



Targionia hypophylla in south-central and eastern England

Fred Rumsey describes how this Mediterranean liverwort is surviving precariously in this area.

T*argionia hypophylla* L. is a nationally scarce species, one of our most xerothermic liverworts and often considered a member of the Mediterranean element in our flora, yet it has more sites in Scotland, Derbyshire and the Welsh borders than in lowland England. As Chris Preston has noted (in Hill *et al.*, 1991) *Targionia hypophylla*, *Reboulia hemisphaerica* and *Marchantia (Preissia) quadrata* form an interesting series, with *Targionia* the most and *Marchantia quadrata* the least well adapted to existence in xeric microclimates. Both *Targionia* and *Reboulia* are, over much of their British ranges, distinct calcicoles, growing over limestones and basic igneous rocks. However, in south-central and eastern England these species exist exclusively on moderately acidic rocky and

sandy roadside banks and walls, where they may often co-exist, sometimes intermixed but usually in subtly different microhabitats.

Given global warming and the spread of other thermophilous species, one might naively assume that *Targionia* should potentially be increasing but it would appear actually to be declining, for reasons which remain unclear. Evidence suggests that it is loyal to very restricted sites, as is *Reboulia*, and that even local colonisation of apparently suitable habitat does not occur. This study aimed to investigate the detailed distribution and abundance of *Targionia* in south-central and eastern England, looking at those factors which may be responsible for its decline, and indeed those which might explain where it does occur. Data on the species occurrence for this area have been taken from published literature,

◁ Figure 1. *Targionia* on soil-covered sandstone rocks forming hedgebank/garden boundary, near Chithurst, May 2005. Fred Rumsey

the herbarium collections at the Natural History Museum (BM), information held by Hampshire Biodiversity Information Centre (HBIC) for which I have undertaken searches of the plant and the data held by the National Biodiversity Network (NBN).

Targionia is frequent on the Channel Islands, but absent from the Isles of Scilly. Elsewhere in lowland England there exists a concentration of records in S. Devon (vc 3), particularly fringing the southern extremities of Dartmoor (Blockeel *et al.*, 2014), but it is strangely almost absent from Cornwall, with only three post-1999 tetrad records (ERICA, 2021). In S. Somerset (vc 5) a site was recorded on a railway bank at Sampford Brett during a 1971 BBS meeting. There has been only a single record for N. Somerset (vc 6), from 1915, in Cheddar Gorge where one would imagine it should still persist. There are no records for Dorset (vc 9) (Hill & Edwards, 2003), where *Reboulia* is also curiously rare. It is interesting to see the history of its recording through the iterations of the hepatic *Census Catalogue*. In spite of the fact that the illustration of the species in Sowerby's *English Botany* (Smith, 1795) had been made from material sent from Suffolk, Macvicar (1905) in the first edition of the *Census Catalogue* recorded the species in southern England only from Devon (vc 3, 4). Ingham (1913) in the second edition corrected the omission of W. Suffolk (vc 26), also adding the Channel Islands. Wilson (1930) in the third edition added N. Somerset and N. Hampshire (vc 12), but there was still no awareness of much earlier finds in S. Hampshire (vc 11) by Lyell, or W. Sussex (vc 13) by Borrer. The discovery of the species in Surrey (vc 17) followed in 1937 with specimens distributed in the 1937 BBS exchange.

The past and present occurrence in south-central and eastern England

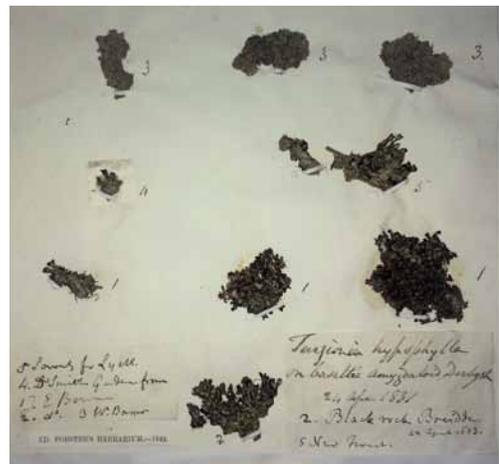
S. Hampshire (vc 11)

New Forest. First record: C. Lyell, undated but *c.* 1810–20, intermixed with *Reboulia hemisphaerica*, BM (Fig. 2). The precise locality of Lyell's collection is unknown and the species has long been presumed extinct in the vice-county (Crundwell & Rose, 1996.) *Reboulia* is occasional in the New Forest (Stern, 2010).

N. Hampshire (vc 12)

Silchester (SU66). First and only record: Dr R.S. Hill, 1861. The precise locality is unknown. *Reboulia* was recorded at Silchester Common as recently as 1984 and the *Targionia* may still persist in this area.

Liss (SU72). First and only record: J.S. Gamble, 1908. The precise locality is unknown. This area marks the extreme edge of the current range for *Reboulia* on the Lower Greensand. It particularly favours the Bargate Beds, these



△ Figure 2. A selection of early *Targionia* specimens from the herbarium of Edward Forster (1765-1849) at BM, including “5 Sowerby fr[om] Lyell ... New Forest” and “3 W. Borrer”, almost certainly from Chithurst.

Fred Rumsey



△ Figure 3. All Saints, Headley. Entrance porch with the low south-facing wall which marks the start of the population which must now be the largest in south-central England. *Fred Rumsey*

outcrops occurring northwards to the next location. Suitable habitat still remains, with one good population of *Reboulia* on sandy friable lane banks, with *Bartramia pomiformis*, in a local Site of Nature Conservation Interest (SNCI) between Liss Forest and Rake.

Headley (SU83). First record: C.P. Hurst, 1919. *Targionia* is well known to recent generations of bryologists on the walls of All Saints churchyard, Headley, bordering the High Street (Fig. 3). Specimens exist at BM collected by J.G. Duckett, J.C. Gardiner, B.J. O’Shea, A.J.E. Smith & E.C. Wallace from SU822362, on 23 March 1969 and there are several NBN records from SU822363 (where the plant does occur in small quantity although the records probably



△ Figure 4. Dense *Targionia* mats filling sheltered soil-filled crevices of the churchyard wall, Headley, March 2020. *Fred Rumsey*



△ Figure 5. *Targionia hypophylla* at All Saint’s church, Headley, March 2020. *Fred Rumsey*

actually relate to 822362). Alan Crundwell, the former BBS Regional Recorder, who lived locally from 1983 until his death in 2000, kept a close eye on the plant. Fittingly, his memorial service was held at the church and he is buried in the churchyard.

The current distribution is given below.

High Street on churchyard wall, from by the entrance porch on the south-facing exterior wall (SU82193626) discontinuously on the east-facing wall to SU82203628, and then very patchily northwards in small quantity on soil/rocky banks to driveway entrances at SU82213632 and the low open sandy roadside bank by the entrance to Abbeydore Close at SU82243637. I first saw the plant here in 2004 and felt that when I next surveyed it, at the behest of HBIC ten years later, it had declined somewhat. The wall is constructed of very many small stone blocks shaped like bricks, largely unmortared and with a fine silty soil filling the interstices. I think that in recent decades more extreme droughts and episodes of more severe rainfall may have been responsible for increased rates of weathering, such that the soil matrix upon which the liverwort occurs has in places been washed away. There is, however, still an impressive quantity of the plant on the churchyard wall which now constitutes its best site (Figs 4, 5). The amount present on the road verge near the entrance to Abbeydore Close has declined since I first saw it in 2004; the vegetation is coarser and with a more restricted bare patch on thinner soil overlying a rock.

Curtis Farm, Curtis Lane (SU82163675). Driveway entrance and northwest-facing lanebank just north of there (SU82173676). The plant was first noticed by me in these sites in

August 2014. There was a more limited quantity around the driveway in 2020 as the banks had been tidied and more rigorously gardened.

Hollow Lane (SU82123683–82123684). At least two patches on the vertical, shaded, friable southwest-facing bank of the sunken roadway under trees. Intermixed with *Reboulia* in one area. I had been unaware that the plant extended into this more natural lane-bank habitat prior to my visit in 2020.



▷ Figure 6. Roadbank by Arford Road, Headley, March 2020. A clearer section with *Targionia* and little ivy cover. Fred Rumsey

Arford Road. Alan Crundwell discovered the species lower down and to the east on the roadside wall and banks of the Arford Road, between Headley and Arford (SU825364) in 1991. This site was described by Francis Rose as “probably (the) best site in Britain” in documents at HBIC. Sadly, this is no longer true (Fig. 6). The liverwort is now mainly to be found on the roadside bank between two driveways close to a “Give Way” sign (SU82573641), continuing a short way up one (SU82573642) and on the retaining bank on the west side of the main road (SU82583642-3) which is now heavily covered in ivy. When surveyed in 2014 small quantities were also to be found on barer areas on the bank further north at SU82583644, SU82583645 and SU82593646. Since Crundwell’s discovery of the plant in 1991, the roadside bank has become progressively overgrown with a dense intricate growth of ivy over the rocky surfaces, with brambles and other rank herbaceous growth over that. Dense shading has affected

the moisture and humidity of the habitat and resulted in a serious and ongoing decline here.

Two records exist on the NBN for SU8035, A.C. Crundwell (1983) and R.C. Stern (2000), but it is clear from the associated comments that both relate to Headley (SU8236) and result from the misinterpretation of a 5-km square grid reference (SU83SE) as a 1-km square reference (SU8035).

West Sussex (vc 13)

Chithurst (SU82). First record: W. Borrer, October 1848, herb. E. Forster, BM. The precise locality of Borrer’s find is unknown, but all subsequent records are from SU840224 and SU840225. It was (re)found here in 1973 by Francis Rose and Ted Wallace, growing on sandstone boulders facing the hedgebank on the minor road to Chithurst, close to the junction with the A272. Rod Stern collected it from a stone wall, Chithurst, 1975, BM, presumably also from this site. The species, although only



△ Figure 7. Former *Targionia* locality at Chithurst in August 2020, the site where the photograph (Fig. 1) was taken in 2005. Fred Rumsey



△ Figure 8. Extant *Targionia* site by minor road to Chithurst, August 2020. Fred Rumsey

present in small quantity, was recorded again six times during the 1990s; the next and most recent record on the NBN dates from 2011.

The plant currently occurs by this minor road to Chithurst, near Trotton Common, on soil-covered rocks on banks in front of houses. The low block edging with a thin soil covering marking the garden boundary/roadbank at c. SU84012251 (Fig. 7) supported *Targionia* in 2005 (Fig. 1), but none was apparent during the dry summer of 2020. A combination of greater vegetation cover at the corner and damage which has caused loss of rock and soil may explain the loss. The species was still present set a little further back from the roadside just out of view towards the top of the frame in SU84002244 (Fig. 8). The sandstone blocks which form the base of the hedgebank still support a small population of *Targionia* on the barer rock areas adjacent to a patch of *Polypodium* but the covering growth of ivy must threaten the liverwort's continued survival.



△ Figure 9. The majority of the *Targionia* in Surrey exists on this rock by an entrance driveway at Churt, August 2020. Fred Rumsey

Surrey (vc 17)

Churt (SU83). First Record: lane near Churt, Surrey, 4 April 1937, E.C. Wallace, BM. It was collected again from “sandy banks of lane east of Churt” by R.A. Boniface in 1952 (BM). The first precisely localised record for the Churt area at SU868387, made in 1970 by Ted Wallace and Jack Gardiner, is for the same location as the current find. It is unclear as to whether the earlier finds relate to here or are further west and closer to Crossways. Suitable habitats would seem to exist there. Within the village at c. SU85603832 several of the houses on the north side of Hale House Lane have low mounded sandy roadbanks and drive entrances with *Reboulia* and mats of *Riccia subbifurca*. The site was too desiccated when visited in August 2020 to be able to definitely rule out the possibility that *Targionia* might be present intermixed with the former. While the *Reboulia* occurs at several scattered points along the lane eastwards, it is not until the drive entrance at SU86883876, a further 1.5



△ Figure 10. The smaller site at Churt where *Targionia* hangs on precariously, August 2020. Fred Rumsey

km further east, that *Targionia* was found. The main concentration was on thin soil on a boulder forming part of the driveway entrance (Fig. 9). A smaller quantity occurred on the parallel bank on the eastern side of the drive (Fig. 10). This site illustrated the precarious nature of so many of the *Targionia* localities in our area. The thin layer of friable soil is very prone to erosion, taking the liverwort with it.

In a document on road verges/lanes of wildlife interest, written by Francis Rose for HBIC, a site at Churt Road (SU842378) is given after the Arford and Headley sites, although unlike the others *Targionia* is not explicitly mentioned. This site is just to the west of Crossways and just over the county boundary into vc 12. A quick search in very dry conditions in August 2020 revealed a little *Reboulia* but no *Targionia*; the lane bank was rather overgrown and somewhat eutrophicated.

Berkshire (vc 22)

A record on NBN from Headley, SU5162, based on a specimen at Tullie House Museum, Carlisle, collected by E.C. Wallace in 1951, is almost certainly an error for Headley, vc 12. No other Berkshire records are known.

W. Suffolk (vc 26)

Nayland (TL93). First record: Sowerby's *English Botany* (Smith 1795). The text reads "very few botanists have gathered this plant in Britain, insomuch that several of the most accurate have doubted whether some *Marchantia* or *Jungermannia* had not been mistaken for it. We are enabled to decide this point by means of wild specimens gathered by the Rev. Mr Kirby, on a bank near Nayland in Suffolk. Hudson found it in Devonshire, a part of the island where it is most to be expected, considering its frequency on rocks and banks in the south of Europe." The

exact location of Rev. William Kirby's find is not known. Sandford & Fisk (2010) tentatively assigned it to TL93S and this does seem likely. It is perhaps instructive to note that the only Suffolk location(s) for *Reboulia* are also in the Nayland area. *Reboulia* was first found here by Joseph Andrews (Ray, 1724). Specimens survive in Andrews' herbarium at BM (Fasc. 10, f. 6) which is unusual for this period in the degree to which the specimens are localised. One was found "on a drie bank in Bull Street in Stoke near Nayland plentifully. Ap: 21: 1746" (cf. Boulger 1919). *Reboulia* was re-found at Bull Street (TL93T) by Francis Rose in 1957, having been found close by at Harpers Hill, Nayland (TL93S) with E.C. Wallace and others in 1956. The Bull Street site continues to flourish, but it was lost at Harpers Hill, the most likely area for the earlier *Targionia* record, owing to road improvements to the A134 (Sandford & Fisk, 2010).

Discussion

The extent to which *Targionia* may be overlooked in southern England is difficult to determine. There are few very active bryologists in the counties considered here and the majority of the habitats in which the species is known do not seem at first glance to be very promising. So, the expectation is that other sites may await discovery. People wanting to see a species will invariably tend to visit known locations and where these are both accessible and easily identified the chance to find additional sites is often not taken. Even so, the species is reasonably distinctive, not microscopic and therefore, were it more widely present, more finds would have been expected.

It is clear that the liverwort is very loyal to precise features and over considerable periods, at Churt, for instance, for over 50 years. We have insufficient evidence to comment with any authority on the species' capability for dispersal

at a local or wider level. However, it does seem likely that dispersal is poor and new sites are rarely initiated, but that once present the species persists. The nature of the species' preferred habitat, on thin soil over rocks and boulders, perhaps allows the long-term maintenance of suitable conditions, allowing this persistence. The rocks are sufficiently large to not be easily disturbed and are kept free of competition, maintaining populations of ephemeral annuals because of the severe droughting and high temperatures to which the thin soil layer is exposed. Overgrowth by coarser vegetation is, however, possible and this has reduced population sizes and caused local losses in the studied sites.

Although good populations remain, the species must be considered at threat in the study area. While the apparent site losses are from the distant past (>100 years), all the extant populations have shown an ongoing decline over the last 20+ years, or are so small that chance effects could easily result in their loss. Indeed, the combined area of occupancy for the species in Sussex and Surrey may be less than 1 m². Habitat management has previously been suggested for the Arford site, which would undoubtedly benefit from clearance of ivy and other covering vegetation. Elsewhere the survival of the species is very much at the whim of landowners who are probably unaware of its presence and could easily cause its loss through the repair or replacement of boundary features and driveway entrances.

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