

# *Xiphydria betulae* (Enslin, 1911) new to Sweden and new records of *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae) with additional notes on two rare ichneumonid parasitoids associated with xiphydriid wood wasps

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Johansson, N. & Larsson, A.: *Xiphydria betulae* (Enslin, 1911) new to Sweden and new records of *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae) with additional notes on two rare ichneumonid parasitoids associated with xiphydriid wood wasps. [*Xiphydria betulae* (Enslin, 1911) ny för Sverige och nya noteringar av *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae) samt noteringar av två sällsynta brokparasitsteklar knutna till halssteklar.] – Entomologisk Tidskrift 140 (3–4): 145–155. Björnlunda, Sweden 2020. ISSN 0013-886x.

The wood wasp *Xiphydria* (*Konowia*) *betulae* (Enslin, 1911) is reported for the first time from Sweden and the known Swedish records of the rare *Xiphydria picta* Konow, 1897 are presented. An account of two of the ichneumonid wasps associated with *Xiphydria*; *Pseudorhyssa alpestris* (Holmgren, 1860) and *Rhyssella obliterated* (Gravenhorst, 1829) and their occurrence in Sweden is given. The species ecology and habitat requirements are discussed.

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Woodwasps of the family Xiphydriidae, which in Sweden belongs to a single genus – *Xiphydria* Latreille, 1803, represented by four species, consist of mid-sized to quite large wasps, with the pronotum characteristically stretched into an elongate neck. The species spend their larval stage in dead wood of different deciduous tree species in Europe, mainly oak (*Quercus* spp.), alder (*Alnus* spp.), birch (*Betula* spp.), aspen (*Populus tremula*), and willow (*Salix* spp.). The female wasp oviposits on wounded or recently dead trees or branches.

When laying her eggs, the female wasp also injects spores of xylobiont fungi which she has carried with her from her native tree. Xiphydriidae wasps seem to be almost exclusively connected to wood infested with cramp balls *Daldinia* spp. (Šrůtka et al. 2007, Pažoutová et al. 2010) while other closely related species of fungi such as *Hypoxylon* spp. or *Melanconium* spp. are less often reported (Sinadsky 1967). Xiphydriidae wasps inhabit woodland areas rich in deciduous trees, such as wetland-, riverside- or seaside forests. Occasionally, high stumps and



Figure 1. Female *Rhyssella approximator* (Fabricius, 1793), habitus lateral view, on a dead trunk of common alder *Alnus glutinosa* containing larvae of *Xiphydria*. Photo: Niklas Johansson.

Figur 1. Hona av *Rhyssella approximator* (Fabricius, 1793), habitus i sidovy, på en död stam av klibbal *Alnus glutinosa* innehållande larver av halssteklar *Xiphydria*. Foto: Niklas Johansson.

residues left on clear cuts are used. The presence of the wasps is often revealed by obvious traces of woodpecker activity on the tree trunks.

Among the ichneumon wasps (Hymenoptera: Ichneumonidae), at least three species representing two subfamilies are associated with *Xiphydria* species in Sweden. The two European species of *Rhyssella* Rohwer, 1920 (Rhyssinae); *Rhyssella approximator* (Fabricius, 1793) (Fig. 1) and *R. obliterated* (Gravenhorst, 1829) both parasitize

*Xiphydria* larvae or pupae, using their ovipositor to drill through wood to sting and lay an egg on the concealed host. This behaviour is then exploited by cleptoparasitoids of the genus *Pseudorhyssa* (Pimplinae), which use the holes drilled by *Rhyssella* or the closely related genus *Rhyssa* Gravenhorst, 1829 to reach and place their own egg on the already infected host larvae, where the first instar larva of the *Pseudorhyssa* kills the Rhyssinae larva and consumes the host. While *Rhyssella approximator* is a rather common and widespread species, occurring over most of the country in Sweden, both *R. obliterated* and *Pseudorhyssa alpestris* are rare species in Sweden with a seemingly scattered distribution.

This paper presents the wasp *Xiphydria betulae* as new to Sweden and gives a faunistic overview of the hitherto known Swedish records of the rare *X. picta* and two of the more prominent ichneumonid species parasitizing *Xiphydria* – *Rhyssella obliterated* and *Pseudorhyssa alpestris* (Fig. 2). The relation between the two parasitoids and *Xiphydria*, with focus on *X. picta*, is also discussed. All photos by the first author using an Olympus OMD M10 and an Olympus M. Zuiko 60mm/f.2.8 macro lens, except Fig. 4, which was taken by Christopher Reisborg using a Nikon DS-Ri1 with a Nikon Plan Apo 4x/0.2 lens.

### Abbreviations

NHRS = Swedish Museum of Natural History, Stockholm, Sweden.

MZLU = Lund Museum of Zoology, Lunds Universitet, Lund, Sweden.

UPSZ = Museum of Evolution, Uppsala University, Uppsala, Sweden.

### *Xiphydria betulae* (Enslin, 1911)

**Sm:** Långemåla: Ekopark Hornsö, 1.vi.–1.viii.2011, 1♀ in window trap on birch high stump in clear cut, M. Larshagen/Sveaskog leg., N. Johansson det.

The subgenus *Konowia* Brauns, 1884, to which *X. betulae* belongs, consists of small to medium sized species with a body length of about 5–11mm. *Konowia* is separated from *Xiphydria* s. str. by the anal cell in the forewing usually being basally divided (Fig. 3A), while it is just constricted in *Xiphydria* s. str. (Fig. 3B). Note that the anal cell of *Konowia* in rare cases can appear constricted as in typical *Xiphydria* s. str. Furthermore, the claws of

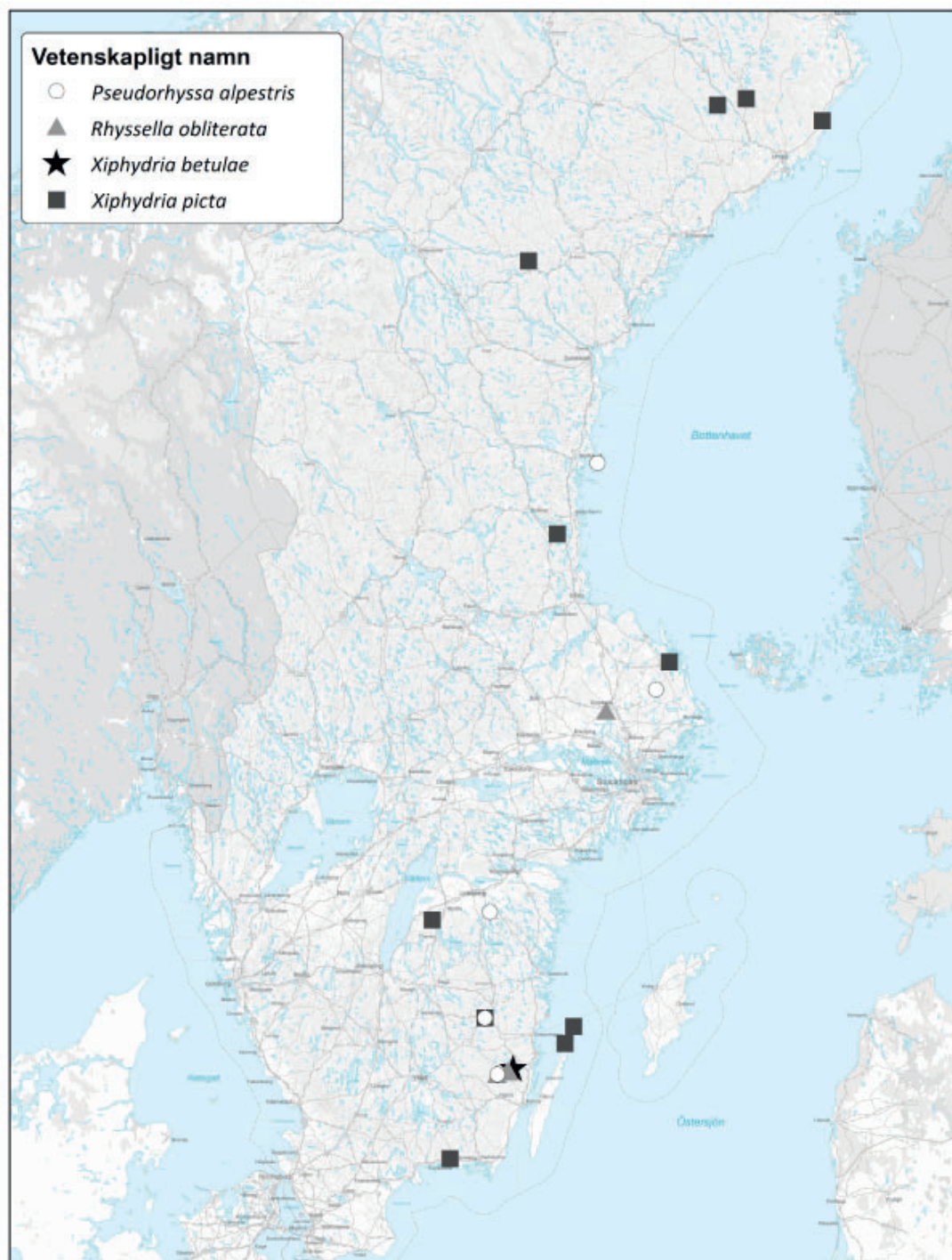


Figure 2. Map of Sweden with symbols marking the known localities for *Xiphydria betulae* (Enslin, 1911) (black star), *Xiphydria picta* Konow, 1897 (grey square), *Rhysella obliterata* (Gravenhorst, 1829) (grey triangle) and *Pseudorhyssa alpestris* (Holmgren, 1860) (white circle).

Figur 2. Sverigekarta med symboler som markerar de kända lokalerna för *Xiphydria betulae* (svart stjärna), *X. picta* (grå kvadrat), *Rhysella obliterata* (grå triangel) och *Pseudorhyssa alpestris* (vit cirkel).



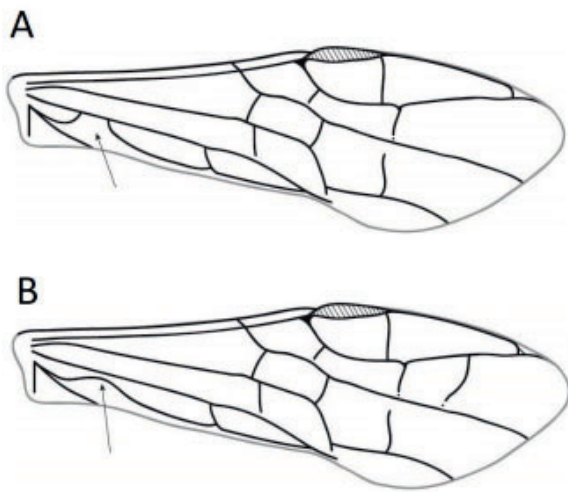


Figure 3. Right fore wing. – A) subgen. *Konowia*; – B) *Xiphydria* s. str. Drawing by Christopher Reisborg.

Figur 3. Höger framvinge. – A) undersläktet *Konowia*; – B) *Xiphydria* s. str. Teckning av Christopher Reisborg.

*Konowia* lack the median denticle which is present in *Xiphydria* s. str. The head in *Konowia* is dorsally matt or rugulose and the body lacks pale markings (Fig. 4), while the head is dorsally polished in *Xiphydria* s. str. which also has distinct pale markings on the head, mesosoma and metasoma (Jansen 1987) (Figs 5, 6A–E). Shcherbakov (2008), who at the time of his publication was unaware of the previous taxonomical work conducted by Jansen (1987), erroneously synonymized *Xiphydria betulae* (Enslin, 1911) with *X. megapolitana* (Brauns, 1884) based on the variable wing venation (Juho Paukkunen pers. com.). This confusion has unfortunately also resulted in the Swedish specimen here presented, initially being identified as *X. megapolitana* instead of *X. betulae*.

*Xiphydria betulae* (Fig. 4) is known from Hungary, the Netherlands, Finland, Belgium, Czech Republic, Russia, Ukraine, Germany and Croatia, but has not yet been recorded from Denmark or Norway (Viitasaari 1984, Midtgaard 1988, Taeger & Blank 1998, 2019b,



Figure 4. Female *Xiphydria betulae* (Enslin, 1911), habitus, lateral view. Photo: Christopher Reisborg.

Figur 4. Hona av *Xiphydria betulae* (Enslin, 1911), habitus från sidan. Foto: Christopher Reisborg.

<https://waarneming.nl>). Apart from some older observations in the surroundings of Moscow during the 1960s (Sinadsky, 1967), the species is rarely reported from Western Europe. However, there have been a couple of new records from Finland in 2017 (Juho Paukkunen, Marko Mutanen pers. com.). *Xiphydria betulae* is classified as vulnerable (VU) in the red list of Finland (Hyvärinen et al. 2019) and it recently also entered the Swedish red list as DD (Data deficient) based on the single specimen presented in this paper (ArtDatabanken 2015 as *X. megapolitana*). *Xiphydria betulae* spends its larval stage in branches and twigs of birch (Sinadsky 1967, Zhelohovtsev & Zinovjev 1988, Taeger & Blank 1998). The female wasp oviposits 1–5 eggs in the lower part of slender branches or twigs of birch where their presence is revealed by dying leaves and a characteristic swelling caused by the larvae. The fungi *Melanconium bicolor* Nees, 1816 has been mentioned as a symbiont (Sinadsky 1967). *Xiphydria betulae* is distinguished from the closely related and equally rare *X. megapolitana* by the shorter and stouter antennae and the more elongate ovipositor. The species can be separated using Jansen (1987). As *Xiphydria megapolitana* has been recorded from both Finland and Norway (Hellén 1924, Viitasaari 1984, Midtgaard 1988) it can potentially be expected to occur also in Sweden. However, one should be aware that the separation of *Xiphydria megapolitana* and *X. betulae* in older literature might be based mainly on variable and therefore invalid characters such as the number of cubital cells and the presence/absence of infuscation of the wings. The Swedish specimen of *Xiphydria betulae* (Fig. 4) was collected in a window trap mounted on a high stump of birch. The wings are weakly sclerotized indicating that the specimen was newly hatched, possibly in a remaining branch or twig on the high stump. After being preserved in alcohol the wings were wrinkled and difficult to interpret, but seem to have two cubital cells in each wing.

#### *Xiphydria picta* Konow, 1897

**Jä:** Ragunda, unknown date, but probably around 1946 when the collector made other observations on the same locality, 1♂ hatched ex *Alnus*, T. Palm leg., N. Johansson det., MZLU; **Öl:** Högby: Horns Kungsgård, unknown date and collector, 1♂, A. Larsson det., NHRS; Borgholm: Böda Ekopark,



Figure 5. Male *Xiphydria picta* Konow, 1897 on dead trunk of common alder *Alnus glutinosa*, habitus lateral view. Photo: Niklas Johansson

Figur 5. Hane av *Xiphydria picta* Konow, 1897 på död klibbalstam. Habitus från sidan. Foto: Niklas Johansson.

25.v.–10.vi.2018, 1♀ in Malaise trap in wet forest with spruce (*Picea abies*), birch (*Betula* spp.) and alder (*Alnus* spp.), R. Isaksson leg., N. Johansson det.; **Up:** Östhammar: Harg, 9.v.1934, collector unknown, 1♂ hatched ex *Alnus*, A. Larsson det. UPSZ; **Bl:** Bräkne Hoby, 26.vi.1939, 1♀ on wood debris, collector unknown, A. Larsson det. NHRS; **Hs:** Skog, 11.vi.1952, 1♂, A. Jansson leg., N. Johansson det., MZLU; **Vb:** Bygdeå, 20.vi.1924, 1♀, K. Fahlander leg., N. Johansson det., MZLU; Degerfors: Naturrum Vindelforsen, 19.vi.2008, 1♀, Katarina Stenman leg., A. Larsson det. (from picture); Vindeln: Åtmyrberget, 1.v.–1.vii.2011, 1♀ in window trap on high stump in clear cut, M. Larshagen/Sveaskog leg., N. Johansson det.; **Sm:** Målilla: Östra Årena, 21.vi.2016, 2♂♂ sitting on a standing trunk of a dead alder (*Alnus glutinosa*), N. Johansson leg. et det.; **Ög:** Rinna: Björneberg, 6–28.vi.2019, 1♀ in Malaise trap by tree trunks of various deciduous trees, including alder (*Alnus glutinosa*), N. Johansson leg. et det.

*Xiphydria picta* (Figs 5, 6A–B, D) was described from specimens from Switzerland (Saas Valley) and



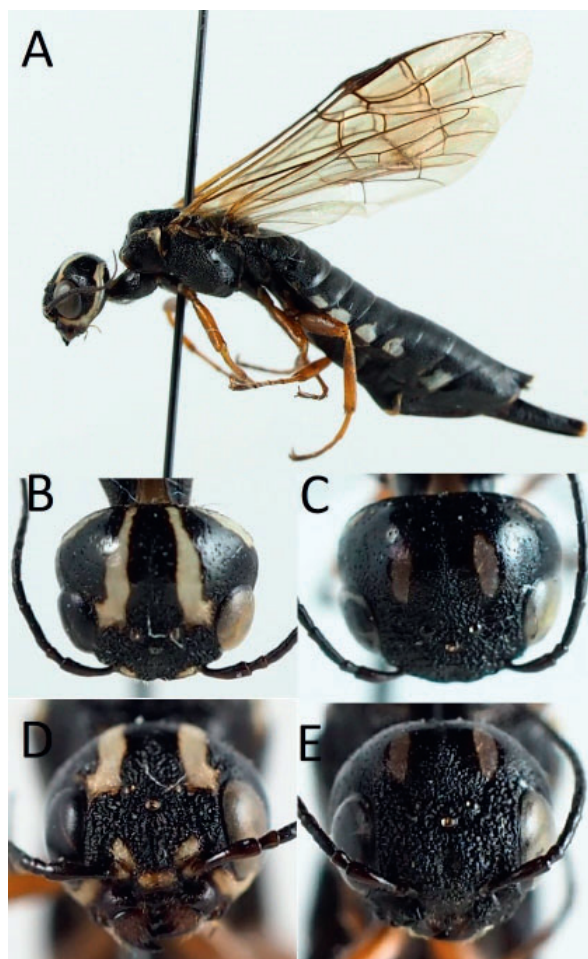


Figure 6. A) Female *Xiphydria picta* Konow, 1897, habitus lateral view; – B) female *Xiphydria picta*, head dorsal view; – C) female *Xiphydria camelus* (Linnaeus, 1758); head dorsal view; – D) female *Xiphydria picta*, head anterior view; – E) female *Xiphydria camelus*, head anterior view. Photo: Niklas Johansson

Figur 6. A) Hona av *Xiphydria picta* Konow, 1897, habitus i sidovy; – B) hona av *Xiphydria picta*, huvud ovanifrån; – C) hona av *Xiphydria camelus* (Linnaeus, 1758), huvud ovanifrån; – D) hona av *Xiphydria picta* huvud framifrån; – E) hona av *Xiphydria camelus*, huvud framifrån. Foto: Niklas Johansson

Western Caucasus (The village Utsch-Dère) (Taeger et al. 2018). It occurs primarily in mountainous regions in central Europe and is recorded from Russia, Ukraine, Romania, France, Austria, Switzerland, Italy, Spain and Hungary (Kravchenko 1972, Vas 2015, Taeger & Blank 2019a). From Northern Europe it is reported from Sweden and Finland (www.dyntaxa.se, Hyvärinen et al. 2019), but no records are known from Denmark or Norway. It seems to be rare throughout its

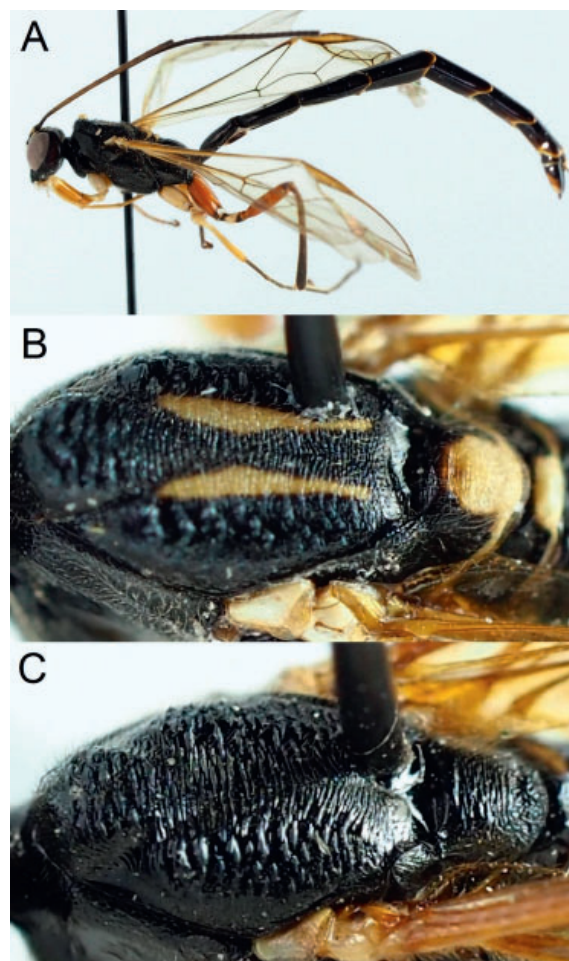


Figure 7. A) Male *Rhyssella obliterata* (Gravenhorst, 1829), habitus lateral view; – B) male *Rhyssella obliterata*, mesoscutum and scutellum, dorsal view; – C) male *Rhyssella approximata* (Fabricius, 1793), mesoscutum and scutellum, dorsal view. Photo: Niklas Johansson.

Figur 7. A) Hane av *Rhyssella obliterata* (Gravenhorst, 1829), habitus från sidan; – B) hane av *Rhyssella obliterata*, mesoscutum och skutell, ovanifrån; – C) hane av *Rhyssella approximata* (Fabricius, 1793), mesoscutum och skutell, ovanifrån. Foto: Niklas Johansson.

distribution and in Finland it is classified as vulnerable (VU) in the national red list (Hyvärinen et al. 2019). In Sweden it is listed as DD (Data deficient) (ArtDatabanken 2015), which reflects the fact that the species is rarely recorded and presumed to be suffering from loss of habitat. *Xiphydria picta* is similar to, and easily mistaken for the common *X. camelus* (Linnaeus, 1758) and is usually distinguished on the richer pale markings on the head and face (Figs 6B–E). The white stripes

dorsally on the head reaches, or almost reaches, the inner margin of the eye in *X. picta* and the face usually has distinct white spots above the antennal scrobes and above the clypeus (Figs 6B, D). As the extension of the pale markings are variable a thorough examination of the face is needed to make an accurate determination. In *X. picta* there is an apparent furrow between the clypeus and the face, while the area between clypeus and face is more evenly convex in *X. camelus*. Another species that *Xiphidria picta* may be confused with is *X. longicollis* Geoffroy, 1785, a species living in branches and trunks of oak. *Xiphidria longicollis* has not yet been recorded from Scandinavia, but is distinguished from *X. picta* by having the pale markings on the body and legs yellow. Kravchenko (1972) states that the females of *X. picta* prefer to oviposit in trunks or branches with a diameter between 4 and 40 cm, growing on sun-exposed riverbanks and in sparse forests with 10–30% canopy cover.

***Rhyssella obliterata* (Gravenhorst, 1829)**

**Up:** Uppsala, Nåsten, 6.viii.1980, 1♂, cZU-kursinsamling, L. Hedström det., N. Johansson conf. (UPSZ); **Sm:** Bäckebo: Mjösingsmåla, Landmadshistret, 1.vi–1.vii.2015, 1♀ in Malaise trap in open clear cut close to riverside forest. N. Johansson leg. et det.; Bäckebo: Ljustoan, 15–30.v.2018, 1♂ in Malaise trap in small clearing in old deciduous forest rich in dead wood adjacent to wet forest, O. Persson leg., N. Johansson det.; Bäckebo: Bjällingsmåla Nature reserve, 15–30.v.2018, 5♂♂ hatched from a shaded standing dead trunk of alder (*Alnus glutinosa*) in an old wet forest rich in dead wood O. Persson leg., N. Johansson det.

*Rhyssella obliterata* (Figs 7A–B) was relatively recently reported as new to Sweden from a single male collected in the province of Uppland (Hedström, 1988). Additionally, several specimens have during the last years been collected in Hornsö-Allgunnen, a small area in Nybro municipality in the province of Småland, an area known for its high biodiversity of saproxylic insects (see also *Xiphidria betulae*) (Nilsson & Huggert 2001, Johansson 2015). *Rhyssella obliterata* is not recorded from any other Nordic country so far. The only known host seems to be *Xiphidria picta* (Kasparyan 1981) and the known distribution covers the

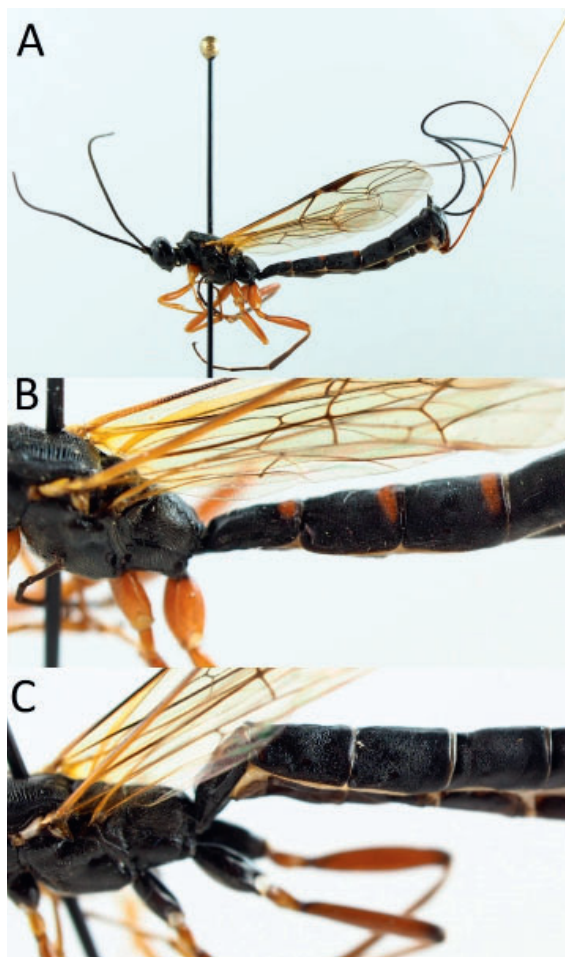


Figure 8. A) female *Pseudorhyssa alpestris* (Holmgren, 1860), habitus lateral view; – B) female *Pseudorhyssa alpestris* part of metasoma and mesosoma laterodorsal view; – C) female *Pseudorhyssa nigricornis* (Ratzeburg, 1852) part of metasoma and mesosoma laterodorsal view. Photo: Niklas Johansson.

Figur 8. A) Hona av *Pseudorhyssa alpestris* (Holmgren, 1860), habitus, från sidan – B) hona av *Pseudorhyssa alpestris*, del av mellankropp och bakkropp snett från sidan/ovanifrån; – C) hona av *Pseudorhyssa nigricornis* (Ratzeburg, 1852), del av mellankropp och bakkropp snett från sidan/ovanifrån. Foto: Niklas Johansson.

West Palearctic with records from Armenia, Austria, Belarus, Croatia, Czech Republic, France, Germany, Hungary, Latvia, Macedonia, Montenegro, Poland, Romania, Russia, Serbia, Sweden and Ukraine (Zwakhals 2019a). *Rhyssella obliterata* is distinguished from the common *R. approximata* (Figs 1, 7C) by the yellow markings on the mesoscutum and scutellum (Fig. 7B). The



species can be determined using Broad et al. (2018) (subfamily level) and Fitton et al. (1988) (genus level) while Kasparyan (1981, in Russian) separates *Rhyssella approximata* and *R. obliterata*.

***Pseudorhyssa alpestris* (Holmgren, 1860)**

**Ög:** Linköping: Gunnarsbo, 1989, 1♀ in window trap on fallen trunk of oak, *Quercus robur*, L. Eldefors leg. et det. (Eldefors 2007); **Up:** Bladåker: Björnsundet, 1.v.2006, 4♂♂ in burned clear cut, hatched from large branch of birch (*Betula* sp.) together with *X. camelus*, O. Hedgren leg. et det. (www.artportalen.se); **Hs:** Rogsta: Ekopark Hornslandet, 1.v.–1.vii.2012, 1♀ in window trap on high stump of birch (*Betula* sp.) in clear cut, M. Larshagen/Sveaskog leg., N. Johansson det.; **Sm:** Bäckebo: Bjällingsmåla, 1.v.–15.viii.2015, 3♀♀ in Malaise trap at large pile of wood debris in semi-open mixed forest, N. Johansson leg. et det.; Målilla: Östra Årena, 22.vi.2016, 3♀♀ on dead common alder (*Alnus glutinosa*) with *Xiphydria picta* and *Rhyssella approximata*, N. Johansson leg. et det. **Unspecified:** 1♀ “col. Ros” in coll. Thomson in MZLU, probably of Swedish provenience.

*Pseudorhyssa alpestris* (Figs 8A–B) was, as *Rhyssella obliterata*, quite recently reported from Sweden for the first time (Eldefors 2007). It has since then been recorded from several regions, indicating that it is a rare, but rather widespread species that possibly occurs over most of the geographical distribution range of its Xiphydriidae and Ichneumonidae hosts. The record by Eldefors might, however, be preceded by one female in coll. Thomson in MZLU. The specimen bears the label “col. Ros” which according to Mattias Forshage is considered to be a part of the “Rosén-enigma”, represented by several specimens in the MZLU (M. Forshage pers. com.). The identity of the collector is still unknown, but the specimens are probably of Swedish origin. *Pseudorhyssa alpestris* is also known from Finland, where it is classified as near threatened (NT) on the national red list (Hyvärinen et al. 2019), Denmark and Norway (Holmgren, 1860). Its European distribution covers most of Northern and Central Europe and apart from the Nordic countries, the species is also recorded from Austria, Great Britain, Russia, Czech Republic, France, Germany, Hungary, Poland, Romania and the Netherlands (Zwakhals 2019b).

Observations of the species have been made on a dead *Alnus* trunk which housed *Xiphydria picta*, where several females of *P. alpestris* occurred together with *Rhyssella approximata*, possibly indicating that *X. picta* is also parasitized, primarily and secondarily, by *R. approximata* and *P. alpestris*. While the other European species of the genus, *Pseudorhyssa nigricornis* (Ratzeburg, 1852) (Fig. 8C) is a documented cleptoparasite of the common woodland ichneumonid *Rhyssa persuasoria* (Linnaeus, 1758), which parasitizes Siricidae wasps in coniferous trees (Spradbery 1969, Spradbery 1970), *P. alpestris* (Holmgren, 1860) seems to use only *Rhyssella* species, usually the more common *R. approximata* (Skinner & Thomson 1960, Fitton et al. 1988, Varga 2015). *Pseudorhyssa alpestris* is distinguished from *P. nigricornis* by the presence of red triangular marks at the base of the first three abdominal terga (Fig. 8B). The species can be determined using Broad et al. (2018) (subfamily level) and Fitton et al. (1988) (genus level) while Kasparyan (1981, in Russian) separates *Pseudorhyssa alpestris* and *P. nigricornis*.

## Discussion

Three of the four species presented in this paper, *Xiphydria picta*, *Rhyssella obliterata* and *Pseudorhyssa alpestris* seem to depend on deciduous forests rich in dead wood. Most of the records have been made either in nature reserves or in areas that are managed in a way that maintain biodiversity by active conservation measures, so called “ecoparks” (www.sveaskog.se/upplev-skogen/besöksraden). The conservation management in the ecoparks, which to some extent is combined with commercial forestry, aims at recreating areas of biologically rich forests by mimicking natural disturbance regimes such as fire, flood and wind, which continuously would create suitable habitats for Xiphydriidae wasps and their parasitoids in an unmanaged environment. While *Xiphydria picta* and *Rhyssella obliterata* seem to be directly dependent on habitats of high quality, i.e. the abundance of sunexposed dead wood of alder, the presumed rarity of *X. betulae* might be explained by yet another unknown ecological factor which possibly involves the interactions between the wasp and its fungal symbiont.

The hyperparasitoid *Pseudorhyssa alpestris* faces another challenge. This species is mainly



associated with a host (*R. approximator*) that is rather common in Sweden, but evidently suffers from being at a high trophic level which is very sensitive to changes in the composition of the ecosystem (Shaw & Hochberg 2001). The competition from other parasitic wasps specialized on *Xiphydria*, such as *Aulacus striatus* Jurine, 1807 and *Xiphydriophagus meyerinckii* (Ratzeburg, 1848) (Skinner & Thomson, 1960), is probably a factor that indirectly regulates the population of *P. alpestris*. This, in combination with the high biological qualities of the known localities, indicates that *P. alpestris* may be another species that require similar amounts of suitable habitat on a landscape level as the three species mentioned above. A similar pattern of abundance can also be observed in the related *Pseudorhyssa nigricornis*, a species that also has the role of hyperparasitoid at the top of a trophic chain of fairly common saproxylic wasps and their primary parasitoids (*Siricidae* and the ichneumonid wasp *Rhyssa persuasoria*), but still seems to be rare in Sweden and only occurs in areas with mature coniferous forests rich in dead wood.

This indicates that viable populations of *X. picta*, *P. alpestris* and *R. obliterated* could be used as indicators for areas with sustainable forestry regarding the amount of deciduous forests rich in dead wood on a landscape level. The still enigmatic habitat requirements of *X. betulae* makes it hard to draw any definitive conclusions regarding its role as an indicator, but possibly it benefits from sun-exposed high stumps of birch, where the dying trees provide suitable food for the larvae. The new records presented here again highlights the Ekopark Hornsö and adjacent areas as a northern European hotspot for biodiversity. Given the large amount of rare and threatened species occurring in the region, it would be an obvious priority for the Swedish Government to start an investigation to appoint the region as a National Park, thereby ensuring its valuable and unique nature for future generations.

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### Sammanfattning

Halsstekeln *Xiphydria betulae* (Enslin, 1911) rapporteras som ny för Sverige genom en hona insamlad på en björkhögstubbe i Ekopark Hornsö. Samtliga svenska fynd av den sällan noterade svenska släktingen *X. picta* Konow, 1897 presenteras också. Halssteklarna parasiteras i Sverige av flera arter av storväxta brokparasitsteklar av släktena *Rhyssella* och *Pseudorhyssa*. Medan de båda arterna av *Rhyssella*, *R. approximator* (Fabricius, 1793) och *R. obliterated* (Gravenhorst, 1829) är primärparasitoider på *Xiphydria camelus* (Linnaeus, 1758) respektive *X. picta* är *Pseudorhyssa alpestris* (Holmgren, 1860) en hyperparasitoid som nyttjar borrhålen efter *Rhyssella*-arterna för att placera sina ägg på den redan infekterade *Xiphydria*-larven där larven av *Pseudorhyssa* dödar och förtär parasiten och sedan själv tillgodogör sig det födoförråd som halsstekelns larv utgör. Aktuella svenska fynd av *Rhyssella obliterated* och *Pseudorhyssa alpestris* presenteras och kommenteras översiktligt. *Xiphydria picta*, *R. obliterated* och *P. alpestris* förefaller samtliga vara beroende av en hög andel lövskogar, företrädesvis med gott om död ved på landskapsnivå och utgör potentiellt goda indikatorer för ett hållbart skogsbruk med avseende på bevarandet av vedlevande arter knutna till triviallövskogar och lövsumpskogar.