

of biting midges (*Culicoides* sp.)

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Introduction

Biting midges (Diptera, Ceratopogonidae, *Culicoides* Latreille) are vectors of more than 50 arboviruses of animals and humans incl. Bluetongue Virus (ruminants), Epizootic Haemorrhage Disease Virus (deer) and African Horse Sickness Virus.

Information regarding the presence and activity of potential vectors and host species is important in order to take preventive measure against vector-borne diseases e.g. risk models.

Hypothesis

- Biting midges are opportunistic in their blood meal host choice.

Table 1: Biting midge species (*Culicoides* sp.) and their molecular identified blood meal hosts. No mixed blood meals were observed. N = 321. Blue are mammals, pink are birds.

	Roe Deer	Cattle	Horse	Goat	Human	Mouse	Red Deer	Sheep	Marsh Warbler	Wood Pigeon	Magpie	Tree Sparrow	Blackbird	Jay	Mallard
<i>C. chiopterus</i>	•		•								•				
<i>C. circumscriptus</i>						•							•		•
<i>C. deltus</i>	•														
<i>C. dewulfi</i>	•					•									
<i>C. duddingstoni</i>													•		
<i>C. festivipennis</i>											•				
<i>C. furcillatus</i>	•														
<i>C. kibunensis</i>	•										•	•			
<i>C. obsoletus</i>	•	•	•	•	•	•	•	•	•	•	•	•			•
<i>C. pictipennis</i>													•		
<i>C. poperinghensis</i>	•														
<i>C. pulicaris</i>	•		•	•			•								
<i>C. punctatus</i>	•	•									•				•
<i>C. reconditus</i>													•		
<i>C. riethi</i>	•														
<i>C. salinarius</i>														•	
<i>C. scoticus</i>	•			•	•						•				•
<i>C. vexans</i>	•	•				•									



Figur 1: Blood-fed biting midges (*Culicoides obsoletus*). Photo by Søren Achim Nielsen.

Method

Biting midges were collected by UV-light traps in Denmark during a biting midge season. Most traps were located near cattle, either inside stables or by pastures. One trap was located in a small forest.

DNA were extracted from blood-fed females and used as templates for molecular identification of both the biting midge species (bar coding, mtDNA COI) and the blood meal (*Cytochrome b*) (Lassen et al., 2011a).

Results

The blood meal host range of biting midges consisted of 17 species (8 mammals and 9 birds).

No less than 18 biting midge species were collected blood-fed. A few species collected are still have still to be identified.

Conclusions

- Most biting midge species are opportunistic in their blood meal choice, but prefer cattle when present.
- Some biting midge species may be said to be ornithophilic or mammalophilic.
- *Culicoides obsoletus*, which is a known Bluetongue Virus vector in all of Europe, is the most opportunistic species in Denmark.

References

- Lassen SB, Nielsen SA, Skovgård H & Kristensen M (2011a). Molecular identification of bloodmeals from biting midges (Diptera, Ceratopogonidae: *Culicoides* Latreille) in Denmark. *Parasitol Res* 108:823-829. DOI 10.1007/s00436-010-2123-4.
- Lassen SB, Nielsen SA, Skovgård H & Kristensen M (2011b). Molecular differentiation of *Culicoides* biting midges (Diptera: Ceratopogonidae) from the subgenus *Culicoides* Latreille in Denmark. *Parasitol Res* (in press) DOI 10.1007/s00436-011-2697-5.