

River connectivity restoration to improve diadromous fish populations: LIFE KANTAURIBAI project



Josu Elso¹, Luis Sanz¹, Eva Zaragüeta¹ M^a Eugenia Hernando² and Jose Ardaiz²

¹GAN-NIK, ²Regional Government of Navarra.





Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



Background

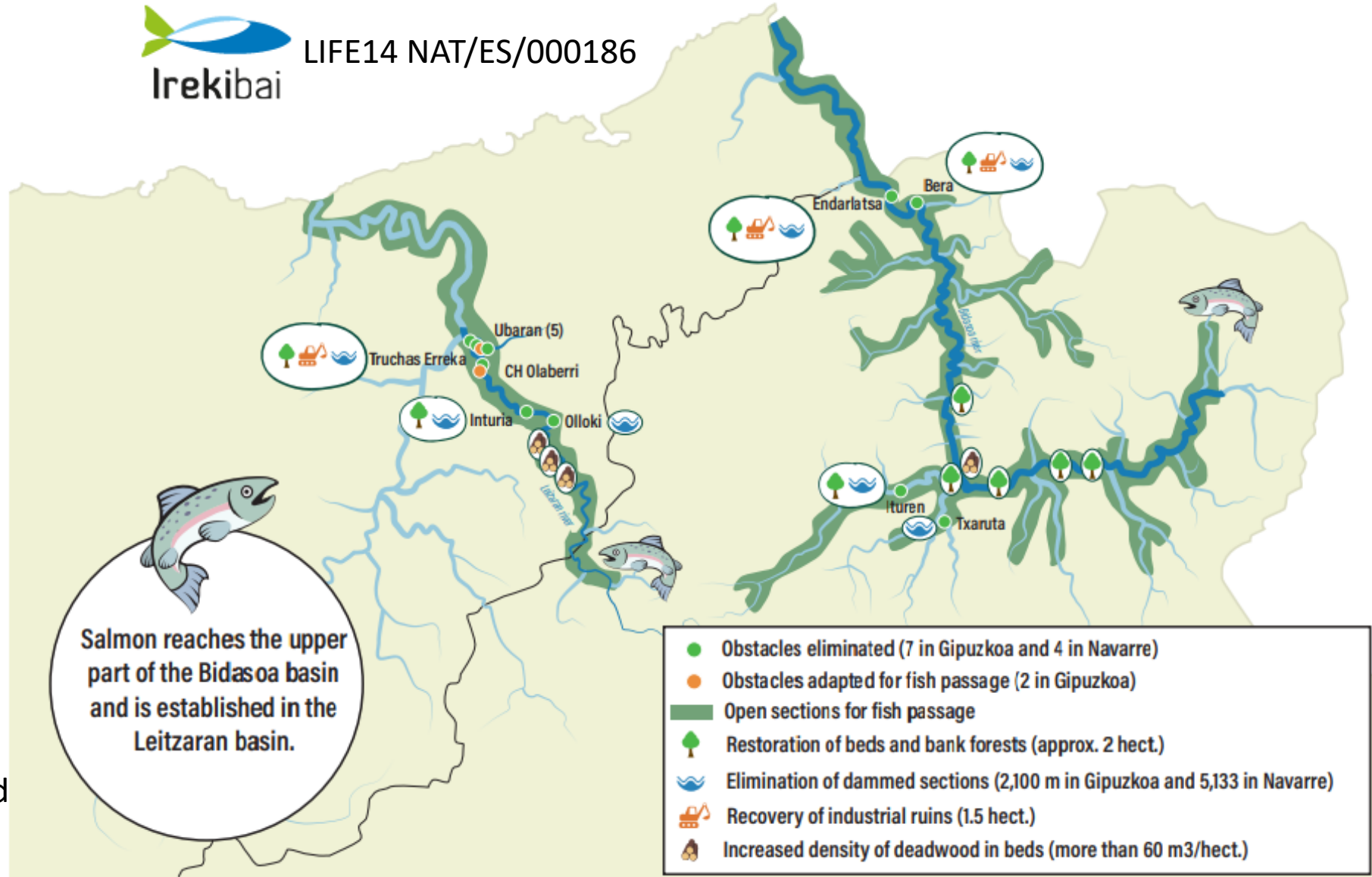
Between 2015 and 2020
Budget: 3 M€
co-finance (60 %) 1.8 M €

Two basin (Bidasoa and Oria)
shared by two regions
(Navarra and Gipuzkoa)

7 dams were demolished
2 fish passes were constructed



LIFE14 NAT/ES/000186





Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneke eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



Background



LIFE14 NAT/ES/000186

Endarlatsa dam (Bidasoa)



Before



After



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



Background



LIFE14 NAT/ES/000186

Bezerro dam (Bidasoa)



Before



After









LIFE21-NAT-ES-LIFE KANTAUERIBAI (101074197)

KANTAUERIBAI
Kantauri (= Cantabrian) + Ibai (= Rivers)

Budget: 10.85 M€
LIFE co-finance (60 %) 6.5 M €
From October 2022 to September 2027

13 partners: public competent authorities, municipalities, research and communication and private entities

Partners



Associated partners





Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



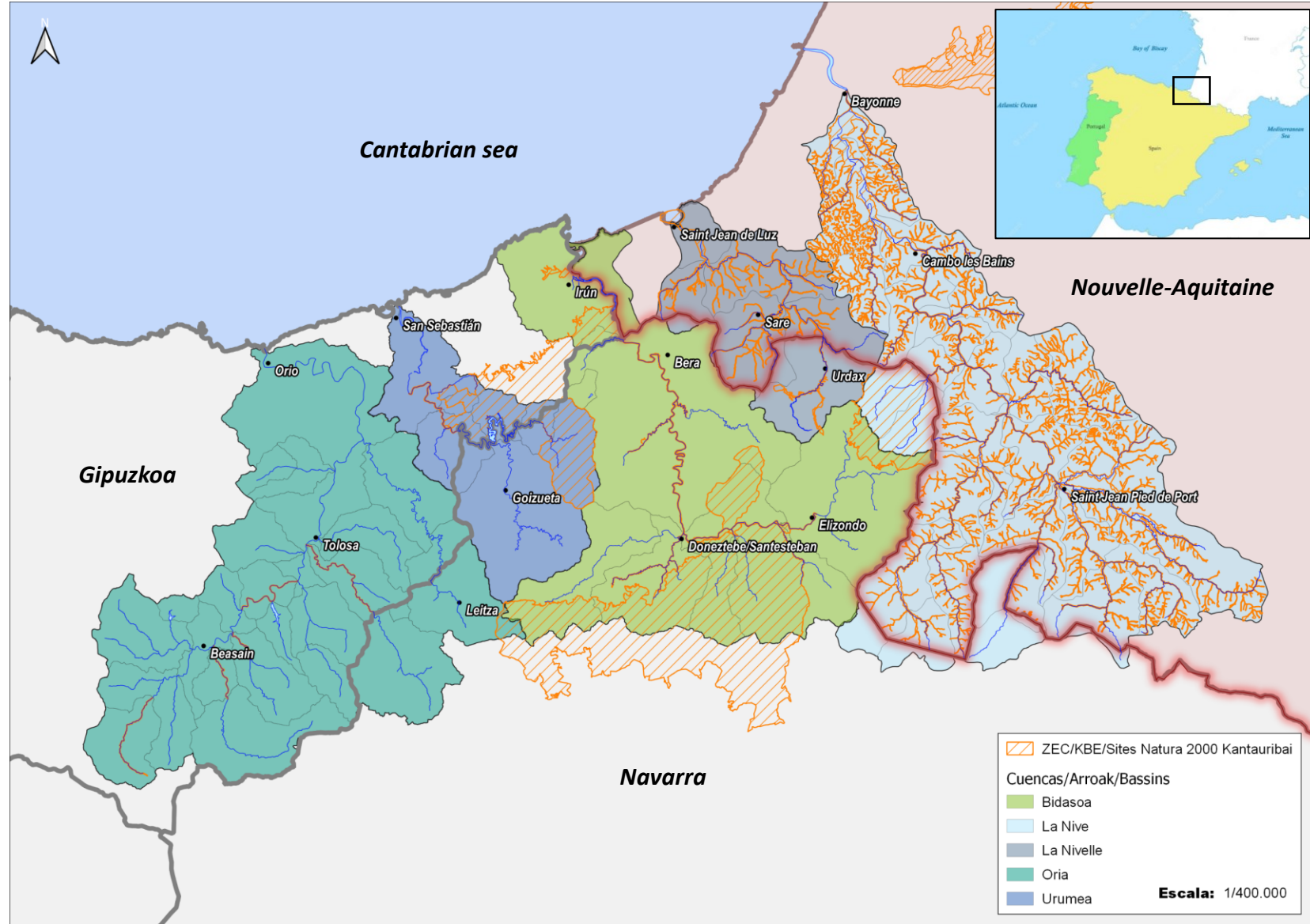
Project area

5 river basins

Shared among 2 countries

and 3 regions

15 Natura 2000 sites



Región	Natura 2000
Navarra	ZEC Río Bidasoa (ES2200014) ZEC Río Baztan y Regata Artesiaga (ES2200023) ZEC Artikutza (ES2200010) ZEC Regata de Orabidea y turbera de Arxuri (ES2200015) ZEC Bertiz (ES2200017) ZEC Aritzakun Urrizate (ES0000122) ZEC Belate (ES2200018)
Gipuzkoa	ZEC Txingudi-Bidasoa (ES2120018) ZEC Urumea ibaia / Río Urumea (ES2120015) ZEC Aiako Harria (ES2120016) ZEC Oria Garaia/ Alto Oria (ES2120005) ZEC Araxes (ES2120012)
Aquitania	ZEC La Nivelle (estuaire, barthes et cours d'eau) (FR7200785) ZEC La Nive (FR7200786) ZEC Barthes de l'Adour (FR7200720)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



Target species

Diadromous fish

Included in the
Habitats Directive or
in the IUCN Red List

Other targets:

Margaritifera margaritifera

Mustela lutreola

Galemys pirenaicus

91E0 habitat



Atlantic salmon (*Salmo salar*)

Annex II and V
Bad conservation status



European Eel (*Anguilla anguilla*)

Critically endangered (UICN)



Sea lamprey (*Petromyzon marinus*)

Annex II
Bad conservation status



Allis shad (*Alosa alosa*)

Annex II and V
Bad conservation status



Work packages and activities

As in the predecessor project, activities are focused on river restoration, in order to recover the fluvial continuum and improve the habitat, to improve the conservation status of target species.

WP1 Project Management

WP2 Restoration of the fluvial ecosystem: dam removal, fish passes and riparian forest restoration.

WP3 Improvement of the conservation status of the diadromous fish species.

WP4 Improvement of the conservation status of the river mussel

WP5 Improvement of the conservation status of Iberian desman and European mink and IAS control

WP6 Monitoring and evaluation

WP7 Communication, dissemination, sustainability, replication and exploitation of results.



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



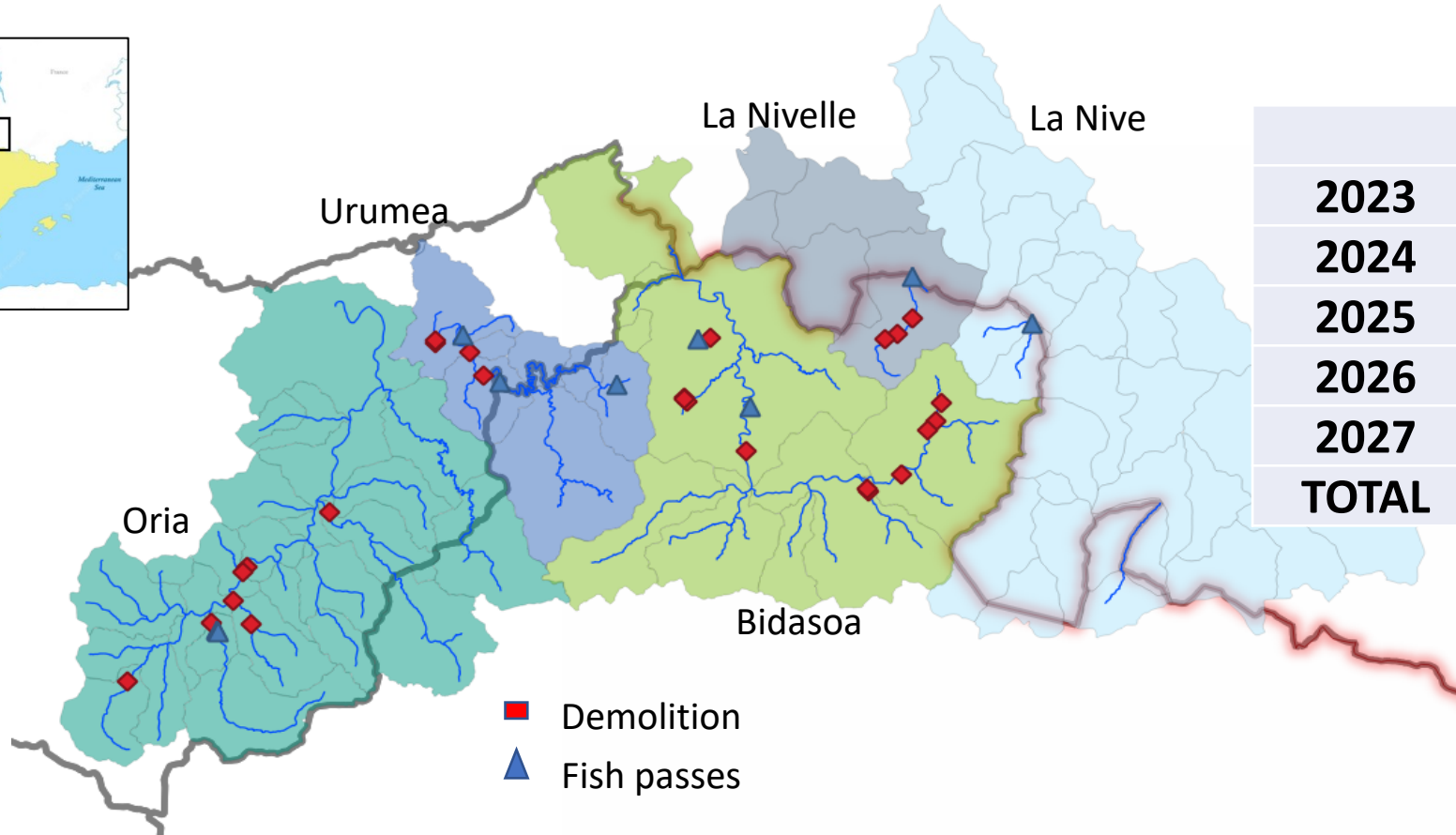
GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



WP2 Restoration and improvement of the fluvial ecosystem

Demolition of 25 obstacles: recovery of free-flowing
26 km of main rivers and 59 km of tributaries

Construction of 7 fish passages in obstacles whose
demolition is not possible

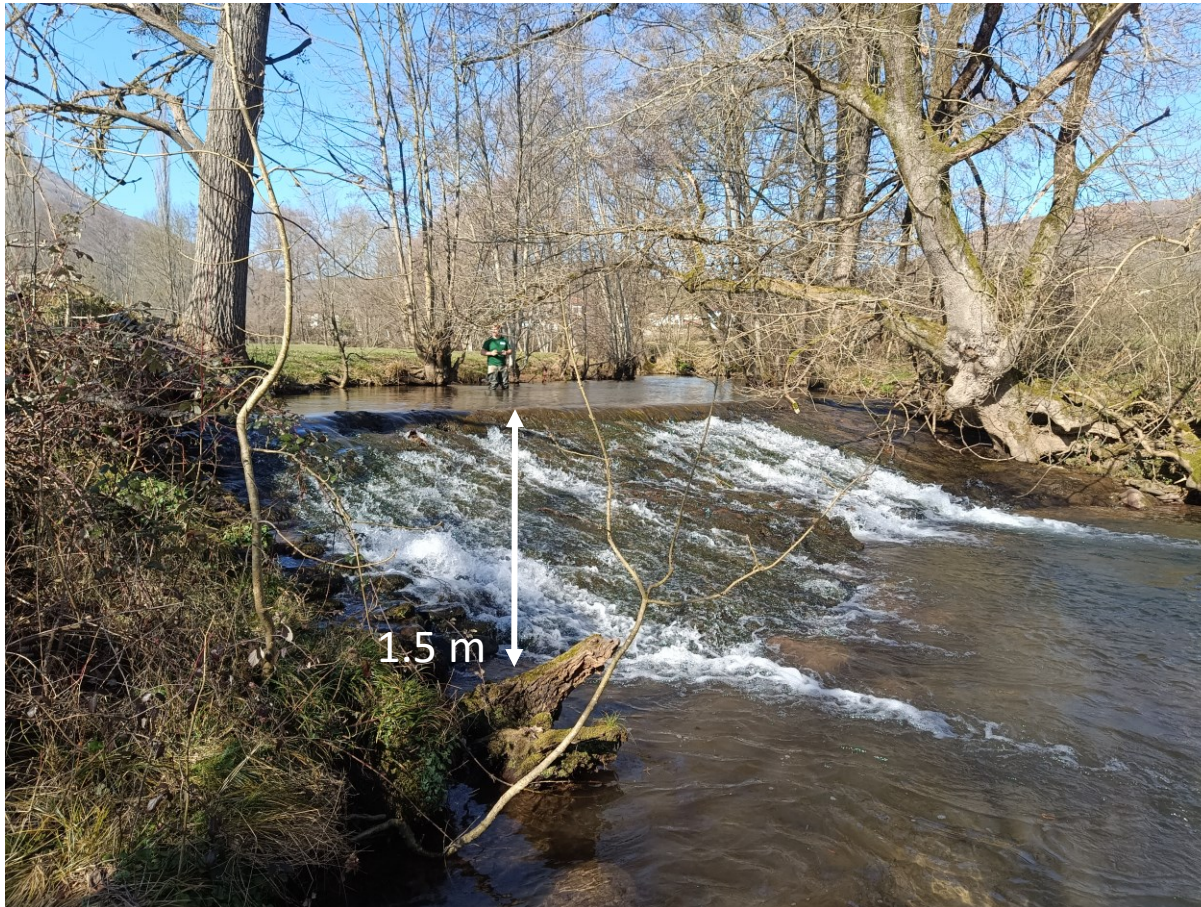


	Demolitions	Fish passes
2023	6	2
2024	8	1
2025	4	1
2026	7	3
2027	0	0
TOTAL	25	7



WP2 Restoration and improvement of the fluvial ecosystem

2023



Kisua Mill dam (Aranea)



WP2 Restoration and improvement of the fluvial ecosystem

2023



Ikatzatea Mill dam (Aranea)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente

Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



WP2 Restoration and improvement of the fluvial ecosystem

2023



Zubiberrialdea Mill dam (Baztán)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



WP2 Restoration and improvement of the fluvial ecosystem

2023



Ugarana dam (Ugarana)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



WP2 Restoration and improvement of the fluvial ecosystem

2023



Foundry dam (Ugarana)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



WP2 Restoration and improvement of the fluvial ecosystem

2024



Arraioz Mill dam

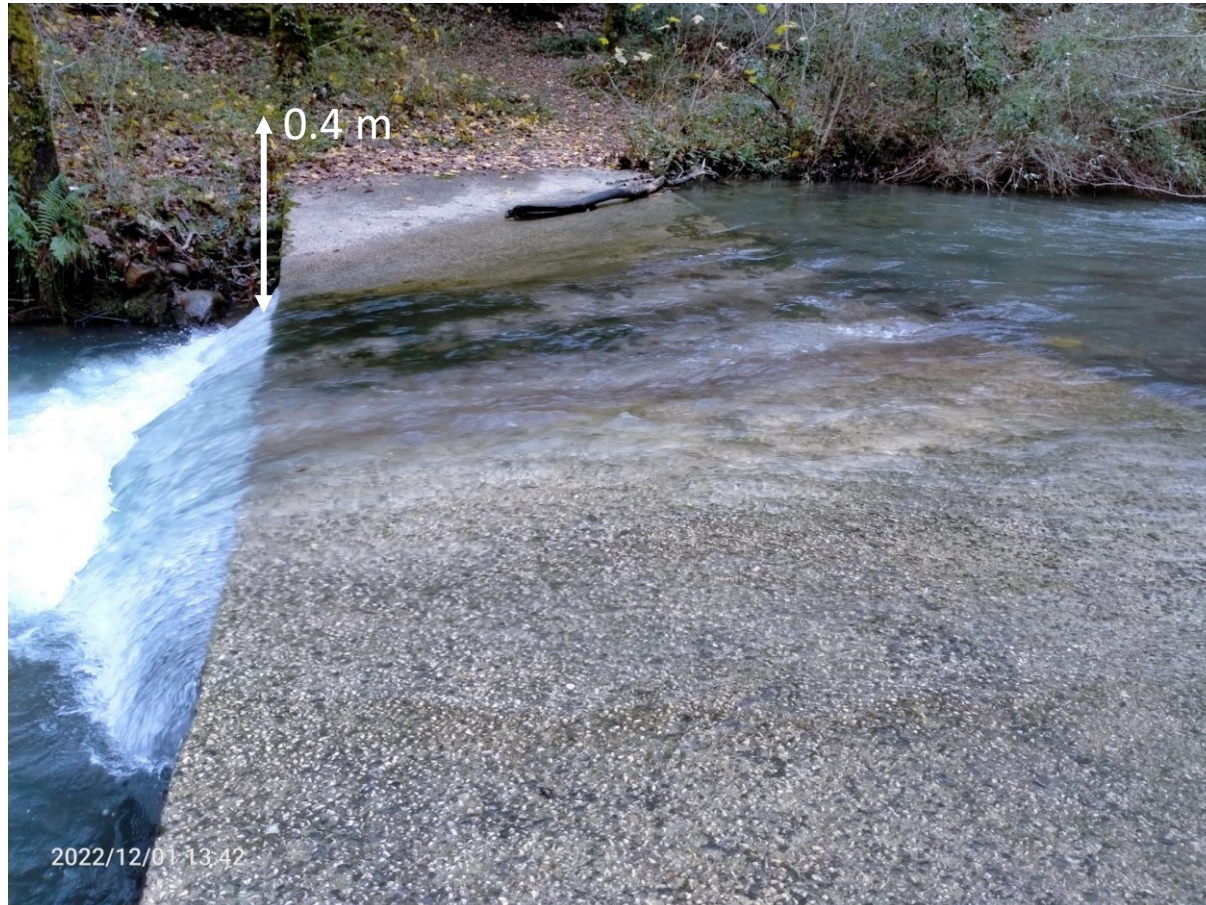


Irurita Sawmill dam

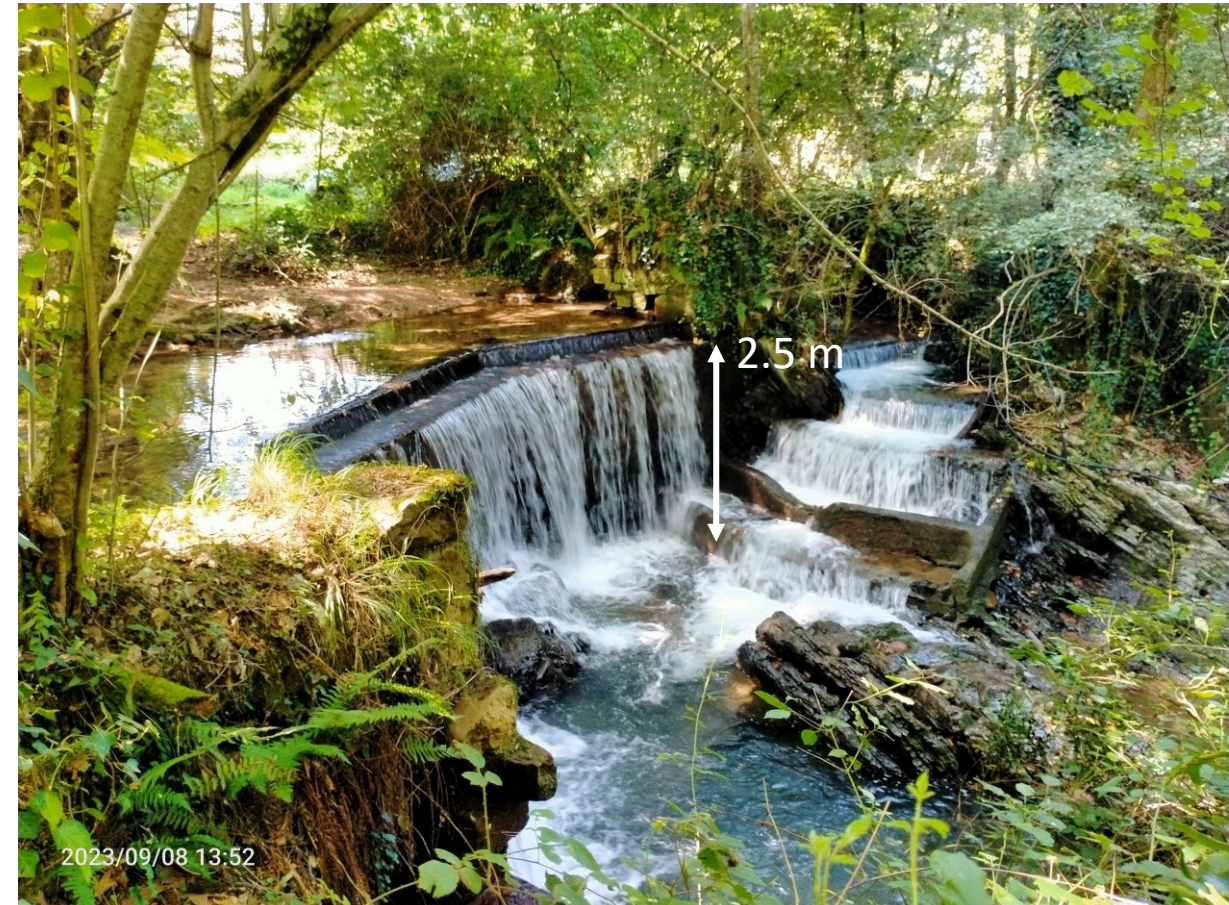


WP2 Restoration and improvement of the fluvial ecosystem

2024



Pikatxarrea ford (Ugarana)



Elbetea Mill dam (Beartzun)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



WP2 Restoration and improvement of the fluvial ecosystem

In the next years



Jorajuría Mill dam (Bidasoa)



Beheko Errota Mill dam (Onin)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



WP2 Restoration and improvement of the fluvial ecosystem

In the next years



Arantza Fish Farm dam (Latsa)



Artikutza Reservoir dam (Leitzaran)



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua

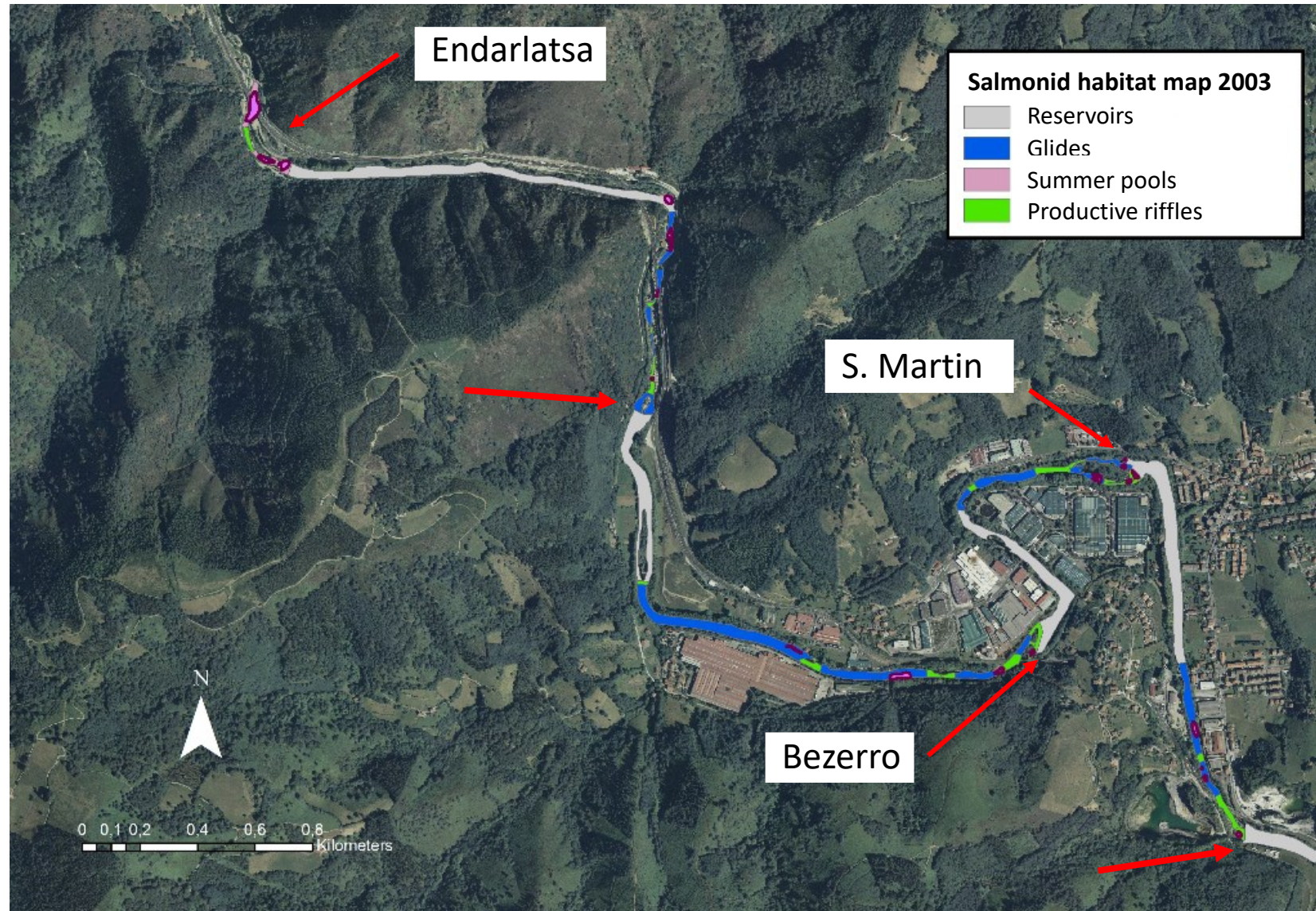


Results: Habitat quality

Mesohabitat map

Removed dams

Bezerro	2.014
San Martín	2.016
Endarlatsa	2.016





Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



Results: Habitat quality

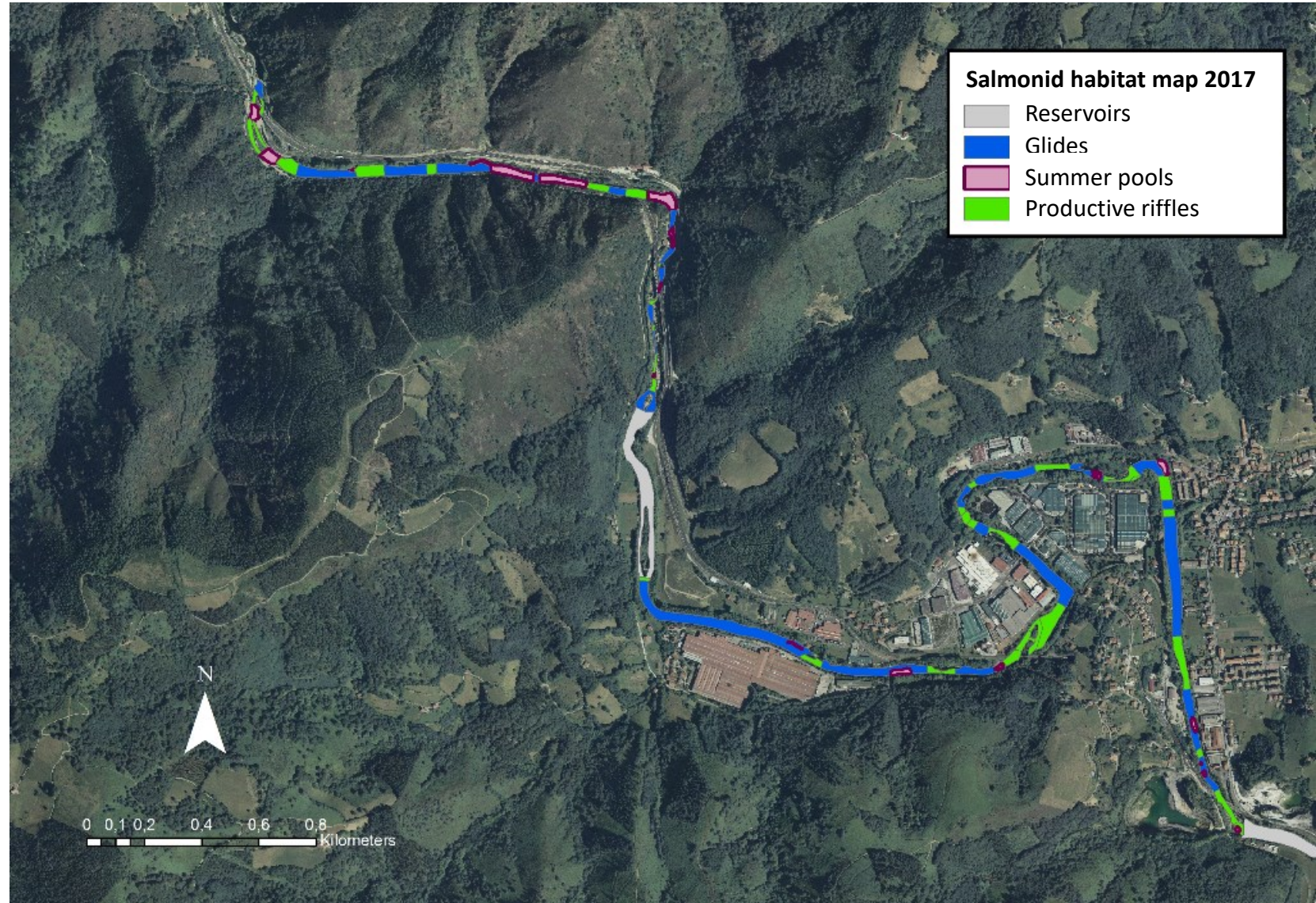
Diference 2003-2017

Reservoirs	-42,8%
Glides	20,7%
Summer pools	5,0%
Productive riffles	17,1%

Riffle/Pool

2.003	1P:0,14R
2.017	1P:0,41R

A clear improvement in
the quality of the habitat
for salmonids





Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



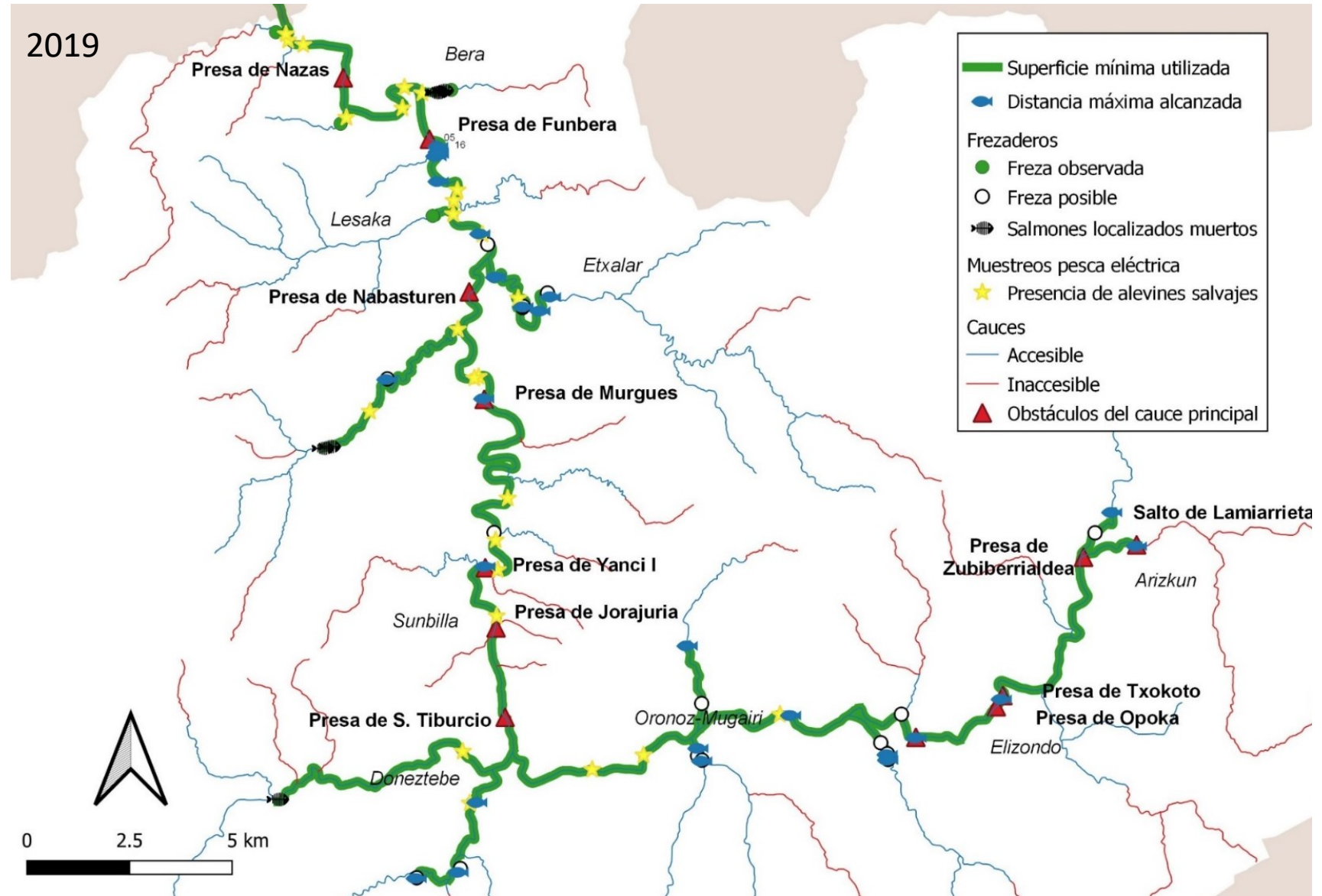
Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



GAN-NIK
Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



Results: Basin colonization



Data from:

- Radiotracking of adults
- Electrofishing of parrs
- Redds count



Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneko eta
Ingurumeneko Departamentua



Summary

3 important management measures
taken in the last 40 years

Angling management

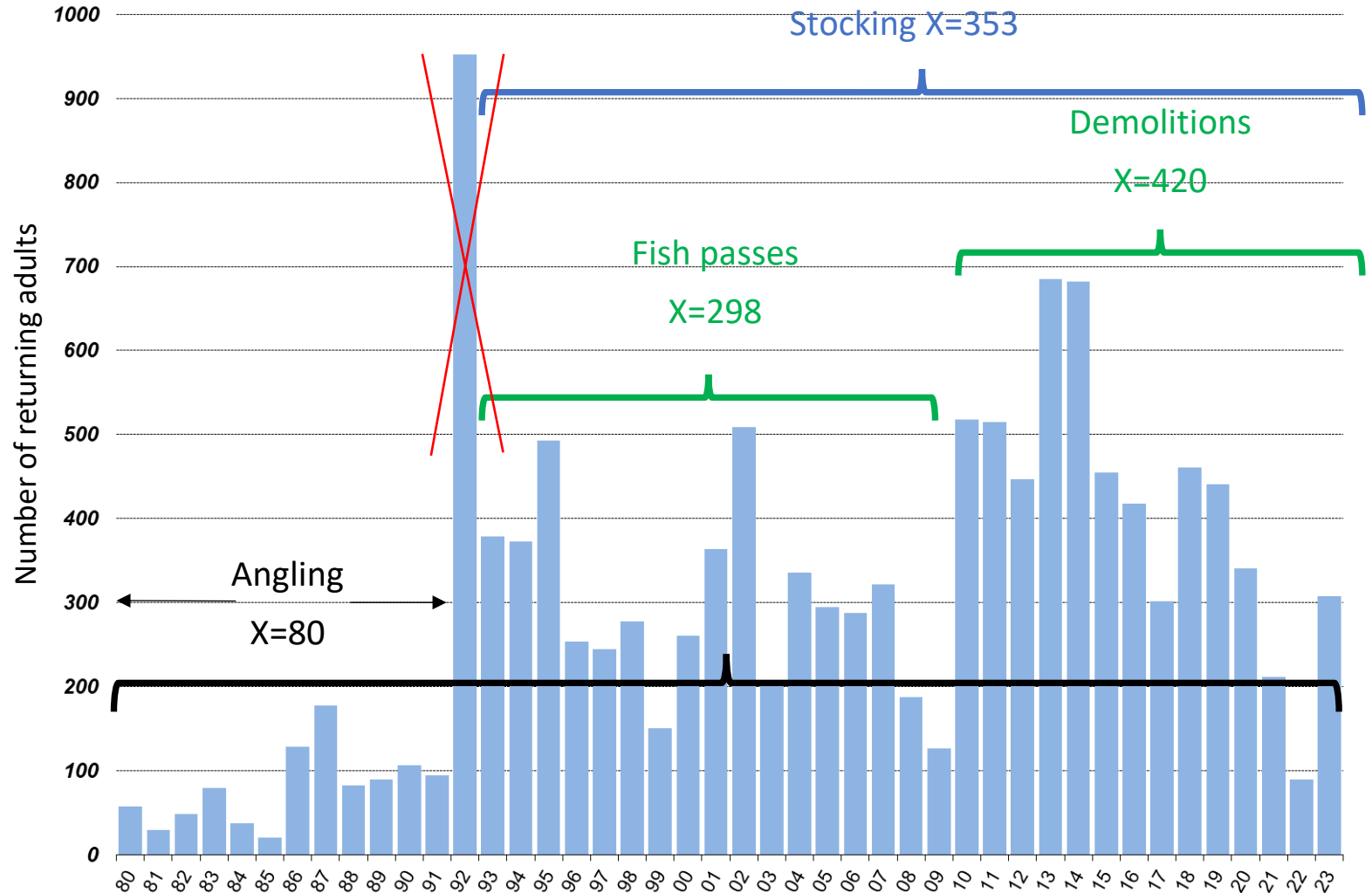
Constant over the years

Fish stocking

Constant over the years

Improvement of connectivity

Increasing over the years





Gobierno de Navarra
Departamento de Desarrollo Rural
y Medio Ambiente



Nafarroako Gobernua
Landa Garapeneke eta
Ingurumeneko Departamentua



GAN-NIK

Gestión Ambiental de Navarra
Nafarroako Ingurumen Kudeaketa



Conclusion

The permeabilization of obstacles is directly related to the improvement of the salmon population observed in the Bidasoa: the increase in the **number of spawners** and in the **surface area of the basin used by salmon** in the last decades in the Bidasoa river, are correlated with the execution of permeabilization works in the basin, mainly with the **construction of fish passages** in the period 1993-2008 and with the **removal of obsolete obstacles** in the period 2009-2023



Thanks!

jelsohua@gan-nik.es