

# Newsletter N. 7

August 2021

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ADMINISTRACIONES COLABORADORAS

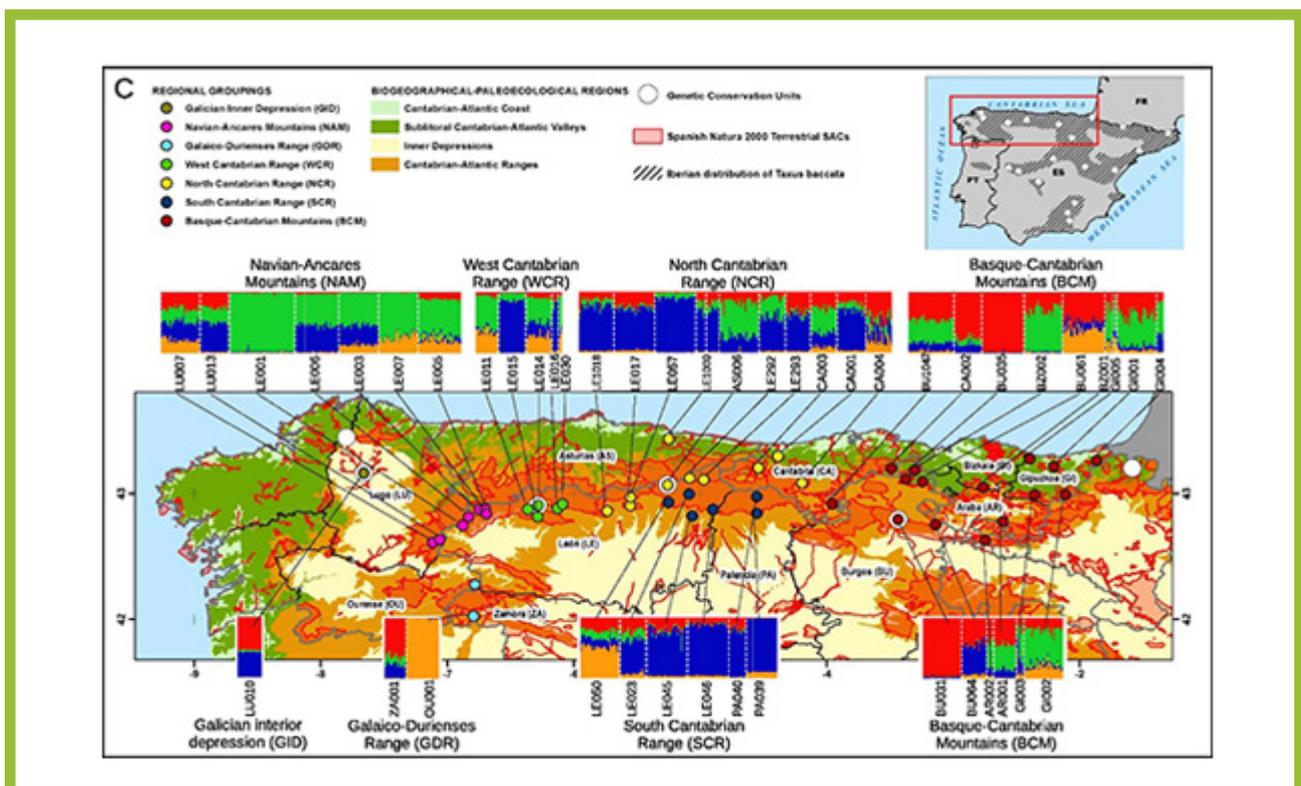


# LIFE BACCATA publishes an international impact article about the genetic diversity of yew in the Cantabrian-Atlantic mountains

March 12, 2021

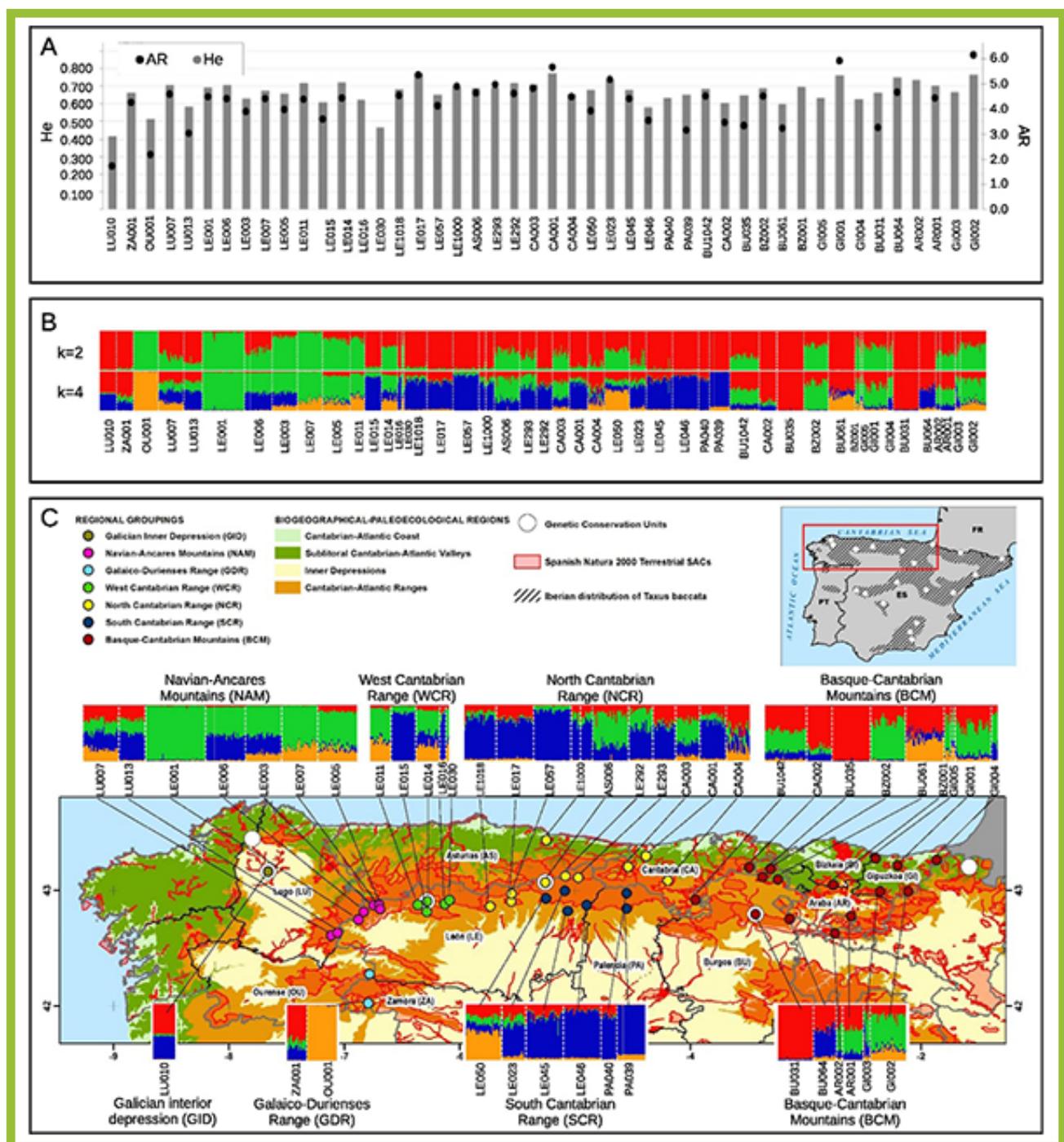
As a result of the work to collect more than 1,000 yew samples from 49 localities distributed in 30 ZECs of the Natura 2000 Network of the North of the Iberian Peninsula, and the subsequent analysis of 9 microsatellite DNA markers (SSR) using PCR techniques and automatic sequencer, it has been possible to determine the genetic diversity and the degree of kinship of the yew populations of the Cantabrian-Atlantic mountains, as we explained in the project's Special Newsletter No. 3 (August 2020).

The information obtained and the knowledge generated have been so relevant that they have led the LIFE BACCATA team to prepare an article in which the methodology used is collected, the procedure followed is detailed, and the results obtained and the conclusions derived from them are presented to the scientific community. The relevance of the LIFE BACCATA data has been so high that its validity has not only transcended at a Cantabrian Mountains level, but the information has been contrasted with previous works on the genetic characterization of yew at Spanish level, provided by the Center for Ecological Research and Forestry Applications (CREAF), allowing to broaden the contextualization of the project results. The article, entitled **“Genetic diversity and structure of *Taxus baccata* from the Cantabrian-Atlantic area in**



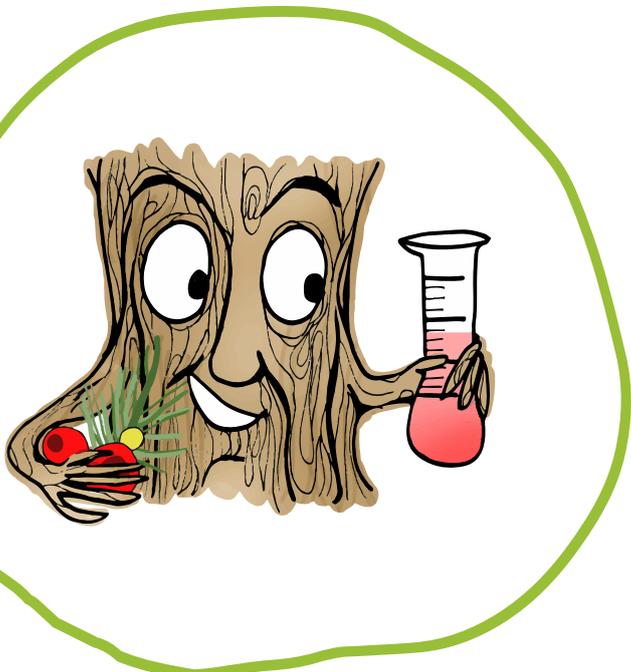
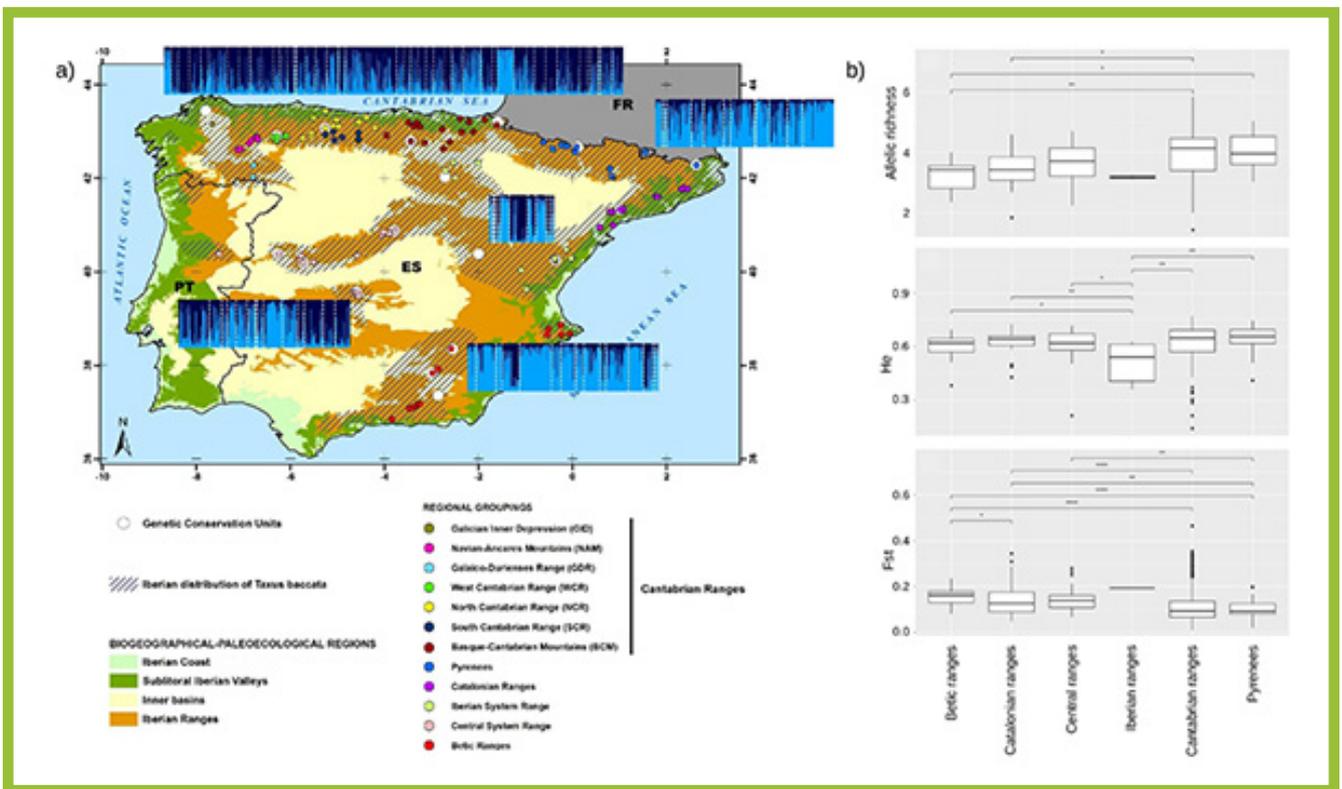
northern Spain: A guide for conservation and management actions”, has been published in Volume 482 of Forest Ecology and Management, a prestigious journal in the forestry field.

The results of the extensive sampling carried out confirm a high diversity of yew genetic resources in the Cantabrian–Atlantic mountains, representing an important source of genetic variation of the species. Some populations showed high genetic variability and low kinship, signs of a larger population size and connectivity throughout the LIFE BACCATA area. The analysis of genetic clustering between populations showed evidence of structuring at different spatial scales, probably associated with the combination of effects of climatic fluctuations from the historical past with a more recent human impact. On a global scale, a differentiation of the



easternmost samples was observed, with signs of greater historical connectivity in the western areas. On a regional scale, genetic differences were identified between 7 biogeographic groups, associated with processes of change and dispersal in the evolutionary history of the species. At a finer scale, an important component of local structuring was detected, reflecting low connectivity between populations, characteristic of southern ranges of the species.

The genetic data obtained have provided information and criteria as a basis to guide the conservation actions of LIFE BACCATA, both in situ (mainly reinforcement / planting / translocation in their natural habitat) and ex situ (for example, seed and clonal banks).



## Final stretch of the LIFE BACCATA project

April 5, 2021

The ninth meeting of the coordination team of the Life Baccata Project took place on 24 March. The end of the project is approaching and the representatives of the University of Santiago de Compostela, Hazi, the Cesefor Foundation and the Junta de Castilla y León, reviewed all the conservation, monitoring, awareness and dissemination of results actions.

The conservation actions have been successfully completed and in the coming months the monitoring actions will be completed. We will shortly inform you about the technical conferences and the final seminar that are already being prepared.



## Replication of the LIFE BACCATA restoration strategy in Galicia

May 3, 2021

On the occasion of the execution of LIFE BACCATA project, the IBADER from Terra Campus (Lugo) of the University of Santiago de Compostela has carried out an experience of exchange and transfer of information and knowledge generated by the project with Asociación para a Defensa Ecolóxica de Galiza (ADEGA), on the conservation and restoration of forest habitats with yew (*Taxus baccata*).



The experience has been carried out at Eira da Xoana (A Golada, Pontevedra), a non-profit foundation in which ADEGA carries out experiences of education and recovery of natural heritage. IBADER, as beneficiary for the restoration actions of yew forests in Galicia, has donated to ADEGA a part of the plant generated by the project as forest reproductive material, to celebrate a yew planting day. In this way, on March 6th, ADEGA organized a planting day for the yew trees produced by LIFE BACCATA, so that in this event the techniques used and the results obtained by the project have been replicated.

The plant generated by IBADER has as its origin genetic material from Galicia, so that the project has ensured the use of compatible local material during restoration work, avoiding genetic contamination that occurs when foreign ecotypes are introduced. The use of the plant generated by IBADER for LIFE BACCATA ensures the replication of the project results by ADEGA.

This event has been framed by ADEGA in its campaign "The yew tree: let time take its course", in which a slow-growing tree species that is emblematic of the Galician mountain is valued, and that serves as a metaphor to vindicate a leisurely lifestyle respectful of the natural environment, habitats and species. In this way, LIFE BACCATA has generated an interesting synergy with this interesting campaign.



# LIFE BACCATA arboretum plantation in Galicia is completed

May 3, 2021

The last week of March 2021 the LIFE BACCATA arboretum was planted in Galicia. The plantation has been made up of a total of 20 yews (*Taxus baccata*), which are representative of the gene pool of the species in the Os Ancares - O Courel SAC (ES1120001). In this way, the arboretum will serve as an ex situ conservation strategy for the yew and yew wood genetic resources of this protected area.

This planting has been carried out in the gardens of the Campus Terra (Lugo) of the University of Santiago de Compostela, by IBADER and TRAGSA, both beneficiaries of LIFE BACCATA. The location of the plantation will provide it with a marked didactic character, which will convey to the population in general, and to the members of Campus Terra in particular, the knowledge and values of an emblematic species of the Galician forest landscape, the yew (*Taxus baccata*), as well as priority habitat 9580 \* as one of the fundamental values of Natura 2000 in Galicia.



## LIFE BACCATA project integrates genetic information into EUFORGEN and EUFGIS



May 17, 2021

LIFE BACCATA project, whose main objective is to improve the conservation status of habitat 9580\* in the Cantabrian Mountains, has met another of its goals set at the beginning of the project. After extensive genetic sampling of yew (*Taxus baccata*) populations, the main species of habitat 9580\*, the project has generated valuable information about them that has been shared with the EUFORGEN project, and the EUFGIS platform. EUFORGEN is the international cooperation program promoting the conservation and sustainable use of forest genetic resources in Europe, as a vital part of sustainable forest management. EUFGIS is the georeferenced information system about the conservation of forest genetic resources in Europe, which provides access to a platform with detailed information about the genetic conservation units of forest species in different countries. The transfer and integration of the information generated by LIFE BACCATA has been carried out with the collaboration of the different entities that manage both tools in Spain: the INIA-CSIC, the CITA of Aragón and the Ministry for the Ecological Transition and the Demographic Challenge (MITECO).

From the genetic sampling of LIFE BACCATA, information has been available on a total of 49 yew localities in the Cantabrian Mountains across Galicia, Asturias, Castilla y León, Cantabria, Euskadi and Northern Portugal. Because of this, the project has far exceeded the initial objective of characterizing 15 units (one for each Natura 2000 SAC where 9580\* habitat restoration actions are carried out), including localities inside and outside the Natura 2000 Network, and increasing the spectrum of regions to characterize (Asturias, Cantabria or Northern Portugal were not in the foreseen areas). The information of the 49 localities has been shared with the EUFORGEN project and the EUFGIS platform, updating and greatly improving the information contained in both with respect to *Taxus baccata* in the Iberian Peninsula. In this way, in EUFORGEN core network a new Forest Genetic Conservation Unit has been created in EUFGIS according to the criteria of the platform and the EUFORGEN program, and one of the existing ones will be redistributed thanks to the information from LIFE BACCATA. In addition, the information available for the rest of the units in Northern Iberian Peninsula will be improved.

The project has also exceeded the objectives set at its beginning with respect to the platforms and entities with whom the information generated is shared. Derived from the transfer of genetic information to EUFORGEN and EUFGIS, and thanks to the important role played by INIA-CSIC, CITA and MITECO in that process, the information from the 49 localities has also become part of the Spanish National Network of Conservation Genetic Units, whose regulatory framework is currently being developed in the form of a Royal Decree. This will enable that when that Royal Decree is approved, the information will be supplied to the corresponding regions for approval and incorporation into the regulatory framework.

## LIFE BACCATA participates in the 3rd Mediterranean Natura 2000 biogeographic seminar

May 17, 2021

LIFE BACCATA project has been one of the LIFE Nature projects selected to be part of the discussion panels of the 3rd Mediterranean Natura 2000 biogeographic seminar, held between 4-7 May 2021.

LIFE BACCATA, aimed at improving the conservation status of habitat 9580\* (Mediterranean *Taxus baccata* woods) in 15 Natura 2000 SACs of the Cantabrian Mountains, contributed its experience in the restoration of a priority habitat with a small surface area and woods and that presents diverse conservation problems motivating high vulnerability and fragility.

The contributions of LIFE BACCATA were very interesting for the audience, fundamentally the high positive impact that the project has had on the habitat type in an Atlantic-Mediterranean transition zone, which gives it a high scientific and conservation interest for biodiversity.



## Networking seminar of the LIFE BACCATA project on yew plant production

May 26, 2021

On the 20th of May, the networking seminar of the LIFE BACCATA project on the production of yew was held. The seminar has served as a



system for the dissemination of the information generated by the LIFE BACCATA project, as well as for the bidirectional exchange with other interested agents and entities about the interesting results and remarkable know-how that LIFE BACCATA has generated during its execution. This allows the transfer of the results of LIFE BACCATA to other national and international organisations, and therefore its application in other territories or situations, thus contributing to the replicability of the project.

The seminar was attended by 39 participants, from administrations responsible for Natura 2000 and forest management in the different Autonomous Communities of Northern Spain (Galicia, Asturias, Euskadi, Navarra, Castilla y León, Catalonia), as well as from Portugal (ICNF), universities, research centres and ministerial bodies related to the subject, local entities and even individuals. The LIFE BACCATA team has been very satisfied with the participation, as the event has aroused the interest of the audience, probably due to the quality of the speakers and the projects that have been presented.

The event was recorded and is available for consultation below but due to a technical problem beyond our control the first two presentations were not recorded, so we leave the linked presentations for consultation. We apologise for the inconvenience.

- **Collection, multiplication, storage and cultivation of yew for habitat restoration 9580\***. Javier Ferreiro, IBADER
- **Vegetative propagation of *Taxus baccata* using advanced hormonal techniques as a new environmental and conservation strategy**. Eva Lozano-Milo, Esther Barreal and Pedro Pablo Gallego, AgroBiotech for Health.
- **Yew as an MRF in Castilla y León: basic materials, plant production from seed and conservation bank**. Javier Tranque, Junta de Castilla y León.
- **Translocation of Pagoeta yew plants to promote the connectivity of yew groves in Aralar**. Javier Pérez, HAZI Foundation.
- **Ex situ conservation of yew: nursery propagation as a strategy for the conservation of native plant heritage**. António Ferreira and Laura Saloio, Instituto da Conservação da Natureza e das Florestas, ICNF.



The next event of the project will be held tomorrow 27th May on “Genetic diversity and conservation of the yew (*Taxus baccata*) in the Iberian Peninsula” and is aimed at agents and entities involved in the subject of the seminar and the general public. General information about the event and the full programme are available here: [Information and programme](#)



## Seminar "Genetic diversity and conservation of the yew (*Taxus baccata*) in the Iberian Peninsula

May 28, 2021

The LIFE BACCATA project aims to improve the conservation status of the 9580\* habitat in 15 SACs in the Cantabrian Mountains, acting on the indicators of the conservation status of the habitat: area of occupation, structure and functions and future prospects. To address the latter, the project aims to tackle one of the conservation problems of the 9580\* habitat, namely the loss of genetic variability of the yew, through a series of ex-situ and in-situ conservation measures developed in action C6: DNA conservation, germplasm bank, creation of arboretums, establishment of forest genetic conservation units, genotyping of populations in the North of the Iberian Peninsula.

The networking seminar of the LIFE BACCATA project on the genetic diversity and conservation of the yew (*Taxus baccata*) in the Iberian Peninsula was held on 27 May. The seminar served as a system for disseminating the information generated by the LIFE BACCATA project on the genetic diversity and structure of the yew populations in the North of the Iberian Peninsula, as



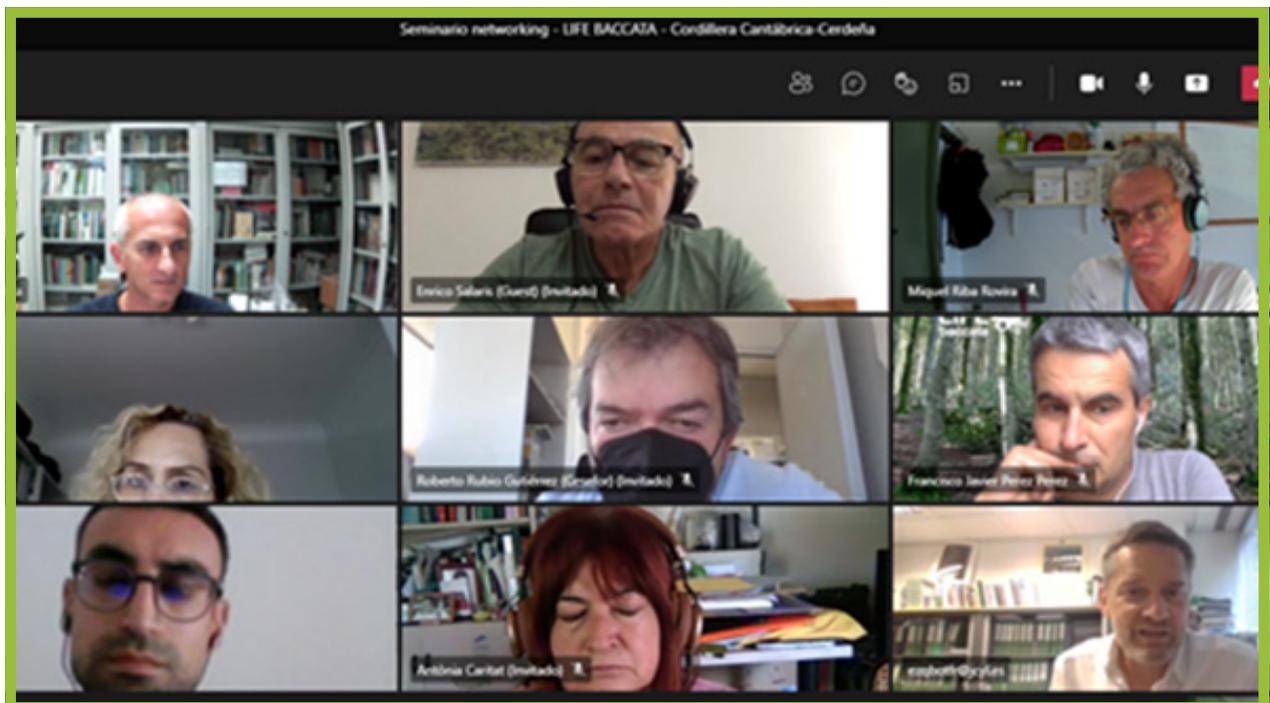
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well as the results of the bidirectional exchange (networking) of information carried out during its execution with other LIFE projects, research centres and competent bodies in the field. In this way, the seminar has allowed the transfer of the results of LIFE BACCATA to other national and international organisations, and therefore its application in other territories or situations, thus contributing to the replicability of the project.

The seminar was attended by 63 participants, from administrations responsible for Natura 2000 and forest management in Spain and Portugal, environmental NGOs, nurseries and forest associations, universities, research centres and ministerial bodies related to the subject, local entities and even individuals. The LIFE BACCATA team has been very satisfied with the participation, we believe that the event has aroused the interest of the audience, probably because of the quality of the speakers and the topics presented.

## LIFE BACCATA and Sardinia networking seminar on forest habitat conservation



**May 28, 2021**

The LIFE BACCATA project aims to improve the conservation status of the 9580\* habitat in 15 SACs in the Cantabrian Mountains, acting on the habitat conservation status indicators: area of occupation, structure and functions and future prospects. The project has successfully implemented its conservation and restoration strategy, generating a high level of interest in other actors and entities in the European Union where yew forests are also one of the unique elements of the landscape, such as in Sardinia (Italy), where sustainable forest management has been carried out for several decades to ensure the conservation of forest habitats.

Thus, on 6 July, a networking seminar was held between LIFE BACCATA and entities from Sardinia (Italy) on the conservation of forest habitats, working on how to manage them in the short and medium term, in order to improve their conservation status. The seminar has served as an exchange system for the restoration actions carried out by the partners of the LIFE BACCATA project (IBADER, Junta de Castilla y León, CESEFOR, HAZI and TRAGSA), as well as the important knowledge generated with regard to the conservation of the badlands of the North of the Iberian Peninsula, with the Regional Forestry Agency of Sardinia (FoReSTAS) represented by Enrico Salaris, and with the Centro Conservazione Biodiversità of the Università degli Studi di Cagliari, represented by Gianluigi Bacchetta. The seminar has also allowed the transfer of the results of LIFE BACCATA to other national and international organisations, and therefore its application in other territories or situations, thus contributing to the replicability of the project.

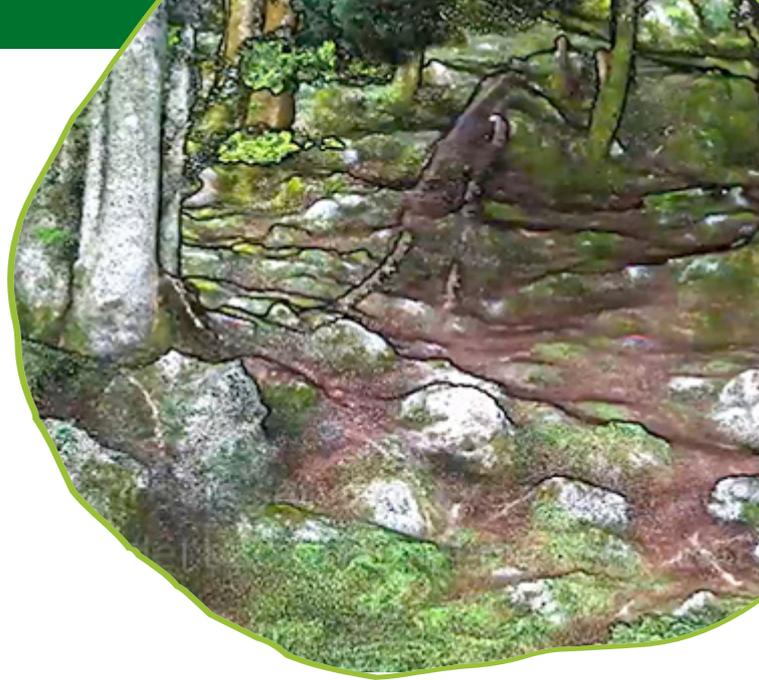
The seminar was attended by 28 participants from Natura 2000 and forest management administrations from Spain and Portugal, members of different governmental entities from Sardinia (Italy), environmental NGOs, universities, research centres, environmental consultancies and local entities. The LIFE BACCATA team has been very satisfied with the participation, and we believe that the event has gathered an audience very involved in the subject, due to the quality of the speakers from Sardinia and the high interest of the topics to be presented by them.



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## LIFE BACCATA characterises more than a hundred yew groves in the Cantabrian Mountains and shows its work through this video



July 16, 2021

The working groups of the LIFE BACCATA project have developed characterization work of the beech forests of the Aralar Natural Park, which forms part of the Natura 2000 Network, as it is a Special Area of Conservation. The work carried out has been reflected in the following informative video which explains how, through mapping, they have managed to find out the true occupation of this habitat where yew, holly, maple and lime trees coexist under the dominant dense beech forest. In order to understand the ecological relationship between dominant beech and subdued yew trees, monitoring plots have been created using the most advanced geomatics techniques.

The result is a 3D model with 16 million points that has been used to validate habitat improvement actions including fences to reduce herbivore pressure and silvicultural treatments emulating small natural disturbances. The yew groves respond by increasing fruit production and canopy growth, activating a chain of ecological processes that favour habitat dispersal.

These actions have contributed to improving the conservation status of a habitat considered of priority Community interest by the European Union.





## Video of the monitoring of the dynamics of a forest in Pagoeta Natural Park

July 16, 2021

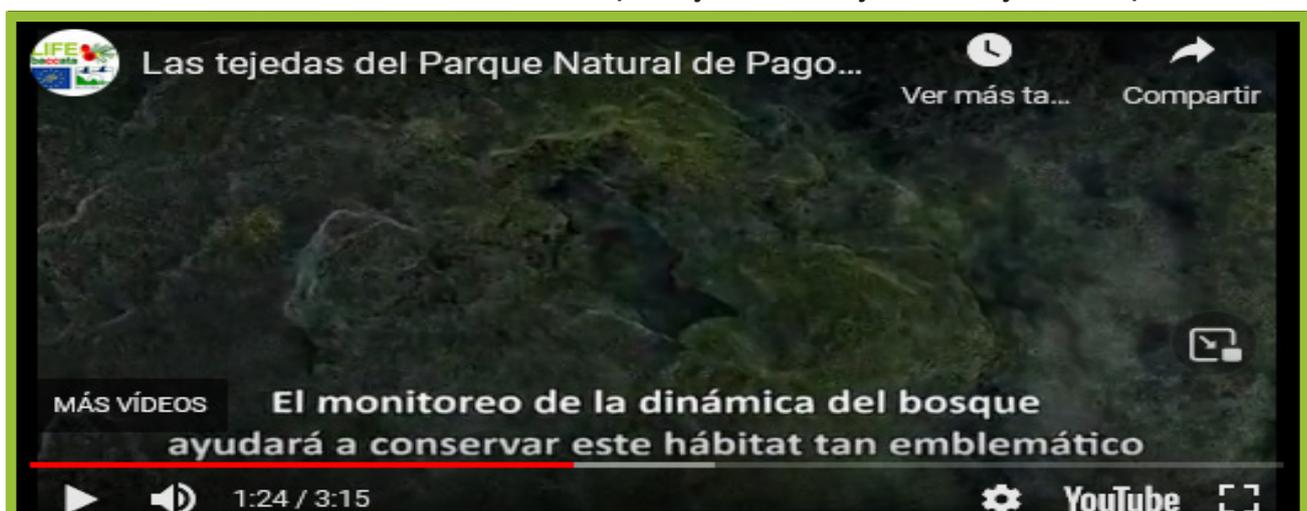
The LIFE BACCATA project has characterised more than a hundred yew groves in the Cantabrian Mountains. Pagoeta Natural Park is part of the Natura 2000 Network as a Special Area of Conservation.

Just a few kilometres from the sea, Pagoeta is home to some of the most thriving yew forests in the Cantabrian Mountains. Using 3D modelling techniques, the LIFE BACCATA project has studied the most important yew woods in the Natural Park.

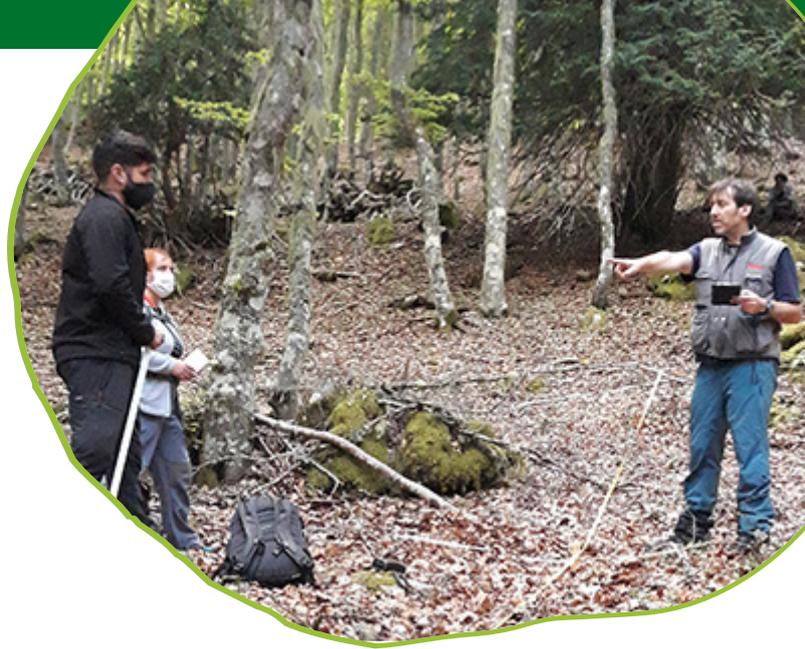
We have for the first time accurately analysed the ancient forest of Aitzpelarreta, forming a complex tree structure deciphered thanks to the LIFE BACCATA project. The result is a topographic cloud of 18 million points in three dimensions.

Monitoring the dynamics of the forest will help to conserve this emblematic habitat, and in addition, in order to know the true structure of these formations it is necessary to study them from the inside. This has been done by taking 1524 photographs of the interior of the forest at Zezen Erreka creating a 3D mould with 19 million points used to quantify the structure and ecological functions of these yew forests. The results indicate that Pagoeta exhibits one of the highest effective yew regeneration rates in the Cantabrian Mountains. This thriving dynamic has been boosted by forestry improvement actions that include the progressive elimination of exotic species.

These actions favour the expansion of the yew in the Basque Country, helping to improve the conservation status of a habitat considered of priority Community interest by the European Union.



## Final stretch in the monitoring of the conservation actions of the yew forests in Castile and Leon



**August 17, 2021**

The partners in Castilla y León, the Junta de Castilla y León and Cesefor, are about to finalise the monitoring of the conservation and improvement actions in several of the stands characterised within the LIFE BACCATA project.

This monitoring works are included in Action D1, an action to be carried out by all partners in order to evaluate the repercussions of the project's conservation actions on the 9580\* habitat, and thus assess the effectiveness of the restoration actions, taking decisions in this respect, and including changes or the implementation of new measures.

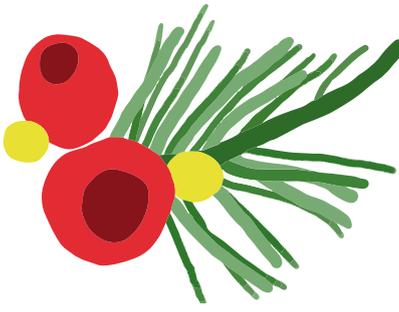
The monitoring indicators used are those identified in Action A1 by the Bioma Forestal team of experts: seed production, types of regeneration, damage to regeneration, forest dendrodiversity and structural diversity of the yew population.

In the current year 2021, information has been collected from yew groves in Los Ancares Leoneses, Montaña Central de León and Picos de Europa in León, from Montaña Palentina and from yew groves in Burgos (Arceo, Monte Hijedo, etc.).

Data has also been collected from the network of plots established in 2017. These plots, spread over 13 Special Areas of Conservation in the Cantabrian Mountains of Castilla y León, were chosen according to an assessment of the representativeness of the dynamics of the most mature sides of the yew forests, which is of great interest for assessing their state of conservation.



# LIFE baccata



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