

# *Clorismia rustica*, a new stiletto fly species for Sweden

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This paper reports *Clorismia rustica* (Panzer, 1804) (Therevidae: Diptera) as a new species record for the Swedish stiletto fly fauna. In the UK, *C. rustica* is a notable species listed on the Biodiversity Action Plan and is associated with the conservation priority habitat category Exposed Riverine Sediments. The collecting localities for *C. rustica* in Sweden are at the Lagan River, in an area characterized by slow-flowing meandering stretches bordered by coniferous-mixed forest. Verified occurrences of the genus in Sweden consist of a few records of the other European species of this genus, *Clorismia ardea* (Fabricius), from Gotland. On the Swedish Red List, *C. ardea* (“blekbent vedstiletfluga”) is listed with the status of “Vulnerable” and has been re-collected on Gotland after 90 years. Discovery of *C. rustica* at this high biodiversity value locality in central Småland is also a reminder that substantial gains in our knowledge of the Diptera fauna can come from targeted sampling of habitats and species in Sweden.

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In 2010, a female stiletto fly specimen identified in the field as *Clorismia* was collected at the Lagan River in Småland, SSE of Skillingaryd. The section of the Lagan where this specimen was collected, “Lagan (mellan)”, has high biodiversity value that can be attributed to the unaltered riverbed and shoreline substrate composition (Carlsson & Liliegren 2005). It is dominated by slow-flowing meandering stretches, is bordered by coniferous-mixed forest, and has a sand bottom substrate (Carlsson & Liliegren 2005). Subsequent visits to this area yielded four additional specimens of this species, *Clorismia rustica* (Panzer), a new species for the Swedish Diptera fauna. Prior to 2010, Swedish specimens of *Clorismia* in public collections were of the other European species of this genus, *Clorismia ardea* (Fabricius). Furthermore, all confirmed localities for *Clorismia* in Sweden were on Gotland and reference collecting events before 1925 (Andersson & Cederberg 2007), with the notable exception of specimens from a recent coastal

sand dune insect survey on Gotland (Johansson 2013).

Country-level checklists are broadly overlapping (Lyneborg 1989), but relative abundance and distribution overlap for the two species of European *Clorismia*, especially at the landscape scale, remain poorly understood. In Belgium, *C. ardea* is considered a “common” species of inland Flanders, associated with open areas rather than woodland, in contrast to the “very rare” *C. rustica*, collected only in 1936 from the Munte area (Grootaert et al. 2001). In general, historical published records of species occurrences are questionable due to taxonomic misidentifications and name misattributions (Lyneborg 1968). Neither *Clorismia* species appears on recent Finland checklists although both species have been reported for the Saint Petersburg area, Russia (Haarto & Winqvist 2006, Kahanpää et al. 2014). Only *C. rustica* has been recorded for Denmark, Lithuania and the UK, but both *Clorismia* species are reported from other northern and central

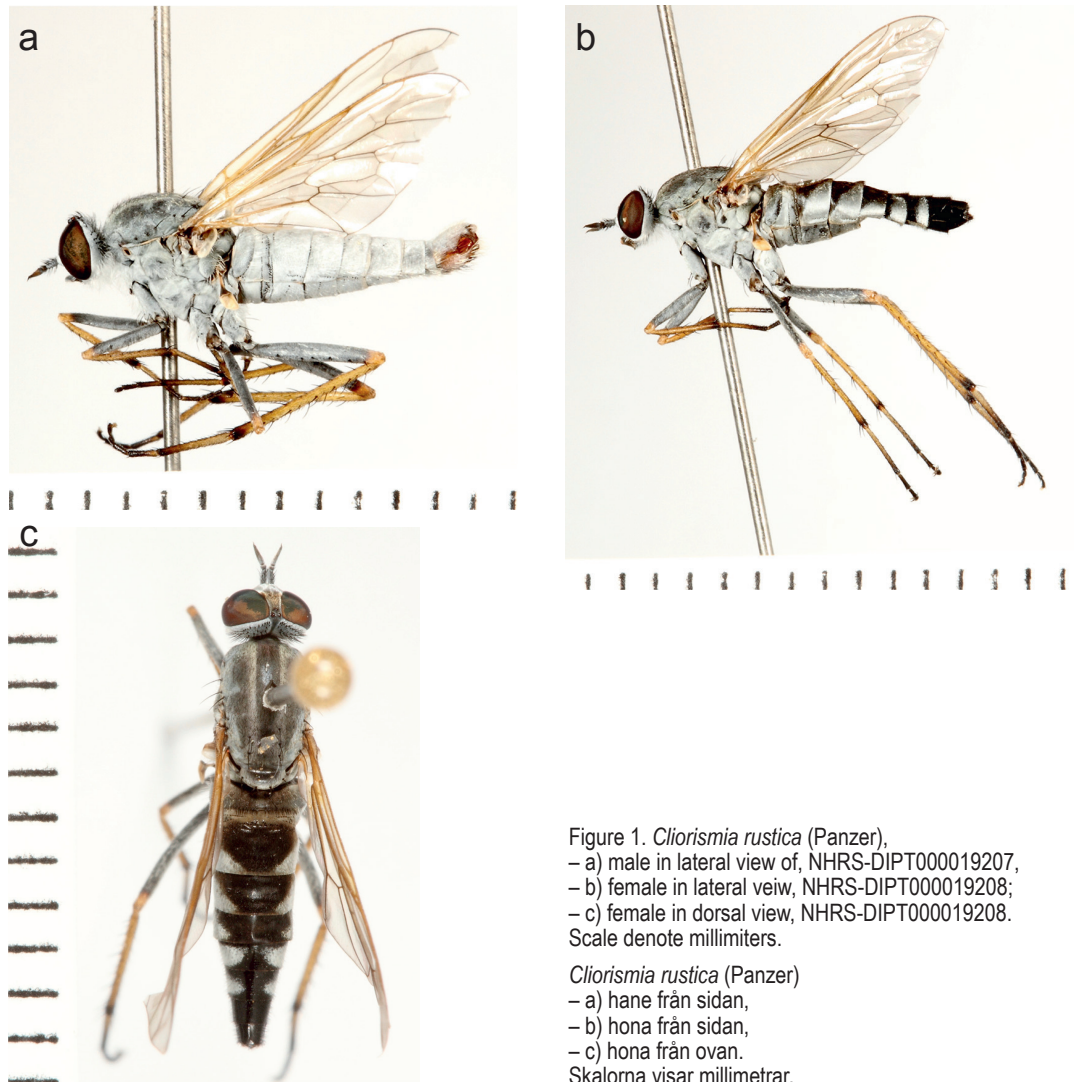


Figure 1. *Clorismia rustica* (Panzer),  
 – a) male in lateral view of, NHRS-DIPT000019207,  
 – b) female in lateral view, NHRS-DIPT000019208;  
 – c) female in dorsal view, NHRS-DIPT000019208.  
 Scale denote millimeters.

*Clorismia rustica* (Panzer)  
 – a) hane från sidan,  
 – b) hona från sidan,  
 – c) hona från ovan.  
 Skalorna visar millimetrar.

European countries (Lyneborg 1989, Lutovino-vas et al. 2003). In the UK, *C. rustica* is listed on the Biodiversity Action Plan (BAP) with action categories covering site discovery and monitoring as well as “research into ecological requirements” (BRIG 2007).

It is difficult to distinguish females of *C. ardea* from *C. rustica* (Stubbs & Drake 2001), both of which have a similar abdominal vestiture pattern that is unlike the uniform silvery grey abdomen of males (Fig. 1). Comparative material at the Swedish Museum of Natural

History, Stockholm (NHRS), and published descriptions were used to identify female Lagan River specimens as *C. rustica* as opposed to *C. ardea*, the smaller species with less extensive dark regions on abdominal tergites 2-3 (Lyneborg 1968). Malaise traps are widely-used, effective sampling methods for adult stiletto flies (Holston 2005), but it was very useful to have Lagan River specimens that were collected by hand so vestiture patterns were undamaged. Male genitalia morphology, redescribed and/or illustrated in several publications, provides un-



Figure 2. Riverbank vegetation at the Lagan River, SSE of Skillingaryd, where specimens of *C. rustica* (Panzer) were collected. (Photo: 2010.VIII.01, K.C. Holston).

Ån Lagan i Halland, Skillingaryd, där *C. rustica* hittades i Sverige för första gången.

ambiguous characters for identifying *C. rustica*. In particular, the distiphallus, which can be seen in pinned and imperfectly preserved specimens, is long and S-shaped in *C. rustica* whereas it is short and only slightly recurved in *C. ardea* (Lyneborg 1968, Weinberg 1985, Stubbs & Drake 2001, Haarto & Winqvist 2006). *Clorismia* can be distinguished from similar stiletto fly genera *Dichoglana*, *Pandivirilia*, *Psilocephala*, and *Spiriverpa* by the presence of hairs on the prosternum (Lyneborg 1986). Among the European genera with hairs on the prosternum, *Clorismia* lacks parafacial hairs, unlike *Acrosathe* and *Thereva*, and both sexes of *Dialineura* have a strongly dilated antennal scape.

The five Lagan River specimens of *C. rustica* were collected from the leaves of trees and herbaceous vegetation at or near the riverbank (Fig. 4). **Sweden: Småland** 1.5 km SSE Skillingaryd, Lagan River, 57.41147° N, 14.10585° E, forest undergrowth – 2010.VII.31 (K.C. Holston), female, NHRS-DIPT000019206; 1.5 km SSE Skillingaryd, Lagan River, 57.41210°

N, 14.10534° E, riverbank vegetation – 2010.VIII.01 (K.C. Holston) male, NHRS-DIPT000019207 – 2011.VIII.03 (K.C. Holston) male, NHRS-DIPT000019208 – 2011.VIII.04 (K.C. Holston) female, NHRS-DIPT000019209 – 2015.VIII.09 (K.C. Holston) male, NHRS-DIPT000019210. Males of *C. rustica* were found on or near alder trees growing at the riverbank, collected from leaves exposed to sunlight. Although the availability of substrates in which larvae can develop is considered a main predictor of stiletto fly occurrences (Holston 2005), it is worth noting that specimens of *C. ardea* were similarly associated with alder at Gotland localities where the species was collected recently (Johansson 2013).

The new record for *C. rustica* is a reminder that the stiletto fly fauna of Sweden may be better known than in other countries in Europe, but much remains unknown. Considering the gains from surveys and inventories in the UK, such as those for *C. rustica* and other Exposed Riverine Sediments (ERS) Diptera (Hewitt & Parker

2008a, Hewitt & Parker 2008b, Littlewood & Stockan 2013), this discovery is also a reminder that substantial gains can come from targeted sampling of habitats and species. A method that was extremely effective for establishing presence of *C. rustica* during these UK surveys was collecting and rearing stiletto fly larvae, which could be replicated for ERS sites on the Lagan River.

New locality records and ecological observations for *Clorismia* species will be important for ongoing national biodiversity and conservation assessments in Sweden. Criterion B (ArtDatabanken 2015) categorizes the geographic area covered by a species distribution and was used to assign *C. ardea* ("blekbent vedstiletfluga") the status of "Vulnerable" for the Swedish Red List (ArtDatabanken 2015). Although there may be populations of *C. ardea* at localities away from the seacoast (Johansson 2013), inventories for *C. rustica* in the UK suggest that Criterion B, with an emphasis on rarity of suitable habitats, may be relevant to the conservation of both *Clorismia* species in Sweden.

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## Svensk sammanfattning

Stiletflugan *Clorismia rustica* hittades om ny för Sverige vid Lagan (Småland). Den liknar mycket den enda övriga art som vi sedan tidigare känt till i Sverige (*C. ardea*), men hanarnas genitalier har bra skiljetecken. Beroende på svårigheter med bestämning är det svårt att veta vilken art äldre fynd tillhör utan att kontrollbestämma dem, men säkra fynd av *C. rustica* finns från Danmark. Fyndplatsen för den nya arten är en relativt orörd sträcka av ån som har höga naturvärden, och antagligen är den beroende av ostörda flodbäddar för sin larvutveckling.