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Observations of *Trichoniscoides sarsi* Patience, 1908 (Isopoda: Oniscidea: Trichoniscidae) on the west coast of Britain

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Abstract

Here we report two observations of *Trichoniscoides sarsi* Patience in western Britain from a synanthropic allotment in Bristol city and from semi-natural coastal habitat near Clevedon. We highlight possible confusion between coastal observations of *T. sarsi* and its congener *T. saeroeensis* Lohmander, which has been widely recorded around the entire British coastline (Gregory, 2009). These findings emphasise that all red-eyed *Trichoniscoides* found on the coast of Britain cannot be assumed to be *T. saeroeensis*, and reliable determination of all *Trichoniscoides* species can only be based on examination of male specimens, regardless of where specimens are found.

Key words: Isopoda, Oniscidea, *Trichoniscoides sarsi*, Britain, Distribution, Habitat.

Introduction

The elusive woodlouse *Trichoniscoides sarsi* Patience appears to have an odd distribution in Britain and Ireland. The map published in Gregory (2009) shows a distinct band of localities stretching across eastern England from Kent to Suffolk and then extending westwards across central England through Leicestershire and into Shropshire with an isolated record near Dublin, eastern Ireland (yellow circles in Fig. 4). Subsequently this distribution pattern has been reinforced by the discovery of *T. sarsi* in Bedfordshire, Derbyshire, Lincolnshire and Essex (Richards, 2016; Gregory, 2018; 2019b). However, the discovery of *T. sarsi* on the Scottish east coast of Kincardineshire (Davidson, 2011), some 400 km north of previously known Leicestershire records, and more recently in a garden in west Lancashire (Gregory, 2019a) suggest a much wider distribution (orange circles in Fig. 4).

Here we report two observations of *T. sarsi* in western Britain from a synanthropic allotment in Bristol city and from semi-natural coastal habitat near Clevedon. We highlight possible confusion between coastal observations of *T. sarsi* and its congener *T. saeroeensis* Lohmander, which has been widely recorded around the entire British coastline (Gregory, 2009).

Discovery

On 07.xi.2020 FA collected two specimens of red eyed trichoniscid from beneath a limestone rock on the upper beach at Clevedon (ST38827007, VC6). Macrophotographs were taken in-situ (Fig 1A), and the specimens preserved and keyed to *Trichoniscoides sp*. following Hopkin (1991) (Fig 1B), then sent to SJG for examination. Both specimens were female, so species was unclear. However, SJG felt these may both be *T. sarsi*, as the eyes were quite dark red and 'smudgy' (as clearly seen in Fig. 1A); they are usually pinkish and more distinct in *T. saeroeensis*. SJG said he would like to see a male to be sure, and so FA returned to the area (ST39317044) (Fig. 3) and collected five more specimens on 22.xi.2020, which were forwarded to SJG for determination. SJG confirmed two males (and three females) of *T. sarsi*, noting, in addition to the shape of the male pleopods, the hooked spur on the merus of pereiopod 7 (Fig. 2), which is absent in *T. saeroeensis* and *T. helveticus* (Carl).

Figure 1: *Trichoniscoides sarsi* female specimen from Clevedon.
A) Live macrophotograph in-situ (image © Frank Ashwood). B) Freshly preserved specimen in 80% ethanol (image © Steve Gregory).

Figure 2: ***Trichoniscoides sarsi* male pereiopod 7.** Specimen collected from Clevedon. Note prominent hooked spur at base of merus (arrowed) (image © Steve Gregory).

Additionally, FA collected a specimen of a small, red-eyed, trichoniscid woodlouse from within clayey topsoil on an allotment in Horfield, Bristol (ST600763, VC34) on 06.xi.2020. The specimen was forwarded to SJG for determination and confirmed as male *T. sarsi*. Other species found on the same allotment plot were *Metatrichoniscoides celticus* Oliver & Trew (the first English record; Ashwood & Gregory, 2021), *Platyarthrus hoffmannseggii* Brandt, *Armadillidium nasatum* Budde-Lund, *Oniscus asellus* L., *Porcellio scaber* Latreille and *Philoscia muscorum* (Scopoli). All specimens of *T. sarsi* have been retained in the personal collection of FA, and record details have been submitted to the BMIG Non-marine Isopod Recording Scheme via iRecord (*www.brc.ac.uk/irecord*).

Discussion

Currently three species of *Trichoniscoides* have been recorded from Britain and Ireland (Gregory, 2009); *T. helveticus*, *T. saeroeensis* and *T. sarsi*. *Trichoniscoides helveticus*, a species typical of semi-natural habitats on calcareous soils, is recorded from a handful of sites in central southern England. *Trichoniscoides sarsi* and *T. saeroeensis* are discussed in more detail below.

Trichoniscoides species can only be reliably separated by dissection of a male specimen (Oliver & Meechan, 1993), especially in the case of preserved specimens that have lost their body pigmentation. However, there do appear to be subtle differences in body and especially eye pigmentation of live specimens of *T. saeroeensis* when compared to *T. sarsi* and *T. helveticus*. In live material of *T. saeroeensis* the ommatidium is usually pinkish and the pigment 'eye' boundary usually more clearly defined (SJG, pers. obsv.; also see images at *www.bmig.org.uk/species/Trichoniscoides-saeroeensis*). In live material of *T. sarsi* (and also *T. helveticus*) the ommatidium is typically infused with dark red pigment with a diffuse spreading margin and the body tends to be more heavily 'flushed' with orange

Figure 3: Habitat of *Trichoniscoides sarsi* on Clevedon coastline
A) Upper coastline location from which specimens were collected; B) Limestone rock microhabitat. (Images © Frank Ashwood).

pigment (e.g. see images at *www.bmig.org.uk/species/trichoniscoides-sarsi*). The latter description is more akin to the original female specimens photographed by FA from the Clevedon coast (Fig. 1 A-B), and therefore, in SJG's opinion, more likely to be *T. sarsi* or *T. helveticus* (two species typically found inland, Gregory, 2009), rather than the 'coastal' *T. saeroeensis*. The additional material, including

males, that were collected by FA confirmed this suspicion. However, the pigmentation differences are subtle, and unlikely to be 100% reliable; thus determination should always be confirmed by examination of a male specimen (as figured in Oliver & Meehan, 1993). In addition, *T. sarsi* males have a hooked projection at the base of the merus of pereiopod 7, which can be seen without dissection (Fig. 2; also figured in Gregory, 2012) and is absent in males of *T. saeroeensis* and *T. helveticus*. *Trichoniscoides saeroeensis* males may be readily identified by the conspicuously slender and elongated endopod 2 (Oliver & Meechan, 1993, pg 35, fig. 9B), which can be seen without dissection (these are short and stout in *T. sarsi* and *T. helveticus*; *ibid*, fig. 9C-D).

Trichoniscoides sarsi occurs widely across England with an isolated coastal record in eastern Scotland, (Fig. 4). Almost all records are from inland synanthropic sites, such as old gardens or churchyards in the environs of towns and villages (e.g. Daws, 1994; 1995; Richards, 2016; Gregory, 2018; 2019a: 2019b). However, a few records have been from coastal habitats in eastern Britain. This includes the Kincardineshire record (Davidson, 2011), where specimens were collected from beneath stones embedded in clayey soil at the base of the sea cliff (and also from a cliff-top cemetery above). In Kent, south-east England, *T. sarsi* has been collected from beside the tidal estuary of the River Medway in Kent, beneath stones embedded in clayey soil covered with strandline debris (Gregory, 2012). This latter site, where it was found with the Nationally Rare *Metatrichoniscoides leydigii* (Weber), is akin to habitats in the Netherlands where both species occur as native species (Berg *et al.*, 2008). Until now *T. sarsi* was previously un-recorded from south-west England.

Trichoniscoides saeroeensis is predominantly coastal, typically occurring along the upper shore, but also found inside caves and mines and on the summits of mountains in coastal limestone areas (Gregory, 2009). Unfortunately, it appears that many records of *T. saeroeensis* have been simply based on field observations of 'red-eyed' coastal woodlice (Non-marine Isopod Recording Scheme dataset included within Gregory, 2009). On a few occasions, microscopic examination of male specimens has shown that *T. sarsi* also occurs on the eastern coast of Britain (Gregory, 2009; 2012; Davidson, 2011) (Fig. 4). Thus, Gregory (2012) suggested the possibility that *T. sarsi* may have been overlooked on the eastern coasts of Britain where the 'coastal' *T. saeroeensis* is widely recorded (Gregory, 2009). Indeed, *T. sarsi* is common along the Netherlands and Belgian coastline on the opposite side of the North Sea, where *T. saeroeensis* has never been recorded (Berg *et al*., 2008; De Smedt *et al*., 2020).

It is possible that *T. sarsi* and *T. saeroeensis* occupy different niches, however there are too few records available to draw reliable habitat preference information. Thus, additional field observations, including microhabitat details, are needed to answer this. However, we can now confirm that *T. sarsi* occurs on the coastline of south-west England. Given this observation we re-iterate the possibility that *T. sarsi* may have been overlooked (and mis-identified as *T. saeroeensis*) at some sites around the entire British coastline (not just the eastern coast). However, this may not be true everywhere. For example, in The Lothians (south-east Scotland) where males have been routinely examined, *T. sarsi* has not been found (Warren Maguire, pers. comm. to SJG). What is clear is that it cannot be assumed that all pallid orange-flushed red-eyed woodlice found on the coast of Britain are *T. saeroeensis*. As such, reliable determinations of all *Trichoniscoides* species can only be based on examination of male specimens, regardless of where they are found.

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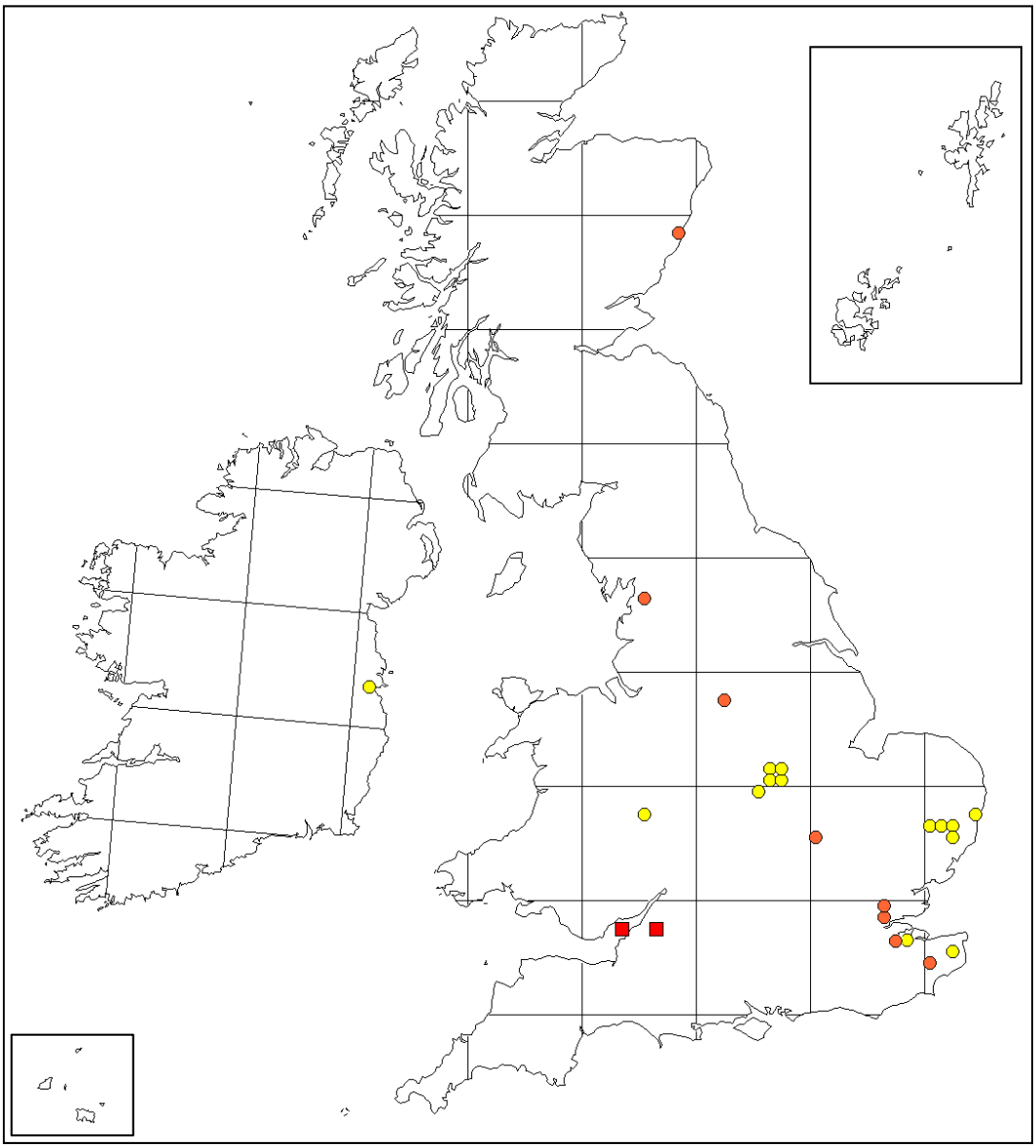

Figure 4: **Distribution map for *Trichoniscoides sarsi* Patience in Britain and Ireland.**
Based on records of male specimens submitted to the BMIG Non-marine Isopod Recording Scheme.
Records up to 2007 (as published in Gregory, 2009); Records from 2008 to 2020;
Records reported herein.

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