Status of *Aeshna serrata* in Denmark

N. Bell, E. Dylmer & K. Olsen

Introduction

Aeshna serrata (Hagen, 1856) is known in Asia from the Russian Federation and Mongolia. In Europe, it is primarily found along the Baltic coastal area in Estonia, Finland and Sweden, and locally, away from the coast, in the remaining Fenno-Scandinavia. So *A. serrata* is distributed throughout a relatively wide geographical range (Dijkstra & Lewington 2006, Kalkman 2010, Kalnins 2011, Billqvist et al. 2012). *Aeshna serrata* is the most common Anisoptera in central and western Mongolia (Peters 1987). The species also occurs in West-Siberia, northern Kazakhstan and in the western part of China (Peters 1987). The occurrence of this species is regularly linked with the steppe belt across the Asian Continent (Peters 1987, Kosterin 1999). Its southern distribution in Asia is poorly known. The species was only recently discovered in Kyrgyzstan (Schröter 2010). Old records exist from eastern Turkey (Kalkman & van Pelt 2006) and from the Caucasus (Schröter 2010), indicating a fragmented southern fringe with small scattered and isolated populations.

During at least the last two decades, the species has expanded its range westwards across the Swedish mainland where it now inhabits mesotrophic or eutrophic freshwater habitats (Billqvist et al. 2012). Additionally, there is an unconfirmed report from Norway from 1995 (Olsvik 1996). In 2006 *A. serrata* was found in Denmark. This paper lists and describes the first confirmed records of *A. serrata* in Denmark, and evaluates its current status and distribution in Denmark.

Sightings of *Aeshna serrata* in Denmark

The first confirmed record of *A. serrata* in Denmark was reported from Han Vejle in 2006 when a fully mature female was found floating on the water in between stems of *Phragmites*. This could indicate that the female had been misfortunate while ovipositing, but after being assisted out of the water and photographed, it soon flew away (pers. comm. K. Søndergaard). The species has not been registered in 2007 and 2008, but since 2009 it has been reported from Han Vejle annually. An overview of the first confirmed record of *A. serrata* for each known locality in Denmark is presented in Table 1. The second locality where *A. serrata* was found is Bygholm Vejle. This area is interconnected with Han Vejle and contains the largest *Phragmites* stands in northern Europe, with a mosaic of clear

Table 1. List of the first confirmed records of Aeshna serrata *for each known locality in Denmark. See Figure 1 for a geographical overview of the sites and the website http://www.fugleognatur.dk/naturbasen.aspx for an up-to-date list of all the verified records from each locality.*

Overzicht van de eerste bevestigde waarnemingen van de Getande glazenmaker (*Aeshna serrata*) per locatie in Denemarken. De ligging van de verschillende locaties wordt weergegeven in figuur 1. Een actueel overzicht van alle waarnemingen per locatie is te consulteren op de website http://www.fugleognatur.dk/naturbasen.aspx.

Date	Locality	Obs.	Name
13.viii.2006	Han Vejle*	1♀	Kirsten Søndergaard leg.
20.viii.2010	Bygholm Vejle*	1♀	Jørgen Peter Kjeldsen leg.
10.vii.2011	Bulbjerg	40 ♀♂	Henrik H. Søndergaard leg.
20.vii.2011	Østerild Plantage	1♂	Nicholas Bell leg.
20.vii.2011	Hjardemål Klitplantage	1♀	Nicholas Bell leg.
26.vii.2011	Feggeklit Strand	1♀	Claus Lunde leg.
04.vii.2012	Lild Strand	1♂	Jørn Skeldahl leg.

*Denotes sub-localities within Vejlerne where the species has been found regularly.

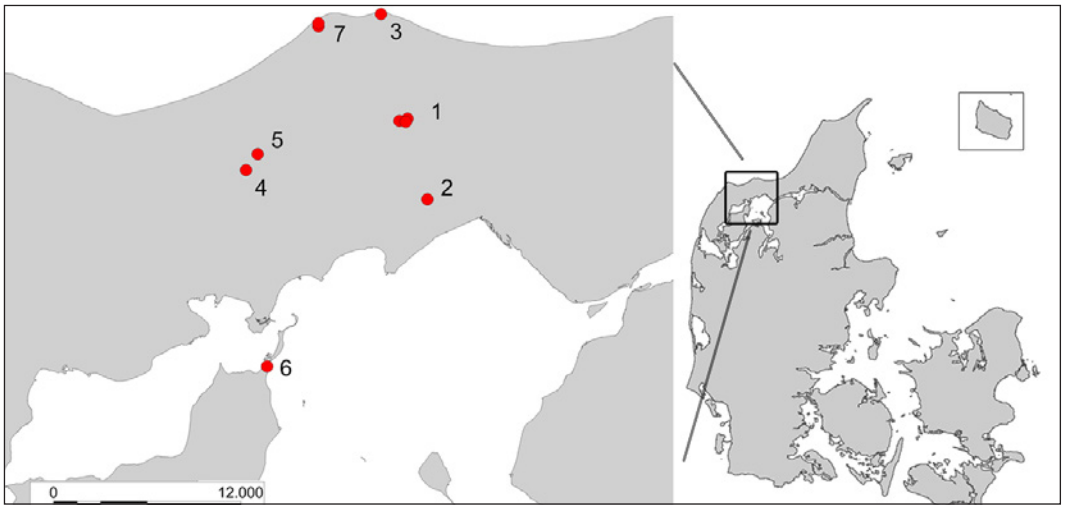

Figure 1. Map showing the geographic distribution of Aeshna serrata *in Denmark in 2006-2012. Numbers on the map denote localities as following: 1. Han Vejle, 2. Bygholm Vejle, 3. Bulbjerg, 4. Østerild Klitplantage, 5. Hjardemål Klitplantage, 6. Feggeklit Strand, and 7. Lild Strand.*
Verspreidingskaart van de Getande glazenmaker (*Aeshna serrata*) in Denemarken, gebaseerd op de waarnemingen in 2006-2012. De cijfers op de detailkaart verwijzen naar volgende locaties: 1. Han Vejle, 2. Bygholm Vejle, 3. Bulbjerg, 4. Østerild Klitplantage, 5. Hjardemål Klitplantage, 6. Feggeklit Strand en 7. Lild Strand.

water lakes and reed beds. Based on the habitat characteristics and the presence in Han Vejle, it was no surprise that *A. serrata* was recorded there in 2010. The reason that the species was not registered previously could be that Bygholm Vejle is part of the Vejlerne Nature Reserve and is not publicly accessible. The record of *A. serrata* from Bulbjerg dates of 2011 when approximately 40 individuals, many in tandem or wheel formation, were observed. They were resting low in the vegetation some 700 metres away from the nearest waterbodies beside the sea, Skagerrak Strait and the North Sea (pers. comm. H. H. Søndergaard & F. Thomsen).

The records from Østerild Plantage and Hjardemål Klitplantage from 2011 both relate to single sightings of imagines resting low in dense grass and sedge vegetation. When approached they both immediately flew away from the areas (pers. obs. N. Bell). All freshwater habitats in the near vicinity of these two sightings consisted more or less of temporary ponds with shallow water and low sedges and grasses covering most of the water surface. The same fleeting behaviour was also reported for a single individual at Feggeklit Strand (pers. comm. C. Lunde) in the same year. The water bodies at Feggeklit Strand are brackish, as a result of being very close to the Limfjord, a fjord connecting the North Sea to the Kattegat. Several of the shallow water areas have dense macrophyte growth, dominated by *Phragmites*. Lild Strand holds several clear water oligo-mesotrophic ponds (Natura 2000 type 3110: 'Oligotrophic base-poor to acidic waters, with growth of *Litorella* and *Lobelia'*) with beds of submerged aquatic plants. A single individual was seen at Lild Strand in 2012.

Range

In recent decades, the overall range in Sweden has significantly increased as the species has expanded westwards across the mainland; i.e. it used to be found only at coastal habitats in eastern Sweden, but now findings are being reported from all across the mainland to Västergötland on the west coast (Billqvist et al. 2012, Kalkman 2010). The sighting in Norway in 1995 (Olsvik 1996) is plausible, but has not been confirmed since and as such, no populations are currently known from Norway. The records in Denmark are therefore a likely result following a possible case of jump dispersal by individuals from the westward expanding Swedish populations.

Figure 2. Male Aeshna serrata *from Han Vejle, Denmark, 21 August 2009 (Photo: Erik Dylmer).*
Mannetje Getande glazenmaker (*Aeshna serrata*) te Han Vejle, Denemarken, 21 augustus 2009.

Biology

A. serrata typically inhabits mesotrophic and eutrophic freshwater habitats with aquatic plant communities being dominated by *Phragmites* and *Cyperaceae* species (Billqvist et al. 2012, Dijkstra & Lewington 2006). In the Baltic-European range the water is often found to be slightly brackish. *A. serrata* emerges in Fenno-Scandinavia by late June and the flight season typically ends in late September. However, the peak of the flight activity is in July (Peters 1987). Males are known to establish and defend territories within and along the reed beds, but like most other *Aeshnidae* species they also temporarily move away from the water bodies to mate, search for food and find day and night roosting sites. *A.serrata* can thus regularly be found in open habitats far away from their territories and breeding habitat. Females oviposit endophytically, as do most Aeshnidae, and use plant material such as stems of *Phragmites*. The larvae have a semivoltine development.

The status of *Aeshna serrata* in Denmark

Of the localities where the species has been observed (Table 1), Han Vejle is the only site where *A. serrata* has been recorded regularly and in high numbers. This site is part of the nature reserve Vejlerne that is the largest bird sanctuary in Northern Europe. It covers an area of about 6000 ha and consists of marsh and wetlands with a mosaic of meadows, fresh water and brackish water. According to habitat requirements for *A. serrata* reported in Billqvist (2012), the brackish water bodies with dominance of *Phragmites* and bulrush species form a suitable habitat for *A. serrata*. Along with the numerous observations of imagines being reported since 2009, we can assume that Vejlerne hosts a healthy, viable population of *A. serrata* and is probably also the origin from where the species expands to other nearby suitable habitats.

In late July 2005, several large Aeshnids were sighted through binoculars foraging above the dense *Phragmites* stands in an area of Han Vejle. At that time they were thought to be *Aeshna juncea*, both because of the habitat, their flight behaviour and their markings, but the identification could not be verified as none were caught or seen well enough through binoculars (K. B. Fries & K. Olsen, pers. comm.). Because *A. juncea* has never before or since been confirmed to occur in Han Vejle or on nearby localities, it is thus plausible, though not definite, that these

Figure 3. Male Aeshna serrata *from Han Vejle, Denmark, 21 August 2009 (Photo: Kent Olsen).*
Mannetje Getande glazenmaker (*Aeshna serrata*) te Han Vejle, Denemarken, 21 augustus 2009.

Aeshnids were *A. serrata*. Either way it is highly unlikely that the single female observed in 2006 was a "founding individual" as the species was abundant already in 2009. It is very likely that *A. serrata* had already been present for some years in Han Vejle, and simply was not recorded earlier, both because of the large areas with restricted public access, and because it was a locality not often visited by odonatologists. Visits in search of this species in 2007 and 2008 were without success (pers. comm. H.H. Søndergård). Possible reasons could be that it was only present in the areas with restricted access, or the overall population size was much smaller than today, or the timing of each visit was wrong, or a combination of these causes.
Of the mentioned localities with confirmed findings of *A. serrata*, the only place that seems suitable for reproduction, besides Vejlerne, are the water bodies at Feggeklit on the island Mors, fifteen kilometres south of Han Vejle. These should be revisited in the coming season to determine whether a population is already present or if the specimen observed was a vagrant individual. The high numbers of imagines found in the coastal dunes near Bulbjerg and the lack of information about the nearby water bodies warrants a search for the species there also. All in all, Denmark has a long coastline and along this, there are many meso-eutrophic lakes with brackish or fresh water, and with a rich occurrence of aquatic plants such as *Phragmites* and *Typha* species. It stands to reason that Denmark has many areas suitable for *A. serrata*, and can potentially support several populations. The current status of *A. serrata* in Denmark is rare, but it is also probably overlooked, because the habitat is not often visited by odonatologists in late summer. A search for new *A. serrata* habitats in Denmark and especially northern Jutland will, without doubt, result in new records and thus contribute to a more accurate knowledge of its national distribution.

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Summary

Bell, N., E. Dylmer & K. Olsen 2014. Status of *Aeshna serrata* in Denmark. Brachytron 16(1/2): 38-42.

Aeshna serrata (Hagen, 1856) is known from a relatively wide geographical range, though in Europe it is mainly confined to the Baltic coastal area in Estonia, Finland and Sweden. *Aeshna serrata* is typically found in mesotrophic and eutrophic freshwater or brackish habitats with dense *Phragmites* and bulrush (Cyperaceae) beds. A. serrata was first found in Denmark in 2006 in a typical habitat for *A. serrata* and has since then been found repeatedly at the same locality. There are also single records from other localities in the same region from 2010-2012. The species is rare in Denmark but very likely overlooked. A search for new *A. serrata* habitats in Denmark will without doubt result in new records and a more accurate knowledge of its national distribution.

Samenvatting

Bell, N., E. Dylmer & K. Olsen 2014. Status van Getande glazenmaker (*Aeshna serrata*) in Denemarken. Brachytron 16(1/2): 38-42.

De Getande glazenmaker (*Aeshna serrata*) heeft een groot verspreidingsgebied in Azië. In Europa daarentegen komt de soort vooral voor langs de Baltische kust in Estland, Finland en Zweden. De soort wordt meestal gevonden in matig voedselrijke tot voedselrijke plassen, zowel in zoet als in brak water. De plassen worden gekenmerkt door een dichte rietvegetatie. De Getande glazenmaker werd voor het eerst gevonden in Denemarken in 2006 in een dergelijk habitat. Sindsdien word de soort daar regelmatig waargenomen. Verder zijn er ook nog eenmalige waarnemingen bekend uit de periode 2010-2012 van andere locaties in dezelfde regio. De Getande glazenmaker is een zeldzame soort in Denemarken maar is hoogst waarschijnlijk talrijker dan nu bekend is. Gericht zoeken naar de soort in zijn habitat in Denemarken zal ongetwijfeld leiden tot meer vindplaatsen en zal zo resulteren in een betere kennis van zijn verspreiding.

Keywords: Odonata, *Aeshna serrata*, Anisoptera, Aeshnidae, Denmark.