Managing an old plantation of lapsed pollards to preserve the endangered beetle *Rosalia alpina*

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Rosalia alpina is almost confined to pollard beech woodlands in the province of Gipuzkoa (northern Spain) due to the lack of alternative old and dead natural trees, as it happens in other European regions. In Gipuzkoa, most explotations of pollard trees ceased five to seven decades ago. However, a large representation of old pollard trees still remains because their lack of timber value saved them from felling. This particular habitat runs the risk of disappearance because pollard plantations contain trees of the same generation, and lapsed pollards are mechanically unstable. Therefore all of them could collapse in a relatively short ecological time scale. In order to extend the standing life of pollard trees, the County Council of Gipuzkoa leads a LIFE project which includes experimental repollarding and forest manipulation techniques directed to enhance and preserve the diversity of saproxylic invertebrates using *Rosalia alpina* as an umbrella species. In this contribution, an example of the preliminary actions taken is presented for the beech forest of lapsed pollards of Artaso.

OBJECTIVES

-Estimation of the population size of *Rosalia alpina* in the forest of Artaso, before repollarding and forest manipulation works, to establish a reference diversity indicator (done).

- Design and execution of tree repollarding and forest work plans to improve habitat quality for *Rosalia alpina* and other saproxylic species (in progress).

- Monitoring the response of the repollarded trees and *Rosalia alpina* population (to be carried out next years).

Figure 1. A winter image of the lapsed pollard beech forest of Artaso.

STUDY AREA

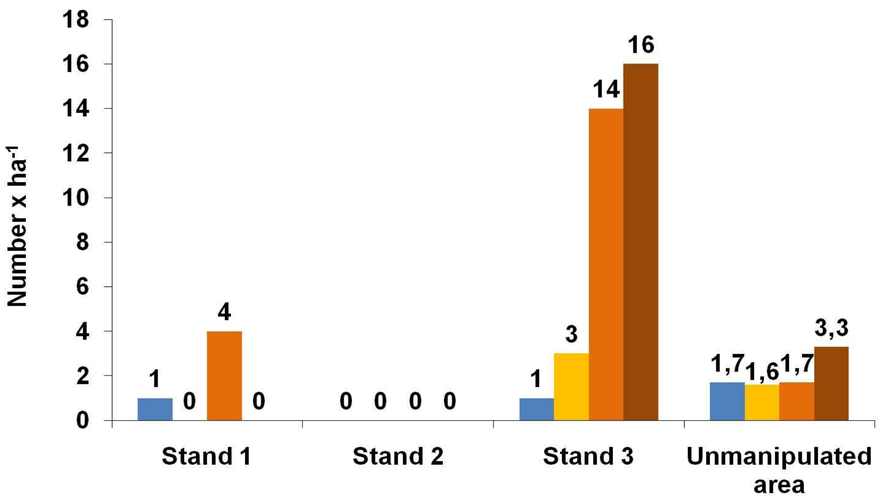
The forest of Artaso is located in the Natural Park of Aizkorri-Aratz (province of Gipuzkoa, Spain). The study area comprises 33 ha of old contemporary homogeneous plantations of pollard beeches (Figure 1) unpollarded since 40-65 years ago. This forest is included in the 30TWN45 10X10 km UTM quadrant, and the altitude oscillates between 690-935 m above sea level.

METHODS

-**Population size of *Rosalia alpina***: A mark-recapture protocol was carried out in July-August 2010. It took 16 sampling days in which all the potentially inhabitable trees (135 trees, Figure 2) were monitored looking for imagos. After this period, all the emergence holes presented in these trees were counted and assigned to an age class: recent, intermediate and old,

- **Forest works**: Accesibility and feasibility dictated the settlement of three square experimental stands of 1 ha each (Figure 2) previously to any fieldwork.

PRELIMINARY RESULTS



-**Population size of *Rosalia alpina***: 52 adults were found and 234 emergence holes counted for all the study area. Densities of imagos and holes varied among experimental stands (see plot at the left). The active population of the summer of 2010, indicated by imagos and recent emergence holes, was restricted to 15 trees (11 % of all monitored trees).

- **Forest works**: In order to provide with habitat heterogeneity and analyze the response of the trees, two different repollarding treatments were carried out in autumn 2010-winter 2011 inside each stand. They involved cutting thick branches (Ø > 10 cm) close to the breast height from the top of the main bole. In the complete repollarding all those branches were cut, while in the partial repollarding a half of them were uncut (Figure 3). Both treatments were interspersed among them and other trees let unmanipulated as controls (15 of each per stand). Young regrowth just next to some pollards was also suppressed to avoid competition stress and provide with sunlit gaps.

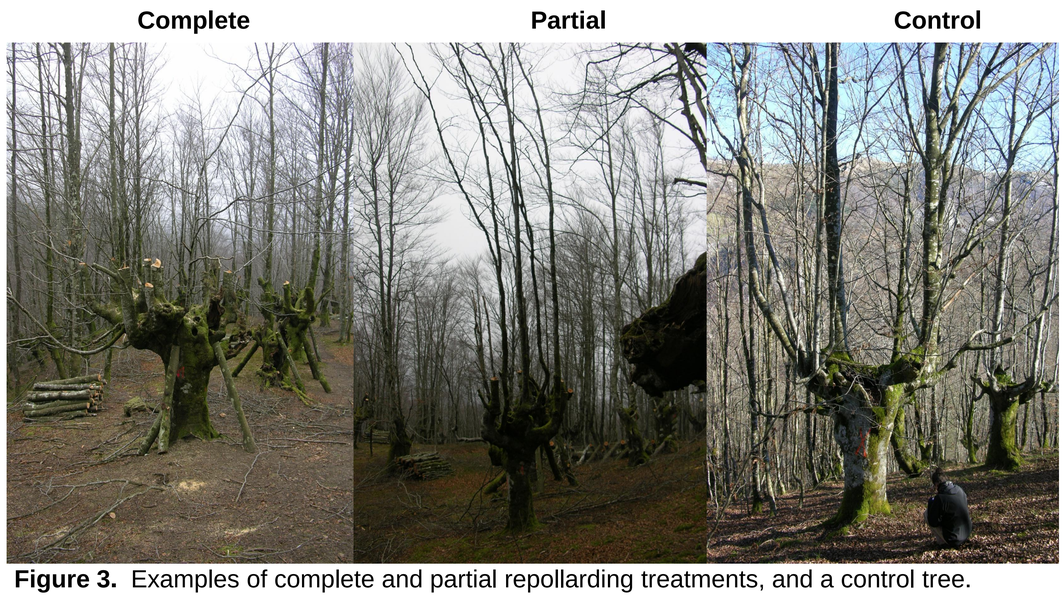


Figure 3. Examples of complete and partial repollarding treatments, and a control tree.

- **In progress** work involves a complete repollarding of all trees in three additional 1 ha stands as means to diversify the habitat in a inter-stand scale, besides the intra-stand scale achieved by the forest works presented in this contribution. Piles of lying and leaning trunks are also been made to create habitat for saproxylic invertebrates. **Futur studies** will monitor trees and population responses to the treatments.

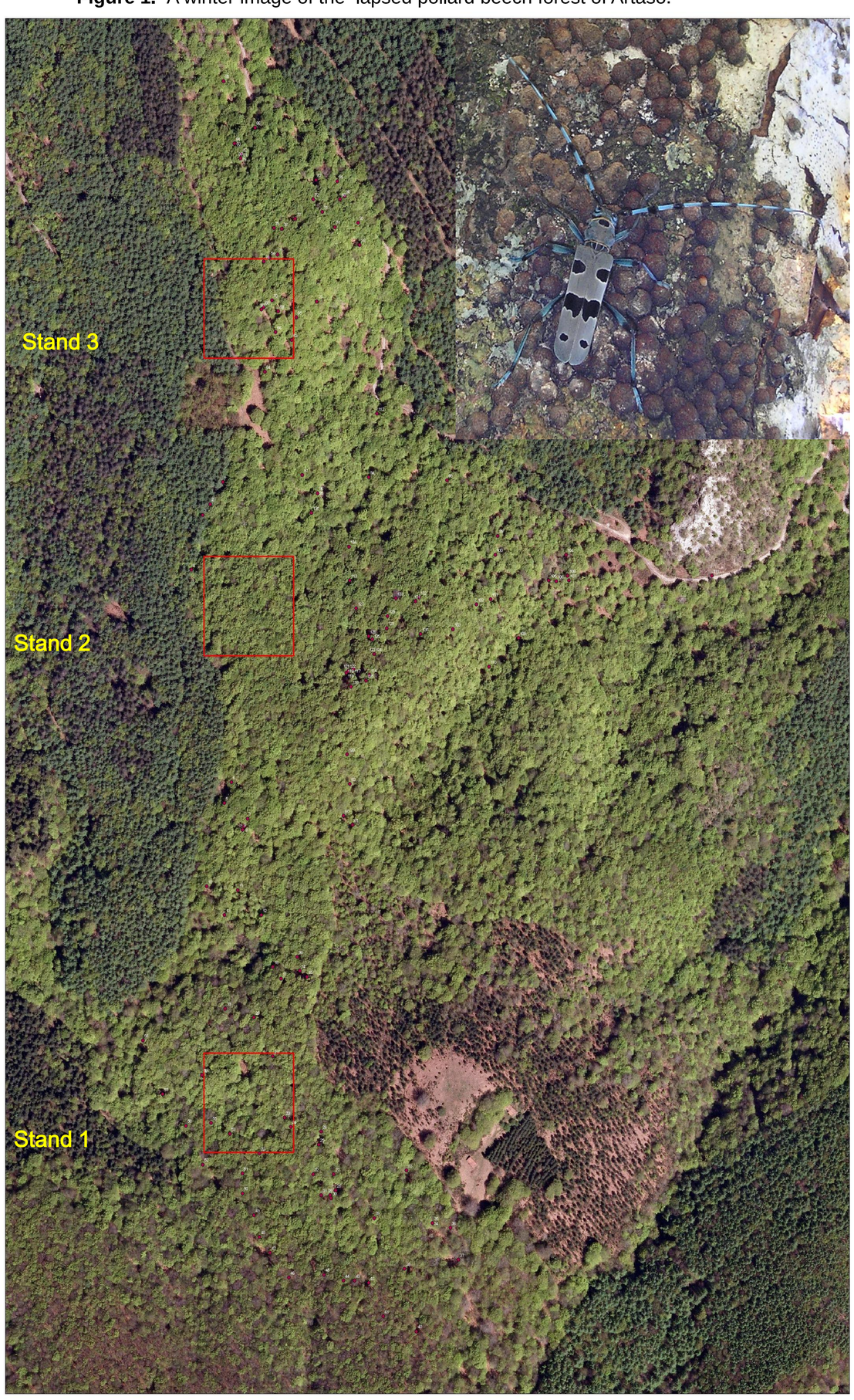


Figure 2. A erial picture of the forest of Artaso marking the trees monitored (red dots) and the experimental square stands (1 ha)settled. A male of *Rosalia alpina* is showed at the right upper corner.

ACKNOWLEDGEMENTS

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