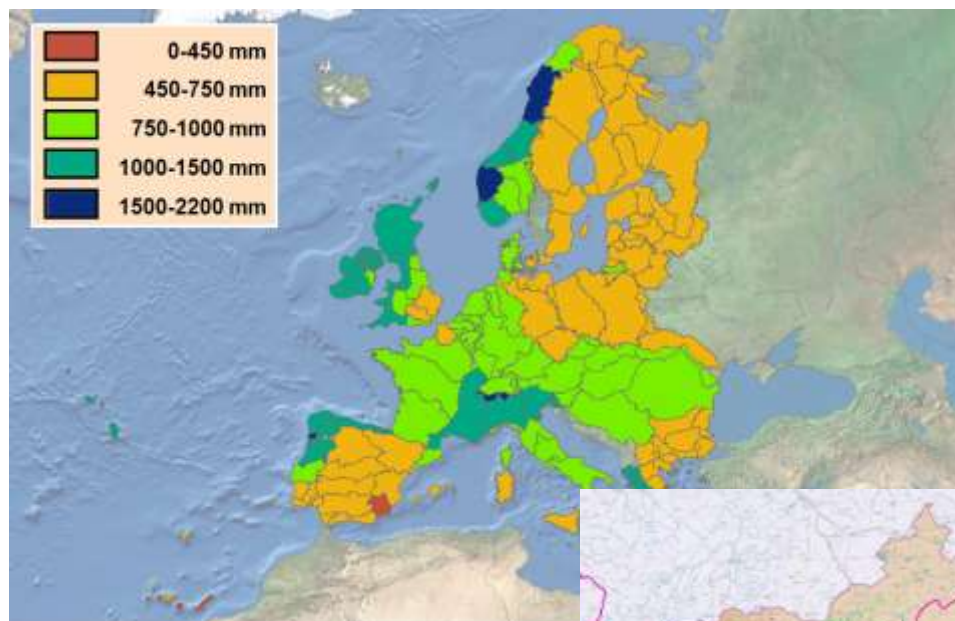
18,870 km²

2.000.000 inhab.

A_{vge}T_{emp} 10-18°C

Long. ≈ 350 km

Last 67 km: channel





RIPI SILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

RIPI SILVA

LIFE+RIPI SILVANATURA Strengthening associated biodiversity of habitat 92A0 and control of Invasive Alien Species in the Segura River

PROJECT PARTNERS

- 2014-2019
- 2,5m€ budget
- 49% EU-funded



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.



AYUNTAMIENTO DE
Cieza

UNIVERSIDAD DE
MURCIA





RIPISILVA

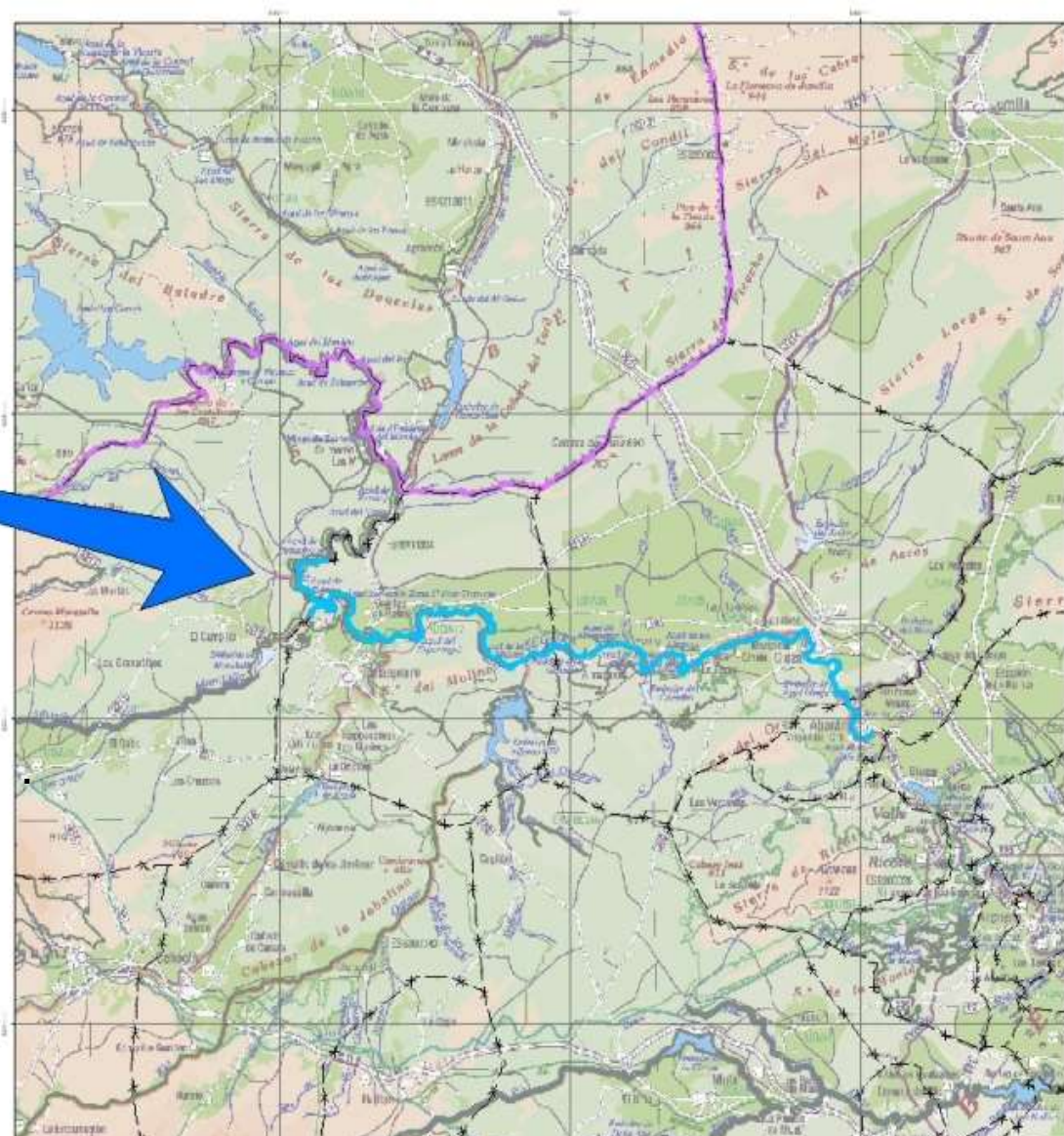
LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

LIFE+RIPISILVANATURA PROJECT

Project area

DEMARCACIÓN HIDROGRÁFICA DEL SEGURA





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Introduction: main project features

LIFE13 BIO/ES/001407 - C0

LIST OF ALL PROPOSED ACTIONS

A. Preparatory actions, elaboration of management plans and/or of action plans

A1 Evaluación Inicial, establecimiento de Condiciones de Referencia e Indicadores Ecológicos de Seguimiento

A2 Estrategia integral para la gestión y control de Especies Exóticas Invasoras (EEI)

A3 Implementación de medidas administrativas y redacción de proyectos

C. Concrete conservation actions

C1 Red de Custodia del Territorio "Ripisilva-Segura"

C2 Ejecución del Deslinde de los tramos seleccionados en la acción A3

C3 Red de Alerta Temprana a través de las nuevas Tecnologías de la Información y Comunicación (TICs), aplicables tanto para las EEIs como para detección de incendios

C4 Control de EEIs no arbóreas mediante estrategias de ingeniería ecológica para fomentar la competencia directa de las especies autóctonas del lugar

C5 Programa de control de EEIs Arbóreas mediante Estrategias de Ingeniería Ecológica para fomentar la competencia directa de las especies autóctonas del lugar

C6 Restauración de los HRAs, a través de las etapas de sucesión natural

C7 Actuaciones de apoyo a la restauración de los HRAs y a la consolidación de Fauna autóctona asociada

C8 Actuaciones de Protección de la biodiversidad riparia y control de EEIs de Fauna

C9 Acciones de Prevención de Incendios

D. Monitoring of the impact of the project actions (obligatory only if there are concrete conservation actions)

D1 Seguimiento de los Hábitats Riparios Autóctonos (HRAs) y su biodiversidad asociada en las Estaciones de Monitorización Ecológica (EME) y Evaluación final

D2 Seguimiento y evaluación del Programa de Control de Flora y Fauna Exótica Invasora y Prevención y detección de incendios.

D3 Evaluación del impacto socioeconómico y de los servicios de los ecosistemas

E. Public awareness and dissemination of results (obligatory)

E1 Sensibilización pública y difusión de todos las acciones y sus resultados

E2 Diseño y Edición de Material Divulgativo

E3 Informe Layman

E4 Diseño e implantación de Paneles Informativos Integrados

E5 E5. Voluntariado de Apoyo para todas las Fases del Proyecto

F. Overall project operation and monitoring of the project progress (obligatory)

F1 Acciones de capacitación de personal

F2 AFTER LIFE: Elaboración de Planes Integrales y Acuerdos de Participación Pública en el DP de los Usos Socioeducativos y Turísticos del Cauce

F3 Gestión del Proyecto por la Confederación Hidrográfica del Segura

F4 Auditoría financiera

F5 Trabajo colaborativo (networking) con otros proyectos

Actions developed on AIS

Manage

Detect

Remove

Restore

Raise Awareness

Disseminate results



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

PRESENTATION OUTLAY

1. Introduction: main project features
- 2. Actions developed to fight AIS:**
 1. Direct removal
 2. Management tools development
 3. Dissemination and awareness raising
3. Conclusions





1) Actions developed to fight AIS:

a) Direct removal

i) Giant Reed:

(1) Actions C4-C8

(a) Initial trimming

(b) Native species plantation

(c) Repeated trimming/maintenance

(i) Intensive repeated trimming (21-28 days)

(ii) Extensive repeated trimming (45-90 days)

(d) Action C7 embankment removal: rhizome extraction

ii) Other Species

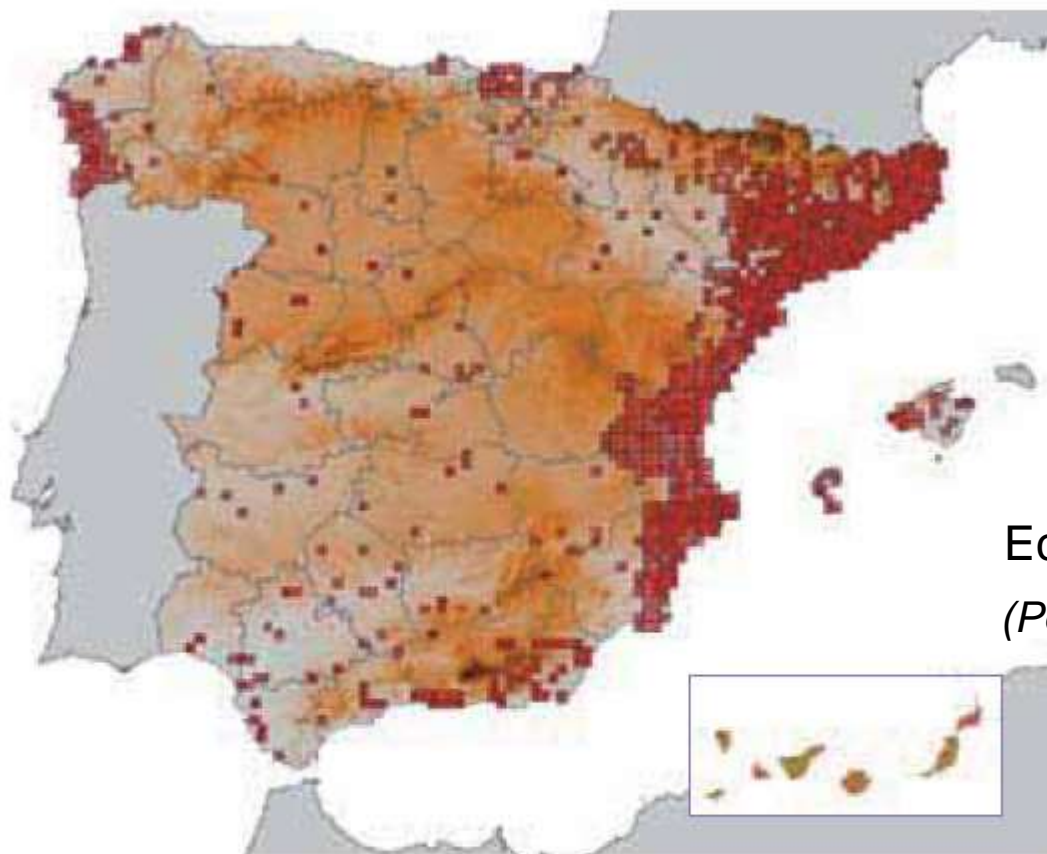
(1) AIS trees

(2) AIS fauna

(a) Crayfish

(b) Birds

(c) fish



Source: 'Bases para el manejo y control de Arundo donax L. (Caña común)'
Deltoro et al, 2012

Figura 6. Distribución de *A. donax* en España. La presencia se muestra mediante cuadrículas UTM de 10x10 km de lado.

Giant reed problem.

Mediterranean
region invaded by
Giant Reed
Arundo donax

Ecological limiting factor: spring frosts
(Perdue, 1958; Decruyenaere & Holt, 2001)





Problems generated by giant reed: Habitat loss

Habitats status research

River Segura mid stretch, 56 km approx.:

98,7 ha native riparian habitats (60%)

51,86 ha reed bed invasion (32%)

12,01 ha degradation stages (8%)

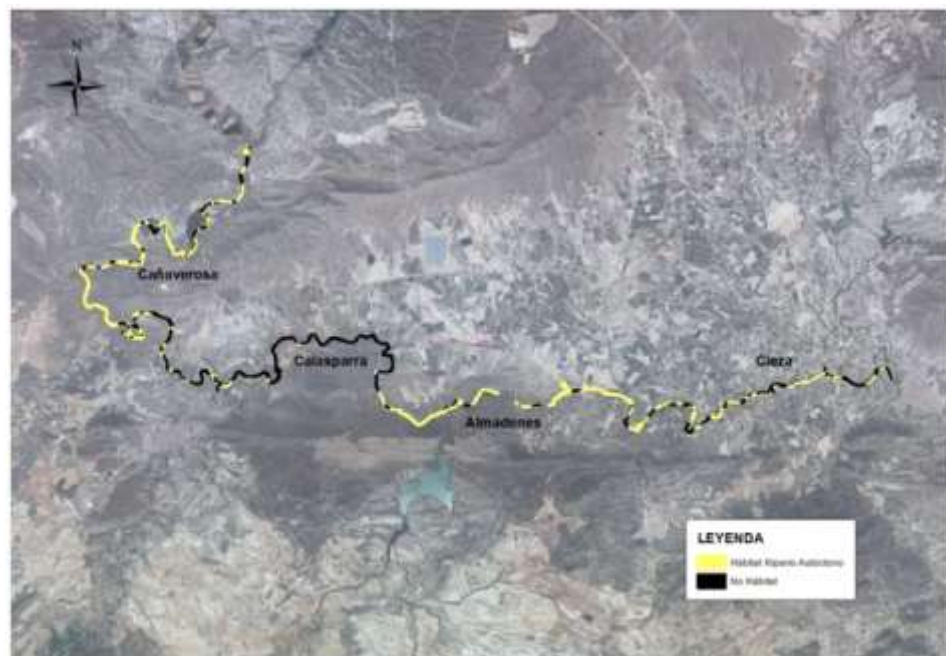


Ilustración 2. Zonificación de la vegetación de ribera dentro del ámbito del proyecto

HABITAT	ASOCIACIÓN	SUPERFICIE (Ha)
92A0	92A034	70.8
	92A044	1.6
	92A062	2.3
92D0	92D013	3.6
	92D021	1.9
	92D033	6.5
	92D050	0.8
	92D051	8.0
7210	621123	3.2

Table 2: Surface occupied by native riparian habitats, according to HD

EXÓTICA/NO HABITAT	SUPERFICIE (Ha)
<i>Arundo donax</i> >75%	29.5
<i>Arundo donax</i> 50-75%	17.3
<i>Arundo donax</i> 25-50%	5.06
No hábitat	12.01

Table 3. Surface occupied by *Arundo donax* and/or no habitat



Problems generated by giant reed:

Water consumption

CONSUMO HÍDRICO DE ARUNDO DONAX

20 MM/DÍA/M2

Bell, 1993:

1000 acres (404,6 ha)

3800 acres-pies de agua/año

(4,687,224m³/año)

11.584,863 m³/ha/año

1,158 m³/m²/año

3,173 l/m²/día

Studies using a variety of methods indicate that ET of A. donax (1.2–7.5 m/year) may be much higher than that of native riparian vegetation such as Salix spp., Populus spp. (1.0–3.3 m/year) and mixed riparian communities of arid and Mediterranean-type climates (0.11–1.6 m/year) (Zimmerman 1999, Hendrickson and McGaugh 2005, Shafroth et al. 2005, Abichandani 2007, Coffman in press).

Abichandani (2007) showed that A. donax infestations may transpire 6 to 110 times more (up to 18,206 kg m⁻² year⁻¹) than native vegetation.

Table 4-3. Summary of *Arundo* transpiration (E) and evapotranspiration (ET) reported in literature or calculated as described in the text.

Study	Location	Stand biomass (t/ha)	Average single leaf area (cm ²)	Average # leaves per cane	Leaf area per cane (m ²)	Average # canes per m ²	LAI (m ² leaf/m ² ground)	Peak (mid-day) E _t (mmol/m ² /s)	E _{max} (mm/day)
Direct Measurements of transpiration (E)									
Abichandani 2007	Santa Clara River, CA		163.3 (132.5–215.9) ¹	25.0 (21.5–28.4–27.9)	Newer (1 to 3 yr): 0.4082	Ave 34.9 (riverbed 29.2, n= 43; terrace 40.6, n=26)	14.25	4.03 (1.89–5.80) ^a	41.1 (36.4) ^a
Watts 2009	Rio Grande River, TX						4.1 (3.4–6.1) and 4.5	4.3 (1.6–8.4) ^b	9.1 (11.0) ^b
Zimmerman (unpublished)	Napa River, CA							6.3 (2.5–11) Summer only	
Indirect calculation of stand-level transpiration									
Cal-IPC (this study)	Southern California	155	1st yr: 206.3 > 1 yr: leader 86.5, 2ndry branch 33.9	1st yr: 23 (SD3.5) > 1 yr old: leader 12.6 (SD8.3) + 2ndry branch lvs 271.6 (SD 174.9) = 284.2	1 st yr: 0.474 > 1yr: 0.556 (leader 0.100, 2ndry branch: 0.457)	41.5 (SD 19.7)	15.8	Used 4.03 in calculations	40.0
Iverson 1998	Based on rice								4.7 ^d
Hendrickson & McGaugh 2005	Castro Cienegas, Mexico								17.3 ^d
Other structural data									
Spencer 2006	16 sites across US (leaf area is north CA)	171	1st year: 520.7	1st yr: 10.3 (SD 6.1) > 1 yr old: 100.6	1st yr: 0.5362 > 1yr old: 0.1162	74.5	11.22	Used 4.03	28.3 ^c
Sharma et al. 1998	India	36–167				33 to 82	12.6 to 28.7		
Direct Measurements of Evapotranspiration									
FAIR 2000–EU study	Europe								3.22
Christou et al. 2003	Greece & Italy	21.1							1.6 (ET)

^a Average across season, and wet and dry sites; ^b E_{max} as calculated using formulas applied to this study; ^c E_{max} calculated using formulas from this study using LAI from the that paper; ^d E_{max} reported in paper, but insufficient additional data to use formulas in this study.

Arundo donax Distribution and Impact Report



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Problems generated by giant reed: Fire hazard



**Increased
frequency,
severity and
spread speed**

(Brooks et al.
2004; Coffman et al.
2004, 2010)



20 signs were installed to raise awareness against burning reed



Problems generated by giant reed:

Flood hazard

- ▼ High biomass production
- ▼ Low water and soil retention
- ▼ Easily released stems
- ▼ Builds up blockages

(Else 1996; Bell 1997)



29/9/2019 Flood in
Molina de Segura



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Actions C4-C8. Giant reed trimming. Project outlay

46 plots, 10 km riverbanks, 100,000 m²



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Initial reed trimming

Heavy machinery
used for continuous
reed beds



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Initial reed trimming



Manual trimming
used in areas
with remains of
native vegetation
(to be previously
marked!)



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Native species plantation

Digging up holes for plantation



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Native species plantation

- 31 riparian species
- 15.000 plants +2.500 additional replacement
- Own and commercial nurseries
- Plantation in fall+winter. Maintenance for 2 years.



SPECIES	QTY
Arbutus unedo	141
Celtis australis	386
Cladium mariscus	392
Rhamnus alaternus (AF1,6)	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	2895
Olea europaea var. Sylvestris	141
Pistacia lentiscus	141
Populus alba	307
Populus nigra	202
Rhamnus alaternus	141
Rosa canina	653
Saccharum ravennae	1178
Salix atrocinerea	210
Salix fragilis	332
Salix triandra	72
Salix neotricha	46
Salix purpurea lambertiana	2220
Sambucus nigra	1585
Scirpus holochoenus	887
Scirpus maritimus	154
Smilax aspera	141
Tamarix canariensis	215
Tamarix boveana	55
Ulmus minor	210
TOTAL	14528



MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Fight against giant reed

Repeated sprout trimming

- **Intensive:** every 21-28 days for 15-23 months
- **Mild:** every 45-90 days for 28-32 months

NO RELEVANT DIFFERENCES FOUND IN RESULTS



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Fight against giant reed

- Monitoring:

- 1x1m frame: height, number.
- Before each trimming.



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.



Observed results

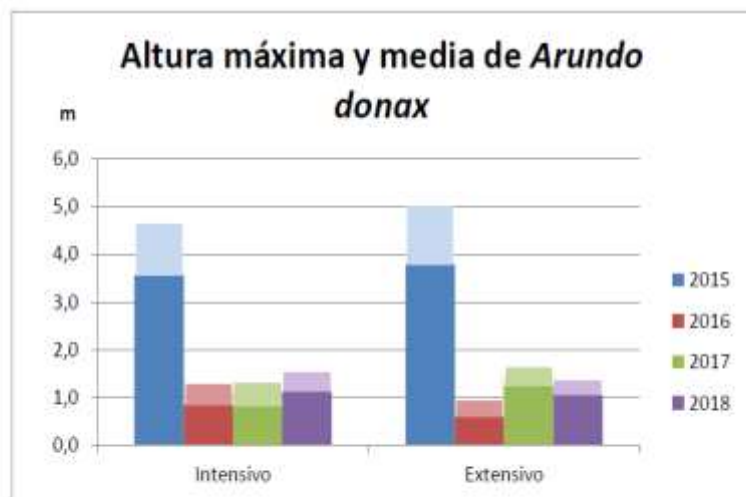


Figura 3.3.1: Variación de los promedios de altura máxima y mínima según la naturaleza de los tratamientos, y para los cuatro años de proyecto.

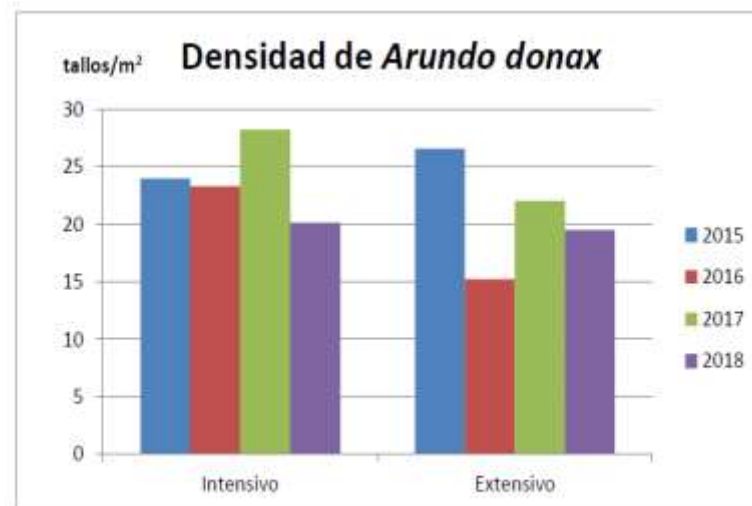


Figura 3.3.2: Variación de la densidad media de *Arundo donax* según tipología de tratamiento (Intensivo o Extensivo) para los cuatro años de proyecto.



▲ Bird diversity

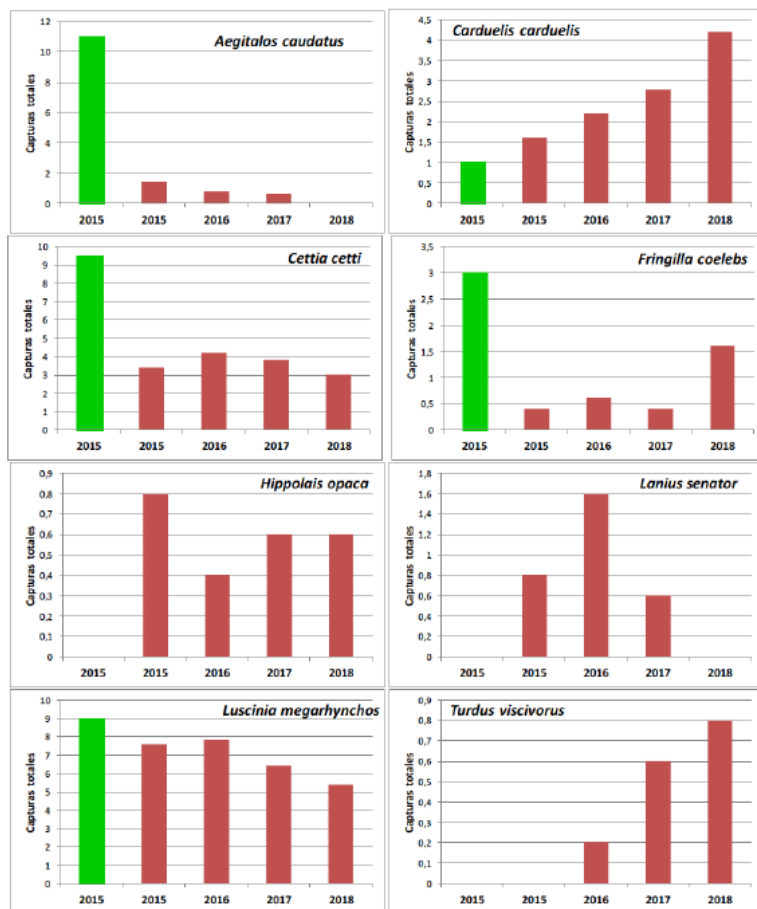


Figura 3.6.1: Variación del número de capturas por estación en los trameos con redes verticales de 2015 a 2018, tanto en las EREs (sólo en 2015, N=2, en verde) como en las EMEs (N=10, en rosa)

Observed results

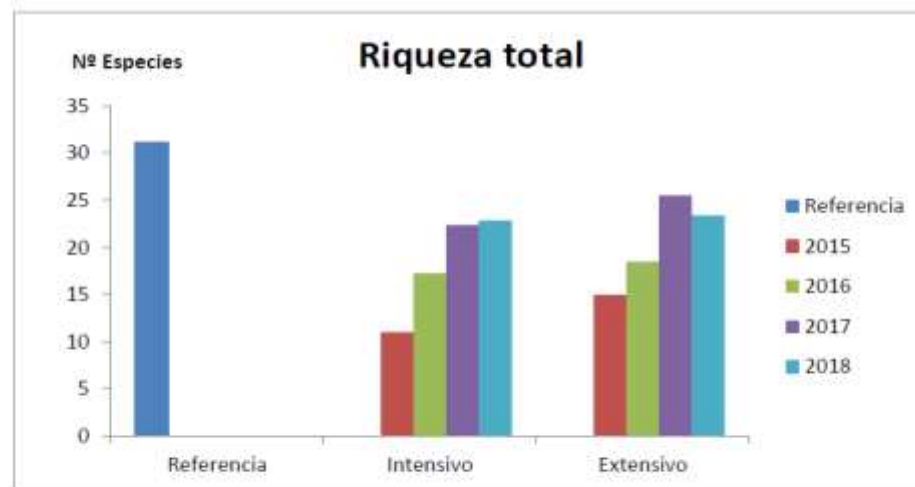


Figura 3.1.1: Variación de la riqueza media de especies leñosas en las EMEs entre los 4 años de muestreo, según la intensidad de los tratamientos, y comparación con las estaciones de referencia muestreadas en el año inicial (2015)

▲ Plant diversity...
And also snails, invertebrates, bats, otter...





RIPISILVA

LIFE+13/BIO/ES/1407

*Project co-funded with the aid of EU's
LIFE+ financial instrument*

Expected results





Action C4-C6 Giant Reed by ecological engineering and native habitats restorations (repeated trimming)

- Competitive price compared to other reed management options
- More time consuming. Less effective
- Treatment of choice where riverbank is irregular and/or remains of native plants are present

PROJECT	m ²	Cost (€)	€/m ²	comments
DGA/PIMA Adapta Molina de Segura PUHD	112.000	900.000	8,04	TRAGSA 100% effective
LIFE+RIPISILVANATURA Repeated trimming	98.000	500.000	5,10	Works 370,000; Management 70,000; plant 30,000 H&S 20.000
LIFE+RIPISILVANATURA Rhizome extraction	3.100	36.000	11,61	Tendering budget. No plants included
ANSE/AGUAS DE MURCIA (geotecnic cover)	4.600	27.600	6,00	No plants included



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Alternative techniques used by CHS in different projects

PIMA-Adapta funded project includes:

- ✓ Recovery of a 4km stretch connecting two remains of riparian forest
- ✓ Total of 80.000 m². 2 years. 1m€ budget
- ✓ Different techniques used: High density plastic cover, Repeated trimming, Rhizome extraction
- ✓ After elimination, 14 native species planted





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Riverbank restoration: embankment removal

Hydromorphological restoration: removing a total of 600m of embankment at Cieza (rhizome extraction!)



GOBIERNO DE ESPAÑA
MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURO, O.A.





RIPISILVA

LIFE+13/BIO/ES/1407

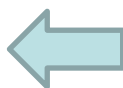
Project co-funded with the aid of EU's
LIFE+ financial instrument

Action C8. Other AIS removal: trees

(*R. pseudoacacia*, *Eucalyptus* spp.,
Opuntia spp.)



- ✓ 1,5 ha treated
- ✓ 9 locations
- ✓ Eliminate AIS trees
- ✓ Replaced with native species
- ✓ Monitored for regrowth



Before



After





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument



Other AIS removal: fauna

- ✓ Environmental agents trained for AIS prospection & Id & removal
- ✓ More than 50 sites within project area prospected
- ✓ More than 500 specimens of *Procambarus clarkii* (invasive crayfish) removed
- ✓ Recent infestation of *Pacifastacus leniusculus* possibly eradicated (32 specimens removed in early infestation stage)
- ✓ Pond slider *Trachemys scripta* prospected for 3 years in project area. Only 1 specimen detected&removed
- ✓ AIS birds prospected, but not detected
- ✓ AIS fish regularly detected & removed in other species prospection

Year	2014	2015	2016	2017	2018	2019	Total
AIS specimens removed	135	110	90	140	85	65	625





RIPISILVA

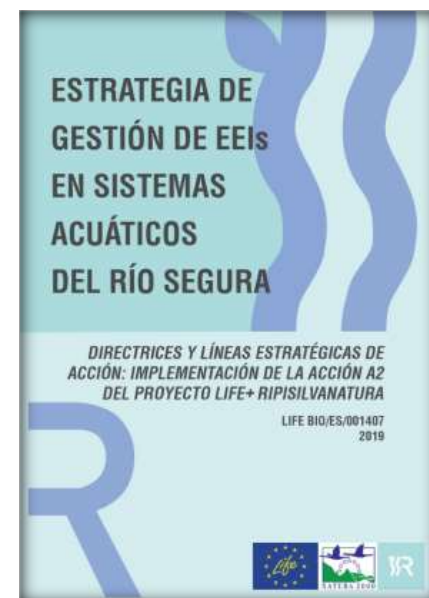
LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

PRESENTATION OUTLAY

1. Introduction: main project features
2. Actions developed to fight AIS:
 1. Direct removal
 - 2. Management tools development**
 - 1. AIS reporting App for Android**
 - 2. List and management strategy for AIS at basin scale**

3. Dissemination and awareness





1) Actions developed to fight AIS:

a) Direct removal

b) Management tool development

i) IT tools

- (1) Database server
- (2) www.exoticaMurcia.carm.es website
- (3) ExoticaMurcia Android App

ii) Management & Planning tools

- (1) AIS management strategy
- (2) AIS list and handbook for management options



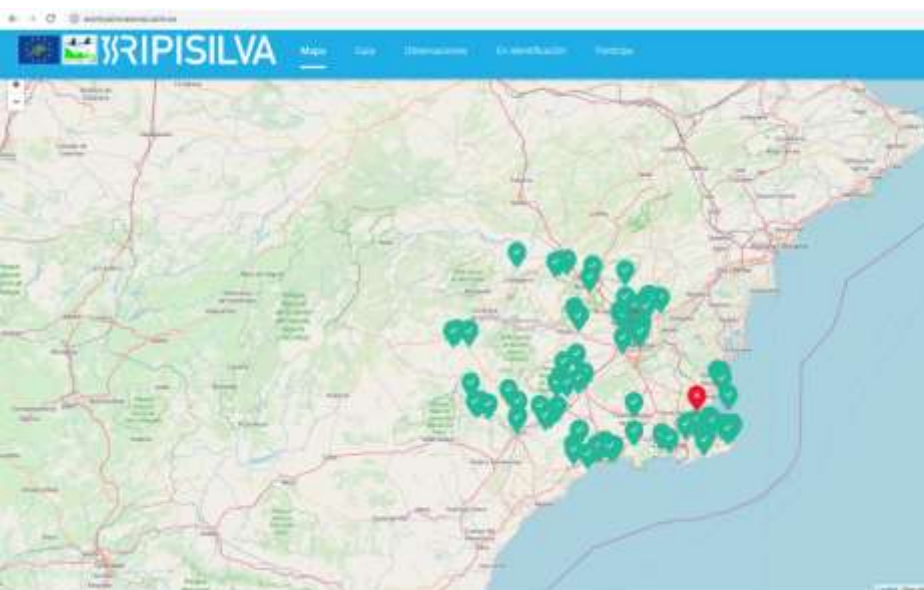
RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action C3 Early Warning Network using IT to fight AIS

- ✓ Creation of 1 server database + 1 website + 1 mobile app (Android)



Guía de especies



Alburnus alburnus
Alburno



Ameiurus melas
Pez gato negro



Corbicula fluminea
Almeja asiática



Cyprinus carpio
Carpa común

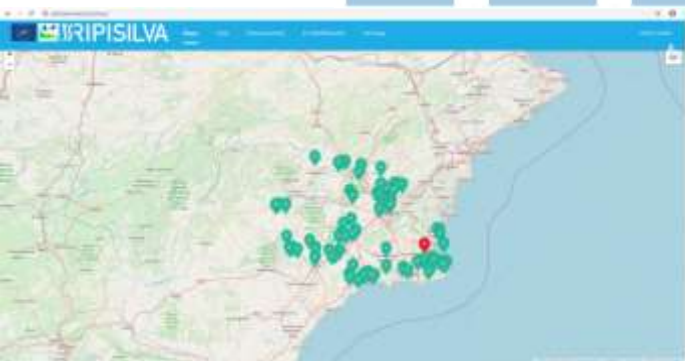
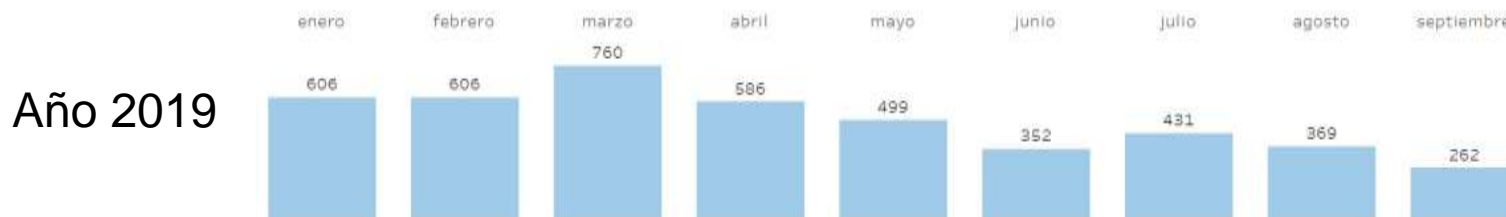







Gambusia holbrooki
Gambusia



Action C3 Early Warning Network using IT to fight AIS

- ✓ Website: more than 7.000 visits over two years
- ✓ AIS identification & report
- ✓ Quotes verified by expert personnel



Guía de especies		
	<i>Heliconius erato</i> Mimosa	1
	<i>Amphiphanes</i> 141 (pala-negro)	1
	<i>Cardinalis</i> Mimosa (mimosa)	1
	<i>Euphydryas</i> Mimosa (mimosa)	2
	<i>Cardinalis</i> Mimosa (mimosa)	1



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action C3 Early Warning Network using IT to fight AIS

- ✓ Mobile app: more than 100 downloads
- ✓ AIS identification & report
- ✓ Quotes verified by expert personnel
- ✓ More than 400 citations helped to locate & remove 625 specimens (mostly pond slider, shockingly 1 *Python regius*)





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action A2.

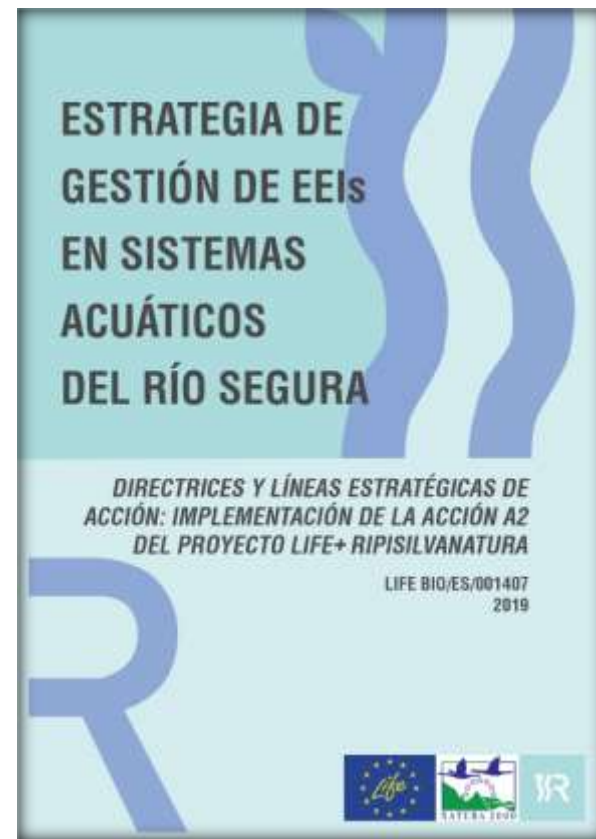
AIS List and management strategy at a Basin level



**Technical documents
= management tools meant to be an input for the River Basin Management Plan according to WFD**



http://www.chsegura.es/export/descargas/cuenca/seguraripisilvanatura/docsdescarga/2019-10-17_Monografia-EEI-Segura.pdf



<http://www.chsegura.es/export/descargas/cuenca/seguraripisilvanatura/docsdescarga/estrategiaGestionEEIs.pdf>

Action A2.

Objectives

- Identifying **target AIS** for SRB.
- **Knowledge review.**
- Development of a **priority list.**
- Proposal of **guidelines & strategic actions.**
- Creation of communication and knowledge **transfer channels** between all entities involved

UNIVERSIDAD DE
MURCIA





Action A2. AIS List and management strategy at a Basin level

UNIVERSIDAD DE
MURCIA



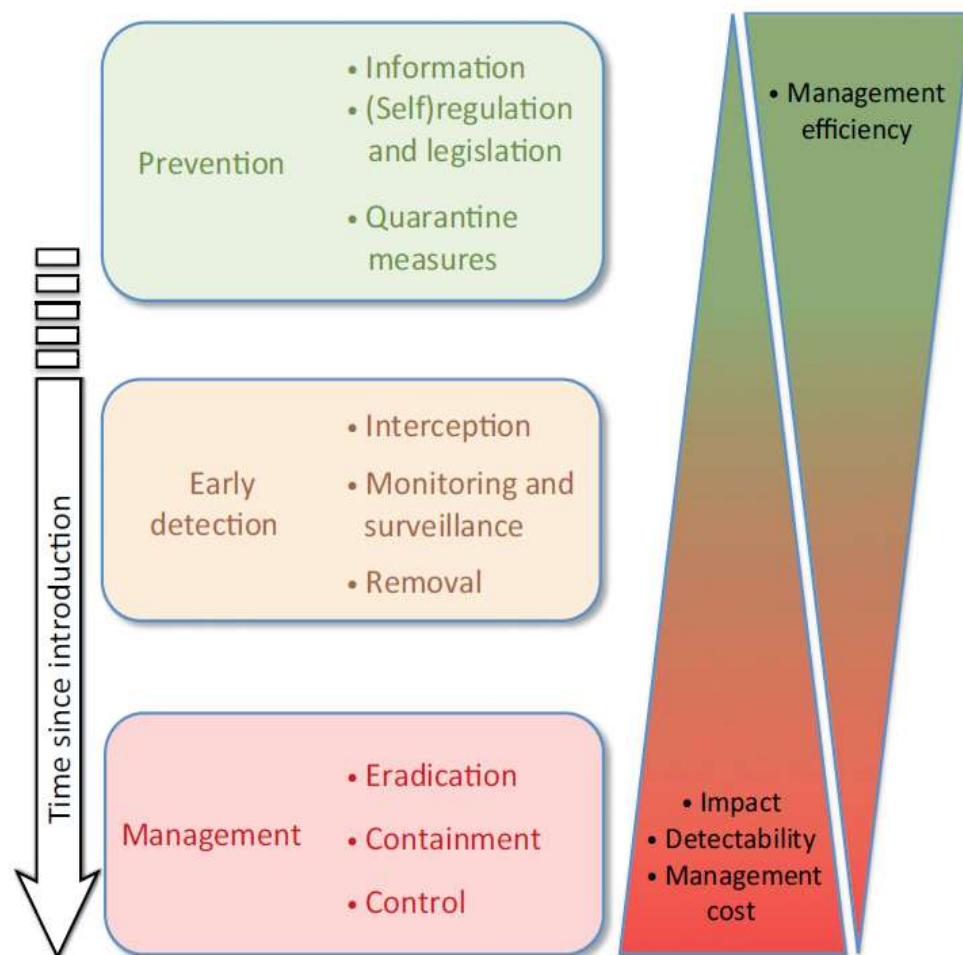
Conceptual framework

Precautionary principle

Hierarchical 3-step

approach

- 1) Prevention
- 2) Early detection & eradication
- 3) Control & Mitigation



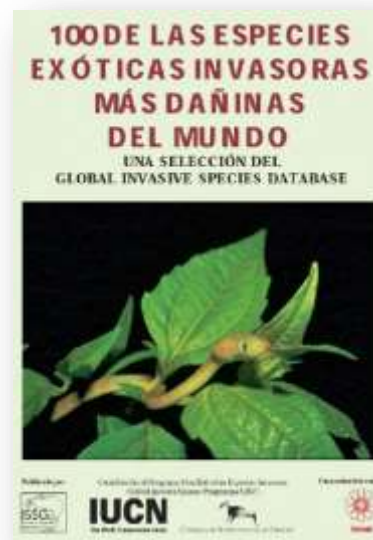


Action A2. AIS List and management strategy at a Basin level

Priority lists

Main purposes

- 1) Optimize management focusing on target AIS
- 2) Facilitate decision making process
- 3) Create a reference catalogue
- 4) Assign monitoring priorities and trigger early response





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action A2. AIS List and management strategy at a Basin level

UNIVERSIDAD DE
MURCIA



Priority lists

Features

- 1) Comprehensive list of existing AIS
- 2) Prioritizing AIS for management
- 3) Development of alert list for potential AIS





RIPISILVA

LIFE+13/BIO/ES/1407
Project co-funded with the aid of EU's
LIFE+ financial instrument

Action A2.

List drafting workshops

- Participative process with several meetings
- More than 30 experts involved
- Specialists sub-groups for plants, vertebrates & invertebrates
- 71 monographic profiles developed (47 present AIS, 24 selected potential AIS)





Action A2. AIS List and management strategy at a Basin level

Priority lists

Results

- 47 taxons present (27 fauna 20 flora).
- 47% listed in national regulation for AIS (RD 630/2013)





RIPISILVA

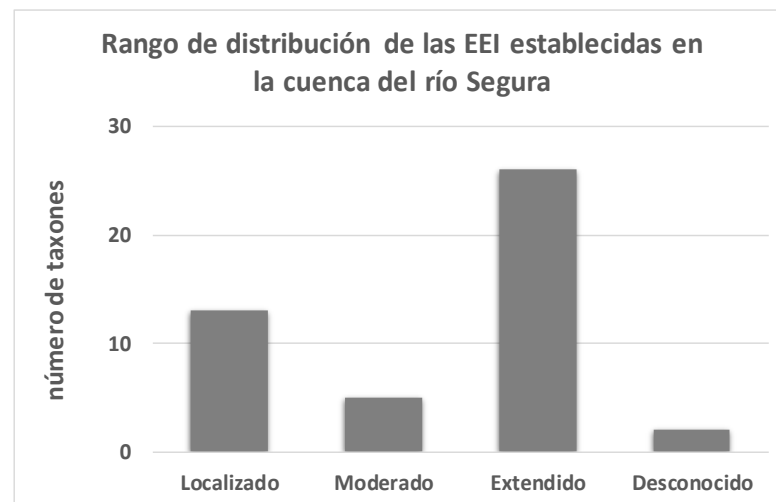
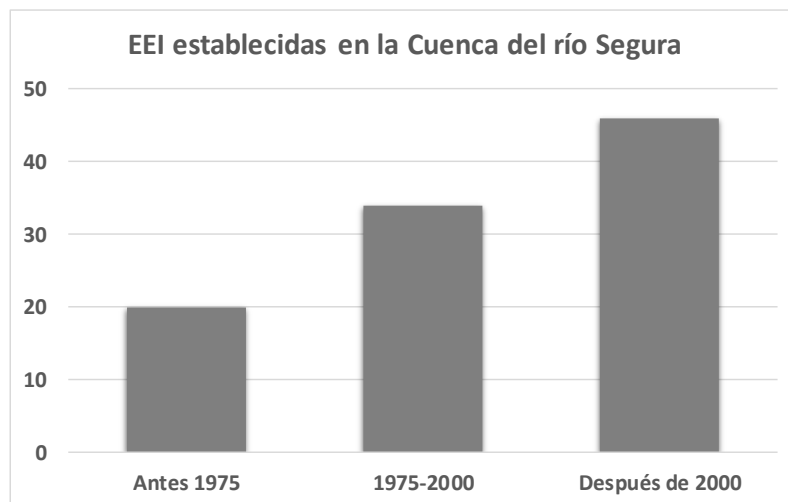
LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action A2. AIS List and management strategy at a Basin level



- **47 taxons present (27 fauna 20 flora).**





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action A2. AIS List and management strategy at a Basin level

UNIVERSIDAD DE
MURCIA



List of Potential AIS in the SRB

Results

- 115 potential AIS (75 fauna, 40 flora).
- 43% listed in national regulation for AIS (RD 630/2013)





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

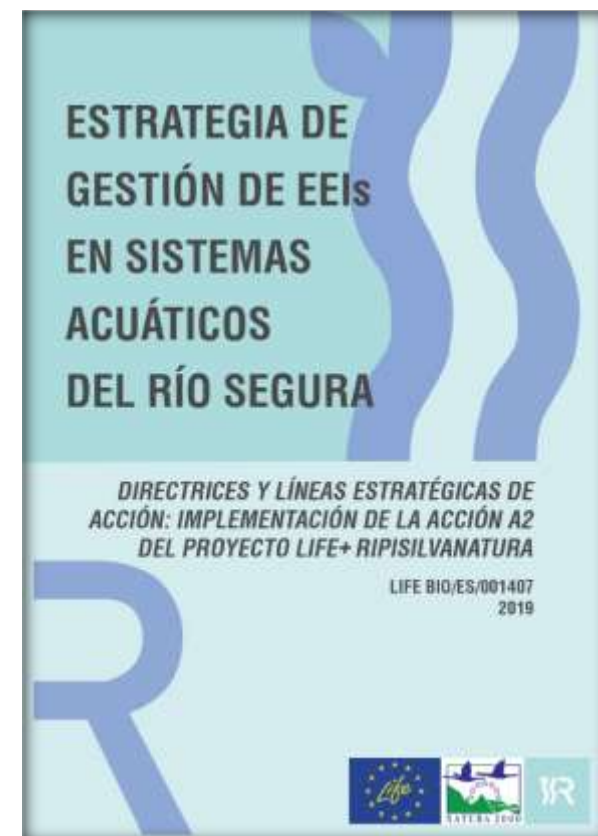
UNIVERSIDAD DE
MURCIA



Action A2.

AIS Management strategy at a Basin level

- *Framework strategy*
- *Reference technical document*
- *8 strategic guidelines*
- *Involvement of all relevant stakeholders*





Action A2.

AIS Management strategy at a Basin level

- *8 strategic guidelines*
 - 1. PREVENTION OF NEW INTRODUCTIONS**
 - 2. EARLY DETECTION & RESPONSE**
 - 3. GATHERING & UPDATING INFO ON AIS**
 - 4. MANAGEMENT PROGRAM: ERADICATION, CONTROL, MITIGATION**
 - 5. AWARENESS RAISING AND DISSEMINATION**
 - 6. COORDINATION OF RELEVANT ENTITIES**
 - 7. LEGAL FRAMEWORK IMPROVEMENT**
 - 8. ECONOMIC AND TECHNICAL RESOURCES**



Action A2.

ALS Management strategy at a Basin level

- Example of strategic guideline:*

1. PREVENTION OF NEW INTRODUCTIONS

1. Accidental introductions

1. *Identify entry ways*

2. *Assess invasion risk*

3. *Inspection, disinfection and quarantine protocols*

2. Intentional introductions

1. *Control & permit of hazardous activities*

2. *Development of Good Practices Handbooks in key sectors: anglers, nurseries, pet stores...*

3. *Adequate facilities for stray pets*

Estrategia de gestión de EEs en sistemas acuáticos de la cuenca del río Segura:
Directrices de actuación (Acción A2) LIFE13 BIO/ES/001407

RIPISILVA

LÍNEA ESTRATÉGICA DE ACCIÓN 1

PREVENCIÓN DE LA INTRODUCCIÓN DE NUEVAS ESPECIES

El principio de precaución debe adoptarse asumiendo que todas las especies exóticas recién llegadas, son sospechosas de ser invasoras hasta se disponga de datos fehacientes que demuestren lo contrario. Es un enfoque frente a la falta de certeza y que consiste en tomar medidas para evitar daños medioambientales graves e irreversibles antes de tener pruebas científicas de dichos daños. Esta aproximación pone el énfasis sobre la prevención, dirigiendo las acciones de manejo hacia los primeros estados de la secuencia de invasión para interrumpir el posible éxito de la especie transferida, ya que una pronta detección y una rápida respuesta son más rentables y tienden a dar mejores resultados que el desarrollo de actuaciones una vez que la especie se ha establecido.

Prevenir la entrada de nuevas especies exóticas constituye la medida más eficaz y económica ante la problemática que generan.



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action A2.

ALS Management strategy at a Basin level

Future development

- *Replicability – cooperation with other basins*
- *Seize potential benefits: integrate in River Basin management Plan and implement actions*
- *Periodic update and review of ALS info*
- *After LIFE: dissemination by LIFE+INVASAQUA*



LIFE INVASAQUA

UNIVERSIDAD DE
MURCIA





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

PRESENTATION OUTLAY

1. Introduction: main project features
2. Actions developed to fight AIS:
 1. Direct removal
 2. Management tools development
3. Dissemination and awareness raising
3. Conclusions





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action E1 Public Awareness raising & dissemination of results.

- 30.000 visits project **website**
- 488 twitter+593 Facebook **followers**
- 453 **tweets** / retweets / posts
- 76 **press** releases on website
- More than 100 **newspaper** reports.
Featured in a **national TV documentary**. Special report in 'Quercus magazine'. National and Regional TV & radio **interviews**
- More than 300 **talks** & presentations
- Organized **RESTAURARIOS** 2019 Conference at Murcia (with a special seminar on Mediterranean riparian forest)
- **AI** CHALLENGE PUT IN THE HEADLINES!!!





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action E1 Public Awareness raising & dissemination of results.

- ✓ 3 year long campaign in public schools
- ✓ 292 talks
- ✓ 9 towns located by the river
- ✓ 6.200 students attended
- ✓ Specific didactic materials developed





Action E1 Public Awareness raising & dissemination of results.

Didactic materials developed



2016

Didactic guide “Riparian forest
in the *Region of Murcia*”



Didactic video “Riparian forest
in the *Region of Murcia*”

Didactic guide: activities

Actividad 3

Encuentra quién vive en el bosque de ribera

En el bosque de ribera viven numerosos animales pues agua, comida y refugio están garantizados durante todo el año. Además este bosque funciona como un pasillo natural que conecta diferentes ambientes, así, a los animales propios del río Segura, se les unen otros que utilizan este corredor como lugar de refugio o alimentación de paso hacia otros lugares.

Encuentra en esta sopa de letras los nombres de estos 7 animales que habitan en el bosque de ribera de la Región.



Cangrejo



Rana



Tortuga



Cigarralero



Carrizalero



Naja



Bucio

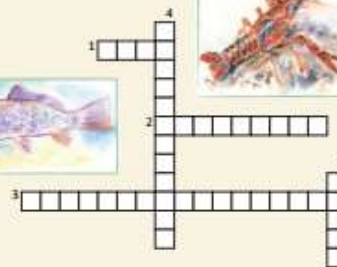
X U L Z K M S O P H J K
S M N O B E Y R I P E M
O S U T A V C O A T K U
S L T U R O N P H N S R
T M R C B U S E P F A C
U E I F O C S N D S U I
S G A U S O Y D P A S E
C A N G R E J O E S Z L
V I A N K Y O L P G U A
E T U A C I S A E P Z G
S R I S P X Z E U T S O

Actividad 4

Eliminando las especies invasoras

El problema más grave al que se enfrenta el bosque de ribera de nuestra región es la amenaza de especies invasoras que van ocupando poco a poco su espacio. Las especies exóticas invasoras son especies foráneas que han sido introducidas fuera de su distribución natural, que después de cierto tiempo consiguen adaptarse al nuevo medio y colonizarlo y afectan muy negativamente al ecosistema nativo, hasta tal punto que corre el riesgo de desaparecer. Estas especies suponen una amenaza para la biodiversidad debido a los impactos que causan sobre las especies nativas porque se alimentan de ellas o porque compiten por el alimento.

Completa el crucigrama con las especies exóticas invasoras que se encuentran en el río Segura.



1. Planta invasora muy abundante en las márgenes del río Segura. Con ella, se elaboran cestas y otros utensilios.
2. Árbol de gran tamaño, procedente de Australia. Sus hojas se han empleado tradicionalmente para curar los resfriados. Compete con los árboles autóctonos del bosque de ribera.
3. Tortuga de agua introducida en nuestro país como mascota. Tiene manchas rojas en el cuello. Compete con el galápago leproso.
4. Además de competir por el espacio y el alimento con el cangrejo de río autóctono, le contagió la enfermedad de la alamicosis, comprometiendo su supervivencia.
5. Puz abundante en nuestro río, de interés en la pesca deportiva.



RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action E1 Public Awareness raising & dissemination of results.

- ✓ Dissemination campaign in AIS handling premises: pet shops, vet clinics, plant nurseries...
- ✓ 126 shops visited at 27 different towns
- ✓ More than 300 posters, 1000 leaflets, 500 stickers delivered





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action E5 volunteering activities

Year	2015	2016	2017	2018	2019	Total
Organized volunteering activities	3	7	18	16	17	61



- ✓ 61 1-day activities
- ✓ Two 7-days work camps
- ✓ Over 700 volunteers





RIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

Action C1 land stewardship network



- ✓ Started from the very beginning
- ✓ Nearly 400 ha subject to 19 land stewardship agreements (100 ha private)
- ✓ 300 landowners in database
- ✓ 3 general meetings, 30 private visits
- ✓ Most importantly... achieving a sense of **belonging** to the river





SSIPISILVA

LIFE+13/BIO/ES/1407

Project co-funded with the aid of EU's
LIFE+ financial instrument

THANKS FOR YOUR ATTENTION!

MUITO OBRIGADO PELA ATENÇÃO



Jaime L. Fraile, Segura River Basin Authority



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

CONFEDERACIÓN
HIDROGRÁFICA
DEL SEGURA, O.A.

More info:

www.ripisilvanatura.eu



Life.ripisilvanatura@chsegura.es

[@ripisilvanatura](https://twitter.com/ripisilvanatura)

LIFE+BIODISCOVERIES
FINAL SEMINAR
Lisboa, Portugal
March 23rd, 2020



Biodiscoveries

Mata da Machada e Sapal do Rio Coina