

## A SHORT NOTE ON THE OCCURRENCE OF *SORBUS MOUGEOTII* IN THE SPANISH PYRENEES

### *Nota breve sobre la presencia de Sorbus mougeotii en los Pirineos españoles*

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**Recibido:** 30-05-2018. **Aceptado:** 21-07-2018. **Fecha de publicación on-line:** 31/08/2021

**Citation/ Cómo citar esta nota:** Robertson, H. (2021). A short note on the occurrence of *Sorbus mougeotii* in the Spanish Pyrenees. *Pirineos*, 176, not.001 <https://doi.org/10.3989/pirineos.2021.176004>

#### 1. Introduction

While on a trip to the Spanish Pyrenees in July 2017 I found a whitebeam that resembled *Sorbus mougeotii*. This short note describes the locations and morphology of the specimens I found and discusses their identity in the context of Spanish and UK *Sorbus* descriptions. Both specimens described below were shrubs rather than trees as they had multiple stems growing from the base of the plants. The presence of *S. mougeotii* in Spain is not agreed amongst others who have studied *Sorbus* in this country. The account of *Sorbus* in *Flora Iberica* (Aedo and Aldasoro, 1999) only includes *S. intermedia*. *S. mougeotii* is given as a synonym. *S. mougeotii* is recorded as occurring in the Pyrenees by *Flora Europaea* (Warburg & Kárpáti 1968), while *S. intermedia* is not listed as occurring in Spain, but this conflict is not referred to in the *Flora Iberica* text about *S. intermedia*. Oria de Rueda Salgueiro *et al.* (2006) follow *Flora Europaea* and regard *S. intermedia* as a northern European species, which is replaced by *S. mougeotii* in Spain. The European and

Mediterranean plant database (Kurtto, 2009) also includes Spain in the distribution of *Sorbus mougeotii*, but labels *S. intermedia* as “native: reported in error”.

#### 2. Site descriptions and photographs of each specimen

The approximate location is given for each specimen using vertical aerial images on Google Earth (version 7.3, 2017), although it should be noted that these locations and their dependent altitudes were estimated after the trip. Google Earth is aligned to the World Geodetic System 1984.

##### 2.1. Hecho valley

The valley was visited on 10<sup>th</sup> July 2017. The *Sorbus* shrub was growing on the south side of the track which ran up the Hecho valley (Figure 1 & 2), beyond the section open to traffic. It was on the slope about 2-3 metres above the

track. The track itself was part way up the southern slope of the valley, well above the river in the valley bottom. A few other similar *Sorbus* individuals were also seen along the sides of the track.

Location to 500 m precision: Latitude 42° 51' 10.31" N, Longitude 0° 41' 45.90" W. Altitude: 1256 m.



Figure 1: Whorl of leaves on a side branch of the Hecho valley specimen

*Figura 1: Verticilo de hojas en una rama lateral del ejemplar del valle de Hecho*



Figure 2: A cluster of fruit on the Hecho valley specimen. The largest fruit touches the ruler between the 7 and 8 centimetre marks on the ruler. Lenticels on the fruits were few and small.

*Figura 2: Un racimo de frutos en el ejemplar del valle de Hecho. El fruto más grande alcanza entre 7 y 8 centímetros. Las lenticelas de los frutos eran escasas y pequeñas.*

## 2.2. Aísa valley

The valley was visited on 11<sup>th</sup> July 2017. The *Sorbus* shrub (Figure 3 & 4) was growing on the east side of a track which ran south from a picnic area and car park. The site was in the valley bottom, close to the river. The site was much

more sheltered than the Hecho site. Other individuals of what appear to be the same *Sorbus* to the one photographed were quite frequent in the surrounding open woodland.

Location to 100 m precision: Latitude 42° 43' 54.85" N Longitude 0° 35' 39.10" W. Altitude: 1375 m.



Figure 3: Whorl of leaves on a side branch of the Aísa valley specimen

*Figura 3: Espiral de hojas en una rama lateral del ejemplar del valle de Aísa*



Figura 3: Frutos on the Aísa valley specimen. Lenticels on the fruits were few and small.

*Figura 3: Frutos en el ejemplar del valle de Aísa. Las lenticelas de los frutos eran escasas y pequeñas.*

## 3. Leaf and fruit measurements

Some measurements were made of leaves and fruit (Table 1), as quantitative information is of importance in identification of *Sorbus* (Rich *et al.*, 2010). Only a small amount of data was collected due to time constraints. Direct leaf length measurements were made with a ruler in the field, other data were derived from the photos. Only leaves vertical to the camera lens were included in the calculation of these ratios. The fruit data were derived from photos except for one direct measurement. Only fruit ver-

tical to the camera lens were included in the calculation of these ratios. Fruits were green and unripe.

Table 1: Leaf characters of Hecho and Aisa specimens  
 Tabla 1: Caracteres foliares de los ejemplares de Hecho y Aisa

Character	Leaf A, Hecho	Leaf B, Hecho	Leaf A, Aisa	Leaf B, Aisa
Leaf length cm	7.6	5.5	10.5	-
Leaf width cm	6.1	-	6.5	-
Ratio leaf width to length	0.80 : 1	0.79 : 1	0.62 : 1	0.68 : 1
Number of parallel secondary veins, extending from the mid-vein (upper surface of leaf)	20	17	19	19
Lowest sinus % distance to midrib	18	29	14	15
2nd lowest sinus % distance to midrib (close to widest part of leaf)	29	33	25	19

Table 2. Comparison of *Sorbus* characters  
 Tabla 2. Comparación de los caracteres de *Sorbus*

Character	Hecho & Aisa specimens	Rich <i>et al.</i> (2010) <i>S. mougeotii</i>	Aedo & Aldasoro (1999) <i>S. intermedia</i>	Rich <i>et al.</i> (2010) <i>S. intermedia</i>
2nd lowest sinus % distance to midrib (close to widest part of leaf) <sup>1</sup>	19-33	15-27	(13-)16-26(-34)	(10-)17-44(-48)
Number of secondary veins on leaf	17-20	16-22	18-21 <sup>2</sup>	(10-)12-17(-18)
Fruit length to width ratio	1.1:1 - 1.24:1 <sup>3</sup> (unripe)	0.85:1 – 1.1:1	0.95:1 – 1:1 <sup>4</sup>	(0.95:1-)1:1 – 1.3:1(-1.45:1)

<sup>1</sup> Rich *et al.* (2010) measure the sinus closest to the middle of the leaf, which is actually the second lowest sinus in their drawings of the species. Therefore, their information should be directly comparable to the measurements of the second lowest sinus depth for the Pyrenean shrubs and the numbers given for this character in Aedo & Aldasoro (1999).

<sup>2</sup> The number of parallel secondary veins on a leaf is not given in Aedo & Aldasoro's account in *Flora Iberica* (1999) but from the illustrations on pages 421 and 423, I counted between 18-21 veins on each leaf where the veins were fully visible.

<sup>3</sup> Green, unripe, fruits in the Pyrenean shrubs were slightly longer than wide (1.1-1.24: 1), whereas the range of 0.85-1.1: 1 is given by Rich *et al.* (2010). However, measurements that I made of ripe fruit compared to green fruit from *Sorbus mougeotii* in Elton indicated that the majority (71%) of fruit had lower ratios of length to width when ripe, ie they had become fatter than they were earlier in the year. I found that 27% of ripe fruit had the same ratio as green fruit. I measured separate green and red fruit, in total 45 fruits each time.

<sup>4</sup> Aedo & Aldasoro (1999) describe the fruit as subglobose but do not give a ratio of length to width. I calculated that the fruit illustrated on pages 421 and 423 had ratios of 0.95-1: 1.

Overall, the Hecho and Aisa valley specimens seem more like *S. mougeotii* than *S. intermedia*. The comparison of characters in Table 2 suggests that the description of *Sorbus intermedia* by Aedo & Aldasoro (1999) seems to fit *S. mougeotii* rather than *S. intermedia*, when compared with *Sorbus intermedia* as described by Rich *et al.* (2010). After my return from Spain to the UK I sent my Pyrenean findings to Dr Tim Rich, the UK's foremost *Sorbus* expert (see Rich *et al.* 2010). He confirmed the identification of the two specimens as *Sorbus mougeotii*.

The fruit length to width ratios were 1.00:1 to 1.12:1 for the Hecho valley specimen (n=3) and 1.07:1 to 1.24:1 for the Aisa valley specimen (n=4).

#### 4. Discussion and conclusion

The two *Sorbus* shrubs described above seem to belong to the same taxon. The Aisa example had larger leaves, perhaps due to more favourable conditions for growth. The two specimens look most like *Sorbus mougeotii*, based on the detailed taxon information in Rich *et al.* (2010) and compared to the planted *Sorbus mougeotii* trees that I had found in the village of Elton, UK. Three key characters are the leaf lobe sinus depth, number of secondary veins arising from the mid-vein of a leaf (also known as lateral veins) and ratio of fruit length to fruit width. Table 2 compares the measures for these three characters from the Hecho and Aisa specimens, and taxon descriptions in Rich *et al.* (2010) and *Flora Iberica* (Aedo & Aldasoro, 1999).

In summary, the two shrubs seen in the Hecho and Aísa valleys in 2017 appear to be *Sorbus mougeotii*. These records can be regarded as new ones for the Spanish Pyrenees in relation to *Flora Iberica* (Aedo & Aldasoro, 1999). Further recording would be very helpful in assessing whether this species occurs more widely in the Spanish Pyrenees.

### Acknowledgements

Many thanks are due to Dr Tim Rich, for examining my findings, Dr Daniel Gómez for his enthusiastic interest in my records, and to Dr Isabel Alonso, who provided helpful comments on Spanish translation.

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