

## Ticks (Acari: Ixodida) parasitizing birds (Aves) in Poland

KRZYSZTOF SIUDA, ANNA MAJSZYK and MAGDALENA NOWAK

Department of Invertebrate Zoology and Parasitology, Institute of Biology, Krakow Pedagogical University, Podbrzezie 3, 31-054 Kraków, Poland; e-mail: [siuda@ap.krakow.pl](mailto:siuda@ap.krakow.pl)

(Received on 2 January 2006, Accepted on 15 November 2006)

---

**Abstract:** Five ecological groups of tick species parasitizing birds in the Polish fauna are proposed, considering their host specificity: exclusively ornithophilous, generally ornithophilous, partly ornithophilous, accidentally ornithophilous, and non-ornithophilous. Lists of bird hosts of individual tick species within the above groups are presented.

**Key words:** Ixodida, ticks, bird parasites, host specificity, Polish fauna

### INTRODUCTION

Nineteen species of ticks (Acari: Ixodida) are recognized as permanent elements of the Polish fauna. The distribution of these ticks is presented in a monographic work (SIUDA 1993). Eleven other species have been introduced to our country on hosts, including 2 species on birds. From the tick species transferred to Poland, only 4 species whose transfer is regarded as natural (SIUDA et al. 2004), are discussed in this study. Most of the 866 ticks species described in the world fauna (HORAK et al. 2002) are widely or moderately host-specific, and a relatively small group of species show narrow host specificity (HOOGSTRAAL & AESCHLIMANN 1982).

The ticks occurring permanently in our country or naturally transferred to Poland include some species having birds as the only hosts and many species that are less host-specific, parasitizing other hosts than birds.

Information on Ixodidae and Amblyommidae feeding on birds in Poland was first summarized by SIUDA (1986a, b). Besides, 3 species of Argasidae occur in Poland, and 2 of them – *Argas (Argas) polonicus* and *A. (A.) reflexus* – parasitize birds (SIUDA 1993).

The aims of this study were: (1) to improve the ecological classification of tick species parasitizing birds on the basis of results of research on host specificity of ticks; and (2) to sum up the available information on ticks parasitizing birds in Poland.

## MATERIALS AND METHODS

Data from own research and from works of other authors on ticks parasitizing birds in Poland and published until the end of 2004 were analysed (JAROCKI 1825, SCHULZE & SCHLOTTKE 1929, LEHNERT 1933, SCHULZE 1933, RAFALSKI 1953, 1956, LACHMAJER et al. 1956, EMCHUK 1960, KOLPY 1963, KOZŁOWSKI et al. 1964, LACHMAJER 1967, 1977, PATAN 1969, GRZYWIŃSKI 1970, KAHL 1971, GRZYBEK et al. 1973, GRZYWACZ & KUŹMICKI 1973, WEGNER 1973, ŻUKOWSKI & BITKOWSKA 1973, FILIPPOVA 1977, 1997, KACZMAREK 1977, 1982a, b, 1988, NOSEK & FOLK 1977, SIUDA & DUTKIEWICZ 1979, SIUDA et al. 1979, 1982, KOLONIN 1983, SIUDA 1984, 1985, 1986a, b, 1991, 1993, HAITLINGER 1987, BUCZEK 1991, SIUDA & SZYMAŃSKI 1991, BUCZEK & SOLARZ 1993). Moreover, some reports from outside Poland were used (EMCHUK 1960, NOSEK & FOLK 1977, FILIPPOVA 1977, 1997, KOLONIN 1983).

## RESULTS

On the basis of the analysed data, we propose a new division of tick species of the Polish fauna according to their host specificity when parasitizing birds:

1. Exclusively ornithophilous ticks (with very narrow host specificity and parasitizing birds only): *Ixodes (Pholeoixodes) arboricola* Schulze et Schlottko, 1929, *Ixodes (Pholeoixodes) lividus* Koch, 1844, *Ixodes (Scaphixodes) caledonicus* Nuttall, 1910, *Ixodes (Trichotoixodes) frontalis* (Panzer, 1798).

2. Generally ornithophilous ticks (inhabiting birds as their main hosts, but sometimes attacking other vertebrates): *Argas (Argas) polonicus* Siuda, Hoogstraal, Clifford et Wassef, 1979, *Argas (Argas) reflexus* (Fabricius, 1794), *Ixodes (Ixodes) festai* Rondelli, 1926. The last species is not native to Poland (SIUDA 1993).

3. Partly ornithophilous ticks (immature stages parasitizing mostly birds, but imagines attacking other land vertebrates and humans): *Ixodes (Ixodes) persulcatus* Schulze, 1930, *Ixodes (Ixodes) ricinus* (Linnaeus, 1758), *Haemaphysalis (Aboimialis) punctata* Canestrini et Fanzago, 1877, *Haemaphysalis (Haemaphysalis) concinna* Koch, 1844, *Hyalomma (Euhyalomma) marginatum* Koch, 1844. The last species is not native to Poland (SIUDA 1993).

4. Accidentally ornithophilous ticks (parasitizing mainly vertebrate groups other than birds, but cases of their parasitism on birds have been also reported): *Ixodes (Exopalpiger) trianguliceps* Birula, 1895, *Ixodes (Pholeoixodes) crenulatus* Koch, 1844, *Ixodes (Pholeoixodes) hexagonus* Leach, 1815, *Ixodes (Ixodes) apronophorus* Schulze, 1924, *Dermacentor (Dermacentor) reticulatus* (Fabricius, 1794), *Dermacentor (Serdjukovia) marginatus* (Sulzer, 1776), *Rhipicephalus (Rhipicephalus) rossicus* Jakimov et Kohl-Jakimova, 1911. The last 2 species are not native to Poland (SIUDA 1993).

5. Non-ornithophilous ticks (never reported to parasitize birds): *Carios (Carios) vespertilionis* Latreille, 1796, *Ixodes (Pholeoixodes) rugicollis* Schulze et Schlottko, 1929, *Ixodes (Pomerantzevella) simplex* Neumann, 1906, *Ixodes (Eschatocephalus) vespertilionis* Koch, 1844.

We also established current lists of bird species serving as hosts for individual tick species in Poland, according to the above classification:

## 1. Exclusively ornithophilous ticks:

***Ixodes (Pholeoixodes) arboricola***: *Tyto alba*, *Strix aluco*, *Hirundo rustica*, *Parus ater*, *Parus major*, *Parus* spp., *Sitta europaea*, *Sturnus vulgaris*, *Passer domesticus*, *Passer montanus*.

***Ixodes (Pholeoixodes) lividus***: *Riparia riparia*, *Hirundo rustica*.

***Ixodes (Scaphixodes) caledonicus*** [reported from the Pomeranian Lakeland (SCHULZE & SCHLOTTKE 1929)]: *Apus apus*.

***Ixodes (Trichotoixodes) frontalis*** [single collection from the Vistula Spit (SIUDA 1985)]: *Acrocephalus palustris*.

## 2. Generally ornithophilous ticks:

***Argas (Argas) polonicus***: *Columba livia*.

***Argas (Argas) reflexus***: *Columba livia*.

***Ixodes (Ixodes) festai*** [on the Hel Peninsula, case of transfer (SIUDA & SZYMAŃSKI 1991)]: *Turdus merula*.

## 3. Partly ornithophilous ticks:

***Ixodes (Ixodes) persulcatus*** [parasitism on birds reported outside Poland].

***Ixodes (Ixodes) ricinus***: *Anas platyrhynchos*, *Buteo buteo*, *Fulica atra*, *Cuculus canorus*, *Asio otus*, *Dendrocops medius*, *Anthus trivialis*, *Troglodytes troglodytes*, *Prunella modularis*, *Erithacus rubecula*, *Luscinia megarhynchos*, *Phoenicurus phoenicurus*, *Turdus merula*, *Turdus pilaris*, *Turdus philomelos*, *Turdus iliacus*, *Sylvia borin*, *Phylloscopus sibilatrix*, *Phylloscopus collybita*, *Phylloscopus trochilus*, *Ficedula hypoleuca*, *Parus ater*, *Parus montanus*, *Parus cristatus*, *Parus palustris*, *Parus caeruleus*, *Parus major*, *Sitta europaea*, *Lanius collurio*, *Garrulus glandarius*, *Pica pica*, *Nucifraga caryocatact*, *Corvus frugilegus*, *Sturnus vulgaris*, *Passer montanus*, *Fringilla coelebs*, *Carduelis spinus*, *Carduelis chloris*, *Carpodacus erythrinus*, *Emberiza citrinella*, *Emberiza rustica*, *Pyrrhula pyrrhula*.

***Haemaphysalis (Aboimisalis) punctata***: *Larus marinus*, *Phoenicurus phoenicurus*.

***Haemaphysalis (Haemaphysalis) concinna*** [parasitism on birds reported outside Poland].

***Hyalomma (Euhyalomma) marginatum*** [in Popielno, case of transfer to Poland (SIUDA & DUTKIEWICZ 1979)]: *Motacilla flava*.

## DISCUSSION

In a previous work (SIUDA 1986a, b), 3 groups of ticks (Ixodidae and Amblyomidae) differing in host specificity were distinguished in respect of parasitism on birds in Poland. The results of this study allowed replacing this division with the new one containing 5 groups of ticks differing in the host specificity in parasitism on birds in Poland.

Moreover, until the present study has been completed, no cases of parasitizing birds by the following tick species have been reported in our country: *Ixodes trianguliceps*, *I. crenulatus*, *I. hexagonus*, *I. apronophorus*, *I. persulcatus*, *Haemaphysalis concinna*, *Dermacentor reticulatus*, *D. marginatus*, and *Rhipicephalus rossicus*. They were found in Poland only on other hosts. However, outside Poland cases of

attacking birds by these ticks have been reported (EMCHUK 1960, NOSEK & FOLK 1977, FILIPPOVA 1977, 1997, KOLONIN 1983). Further studies may confirm that those ticks parasitize birds also in Poland, so we classified them here as accidentally ornithophilous ticks (group 4).

## REFERENCES

- BUCZEK A. 1991. Characterization of *Argas (A.) reflexus* (Fabricius, 1794) (Acari: Ixodida: Argasidae) – a common parasite in the Upper Silesia. *Wiad. Parazytol.* 37: 375–380 (in Polish).
- BUCZEK A., SOLARZ K. 1993. Invasion of man by *Argas (A.) reflexus* (Ixodida, Argasidae) – dangerous parasites of human and animals. *Polski Tygodnik Lekarski* 48: 238–239 (in Polish).
- EMCHUK E. M. 1960. Ixodid ticks. *Fauna Ukrayiny*, 25. *Wid. AN URSR Kiiv* (in Ukrainian).
- FILIPPOVA N. A. 1977. Ixodid ticks of the subfamily Ixodinae. *Fauna SSSR, Arachnoidea*, 4(4). *Izd. Nauka, Leningrad* (in Russian).
- FILIPPOVA N. A. 1997. Ixodid ticks of subfamily Amblyomminae. *Fauna of Russia and Neighbouring Countries. Arachnoidea* 4(5). *Izd. Nauka, St. Petersburg* (in Russian).
- GRZYBEK A., DZIKOWSKI A., STEFAŃSKA E. 1973. *Argas reflexus* in Zabrze. *Mater. 11 Zjazdu Pol. Towarz. Parazyt., Poznań*, p. 53 (in Polish).
- GRZYWACZ M., KUŹMICKI R. 1975. A case of *Argas reflexus* (Fabricius, 1794) infestation in man. *Wiad. Lek.* 28: 1571–1577 (in Polish).
- GRZYWIŃSKI L. 1970. Invasion of man by *Argas reflexus*. *Wiad. Parazytol.* 16: 457–461 (in Polish).
- HAILINGER R. 1987. *Dermanyssus alaudae* (Schränk, 1781) and other mites (Acari, Dermanyssidae, Haemogamasidae, Hirstionyssidae, Trombiculidae, Erythraeidae) collected from birds in Poland. *Wiad. Parazytol.* 33: 233–245 (in Polish).
- HOOGSTRAAL H., AESCHLIMANN A. 1982. Tick – host specificity. *Mitt. Schweiz. Entomol. Ges.* 55: 5–32.
- HORAK I. G., CAMICAS J.-L., KEIRANS J. E. 2002. The Argasidae, Ixodidae and Nuttalliellidae (Acari: Ixodida): a world list of valid tick names. *Exp. Appl. Acarol.* 28: 27–54.
- JAROCKI F. P. 1825. *Zoology, that is description of animals arranged according to the latest systematics. Vol. 5: Crustaceans and Spiders.* Drukarnia Rządowa Jego Cesarsko – Król. Mości, Warszawa (in Polish).
- KACZMAREK S. 1977. Arthropods (Arthropoda) dwelling birds nests in breeding boxes located in wild forest stands. *WSP, Słupsk* (in Polish).
- KACZMAREK S. 1982a. Ectoparasites from the nests of the swallows *Hirundo rustica* L. and *Delichon urbica* (L.). *Wiad. Parazytol.* 28: 169–171 (in Polish).
- KACZMAREK S. 1982b. Ectoparasites of birds in Northern Poland. *Wiad. Parazytol.* 28: 449–463 (in Polish).
- KACZMAREK S. 1988. Ectoparasites from the nests of the swallow *Riparia riparia* (L.) *Wiad. Parazytol.* 34: 347–351 (in Polish).
- KAHL K. 1971. Some observations on the occurrence of *Ixodes ricinus* (L.) living on migratory birds. *Wiad. Parazytol.* 17: 417–426 (in Polish).
- KOLONIN G. V. 1983. World distribution of ixodid ticks. Genera *Hyalomma*, *Aponomma*, *Amblyomma*. *Izd. Nauka, Moskwa* (in Russian).
- KOLPY I. 1963. Researches on the ecology of sheep tick *Ixodes ricinus* L. conducted in the Olsztyn Palatinat. II Season activity of sheep tick *Ixodes ricinus* L. on the terrains of Olsztyn Palatinat. *Zesz. Nauk. WSR, Olsztyn* 16: 376–396 (in Polish).
- KOZŁOWSKI S., SZYMAŃSKI S., ŻÓŁTOWSKI Z., ŻUKOWSKI K. 1964. Preliminary arachno-entomologic survey of the territory of the Kampinos Forest and adjoining territories. *Przegl. Epidem.* 18: 391–399 (in Polish).
- LACHMAJER J. 1967. Species composition and distribution of Ixodoidea (Acarina) in Poland. *Wiad. Parazytol.* 13: 345–359.

- LACHMAJER J. 1977. The ticks (Acarina, Ixodoidea) found in Polish territory. 2 Internat. ArbKol-loq. Naturh. Infekt-Krank ZentrEurop., Graz 25.2–28.2 1976, pp: 451–455.
- LACHMAJER J., SKIERSKA B., WEGNER Z. 1956. Ticks of the genus *Haemaphysalis* Koch (Ixodidae) found in the territories of Poland. Bull. Inst. Mar. Trop. Med. Gdańsk 7: 189–195 (in Polish).
- LEHNERT W. 1933. Beobachtungen über die Biocönose der Vogelnester., Ornithol. Monatsber. 41: 161–166.
- NOSEK J., FOLK Č. 1977. Relationships of birds to arboviruses and their vectors. Acta. Sci. Nat. Brno 11: 1–61.
- PATAN K. 1969. Gamasina (Acari, Mesostigmata) from the nests of bank swallows (*Riparia riparia* L.) in Wielkopolska. Bad. Fizj. Pol. Zach. 22: 39–52 (in Polish).
- RAFALSKI J. 1953. Fauna of Arachnids in the Wolin National Park in light of the recent studies. Ochr. Przyr. (Kraków) 21: 215–248 (in Polish).
- RAFALSKI J. 1956. The occurrence of the ticks *Argas vespertilionis* Latr. and *Argas reflexus* Fabr. (Arachnida, Ixodoidea) in Poland. Polskie Pismo Entomol. 24: 165–168 (in Polish).
- SCHULZE P. 1933. Neue und wenig bekannte deutsche Ixodes – Arten. Z. Parasitenk. 6: 432–437.
- SCHULZE P., SCHLOTTKE E. 1929. Kleinhöhlenbewohnende deutsche Zecken mit Beschreibung dreier neuer Baumhöhlenbruter und einer Bestimmungstabelle der deutschen *Ixodes*. Erste Mitteilung. Sber. Abh. Natur. Ges. Rostock (1927–1929). 3. F., 2: 95–110.
- SIUDA K. 1984. The review of the data on the occurrence of soft ticks of the genus *Argas* (Acarina: Ixodidae: Argasidae) in Poland. Wiad. Parazytol. 30: 595–601 (in Polish).
- SIUDA K. 1985. *Ixodes (Trichotoixodes) frontalis* (Panzer, 1798), (Acari: Ixodida: Ixodidae) – a new species for Polish fauna. Przegl. Zool. 29: 497–502 (in Polish).
- SIUDA K. 1986a. Ixodidae ticks (Ixodida, Acari) parasitizing birds in Poland. Part I. Obligatory ornithophilous ticks. Wiad. Parazytol. 32: 479–482 (in Polish).
- SIUDA K. 1986b. Ixodidae ticks (Ixodida, Acari) parasitizing birds in Poland. Part II. Not obligatory and accidentally ornithophilous ticks. Wiad. Parazytol. 32: 483–487 (in Polish).
- SIUDA K. 1991. Ticks (Acari: Ixodida) of Poland. Part I. General Problems. PWN, Warszawa, Wrocław (in Polish).
- SIUDA K. 1993. Ticks (Acari: Ixodida) of Poland. Part II. Taxonomy and Distribution. PTP, Warszawa (in Polish).
- SIUDA K., DUTKIEWICZ J. 1979. *Hyalomma marginatum* Koch, 1844 (Acarina, Ixodidae) in Poland – an example for transport of exogenous tick by migratory birds. Wiad. Parazytol. 25: 333–338 (in Polish).
- SIUDA K., JAROSZ Z., NOREK L. 1982. The case of attack of trumpeters in St. Mary's Church in Kraków by the ticks *Argas (Argas) polonicus* Siuda, Hoogstraal, Clifford et Wassef, 1979 (Acarina, Ixodidae, Argasidae). Wiad. Parazytol. 27: 57–62 (in Polish).
- SIUDA K., HOOGSTRAAL H., CLIFFORD C. M., WASSEF H. Y. 1979. Observations on the subgenus *Argas* (Ixodoidea: Argasidae: Argas). 17. *Argas (A.) polonicus* sp. n. parasitizing domestic pigeons in Kraków, Poland. J. Parasitol. 65: 170–181.
- SIUDA K., NOWAK M., KĘDRYNA M. 2004. Transfer of exotic tick *Aponomma latum* (Koch, 1844) (Acari: Ixodida: Ixodidae) on ball pythons (*Python regius* Shaw, 1802) brought to Poland. Wiad. Parazytol. 50: 337–341 (in Polish).
- SIUDA K., SZYMAŃSKI S. 1991. A case of transfer to Poland a Mediterranean tick *Ixodes (Ixodes) festai* Rondelli, 1926 (Acari: Ixodida: Ixodidae) by migratory birds. Wiad. Parazytol. 37: 25–29 (in Polish).
- WEGNER Z. 1973. Two new cases of people attacked by parasitic bird mites (Acarina: Argasidae and Dermanyssidae) in Poland. Wiad. Parazytol. 19: 187–191 (in Polish).
- ŻUKOWSKI K., BITKOWSKA E. 1973. Mites (Acari, Mesostigmata) dwelling nests of swallows (*Riparia riparia* L.) from the territory of Warsaw Voivodship. Wiad. Parazytol. 19: 835–839 (in Polish).