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► **To cite this version:**

Vincent Labbas, Mélanie Saulnier, Sylvain Burri, Laurent Larrieu, Vanessa Py-Saragaglia. Reconstructing ancient timber supply practices of an ancient and mature forest (Gavarnie-Gèdre, Pyrenees, France). From Forest to Heritage, May 2024, Helsinki, Finland. . <halshs-04731736>

HAL Id: halshs-04731736

<https://shs.hal.science/halshs-04731736v1>

Submitted on 11 Oct 2024

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Reconstructing ancient timber supply practices of an ancient and mature forest (Gavarnie-Gèdre, Pyrénées, France)

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Ancient and Mature Forests (AMFs) represent only a tiny fraction of Europe's forests. However, these forests are home to a unique biodiversity, thanks to a wide variety of habitats and a high degree of naturalness. These AMFs' ecosystem qualities, resulting from long periods without human intervention, do not mean that AMFs have not been exploited or managed in the past before being designated as subnatural forests. In this study, we want to explore what role did AMFs play in providing timber for past local construction? In the framework of the Bendys project, which aims to study the past trajectories of European subnatural fir and beech forests, we applied a pluridisciplinary approach to reconstruct long-term forestry practices since the 16th century in Barrada AMFs located on the northern slope of the Pyrenees (Gavarnie-Gèdre, Haute-Pyrénées, France).

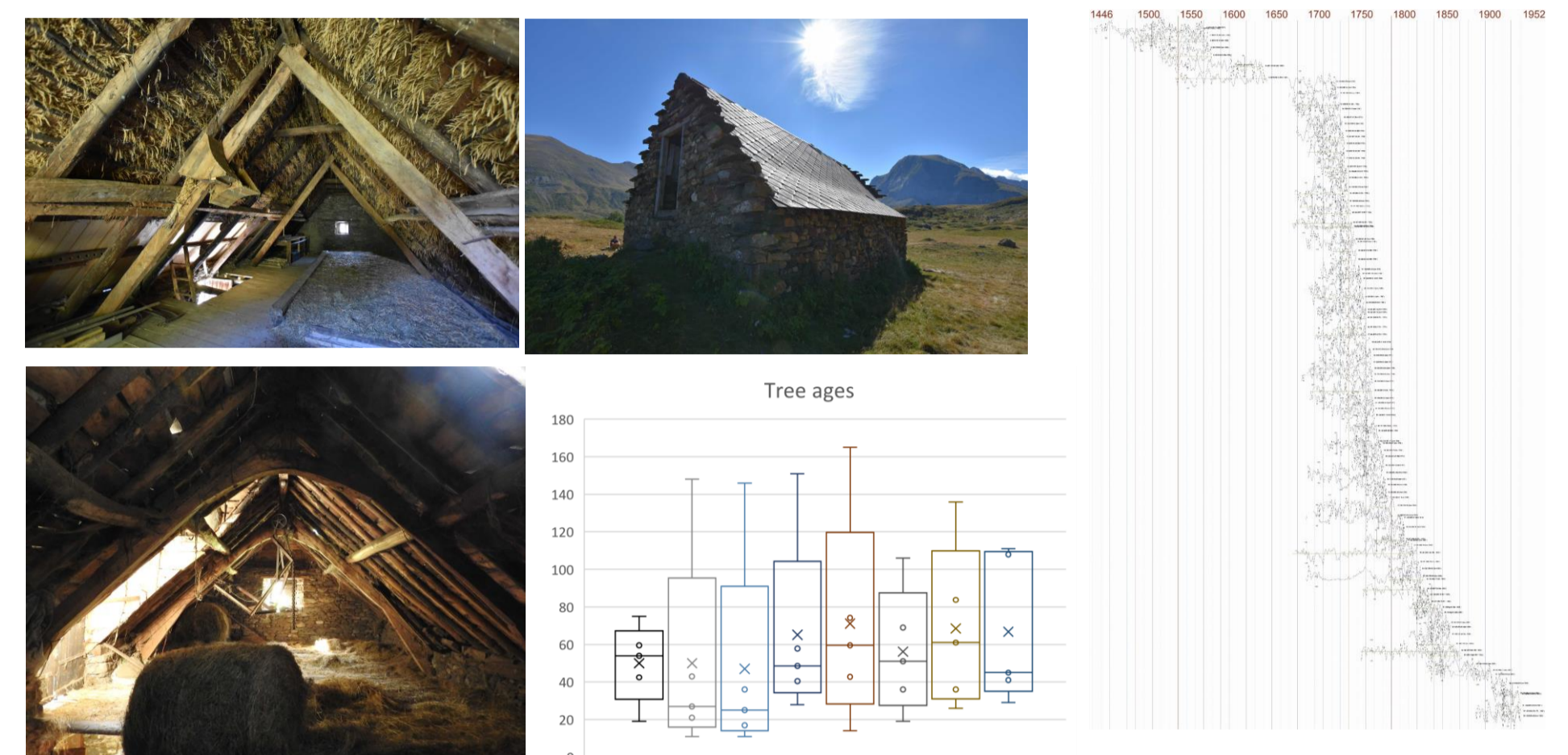


Fig. 2: Different views of three barns (GR12 top, GR9 top left and GR1 bottom left). Bottom: box-plot of tree ages in barns GR1, GR3, GR4, GR6, GR7, GR9, GR11 and GR12 (from left to right). Right: fir tree-ring series dated in the 13 buildings. (n=102). Pictures, charts and CAD: V. Labbas.

We combined dendrochronological analysis of lumber from two buildings adjacent to the forest of Barrada and 11 from other parts of the locality (Fig. 1), as well as living trees in current stands in the heart of the fir-dominated forest of Barrada, with historical study of local archives.

We compared indicators of forest practices and management obtained from dendrochronological analyses (cross-dating (Fig. 2), growth profiles, and opening phases (Fig. 3)) with historical data. We reconstructed some probable exploitation phases of the Barrada forest and the surrounding fir forests, while the historical results show that the forest is essentially pastoral but also reveal the occasional harvesting of wood for local construction.

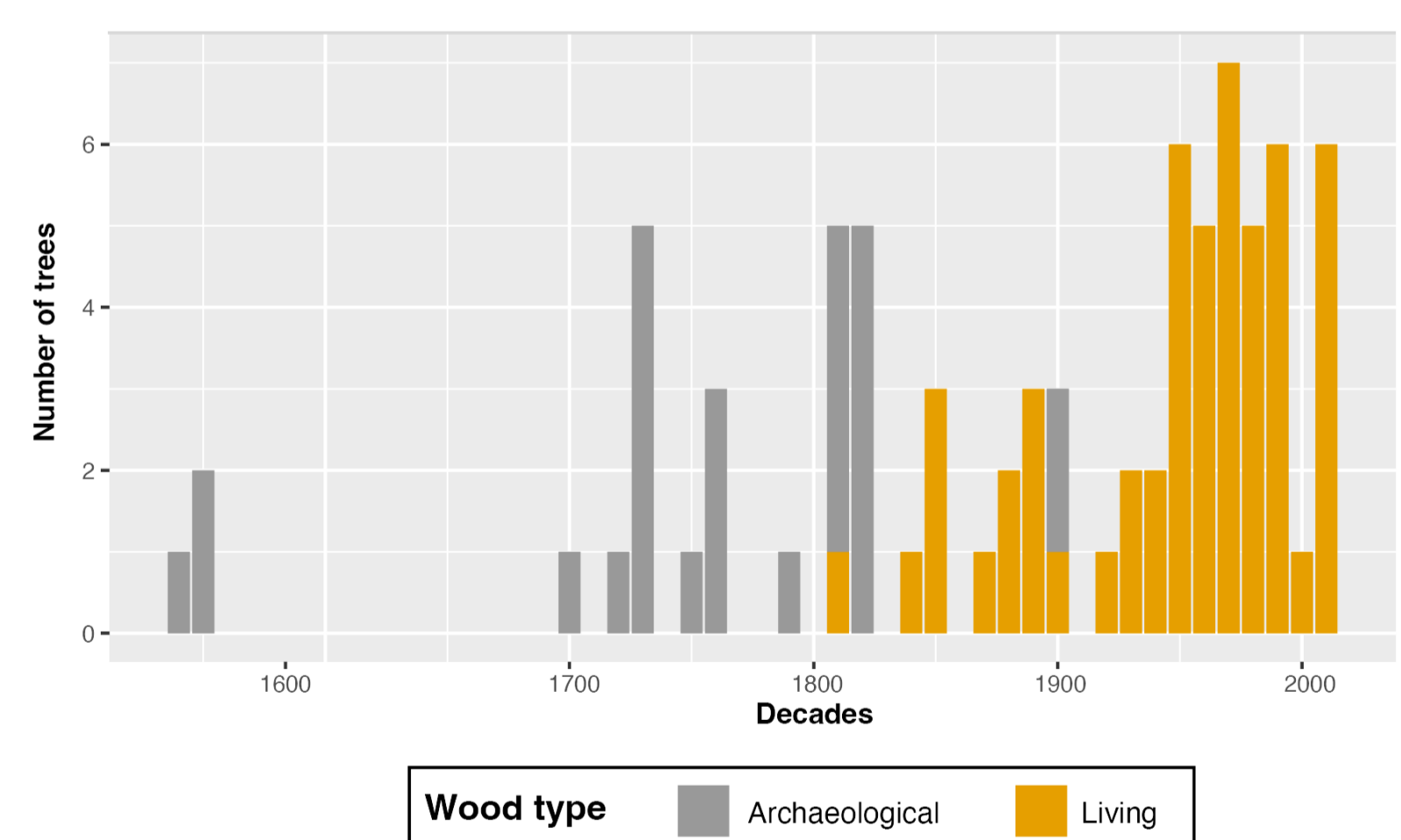


Fig. 3: Decadal disturbance reconstruction based on tree-ring from archaeological and living wood. Chart: M. Saulnier.

Acknowledgements

This research is part of the Bendys project. We would like to thank all the people in Gavarnie-Gèdre who have shared their knowledge of local history and helped us access the buildings.

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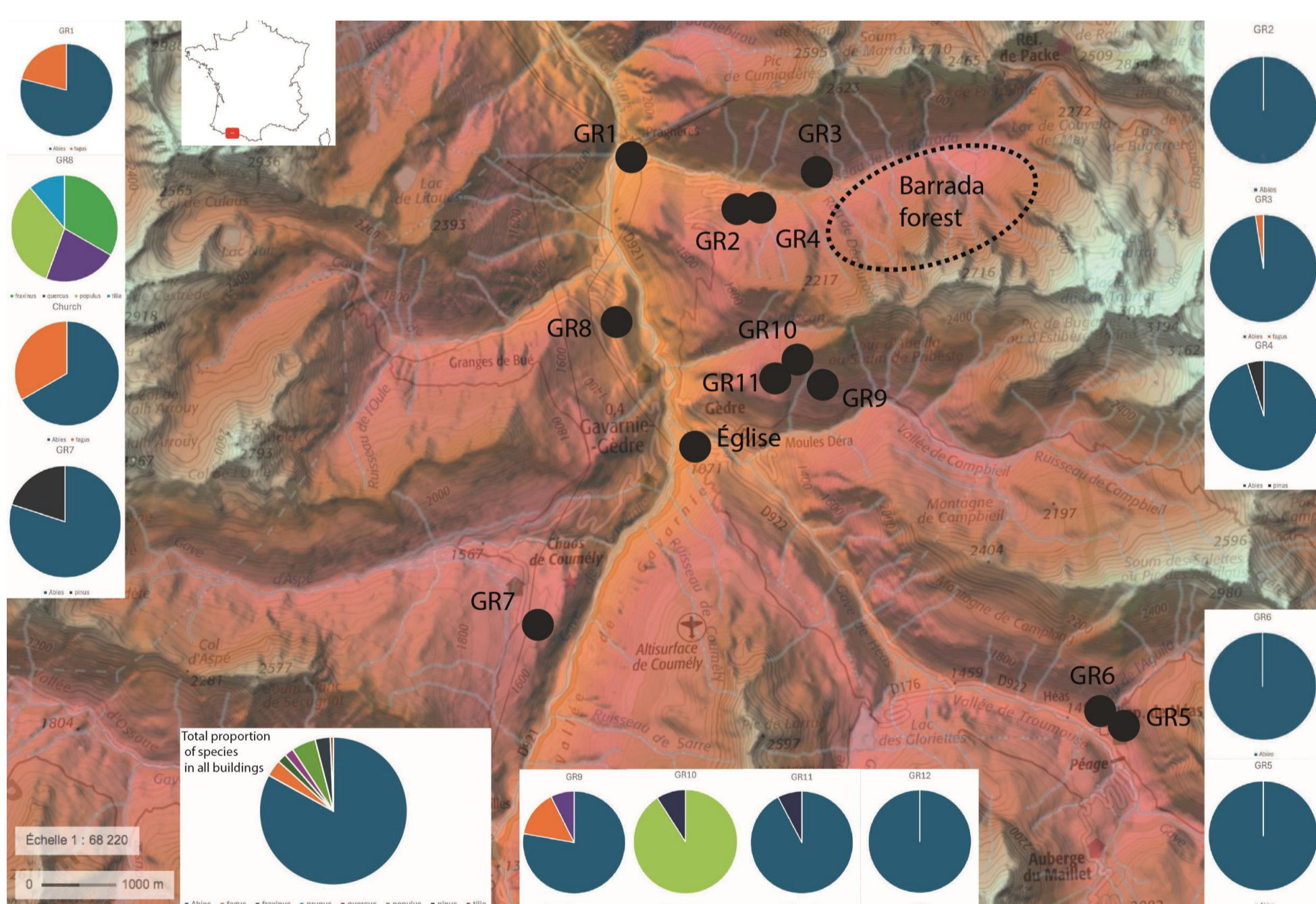


Fig. 1: Location map of the buildings studied in Gavarnie-Gèdre and the proportion of species identified in each building. Fir is the predominant species used in construction, but a variety of other species are also used. CAD: V. Labbas. Background map: IGN.

From Forests
to Heritage
Conference 2024

Helsinki 28–31 May 2024