



PROYECTO LIFE13 BIO/ES/000556 LIFE ELM



Restoration of Iberian elms (*Ulmus minor* and *U. laevis*) in the Tagus river basin

Layman report

November 2020





BACKGROUND:

Elm groves are included as subtype 2.3 in habitat 92A0 of Directive 92/43/EEC for the Conservation of Natural Habitats and of Wild Fauna and Flora. In Spain there are three species of native elms, the field elm (*Ulmus minor*), the white elm (*Ulmus laevis*) and the Wych elm (*Ulmus glabra*), along with the Siberian elm (*Ulmus pumila*) as an exotic species frequently naturalized.

For different reasons, the elm groves have suffered a profound degradation, having lost their role in the Spanish forest landscape. Dutch elm disease (DED) has been one of the most devastating forest diseases, and led to the practical disappearance of the Spanish groves of *U. minor*. In the case of *U. laevis*, the alteration of its natural habitat linked to temporarily flooded areas and river banks, has caused that the Spanish populations are very small and fragmented, and at risk of disappearance. Along with these two species, Spanish populations of *U. glabra* are found in mountain areas, and also at lower altitudes in the Atlantic region.

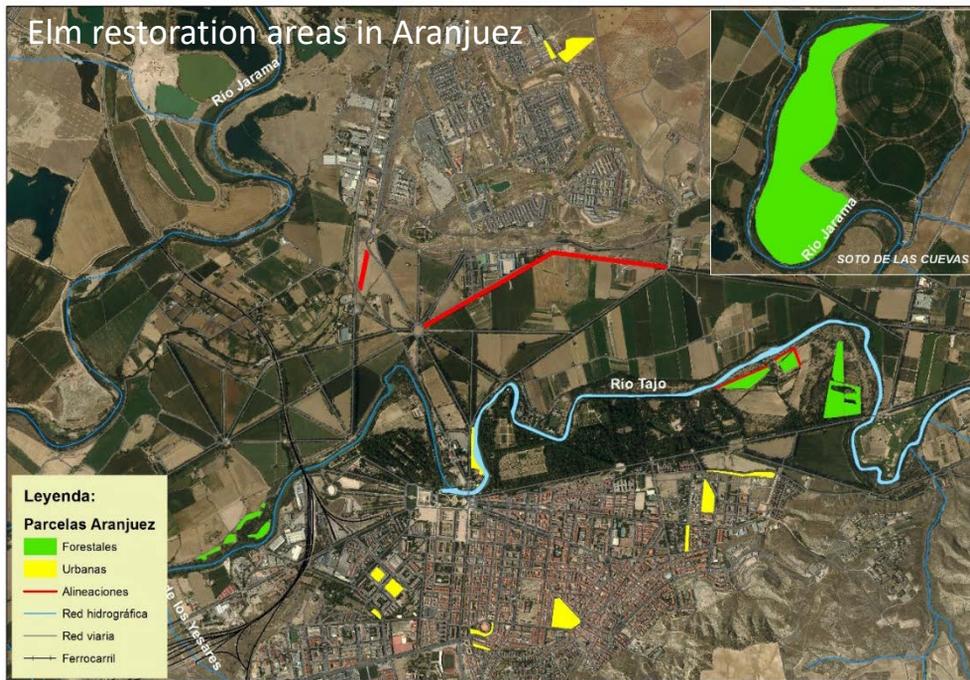
In addition to the importance that elm has in natural riverine habitats, it has been one of the most used trees since ancient times by man. It was commonly planted for its shade in paths and gardens and frequently occupied a remarkable position in the main squares of towns and cities.

Thanks to the previous work of the Spanish elm breeding program, developed for decades by the Universidad Politécnica de Madrid and the Spanish Environmental Administration, seven DED-resistant *U. minor* clones were obtained in 2013.

THE PROJECT:

The main objective of LIFE ELM, through its demonstrative and innovative nature, is to initiate the recovery of the Spanish elm groves of *U. minor* and *U. laevis* in various locations in the Tagus river basin, within the Community of Madrid, Spain. In addition, it aims to make elm groves a regular element to be included in the region's forest management plans. For this purpose, around 9,600 trees of native and DED-resistant clones of *U. minor* were grown by in vitro propagation and planted in Aranjuez (Madrid), and 7,100 *U. laevis* trees, propagated from seeds of relict populations, were planted in San Sebastián de los Reyes (Madrid).

This distribution cares for the edaphic preferences of both species in Spain, calcareous soils for *U. minor* and siliceous for *U. laevis*.



In addition to the reforestation with elms in the riverside areas of the Jarama and Tajo rivers, and another minor streams, the project performed informative plantations in urban settings and road tree alignments.



The actions of LIFE Elm have been accompanied by a communication and dissemination plan to convey the results of the project to society, and to boost the use of elms in riverbank restorations, as well as their use for ornamental purposes.



THE ACTIONS

A. PREPARATORY ACTIONS:

A1. Preparation of planning documents:

- General intervention plan
- Outreach plan
- Reforestation projects

A2. Elaboration of a strategy to integrate elm trees into forest plans:

- Inclusion of the 7 *U. minor* resistant clones in the Community Plant Variety Office (CPVO)
- Administrative protection of *U. laevis* populations
- Drafting the Manual for Sustainable Management of Elm Stands

A3. Develop in vitro propagation of *U. minor* clones resistant to DED

A4. Initial administrative procedures

C. CONCRETE CONSERVATION ACTIONS:

C1. Plant production for restorations

C2. Forest plantings of *U. minor* and *U. laevis* in the Tagus river basin

D. MONITORING THE IMPACT OF THE PROJECT ACTIONS:

D1. Monitoring of plant production in nursery

D2. Monitoring of plantation survival and biodiversity improvement

D3. Evaluation of the socio-economic impact of the project actions

E. PUBLIC AWARENESS AND DISSEMINATION OF RESULTS:

E1. Dissemination workshops and guided visits

E2. Installation of informative posters and distribution of informative material

E3. Development of a web page and group profiles on social networks

E4. preparation of *Layman* report

E5. Publication of technical and research articles

E6. Participation in congresses and professional events

E7. Communication of results to professional key groups

E8. Dissemination plantings of *U. minor* y *U. laevis* in urban areas

F. OVERALL PROJECT OPERATION AND MONITORING OF THE PROJECT PROGRESS:

F1. Project management

F2. Connections with other projects

F3. Project audit

F4. *After-LIFE* communication plan

THE PROJECT IN IMAGES



In vitro propagation of *U. minor*.



Ciliated samaras of *U. laevis*.



Elm cultivation in nursery.



Monitoring of plant quality.



Planting in S.S. de los Reyes in 2017.



Planting in Aranjuez in 2018.



Planting irrigation in Aranjuez.



Weed clearings.



Day of the Tree in Aranjuez in 2016.



Elm planting workshop.



Trunk diameter in less than 6 years.



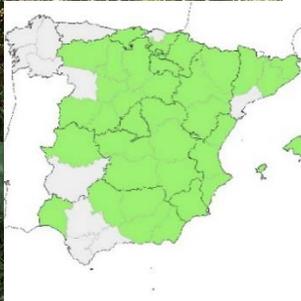
Elms of 5-6 years of age in Aranjuez.

THE RESULTS

During the development of the project the following results have been achieved:

- Inclusion of the 7 DED-resistant *U. minor* clones used in the project in the Community Plant Variety Office (CPVO), which protects their industrial property throughout the territory of the European Union.
- Massive production of DED-resistant *U. minor* clones through in vitro propagation, improving traditional propagation protocols and nursery culture techniques.
- Plantation of 7,128 units of *U. laevis* and 9,652 units of DED-resistant *U. minor* trees in riverside areas and urban settings, with an overall survival rate of 85% at the end of the project. Specifically, the following highlights have been achieved:
 - 24.70 ha of natural land restored with elms in Aranjuez and 20.59 ha in S.S. de los Reyes.
 - 16 Km of restored riverbanks, of which 8 stretches are accessible to the public and have recreational facilities.
 - 9 ha of informative plantations with elms in urban settings, which include gardens, parks, schoolyards and peri-urban green areas.
 - 5 km of tree alignments recovered with elms on historical roads within the Cultural Landscape of Aranjuez, declared a World Heritage Site by UNESCO.
- Project replicability: plantation of circa 30,000 elms on public land in 36 of the 50 Spanish provinces, through plant donations made by the Ministry to public entities and associations.
- Initiation in the use of Spanish elms in actions of ecological restoration of river banks by 7 of the 9 Spanish hydrographic confederations (CH) thanks to donations from the Ministry. Specifically: CH Duero, CH Ebro, CH Guadalquivir, CH Guadiana, CH Júcar, CH Segura and CT Tajo.
- First steps for the commercialization of resistant elms through the approval of public prices by the Ministry and accreditation as plant producers.
- Study of the relict Spanish populations of *U. laevis*, which will allow their conservation and use of reproductive material according to their gene pool.

In this way it can be said that the LIFE Elm project has started the recovery of the Spanish elm stands.



DISSEMINATION AND IMPACT OF THE PROJECT

Within the LIFE Elm an intense communication and dissemination plan has been carried out to transfer its progress to key professional groups and to society in general, whose actions have yielded the following results:

- Drafting and distribution of a Manual for the Sustainable Management of the Spanish Elm Stands in the Tagus River Basin.
- Carrying out more than 30 informative sessions around the LIFE Elm project and the elms.
- Project Facebook page created since October 2014, with 1,177 followers from 36 different countries.
- Twitter account of the project created since October 2014, with 426 followers.
- Publication of 9 articles in national and international scientific and informative journals.
- Two radio interviews with the project coordinator and one television report during which the advances on elm restoration were highlighted.
- Dissemination of the documentary “Giants with mud feet”, from which audiovisual rights have been purchased, and edition and dissemination of a promotional video of the LIFE Elm project.
- Attendance at 9 scientific conferences in which the LIFE Elm project has been presented, 6 of them international.
- Reception of more than 200 contacts via e-mail or Facebook messages from individuals, companies and representatives of public administrations, interested in the LIFE Elm project.
- Reception of more than 120 forms "Help us find alive elms" via the project website.
- Appearance of the LIFE Elm project in more than 400 media news.
- Presentation of the project at the III Scientific Meeting on Forest Health in October 2015 in Madrid, with a guided visit to the plant production center in Puerta de Hierro.
- Connection with other projects sharing technical information and establishing strategic alliances: LIFE enArbolar, LIFE Hessof (Poland), LIFE Ordunte Sostenible, LIFE Elmiás (Sweden), LIFE Zaragoza Natural and LIFE Tremedal.
- Reception of 5 visits to the Puerta de Hierro Forest Breeding Center by groups of students related to forest sciences, publicizing the LIFE Elm project and the advances in the protection and conservation of elm trees.





THE FUTURE:

- *Monitoring of the plantations carried out within the LIFE Elm.*

Assessment of the adaptation of *U. minor* clones to the natural environment and the recovery of the elm forest habitat.

Responsible: UPM.

- *Conservation and improvement of *U. laevis* populations.*

Results of the studies on Spanish *U. laevis* populations will be published in a scientific journal. These results will allow progress in the conservation and recovery measures of this species started in the LIFE ELM project.

Responsible: UPM.

- *Continuation of the donation of elm trees by the Ministry to public administrations and non-profit entities.*

With this, the project can be replicated throughout the Spanish geography, accelerating the recovery of Iberian elm species in their potential places.

Responsible: Ministry (MAPA)

- *Continuation of the search of new DED- resistant clones of *U. minor* in nature, and breeding actions.*

Responsible: UPM and MAPA.

- *After-LIFE communication plan.*

The LIFE Elm project and the results obtained will continue being disseminated through a plan that includes the maintenance of its website and social networks, participation in professional and scientific events, organization of visits to plantation areas and advice and knowledge transfer to Stakeholders on elm recovery and conservation techniques.

Responsible: UPM, MAPA and municipalities of Aranjuez and S.S. de los Reyes.

- *Continuation of scientific-technical collaborations at the international level.*

We aim to spread the replicability of the project to spread to other European countries affected by DED.

Responsible: UPM.

GENERAL DATA:

Code: LIFE13 BIO/ES/000556 LIFE ELM

Country: Spain

Duration: 5 years and 3 months

Starting date: 01/July/2014

Ending date: 30/September/2019

Partners:

- Universidad Politécnica de Madrid (Coordinator)
- Council of Aranjuez
- Council of San Sebastián de los Reyes
- Dirección General de Desarrollo Rural, Innovación y Política Forestal (Ministerio de Agricultura, Pesca y Alimentación)
- Confederación Hidrográfica del Tajo (Ministerio para la Transición Ecológica)

Budget: 1,348,799 €

EC contribution: 48.97 %

Web page: <http://www.olmosvivos.es/>

Social networks: <https://www.facebook.com/pages/Olmos-Vivos/>
<https://twitter.com/olmosvivos>

Contact: info@olmosvivos.es



THE LIFE+ PROGRAM

The LIFE Program is the specific EU financial instrument for supporting projects on the environment, nature conservation and climate action. Created in 1992, to date it has co-financed more than 5,400 projects.





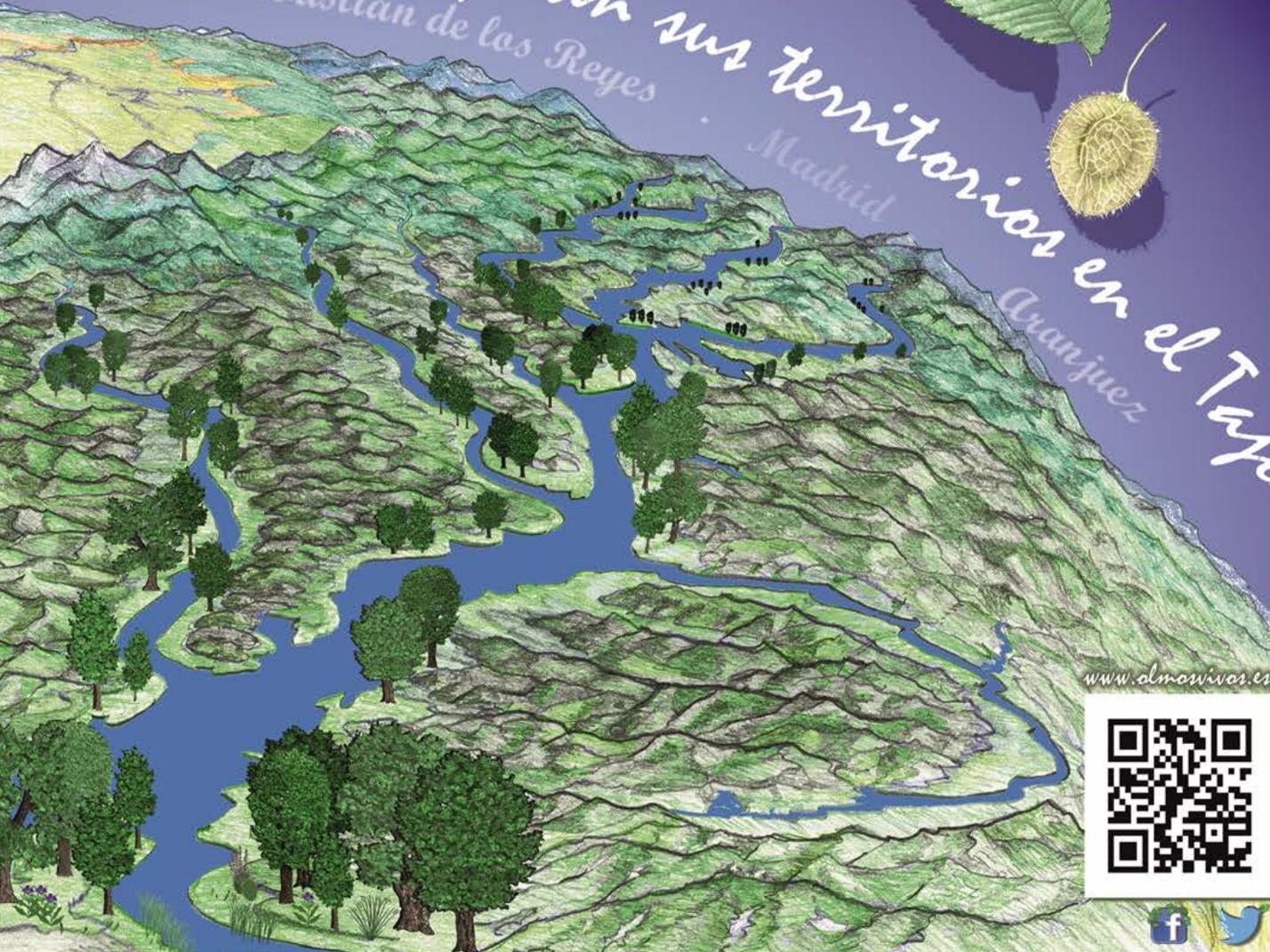
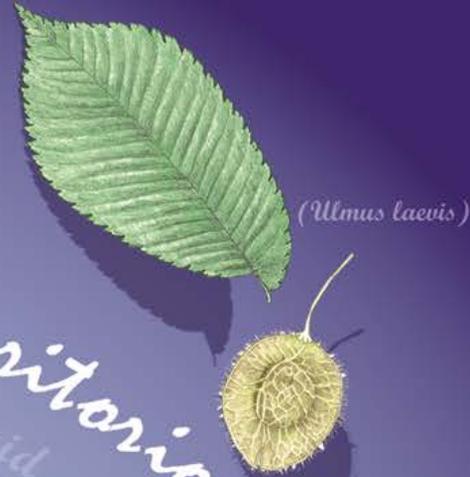
almas vivas

Los almas recuperan sus territorios en el Tago

San Sebastián de los Reyes

Madrid

Aranjuez



www.almasvivas.es



POLITÉCNICA



MINISTERIO DE AGRICULTURA, PESCA Y ALIMENTACIÓN

SECRETARÍA GENERAL DE AGRICULTURA Y ALIMENTACIÓN

DIRECCIÓN GENERAL DE DESARROLLO RURAL, INNOVACIÓN Y POLÍTICA FORESTAL



MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA

CONFEDERACIÓN HIDROGRÁFICA DEL TAGO, O.A.