

## Fleas of Estonia: a taxonomic checklist (Insecta: Siphonaptera)

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Data on Estonian Siphonaptera have been scattered across various old and obscure publications, making them largely inaccessible to a wider international audience. We present an up-to-date, literature-based checklist of 38 Siphonaptera species occurring in Estonia.

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## Introduction

Fleas (Insecta: Siphonaptera) are the only holometabolous insect order in which all members are wingless. They are obligate parasites of mammals and birds. Over 2,200 flea species are known worldwide (Bossard et al. 2023), with more than 900 recorded in the Palaearctic Region (Medvedev 2014). In Fennoscandia, 69 species or subspecies have been documented (Brinck-Lindroth & Smit 2007). Due to their parasitic lifestyle, fleas can act as vectors of multiple diseases. Therefore, understanding and monitoring their diversity is of utmost importance.

Data on Estonian fleas (Insecta: Siphonaptera) are scattered across various sources, primarily published in local journals or in publications with a specialized parasitology focus. Additionally, several sources published before the 2000s are in Estonian or Russian, making them inaccessible to a broader international audience. The Estonian biodiversity database lists altogether 27 flea species including 24 preserved specimens, 2 observa-

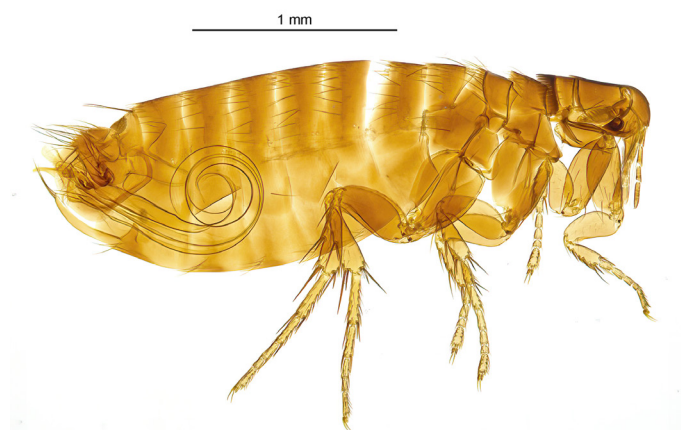
tions and 32 literature references (eElurikkus 2025). Pototski (1990a) mentioned 36 species recorded in Estonia but without any particular data. There is no checklist of Estonian Siphonaptera published so far.

The aim of the present paper is to provide a complete checklist of Estonian Siphonaptera based on all published literature or databased occurrences to date.

## Results

The present survey was initiated out of a practical need to gain an overview of Estonian Siphonaptera species as part of the first author's bachelor thesis (Tammsoo 2025). The thesis focused on studying invertebrate diversity in the nests of cavity-breeding passerine birds in Estonia, with particular emphasis on parasites — among which fleas were the dominant group. Despite their high abundance, only a single species, the hen flea *Ceratophyllus gallinae* (Schrank, 1803), was recorded (Fig. 1). However, all available published information on Estonian Siphonaptera was compiled, and a taxonomic checklist is presented below.

The classification used in the following species list follows Brinck-Lindroth & Smit (2007). The subspecies rank is not applied, as it is absent in most of the original data on Estonian Siphonaptera and therefore cannot be reliably assigned. Additionally, the voucher material for these historical records has not survived or is unavailable for re-examination. However, if a subspecies level has been used in the original publication, it is referred to in parentheses. Literature sources, with exact page references, are provided in chronological order; if a synonymous name is used, it is given in parentheses.



**Fig. 1.** *Ceratophyllus gallinae*, the only flea species recorded from nests of cavity-breeding passerine birds in Estonia (Tammsoo 2025).

## List of species

## Order Siphonaptera

## Family Hystrihopsyllidae Tiraboschi, 1904

1. *Hystrihopsylla talpae* (Curtis, 1826)

Dampf 1926: 385; Seidel & Bischofstal, 1937: 106; Jacobson 1940: 112; Vilbaste 1959: 60; Daiter 1961: 133; Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 29.

## Family Ctenophthalmidae Rothschild, 1915

2. *Ctenophthalmus agyrtes* (Heller, 1896)

Dampf 1926: 383; Seidel & Bischofstal 1937: 108; Jacobson 1940: 112; Vilbaste 1959: 60; Daiter 1961: 132; Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 26.

3. *Ctenophthalmus bisocodentatus* Kolenati, 1863

Dampf 1908: 33; 1926: 383; Seidel & Bischofstal 1937: 107; Jacobson 1940: 112; Pototski 1990a: 180; Brinck-Lindroth & Smit 2007: 43; Kitrytė & Baltrūnaitė 2023: 27; Vashchonok 1996: 418.

4. *Ctenophthalmus uncinatus* (Wagner, 1898)

Vilbaste 1959: 60; Daiter 1961: 133; Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 27; Medvedev & Stanyukovich 2022: 145.

5. *Ctenophthalmus assimilis* (Taschenberg, 1880)

Pototski 1990a: 180; 1990b: 100; Brinck-Lindroth & Smit 2007: 46; Kitrytė & Baltrūnaitė 2023: 27.

6. *Palaeopsylla soricis* (Dale, 1878)

Dampf 1926: 385 (as *P. sorecis* (Dale)); Jacobson, 1940: 112 (as *P. sorecis* (Dale)); Vilbaste 1959: 60 (as *P. sorecis starki* Wagn.); Daiter 1961: 133 (as *P. sorecis starki* Wagn.); Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 25.

7. *Doratopsylla dasyncema* (Rothschild, 1897)

Jacobson 1940: 112 (as *D. dasyncemus* Roths.); Vilbaste, 1959: 60 (as *D. dasyncemus* Roths.); Daiter 1961: 133; Vashchonok 1996: 419; Brinck-Lindroth & Smit 2007: 52; Kitrytė & Baltrūnaitė 2023: 28.

8. *Rhadinopsylla* (*Actenophthalmus*) *integella* (Jordan & Rothschild, 1921)

Vilbaste 1959: 60 (as *R. integella casta* Jord.); Daiter 1961: 133 (as *R. integella casta* Jord.); Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 28.

## Family Ceratophyllidae Dampf, 1908

9. *Ceratophyllus* (*Monopsyllus*) *sciurorum* (Schrank, 1803)

Silvere 1960: 177; Pototski 1989: 23 (as *Monopsyllus sciurorum*); 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 24 (as *Monopsyllus sciurorum*).

10. *Ceratophyllus* (*Ceratophyllus*) *gallinae* (Schrank, 1803)

Silvere 1960: 177; Daiter 1961: 130.

11. *Ceratophyllus* (*Ceratophyllus*) *hirundinis* (Curtis, 1826)

Pototski 1990a: 180.

12. *Ceratophyllus* (*Ceratophyllus*) *farreni* (Rothschild, 1905)

Pototski 1990a: 180; Brinck-Lindroth & Smit 2007: 80.

13. *Ceratophyllus* (*Ceratophyllus*) *styx* (Rothschild, 1900)

Daiter 1961: 131; Brinck-Lindroth & Smit, 2007: 81.

14. *Ceratophyllus* (*Emmareus*) *garei* (Rothschild, 1902)

Vilbaste 1959: 60; Daiter 1961: 130; Pototski 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 22.

15. *Megabothris* (*Megabothris*) *walkeri* (Rothschild, 1902)

Vilbaste 1959: 60 (as *Ceratophyllus walkeri* Roths.); Daiter 1961: 131 (as *Ceratophyllus walkeri* Roths.); Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 23.

16. *Megabothris* (*Gebiella*) *turbidus* (Rothschild, 1909)

Dampf 1926: 382 (as *Ceratophyllus mustelae* Wagner, 1897); Seidel & Bischofstal 1937: 105 (as *Ceratophyllus mustelae* Schill., 1857); Jacobson 1940: 111; Vilbaste 1959: 60 (as *Ceratophyllus turbidus* Roths.); Daiter 1961: 131 (as *Ceratophyllus turbidus* Roths.); Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 23.

17. *Megabothris* (*Gebiella*) *rectangulatus* (Wahlgren, 1903)

Daiter 1961: 130 (as *Ceratophyllus rectangulatus* Wahlgren.); Brinck-Lindroth & Smit 2007: 92; Kitrytė & Baltrūnaitė 2023: 23; Vashchonok 1996: 415; Medvedev & Stanyukovich 2022: 142.

18. *Nosopsyllus* (*Nosopsyllus*) *fasciatus* (Bosc, 1800)

Jacobson 1940: 111; Vilbaste 1959: 59 (as *Ceratophyllus fasciatus* Bosc.); Daiter 1961: 129 (as *Ceratophyllus fasciatus* Bosc.); Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 24.

19. *Amalaraeus penicilliger* (Grube, 1851)

Jacobson 1940: 111 (as *Malaraeus penicilliger* Grube); Daiter 1961: 130 (as *Ceratophyllus penicilliger* Gr.); Pototski 1989: 23; 1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 21; Vashchonok 1996: 412; Medvedev & Stanyukovich 2022: 141.

20. *Dasypsyllus (Dasypsyllus) gallinulae* (Dale, 1878)  
Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 22.

21. *Tarsopsylla octodecimdentata* (Kolenati, 1863)  
Dampf 1926: 382 (as *Ceratophyllus uralensis* Wagner, 1897);  
Seidel & Bischofstal 1937: 106; Jacobson 1940: 111; Daiter  
1961: 129.

22. *Amphipsylla rossica* (Wagner, 1912)  
Pototski 1989: 23; 1990a: 180; 1990b: 100; Pototski et al.  
1993: 14; Brinck-Lindroth & Smit, 2007: 106; Kitrytė &  
Baltrūnaitė 2023: 21; Vashchonok 1996: 416.

23. *Leptopsylla (Leptopsylla) segnis* (Schönherr, 1811)  
Dampf 1908: 36 (as *Ctenopsyllus musculi* (Dugés, 1832)); Dai-  
ter 1961: 131; Pototski 1990b: 100; Pototski et al. 1993: 14;  
Kitrytė & Baltrūnaitė 2023: 22–23.

24. *Peromyscopsylla bidentata* (Kolenati, 1863)  
Vilbaste 1959: 60 (as *Leptopsylla bidentata* Kol.); Daiter 1961:  
131 (as *Leptopsylla bidentata* Kol.); Pototski 1989: 23; 1990b:  
100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė 2023: 26.

25. *Peromyscopsylla silvatica* (Meinert, 1896)  
Vilbaste 1959: 60 (as *Leptopsylla silvatica* Mein.); Daiter  
1961: 132 (as *Leptopsylla silvatica* Mein.); Pototski 1989: 23;  
1990b: 100; Pototski et al. 1993: 14; Kitrytė & Baltrūnaitė  
2023: 26.

#### Family Ischnopsyllidae Wahlgren, 1907

26. *Myodopsylla trisellis* Jordan, 1929  
Medvedev & Mazing 1987: 461; Vashchonok 1996: 421.

27. *Ischnopsyllus (Hexactenopsylla) hexactenus* (Kolenati,  
1856)  
Medvedev & Mazing 1987: 461; Vashchonok 1996: 420.

28. *Ischnopsyllus (Hirtopsylla) obscurus* (Wagner, 1898)  
Medvedev & Mazing 1987: 461; Vashchonok 1996: 420.

29. *Ischnopsyllus (Ischnopsyllus) elongatus* (Curtis, 1832)  
Medvedev & Mazing 1987: 461; Vashchonok 1996: 420.

30. *Ischnopsyllus (Ischnopsyllus) intermedius* (Rothschild,  
1898)  
Medvedev & Mazing 1987: 461; Vashchonok 1996: 420.

31. *Ischnopsyllus (Ischnopsyllus) simplex* Rothschild, 1906  
Medvedev & Mazing 1987: 461 (recorded two separate subs-  
pecies *I. simplex simplex* Rothschild, 1906 and *I. simplex mys-  
ticus* Jordan, 1942); Vashchonok 1996: 421.

32. *Ischnopsyllus (Ischnopsyllus) variabilis* (Wagner, 1898)  
Medvedev & Mazing 1987: 461; Vashchonok 1996: 421; Brin-  
ck-Lindroth & Smit 2007: 134.

#### Family Vermipsyllidae Wagner, 1889

33. *Chaetopsylla (Chaetopsylla) globiceps* (Taschenberg,  
1880)  
Estonian Naturalists' Society 2025 (a record in the GBIF data-  
base based on an observation).

#### Family Pulicidae Billberg, 1820

34. *Xenopsylla cheopis* (Rothschild, 1903)  
Daiter 1961: 129; Kitrytė & Baltrūnaitė 2023: 30.

35. *Pulex (Pulex) irritans* (Linnaeus, 1758)  
Jacobson 1940: 112; Daiter 1961: 129; Luig 1998: 106; Kitrytė  
& Baltrūnaitė 2023: 29–30.

36. *Archaeopsylla erinacei* (Bouché, 1835)  
Vashchonok 1996: 411.

37. *Ctenocephalides felis* (Bouché, 1835)  
Daiter 1961: 129.

38. *Ctenocephalides canis* (Curtis, 1826)  
Dampf 1908: 17 (as *Ctenocephalus canis* (Curt., 1826)); Daiter  
1961: 129.

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