

**EREYNETID MITES (ACARIFORMES: TYDEOIDEA: EREYNETIDAE) PARASITIZING
THE RESPIRATORY WAYS OF BIRDS (AVES: ANSERIFORMES,
CHARADRIIFORMES, PASSERIFORMES) OF THE EUROPEAN-SIBERIAN
SUBREGION OF THE PALAEARCTIC**

**КЛЕЩИ СЕМЕЙСТВА EREYNETIDAE (ACARIFORMES: TYDEOIDEA) ПТИЦ
(AVES: ANSERIFORMES, CHARADRIIFORMES, PASSERIFORMES)
ЕВРОПЕЙСКО-СИБИРСКОЙ ПОДОБЛАСТИ ПАЛЕАРКТИКИ**

**S.A. Zabludovskaya
С.А. Заблудовская**

Department of Acarology, I.I. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kiev, 252601 Ukraine
Институт зоологии им. И.И. Шмальгаузена УАН, Киев, 252601 Украина

Key words: Ereynetidae, Aves, Palaeartic
Ключевые слова: Ereynetidae, птицы, Палеарктика

To the memory of Prof. V. Dubinin

ABSTRACT

Parasitic mites of the family Ereynetidae (Prostigmata, Tydeoidea) from the respiratory ways of birds (Aves: Anseriformes, Charadriiformes, Passeriformes) of European-Siberian subregion of the Palaeartic are reviewed.

РЕЗЮМЕ

В статье приводятся результаты изучения клещей сем. Ereynetidae Oud. 1931 из дыхательных путей птиц отрядов Anseriformes, Charadriiformes и Passeriformes некоторых регионов Европейско-Сибирской подобласти Палеарктики.

The respiratory ways of vertebrate animals serve as a specific habitat for mites from several taxonomic groups, including the Ereynetidae. Parasitizing pipes of wild and domestic birds the mites cause harm to their hosts, sometimes leading to death of the latter.

A study of Ereynetidae inhabiting pipes of birds was started quite recently [Boyd, 1948], and was mainly carried out in different regions of Africa and North America which resulted in a number of publications [Fain, 1955, 1956, 1958, 1963, 1969; Fain, Aitken, 1968; Fain, Hyland, 1970, 1975; Clark, 1958, 1967; Domrow, 1960, 1964, 1974; Pence, 1973, 1975; Pence, Knox, Knipping, 1981, etc.].

In the former USSR this undoubtedly interesting group of mites was first studied by Dubinin [1957] who discovered ereynetid mites in the eye mucosa of the common heron (*Ardea cinerea*). Dubinin has established a new genus for these mites. He believed that the study of ereynetid mites would be indispensable from both scientific and practical points of view especially because of the peculiar features of their adaptation to such a specific ecological niche as the internal cavities and pipes.

Unfortunately, the research on parasitic ereynetids of the USSR first started by Dubinin had no

continuation. In the subsequent years only two published works appeared on the finding of parasitic ereynetids in mollusks and in the nasal cavity of starlings [Arutyunyan, 1972, 1981]. Since 1985, the extensive studies on ereynetid mites were carried out in Ukraine [Zabludovskaya, 1985, 1986, 1990a, 1990b, 1991].

The present paper presents a review of parasitic ereynetid mites from the collection of V. B. Dubinin preserved in Zoological Institute of Russian Academy of Sciences, St. Petersburg. Our own data on ereynetids parasitizing birds are also included.

Nine species and subspecies of ereynetid mites belonging to two tribes of the family Ereynetidae were discovered in a result of our research work conducted on the vast territory of European-Siberian subregion of the Palaeartic.

Tribe *Boydaiini* Fain, 1985 is represented by genera *Boydaia* Wom., 1953 (4 spp.) and *Codoydaia* Fain, 1985 (2 spp.).

Boydaia sturni Boyd, 1948 is a common species parasitizing birds of the family Sturnidae. In our collections it was recorded from 78 specimens of the common starling (*Sturnus vulgaris*) and 4 specimens of rose-colored starling (*Pastor roseus*). In total 58♀, 13♂, 9LL, 1N2, and 3N3 were collected from starlings of two above-mentioned species.

The mites from nasal cavities of the rose-colored starling appeared to be much larger than the specimens from the common starling, and also than the body dimensions shown in the description of the type species (398×529 μm, compared to 261×273 μm). Differences in the size of sensillae and the dorsal setae.

Boydaia bradornis Fain, 1956. Mites of this species belong to the group of species "*spatulata*". Species of this group can be easily distinguished on larval stage only. *B. bradornis* is only known from the host species *Bradornis pallidus* from Africa. 11♀,

5LL and 1 N2 were collected by us from the thrush nightingale (*Luscinia luscinia*) during its autumn migration. No deviations from the type description have been revealed, apart from the length of claws on pretarsi I in larvae (60 µm, compared to 70 µm).

Boyardaia psalidoprocei Fain, 1956 is known from swallows, and was previously recorded in Africa and North America. It was collected by us from *Riparia riparia*. The species also belongs to the group “*spatulata*” but its adult individuals can easily be distinguished from adults of the other closely related species by several features such as the different structure of chitinous bands on legs, the presence of only 5 setae on femur I, nearly spherical sensillae, and, which is most important, the presence of residual ocular plates absent in other species of the genus.

Boyardaia jordani Eyndhoven, 1955. Mites of the latter species (2♀, 2♂, 7 LL, and 1 N1) were found in the collection of V.B.Dubinin from the nasal canals of the mistle thrush (*Turdus viscivorus*). The species was first described from *Turdus pilaris* from Holland. It was also collected from *T.migratorius* in North America [Clark, 1967]. The mistle thrush is a new host for this species. A male of *B.jordani* was discovered by us for the first time. Moreover, in larvae from the nasal canals of the mistle thrush the pretarsi I–II are much longer than it was stated for the larva in the published description (60 µm, compared to 43 µm).

Mites of the genus *Codoydaia* are represented by two subspecies of *Coboydaia nigra* Fain, 1955. *Coboydaia nigra nigra* Fain, 1955 is the most numerous species in our collections. 224♀, 20♂, 11 LL, 3 N2, and 3 N3 were recorded from 16 species of passerine birds (Table 1). Females of mites collected during autumn migration of their hosts were, as a rule, at the stage of ovulation or with embryos. A study of the large number of mites of this species from the wide range of hosts revealed no significant deviations from the type description [Fain, 1955].

Coboydaia nigra, and *C.nigra nigra* in particular, is a common parasite of finches, weavers, and wagtails in Africa, North America and Central Europe [Fain, 1955, 1963; Fain, Aitken, 1968; Fain, Goff, 1980]. Moreover, in our collections this species was obtained from buntings and thrushes. As it is seen from Table 1 all species of birds except *Passer domesticus*, *Emberiza rutila*, and *Anthus trivialis* are new hosts for *C.nigra nigra*. Also, the analysis of literature and our own data indicate that this species is wide-spread. It has been found on passerines world-wide.

Coboydaia nigra motacillae Fain, 1956 was found in our collection obtained from 3 species of birds, two of which being the new hosts for this subspecies. Thus *C.nigra motacillae* is widely distributed not only in Central and South Africa but also in the different regions of the Palaearctic.

Two species and a subspecies belonging to two genera of ereynetid mites (tribe Trispeleognathini

Table 1.
Passerine birds infested by *Coboydaia nigra nigra*
Таблица 1.

Воробьиные – хозяева *Coboydaia nigra nigra*

Fam.Ploceidae	
<i>Passer domesticus</i>	Воробей домовый
* <i>P.hispaniolensis</i>	Воробей испанский
* <i>P.ammოდendri</i>	Воробей саксаульный
* <i>P.montanus</i>	Воробей полевой
Fam.Emberizidae	
<i>Emberiza rutila</i>	Овсянка рыжая
* <i>E.tristami</i>	Овсянка таежная
* <i>E.spodocephala</i>	Овсянка седоголовая
* <i>E.pusilla</i>	Овсянка-крошка
* <i>E.ruetica</i>	Овсянка-ремез
* <i>E.aureola</i>	Дубровник
Fam.Fringillidae	
* <i>Fringilla coelebs</i>	Зяблик
* <i>F.montifringilla</i>	Юрок
* <i>Carpodacus erythrinus</i>	Чечевица
Fam.Motacillidae	
<i>Anthus trivialis</i>	Лесной конек
Fam.Turdidae	
* <i>Oenanthe isabellina</i>	Каменка-плясунья

Fain, 1985) were collected from birds of other orders: Anseriformes and Charadriiformes.

Trispeleognathus womersleyi Fain, 1955 was obtained from the green-winged teal (*Anas crecca*) and garganey (*A.querquedula*) during their autumn migration in the Oka Biosphere State Reserve. The species is also known to us from pintail (*A.acuta*). All findings of this species [Fain, 1956; Fain, Hyland, 1975; Clark, 1958; pers. observations] were made from the nasal cavities of birds of the subfamily of ducks (Anatinae).

Neoboydaia philomachi Fain, 1956 is described from Africa with the only host species known — the ruff (*Phylomachus pugnax*, Scolopacidae). The mites collected by us from the nasal cavity of the ruff belong to the same species.

Subspecies *N.philomachi eroliae* Fain et Hyland, 1970 [Fain, 1956] is often collected from snipes (Scolopacinae). The subspecies was obtained by us from the nasal cavity of the ruff. This is a first record of the subspecies from the ruff.

The level of infestation of birds by endonasal ereynetid mites shown in Table 2 reflects the perspectives of a further research on mites parasitizing bird pipes. The present study shows the possibility for mites of the family Ereynetidae to spread together with their hosts widely in the European-Siberian subregion of the Palaearctic. The hosts of the Ereynetidae include long-distance migratory birds (swallows, starlings, etc.), short-distance migratory birds (ducks, finches), wandering (wagtails, tits) and resident birds (weavers). The analysis which species of birds are most often infested with mites of the family Ereynetidae suggests that those are mainly flock granivorous birds feeding or breeding on the ground. Passerines are most often infested with mites of the genera *Boyaia* and *Coboydaia* which are the most primitive ereynetids parasitizing the nasal cavity of birds.

Moreover, the study of records of ereynetid mites shows that mites of the family spread much further north than it is indicated in the distribution ranges proposed for them. Parasitic ereynetid mites reach the tundra zone in the north together with their hosts (Yamal Peninsula). In the east they were recorded by us from Transbaikalian region. In the west they are widely distributed throughout the East-European valley, including Ukraine.

REFERENCES

- Arutyunyan A.S. 1972. [The first finding of the mite *Riccardoella limacum* (Schrank, 1776) Berlese, 1923 (Prostigmata, Ereynetidae) in the Armenian SSR] // Biol. Zhurnal Armenii. T.25. S.108–111. [in Russian]
- Arutyunyan A.S. 1981. [The first finding of the mite *Speleognathus sturni* Boyd, 1948 (Trombidiformes, Speleognathidae) in the USSR] // Biol. Zhurnal Armenii. T.31. S.646–648. [in Russian]
- Boyd E. 1948. A new mite from the respiratory tract of the starling (Acarina, Speleognathidae) // Proc. Entomol. Soc. Wash. Vol.50. №1. P.9–14.
- Clark G.M. 1958. One new and one previously unreported species of nasal mite (Acarina, Speleognathidae) from North American birds // Proceedings of the Helminthological Society of Wash. Vol.25. №2. S.78–86.
- Clark G.M. 1967. A new nasal mite from the robin (*Turdus migratorius*) (Acarina, Speleognathinae) // Entomol. Soc. Wash. Vol.69. P.294–296.
- Domrow R. 1960. The family Speleognathidae in Australia (Acarina) // Proc. Linn. Soc. N.S.W. Vol.85. №3. P.374–381.
- Domrow R. 1964. Three speleognathid nasal mites from Australian birds // Acarologia. Vol.7. №1. P.43–48.
- Domrow R. 1974. Miscellaneous mites from Australian vertebrates // Proc. Linn. Soc. N.S.W. Vol.99. P.1–48.
- Dubinin V.B. 1957. [A new genus *Ophthalmognathus* (fam. Speleognathidae), and its position in the system of the superfamily Tydeoidea V.Dub.] // Trudy Leningradskogo obshchestva estestvoispytateley. T.73. Vyp.1. S.64–71. [in Russian]
- Eyndhoven van G. 1955. *Boyaia jordani* sp.nov., a new endoparasitic mite (Acarina: Speleognathidae) // Trans. R. Entomol. Soc. of London. Vol.107. P.203–207.
- Fain A. & Aitken T. 1968. Les Acariens parasites nasicoles des Oiseaux de Trinidad (Indes Occidentales). II. Ereynetidae: Speleognathinae // Bull. Ann. Soc. r. Ent. Belgique. T.104. P.80–84.
- Fain A. & Goff M. 1980. Speleognathinae mites (Acari: Ereynetidae) from birds in the Hawaiian Islands with description of a new species // J. Med. Entomol. Vol.17. №6. P.506–508.
- Fain A. & Hyland K. 1970. Acariens nasicoles des Oiseaux du Mexique. III. Familles Ereynetidae et Turbinoptidae // Bull. Ann. Soc. r. Ent. Belgique. T.106. P.37–46.
- Fain A. & Hyland K. 1975. Speleognathinae collected from bird in North America (Acarina: Ereynetidae) // New York Entomological Soc. J. Vol.83. P.203–208.
- Fain A. 1955. Les acariens de la Famille Speleognathidae Wom. au Ruanda-Urundi // Rev. Zool. et Bot. Afr. T.53. №1–2. P.17–50.
- Fain A. 1956. Nouvelles observations sur les Acariens de la famille Speleognathidae parasites des fosses nasales chez les batraciens, les oiseaux et les mammifères // Ann. Parasitol. hum. et comp. T.31. P.643–662.
- Fain A. 1958. Notes sur les acariens de la sous-famille Speleognathinae Fain, 1957 (Trombidiformes, Ereynetidae Oudemans). Essai de groupement sous-generique // Rev. Zool. et Bot. Afr. T.58. Fasc.1–2. P.175–183.
- Fain A. 1963. Les Acariens nasicoles des oiseaux de Belgique. II. Description de deux especes nouvelles // Bull. Ann. Soc. r. Ent. Belgique. T.99. №12. P.168–181.
- Fain A. 1969. Nouveaux Speleognathinae parasites nasicoles d'oiseaux (Acarina: Trombidiformes) // Rev. Zool. Bot. Afr. T.80. №3–4. P.369–376.
- Fain A. 1985. Systematic notes on the Speleognathinae (Acari, Ereynetidae) with description of new taxa and a key to the Trispeleognathini // Bull. Ann. Soc. r. Ent. Belgique. T.121. P.143–152.
- Pence D., Knox J., Knipping P. 1981. Acari of Antillean bats (Chiroptera) // J. Med. Ent. Honolulu. Vol.18. №4. P.353–354.
- Pence D.B. 1973. The nasal mites of birds from Louisiana V. The Ereynetidae (Speleognathinae) // J. Parasitol. Vol.59. P.364–368.
- Pence D.B. 1975. Keys, species and host list, and bibliography for nasal mites of North American birds (Acarina: Rhinonyssidae, Turbinoptidae, and Cytoitidae) // Texas Tech. University. Vol.8. 148 p.
- Zabludovskaya S.A. 1985. [To the methodics of collecting and processing of mites inhabiting the nasal cavities of mammals] // Abstracts of the Vth All-Russian Conference on the Problems of Theoretical and Applied Acarology. Frunze, Kirghizstan. S.128–129. [in Russian]
- Zabludovskaya S.A. 1986. [The finding of the mite *Paraspeleognathopsis bakeri* Fain, 1955 in the fauna of the USSR] // Vestnik Zoologii. №.3. S.45. [in Russian]
- Zabludovskaya S.A. 1990a. [Parasitic mites from the pipes of murine rodents of the Reserve "Askania-Nova"] // Novosti Faunistiki i Sistematiiki. Kiev, "Naukova Dumka". S.157–158. [in Russian]
- Zabludovskaya S.A. 1990b. [To the study of mites of the family Ereynetidae Oudemans, 1931 (Tydeoidea) of the fauna of the USSR] // Abstract of the Xth Congress of All-Union Entomological Society, 1989. Leningrad. S.7–98. [in Russian]
- Zabludovskaya S.A. 1991. [Some features of the biology of the parasite of pulmonate mollusks *Riccardoella (Proriccardoella) oudemansi* Sig Thor, 1932] // Manuscript deposited in All-Union Institute of Scientific and Technical Information (VINITI). (Deponent VINITI 24.05.91). No.2341. B.91. 25 ss. [in Russian]

Table 2.
Distribution of ereynetid mites
Таблица 2.

Распространение клещей сем. Eреynetidae

Species of mites	Family of hosts	Species of hosts	Location
<i>Boydaia sturni</i> (Boyd, 1948)	Sturnidae	<i>Sturnus vulgaris</i>	Russia(Ryazan, Tyumen, Kaliningrad Regions) Kazakhstan
		* <i>Pastor roseus</i>	Kazakhstan
<i>B.bradomis</i> (Fain, 1956)	Turdidae	* <i>Luscinia luscinia</i>	Ukraine (PoltavaRegion)
<i>B.jordani</i> Van Eyndhoven, 1955		* <i>Turdus viscivorus</i>	Russia(Ryazan Region)
<i>B.psalidoprocei</i> (Fain, 1956)	Hirundinidae	* <i>Riparia riparia</i>	Russia(Tyumen Region)
<i>Coboydaia nigra nigra</i> (Fain, 1955)	Ploceidae	<i>Passer domesticus</i>	Turkmenia
		* <i>P.montanus</i>	Turkmenia
		* <i>P.ammодendri</i>	Turkmenia
		* <i>P.hispaniolensis</i>	Turkmenia, Kazakhstan
	Emberizidae	<i>Emberiza rutila</i>	Russia(Primorsky Krai)
		* <i>E.tristami</i>	Russia(Primorsky Krai)
		* <i>E.spodocephala</i>	Russia(Primorsky Krai)
		* <i>E.pusilla</i>	Russia(Primorsky Krai)
		* <i>E.rustica</i>	Russia(Primorsky Krai)
		* <i>E.citrinella</i>	Russia(Tyumen Region)
		* <i>E.aureola</i>	Tyumen, Ryazan Regions)
	Fringillidae	* <i>Fringilla montifringilla</i>	Russia(Tomsk Region)
		* <i>F.coelebs</i>	Russia(Tomsk Region), Ukraine (Kiev Region)
		* <i>Carpodacus erythrurus</i>	Russia(Tomsk, Ryazan Regions)
	Motacillidae	<i>Anthus trivialis</i>	Regions)
	Turdidae	* <i>Oenanthe isabellina</i>	Turkmenia
<i>C. nigra motacillae</i> (Fain, 1969)	Motacillidae	<i>Motacilla flava</i>	Kirgizia, Russia(Ryazan Region)
		* <i>M.alba</i>	Russia(Tomsk, Tyumen Region)
<i>Neoboydaia philomachi</i> (Fain, 1956)	Charadriiformes (Scolapacidae)	<i>Phylomachus pugnax</i>	Russia(Omsk Region)
<i>N.philomachi eroliae</i> Fain et Hyland, 1970		<i>Gallinago gallinago</i>	Russia(Omsk Region)
<i>Trispeleognathus womersley</i> (Fain, 1955)	Anseriformes (Anatidae)	<i>Anas crecca</i>	Russia(Ryazan Region)
		<i>A. querquedula</i>	Russia(Ryazan Region)
		<i>A.acuta</i>	Turkmenia