

**SESSION 1. BROADLEAVES IN GALICIA
BROADLEAVES SILVICULTURE. MARTELOSCOPE OF LABIO**

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**Árbol de porvenir y pie marcado para
extracción por uno de los equipos en
la práctica de señalamiento del
marteloscopio de Labio 14/10/2022.
Foto: XBruña**



BROADLEAVES. WHICH ONES?

Framework: regional 'Project for Valorizing Harwoods in Galicia' and the European project 'RESONATE 'Resilient forest value chains – enhancing resilience through natural and socio-economic responses'

European forestry. Broadleaf tree species (angiosperms) as opposed to conifers. Hardwoods and softwoods

Broadleaves: native and exotic species

PLANTATION FORESTRY WITH FAST-GROWING EUCALYPTS



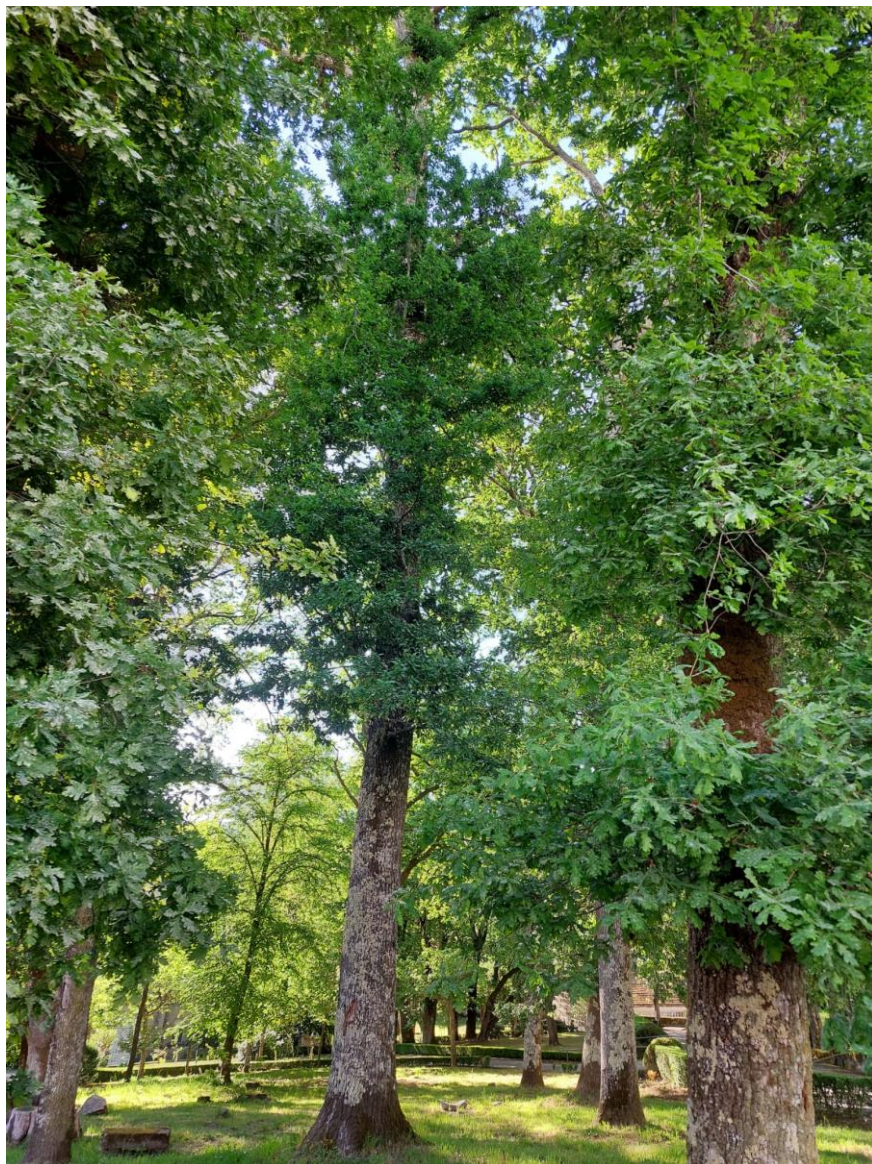
MEDITERRANEAN SILVICULTURE OF HOLM OAK, CORN OAK & OTHER SPECIES



PLANTATION FORESTRY WITH POPLAR SPECIES AND HYBRIDS

THESE ONES:

SILVICULTURE OF ATLANTIC SPECIES (MAINLY DECIDUOUS AND NATIVE): COMMON OAK, BEECH, CHESTNUT, REBOLLO OAK



>30 m tal oak tres in the Carballiño garden, Ourense. Picture: RRS



Provenance trial of Forest research center Lourizán in Louzarella, Lugo, aged 20 years, tallest trees of 16 m

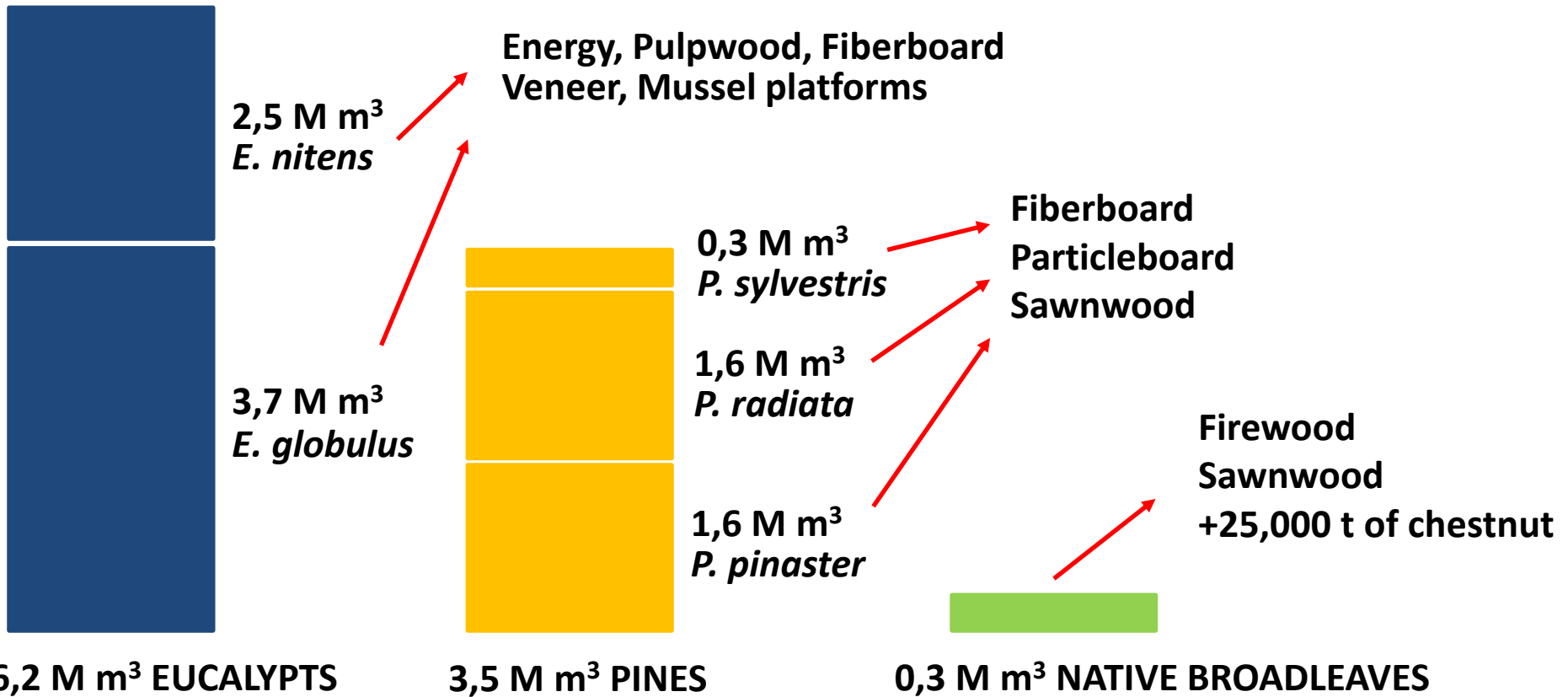
GALICIAN FORESTRY AND NATIVE BROADLEAVES

Forest value chains in Galicia mainly based in pine and eucalypt species



Pinus pinaster
Pinus radiata
Pinus sylvestris
Eucalyptus globulus
Eucalyptus nitens

SIMPLIFIED AVERAGES FOR REGIONAL FELLINGS



- Highly integrated value chains for pines and eucalypts
- Almost no silviculture for native broadleaves

A LARGELY UNEXPLORED RESOURCE...

Total area of native broadleaves in Galicia: 617,000 h, 40% of tree covered forest area

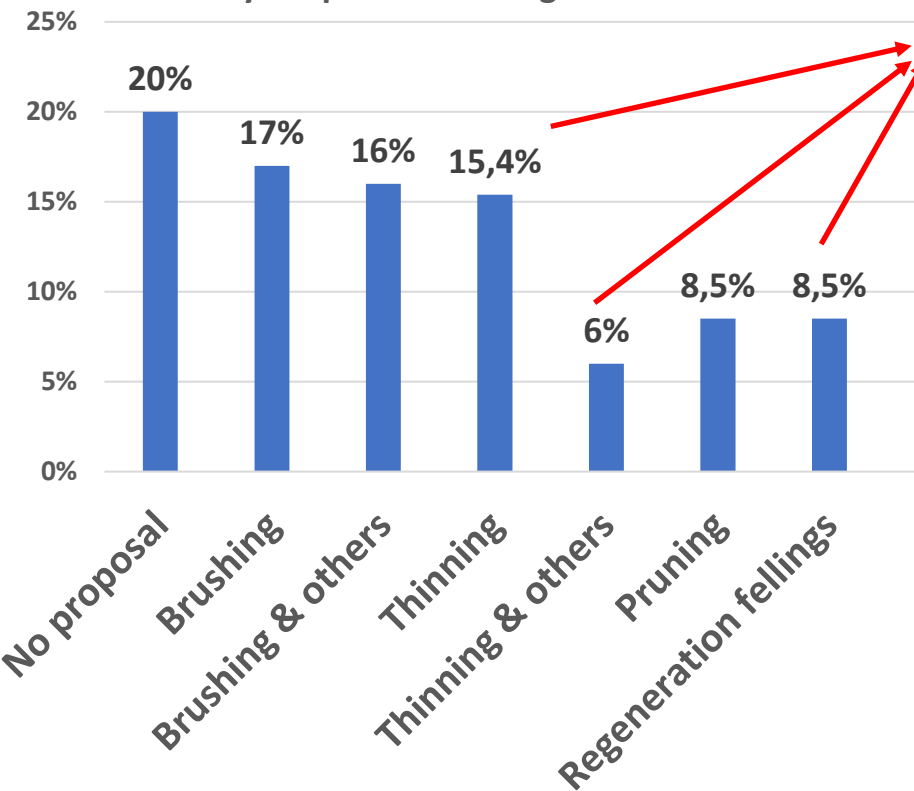
Oak forest of Labio (Lugo), february 2023. Picture: Gonzalo Piñeiro (XERA)



Around a real oak silviculture practitioner (Froilán Sevilla, silviculturist at the Merindades district of Burgos). Workshop of broadleaves tree marking, fall of 2022. Forest District IX, Xunta de Galicia. Picture: Xavier Bruña

GALICIAN BROADLEAVES: IN NEED OF MANAGEMENT!

Percentage of Galician Continuous Forest
Inventory subplots according to silvicultural needs



No just tending operation (investments), but already comercial fellings could (and should) be applied

But adequately applied:
**THERE'S NO SILVICULTURE WITHOUT
TREE MARKING (MARTELAGO)**

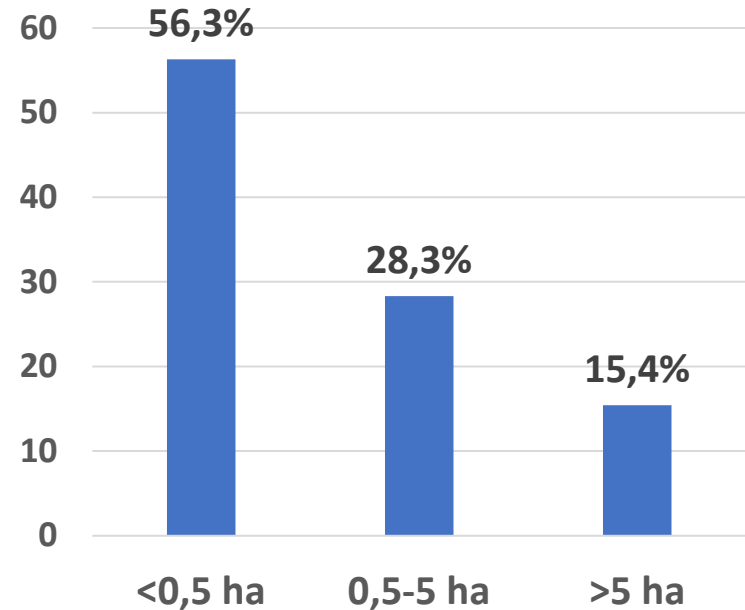
Tree marked for felling in the oakwood of labio (Lugo), with the feller-buncher working



BROADLEAF FOREST OWNERSHIP

- Private individual ownership: very small plot lands, impossibility of rational forest management, particularly with broadleaves
- Only 2% of public forests)
- Communal forests. Private collective forests. Forest areas belonging to the dwellers (rural communities), based on germanic law of co-ownership: same share, undivisible, the right linked to neighbourhood (not heritable nor saleable)

Percent of broadleaf forest areas depending on the ownership plot area



Los celtas se establecieron principalmente en la cordillera Ibérica, en la Meseta Central, Palencia, Valladolid, Zamora, Salamanca, Avila, Burgos y parte de Soria (en Numancia, oiga) y en Galicia, que tomó tal nombre de los celtas, ya que en el mundo antiguo eran llamados *galos*.



MANAGED BROADLEAF FORESTS & RESILIENCE

GEOGRAFIA, RISCOS
E PROTEÇÃO CIVIL HOMENAGEM AO PROFESSOR
DOUTOR LUCIANO LOURENÇO
VOLUME 2

Is native forest an alternative to prevent wildfire in the WUI in Central Portugal?

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Forest resilience: capacity to withstand or to recover quickly from perturbations

- **Most forest fires propagate through the shrub stage.**
- **Established broadleaves suppress the presence of light demanding shrubs.**
- **Fuel structure in native broadleaves forests are prone to a fire behaviour with less fireline intensity or fire severity**

Implications for silviculture: weak thinning, removing a low percentage of volume/ basal area

Large areas needed to apply thinnings and obtain significant woodlots

Marking chestnuts in the Communal Forest of Couso (Gondomar). Edge tree has not been marked. Note the development of shrubs in the forest boundary. Picture:: RRS



BROADLEAVES & FORESTS VALUE CHAINS RESILIENCE

Need to diversify the
forest products chains

A/B quality French oak logs in
the timberyard of Maderas
Sabugos (Sarria, Lugo)



Parque de madera
del aserradero
maderas Gayoso
(Vilalba, Lugo). Rolla
de calidad de 10 m de
longitud. Foto:
Xavier Bruña

WHAT'S A MARTELOSCOPE?

100 × 100 m plot where all trees are measured and positioned, able for field-based training and education of forestry professionals and students

From the French martelage, selecting and marking trees for fellings

The marteloscope European net: origin in several European projects: Integrate, Integrate+, INFORMAR

Location of marteloscopes in the European network:
<http://iplus.efi.int/marteloscopes-data.html>



Example of tree marking with forest hammer (martelage, hammering, señalamiento). Source: Office Nationale des Forêts, Francia

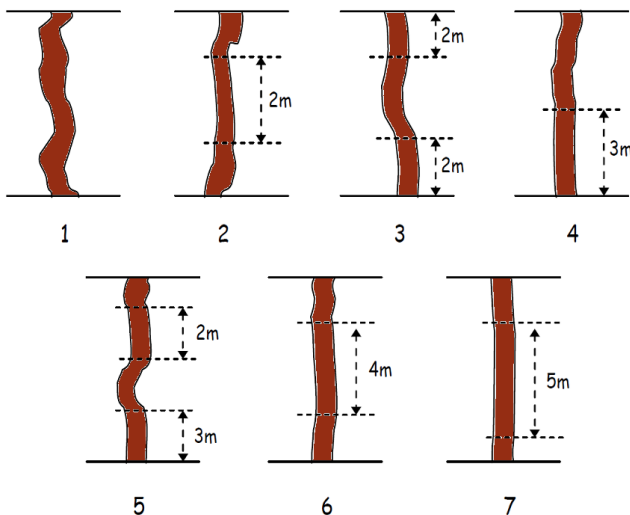
ESTABLISHING THE LABIO MARTELOSCOPE

A field intensive work and detailed work: plot established with positions of all trees recorded

Measurement of 1150 trees, dbh, height, straightness evaluation, volumen and economic value

Froilán Sevilla -> Técnicos Distrito IX -> Equipo Inventario César P. Cruzado

08_TCCP for oak + Straightness class



SAWNWOOD,
 $\varnothing > 25\text{cm}$ & $L > 3\text{m}$,
40€/standing m^3

POLES ($\varnothing > 15\text{cm}$
& $L > 2\text{m}$, 30
€/standing m^3

FIREWOOD, 15
€/standing m^3

AXENCIA GALEGA DA CALIDADE ALIMENTARIA

CADEIRAS de DIVULGACIÓN FORESTAL

TALLER DE MARCAJE EN APROVEITAMENTOS DE FRONDOSAS

DATA: Venres, 14 de outubro de 2022

HORARIO: Parte teórica de 10h a 13h e parte práctica de 15h a 20h (Total 8 horas)

LUGAR: Parte teórica no salón de actos edificio Xunta de Galicia en Lugo
Parte práctica na carballeira de Labio (Lugo)

IMPORTE: Froilán Sevilla (Xefe Sección Territorial Merindales en Junta Castilla y León)

Código Curso: FC2022F127164

PREINSCRIPCIÓN:
<https://foagro.xunta.gal/foagro/inscripcion/publica/accionesFormativas>

+ información: distrito_forestal9@xunta.gal 982 828 620 @Dist_Forestal9

ORGANIZA: Distrito Forestal IX Lugo-Sarria

XUNTA DE GALICIA CONSELLERÍA DO MEDIO RURAL

Fondo Europeo Agrícola de Desenvolvemento Rural: Europa inviste no rural

Xacobeo 21-22

Operations of establishment and workshop porter 14/10/22. XBruña

UPLOADING INTO THE EUROPEAN NETWORK



facilitated by EFI

HOME

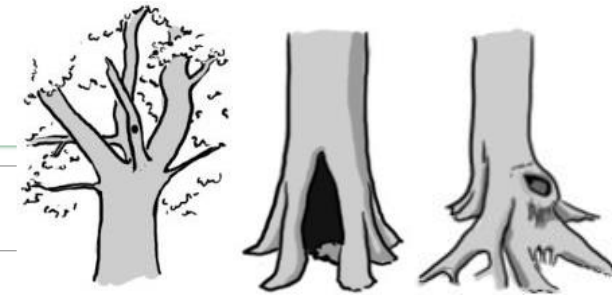
I+ SOFTWARE STORE

MARTELOSOPES AND DATA

DOCUMENTATION

<http://iplus.efi.int/marteloscopes-data.html>

207	ES	Labio	1016	221.8	Submontane oak forest	ES_InfoSheet_Labio ES_InfoSheet_Labio_en
213	ES	Coca	213	175.2	Forest with Pinus pinaster with occasional Pinus pinea	ES_InfoSheet_Coca ES_InfoSheet_Coca_en



CV11

CV21

CV41

Kraus, et al, 2016. Catálogo microhábitats árboles- Lista campos referencia. Integrate+ Technical Paper13. 16p. Ilustraciones Lisa Apfelbacher

Dirección Xeral de Ordenación Forestal -> Mercedes Rois -> Tenzas -> Andreas Schuck

- I+ Manager, TO ADMINISTRATE MARTELOSOPES
- I+ Trainer. For smartphones or tablets, to perform field exercises

Follow the I+Trainer user's manual to download the program to your mobiles: English, German, Finnish & Spanish available



UPDATING THE INVENTORY

A really continuous operation

- Need of frequent update of the marteloscope status
- Thinning operations
- Trees uprooted by the wind
- Mortality (dead standing tres)
- Diameter and height growth

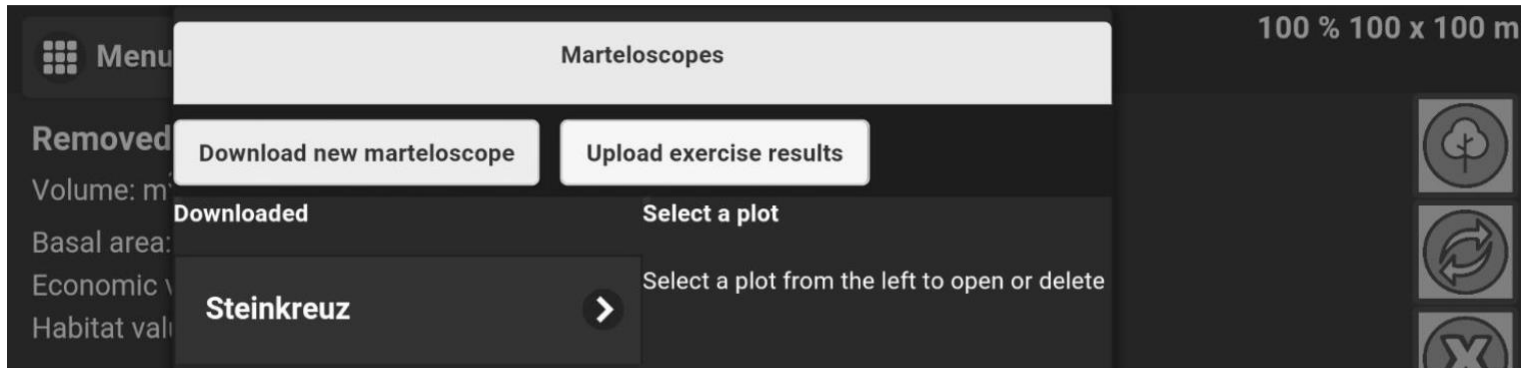
César Pérez Cruzado -> Equipo de campo:
Mario López Fernández, Diego Lombardero



The marteloscope at 17/10/2023, with thinning applied and chopped logging residues

USING+TRAINING

2) Abrimos la aplicación y aparece el menú de inicio:

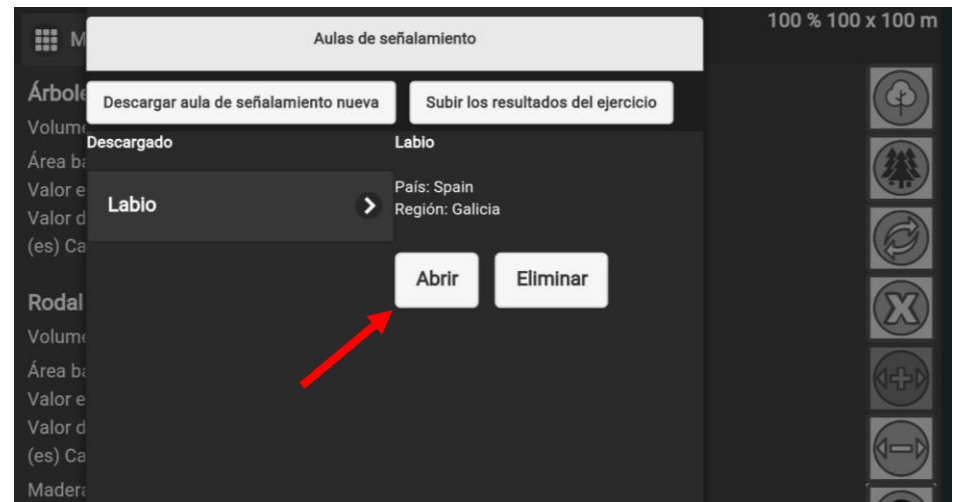


Por defecto, la aplicación se abre en inglés (veremos más adelante cómo cambiar el idioma) y que tiene un marteloscopio cargado, llamado “Steinkreuz”.

3) Para descargar los marteloscopios españoles elegimos la opción “*Download new marteloscope*”.

A continuación pide una contraseña, que será diferente en función del marteloscopio. En este caso es: Labio_guest

Tras la descarga completa del marteloscopio, podemos abrirlo, con el siguiente cuadro de diálogo



I+TRAINING (CONT.)

Menú con ≠ opciones.
Posibilidad cambio idioma

Mapa del marteloscopio.
Posible zoom táctil.
Pies numerados, con colores según especies y con círculos proporcionales a su diámetro

Acumulado de árboles que hemos señalado para cortar

Acumulado de árboles que hemos señalado para retener

Labio, Spain 100 % 100 x 100 m

Menú

Árboles cortados (0) **Seleccionar árbol por su ID**

Volumen: 0 m³

Área basimétrica: 0 m² **Seleccionar grupo de árboles por diámetro**

Valor económico: 0 €

Valor del hábitat: 0 **Ocultar/mostrar árboles extraídos**

(es) Carbon: 0 t

Rodal tras la corta **Resetear la selección**

Volumen: 221.7 m³

Área basimétrica: 27.5 m² **Hacer los círculos mayores**

Valor económico: 5049 €

Valor del hábitat: 16531 **Hacer los círculos menores**

(es) Carbon: 136.96 t

Madera muerta: 0 m³

Árboles retenidos (0) **Orientación del marteloscopio**

Volumen: 0 m³

Árboles de futuro: 0

Árboles hábitat: 0

Valor económico: 0 €

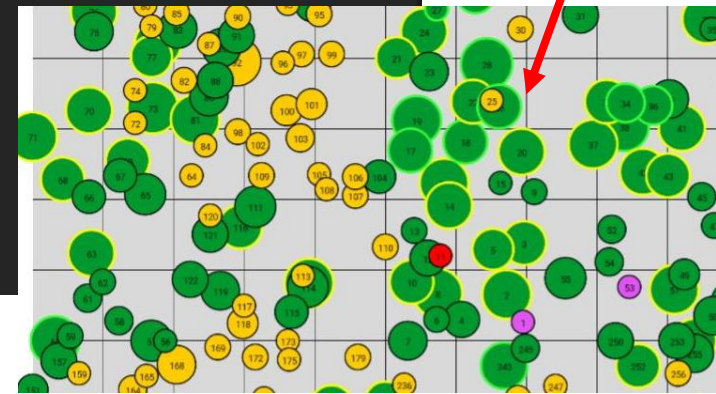
Valor del hábitat: 0

(es) Carbon: 0 t

A seleccionar cada pie, se accede a toda su información: calidad tecnológica, microhábitats o destacar árboles competidores

Árboles señalados se resaltan en amarillo (extracción) o en verde (retención)

Una vez terminado el ejercicio: Menu -> Resultados del ejercicio



GRACIAS POR LA ATENCIÓN

