

## NOTA BREU

*Thalictrum foetidum* (Ranunculaceae) in the Pyrenees*Thalictrum foetidum* (Ranunculaceae) als Pirineus

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Until a few years ago *Thalictrum foetidum* L. subsp. *foetidum* was only known in the Pyrenees from a herbarium sheet (MA 529159) that was originally identified only as *Thalictrum* and labelled «Tosses, pr. la Molina, Pico Niu d'Àliga, 31TDG1086, 2235 m, calizas, 21-VII-1993, C. Aedo & al.». This herbarium voucher was not identified as *T. foetidum* until 2000 by Ralf Hand, who added the locality to his revision of the genus *Thalictrum* in Europe (Hand, 2001). This locality, in the Tosa d'Alp massif (Eastern Pyrenees), is the absolute southwestern known limit of this species, which has a wide Eurasian distribution and is still relatively common in some valleys of the Alps. This species was formerly reported from other Pyrenean places, but these are apparently confusions with *T. minus*, even the most plausible records from the French Eastern Pyrenees, where it is not confirmed (Tison *et al.*, 2014). Plants formerly known as *T. foetidum* subsp. *valentinum* O. Bolòs & Vigo were also been reported from several Iberian localities (Bolòs & Vigo, 1984; Montserrat, 1986) but they belong to some glandular forms of *T. minus* L. (Adá *et al.*, 1995) for which it was later proposed the name *T. minus* subsp. *valentinum* (O. Bolòs & Vigo) R.J. Adá, G. López & P. Vargas, a taxon that Hand (2001) subsumed in the synonymy of *T. minus* subsp. *saxatile* DC.

*Thalictrum foetidum* was not relocated in Tosa massif until 2017 thanks to the survey carried out by Ignasi Soriano, who followed the route of the 1993 herborization. Based on partial observations that quantified its population in tens or a few hundred plants, the IUCN risk category EN (Endan-

gered) was assigned to this species in the 2020 update of the Red List of the vascular flora of Catalonia (Aymerich & Sáez, 2021). Currently this plant is not protected in Catalonia, but it is planned that it will be in a short time (2022 or 2023). In 2022, with the support of Cadí-Moixeró Natural Park, a work was carried out to improve knowledge of this species in the Pyrenees. The main results of this work are summarized in this note.

In the field work of 2022 *T. foetidum* (Fig. 1a,b) has been found only in the area in which it was rediscovered in 2017 by I. Soriano: Torrent de Set Fonts (Alp, Cerdanya; UTM 1 × 1 km ETRS89: 31TDG1086), located on the north-east slope of Tosa d'Alp massif. An occupancy area of about 4.5 hectares has been estimated, but this species only has a high density in a small sector of 0.4 hectares that concentrates more than 90 % of the population. It has been observed at altitudes between 2050 and 2230 m a.s.l., but mainly between 2150 and 2200 m. *T. minus* is also found in the same valley and at low altitudes the two species grow close together, but no mixed populations are found. Its preferred local habitats are open places with shallow soils, on limestone rocks, located in sunny slopes south or east facing (Fig. 2). These are

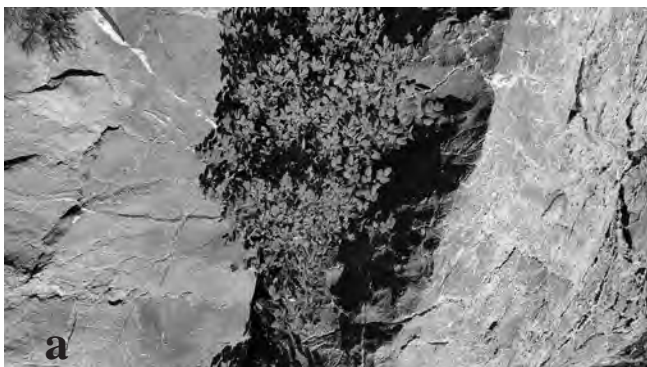


Figura 1. *Thalictrum foetidum*: a) individual in a rock crevice; b) detail of leaves and stem of a highly pubescent individual.



Figura 2. Habitats in Torrent de Set Fonts area. In the foreground main habitat in stony grassland. In the background secondary habitat in *Juniperus* shrubland.

habitats similar to those it occupies in central Europe and in other areas of its distribution (e.g. Hand, 2001; Kaplan *et al.*, 2017). In these places it usually occurs with plants of dry grasslands, and also with some saxicolous species: *Festuca gautieri*, *Sideritis hyssopifolia*, *Eryngium bourgatii*, *Carduus carlinifolius*, *Anthyllis montana*, *Satureja montana*, *Allium lusitanicum*, *Paronychia kapela*, *Potentilla alchemilloides*, *Artemisia chamaemelifolia*, *Sempervivum tectorum*... In the lower parts of its local area the most common habitat is the creeping carpets of *Juniperus communis* (exceptionally also *J. sabina*), within which *T. foetidum* remains protected from ungulates. The population was estimated at some 2000 individuals (minimum 1973, of which 864 flowering individuals). The number of mature plants could be higher, because 2022 was an exceptionally dry year and it is possible that a significant fraction of mature plants failed to produce flowers.

The presence of *T. foetidum* outside Torrent de Set Fonts area could not be confirmed in 2022. However two years before (2020) a small group (10-20 individuals) was found in the Pla de la Corda area (UTM 31TDG1086), about 500 m to the north and at an altitude of 2100 m (own data). In 2022, this place was prospected, but only *T. minus* could be found. It is likely, therefore, that other unknown locations exist around Torrent de Set Fonts. As a whole, *T. foetidum* could have in the Tosa massif a metapopulation with a central subpopulation in Set Fonts and some small and perhaps temporarily unstable satellite subpopulations in nearby places. However, it should be noted that the coordinates provided by the database of the Real Jardín Botánico de Madrid for the *T.*

*foetidum* location of 1993 (a point 800 m to the south, UTM 31TDG1085) are erroneous (Carlos Aedo, pers. comm.).

Although this population is located within the perimeter of La Molina mountain resort, the Set Fonts area has not undergone major transformations and it is unlikely that they will occur in the future. Apparently no major threats currently exist for *T. foetidum*, but Set Fonts needs to be managed as an area of high floristic interest, since other species of conservation concern at a regional scale are present there (*Alchemilla cadinensis*, *Artemisia chamaemelifolia*, *Carex brevicollis*, *Juniperus sabina*, *Sabulina villarii*).

With the new data obtained in 2022, *T. foetidum* is not assessed as EN (Endangered) in Catalonia under IUCN criteria (IUCN, 2012), as was done in the 2020 Red List (Aymerich & Sáez, 2021). A reassessment suggest that the most appropriate category is VU (Vulnerable) for criterion D and sub-criteria 1 (population with less than 1000 mature individuals) and 2 (a single confirmed location).

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