

NOTAS / NOTES

First record of *Rosalia alpina* (Linnaeus 1758) (Coleoptera, Cerambycidae) in *Prunus avium* (L.) (Rosaceae)

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ABSTRACT

The use of *Prunus avium* (L.) as habitat of the legally protected longicorn *Rosalia alpina* (Linnaeus, 1758) is recorded for the first time. The observations took place in a dying cherry tree located in a garden of a countryside land belonging to the municipality of Asteasu (Gipuzkoa). The presence of adults mating and looking for oviposition sites, exit holes, and one larva inside a dead branch suggest that *R. alpina* is able to complete its life cycle in the cherry tree. Two other saproxylic species, *Cerambyx scopolii* Fuessly, 1775 and *Ampedus pomonae* (Stephens, 1820), were found inside dead branches. In the region of the study area, *R. alpina* had only been previously recorded on *Fagus sylvatica* L. trees. Therefore, further research is suggested to determine the importance of other tree species like alternative habitat and their role in the conservation of *R. alpina*.

Key words: Cerambycidae; Cherry tree; Coleoptera; Dead wood; Saproxylics.

RESUMEN

Primer registro de *Rosalia alpina* (Linnaeus 1758) (Coleoptera, Cerambycidae) en *Prunus avium* (L.) (Rosaceae)

El empleo de *Prunus avium* (L.) como hábitat para el longicornio legalmente protegido *Rosalia alpina* (Linnaeus, 1758) se registra por primera vez. Las observaciones tuvieron lugar en un cerezo moribundo localizado en un jardín en un entorno rural perteneciente al término municipal de Asteasu (Gipuzkoa). La presencia de adultos apareándose y buscando lugares para ovopositar, de orificios de salida y de una larva dentro de una rama muerta, sugieren que la especie es capaz de completar su ciclo biológico en el cerezo. Dentro de las ramas muertas se encontraron otras dos especies de saproxílicos: *Cerambyx scopolii* Fuessly, 1775 and *Ampedus pomonae* (Stephens, 1820). En la región del área de estudio, *R. alpina* sólo había sido previamente citada en ejemplares de *Fagus sylvatica* L. Por tanto, se recomiendan futuras investigaciones para determinar la importancia de otras especies de árboles como hábitat alternativo y su papel para la conservación de *R. alpina*.

Palabras clave: Cerambycidae; Cerezo; Coleoptera; Madera muerta; Saproxílicos.

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The conservation of endangered insect species requires knowledge about their habitat (New, 2009; Samways *et al.*, 2010). The saproxylic beetle *Rosalia alpina* (Linnaeus 1758) is legally protected in Europe (Council of European Communities, 1992) because it shows an overall decline of its continental distribution and population through the last century, despite of the recovery showed by some populations at regional scale (Luce, 1996; Lachat *et al.*, 2013; Michalcewicz & Ciach, 2015). *Rosalia alpina* colonizes dead wood of dying and dead trees on open and sunlit conditions (Duelli & Wermelinger, 2005; Russo *et al.*, 2010; Castro & Fernández, 2016). The aforementioned population trends are mainly linked to the availability of this particular habitat (Luce, 1996; Russo *et al.*, 2010; Lachat *et al.*, 2013). There are observations of individuals of *R. alpina* in many tree taxa (Čížek *et al.*, 2009). However, the species seems to prefer the common beech (*Fagus sylvatica* L.) and beech forests, and successful colonizations have been confirmed at least in another nine broadleaf species (Čížek *et al.*, 2009; Mazzei *et al.*, 2013). Furthermore, recent research suggests the importance of trees as *Acer pseudoplatanus* L., *Ulmus glabra* Huds., and *Fraxinus excelsior* L. like habitat of *R. alpina* (Binner & Bussler, 2006; Michalcewicz *et al.*, 2011; Michalcewicz & Ciach, 2012; Ciach & Michalcewicz, 2014). To our knowledge, this contribution shows the first observations of *R. alpina* in the genus *Prunus*.

All observations of *R. alpina* were done on a dying cherry tree, *Prunus avium* (L.), located in a plain surface of a valley bottom with the following UTM coordinates (WGS 84 Datum) and altitude: 30TWN7210482740

and 134 m. This location is included in the municipality of Asteasu (province of Gipuzkoa, the Autonomous Community of the Basque Country, Spain) (Fig. 1). According to the nearest weather station (Billabona, 172 m a. s. l.), annual values of rainfall and average temperature are 1551 mm and 13.6°C, respectively (Loidi *et al.*, 2011). The cherry tree is in a garden of ornamental and fruit trees (owned by L. Martínez de Murguía), surrounded by one stand of temperate mixed forest on the south, and a countryside landscape on the north. The cherry tree has three main trunks from the base (Fig. 2), all partially stripped, with bracket fungi, and with the following diameters at breast height and aspects: 32 cm and N, 30 cm and SE, and 28 cm and SW. The tree died on 2016, and all branches above 4 m were cut on 19 March for safety reasons. On this date, cut branches were broken to check for presence of larvae, and exit holes assignable to *R. alpina* were counted. Exit holes showed the typical shapes and sizes described in beeches (Duelli & Wermelinger, 2005; Ciach & Michalcewicz, 2013), that also matched with those observed in *Acer pseudoplatanus* L. (Binner & Bussler, 2006; Michalcewicz *et al.*, 2013), and *Ulmus* sp. (Čížek *et al.*, 2009).

Individuals of *R. alpina* were photographed and distinguished among them by the pattern of their elytra (Luce, 1996). In this way, two males and one female were observed on 28 July 2013. One male was in a resting position and the other two individuals were mating (Fig. 2). On 17 July 2016 another three individuals were observed showing the same behavior. However, in this case, after separating from the male, the female started to explore the cracks of the stripped



Fig. 1.— Location of the observations of *Rosalia alpina* (black square). The frame delimits 10 x 10 km UTM square grid.

Fig. 1.— Localización de las observaciones de *Rosalia alpina* (cuadrado negro). El marco delimita el enrejado de cuadrículas UTM de 10 x 10 km.

part of a cut branch looking for a place to lay eggs (Fig. 2). One last male was seen on 10 August 2016. Additionally, a larva of 20 mm in length was found inside a branch (Fig. 3) around 15 cm in diameter. This means an important development and growth of the larva inside the tree, considering that the eggs of the species average 3.6 mm (Ciach & Michalcewicz, 2009). The SW, SE, and N trunks showed 18, 17, and one exit holes assignable to *R. alpina* (Fig. 3), respectively. One adult male of the Cerambycidae *Cerambyx scopolii* Fuessly, 1775 (in a pupal chamber), and one larva of the Elateridae *Ampedus pomonae*

(Stephens, 1820) were also found inside the cut branches. Larvae were stored and preserved in the collection of the Aranzadi Society of Sciences. Larvae were identified with the help of the works of Švácha & Danilevski (1987, 1988, 1989) for Cerambycidae, and Klausnitzer (1994) for Elateridae. *C. scopolii* was determined following the works of Bahillo & Iturrondobeitia (1996), and Vives (2000).

Regarding to these last two species, *C. scopolii* had already found in wood of *P. avium* close to the study area (Bahillo & Iturrondobeitia, 1996), while to our knowledge *A. pomonae* is recorded in the genus



Fig. 2.— Observations of *Rosalia alpina* on the cherry tree. From upper left to bottom right: view from the south, male on the main trunk, female exploring the cracks of a cut branch, and two individuals mating on a branch (Photos: L. Martínez de Murguía).

Fig. 2.— Observaciones de *R. alpina* en el cerezo. De izquierda a derecha y de arriba abajo: vista desde el sur, macho en el tronco principal, hembra explorando las grietas de una rama cortada y dos individuos apareándose sobre una rama (Fotos: L. Martínez de Murguía).



Fig. 3.— Exit hole observed on the SE trunk, and the larva extracted from one of the cut branches (Photos: L. Martínez de Murguía).

Fig. 3.— Orificio de salida observado en el tronco SE y la larva extraída de una de las ramas cortadas (Fotos: L. Martínez de Murguía).

Prunus for the first time. *Ampedus pomonae* has been found in willows, poplars, birches, and pubescent oaks (Chatenet, 2000; Sautière & Calmont, 2014). According to the last authors, more information about the ecology of this beetle species, such as the one presented here, is needed.

So far, in the region of the study area (Basque Country) all *R. alpina* records of larvae or adults in trees with exit holes have been associated to wood of *F. sylvatica* (Bahillo & Iturrondobeitia, 1996; Martínez de Murguía *et al.*, 2007; Castro *et al.*, 2012). However, this contribution shows that in the absence of beeches, the species colonizes other tree species if other habitat preferences, such as thick trunks ($\text{Ø} > 25$ cm) with dry and sun-exposed dead wood (Duelli & Wermelinger, 2005; Russo *et al.*, 2010; Castro *et al.*, 2012; Castro & Fernández, 2016), are present. No trees meeting these habitat conditions were observed in the surroundings of the study area. The nearest records of *R. alpina* are from the Site of Community Interest of Hernio-Gazume (Castro *et al.*, 2012), and located more than 2 km far away, exceeding the maximum dispersal distance known (=1628 m) of the species (Drag *et al.*, 2011). However, recent genetic analysis suggests that *R. alpina* could have stronger dispersal abilities (Drag *et al.*, 2015), allowing repeated colonizations of lowlands with less and more isolated available habitat (as it would be the case of the study area) from nearby mountains, where most part of the population would concentrate (case of Hernio-Gazume). Records of *R. alpina* in valley bottoms and lowlands close to the study area (Vega, 1981; Ugarte *et al.*, 2002; Pagola, 2007; Ugarte & Salueira, 2009–2010) could reflect this kind of

dispersal movements. *Rosalia alpina* colonizes successfully other deciduous tree species than the beech in lowlands of central Europe (Čížek *et al.*, 2009). In Spain the recommended measures of conservation of *R. alpina* are focused on beech woodlands, which are considered their preferred habitat (Viñolas & Vives, 2012). However, keeping in mind the presence of important populations in *Quercus* trees in the east of the country (Viñolas & Vives, 2012) and data from this contribution, it would be advisable to determine the role of other deciduous trees and forests as habitat of the species. If these are shown to be important, it will imply considering to include more woodland types in conservation actions for *R. alpina*, as habitat protection and enhancement, and design of net of corridors among populations.

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