

A NEW CLOACARID MITE (ACARI: CLOACARIDAE) FROM THE LUNGS OF THE GREAT HORNED OWL, *BUBO VIRGINIANUS*, FROM THE U.S.A.

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ABSTRACT - *Pneumophagus bubonis* n.g., n.sp. (Acari: Cloacaridae) is described from the lungs of the Great Horned Owl, *Bubo virginianus* (Gmelin), from the U.S.A. A new subfamily Pneumophaginae n. subfam., is created in the Cloacaridae for this new genus. It is the first member of this mite family found in a bird.

INTRODUCTION

Camin et al. (1967) created a new family, Cloacaridae (Prostigmata) for a new genus and species, *Cloacarus faini* Camin et al. found in the cloaca of an aquatic turtle from North America. A second new species, based only on nymphs (*C. beeri*) and also collected from a North American turtle, was described in the same paper. In 1968, Fain added 3 new genera (*Caminacarus*, *Emyduracarus* and *Theodoracarus*) and 8 new species to the family Cloacaridae. All taxa were found in the cloacae of turtles from different countries in Africa, North America, Asia and Australia, except *Caminacarus theodori* Fain, 1968, which was embedded into the submucosal layer of the cloacae, and *Theodoracarus testudinis* Fain, 1968, which was collected from the connective and muscular tissues of the breast and the legs.

In 1969, Fain and Orts described a new genus and species, *Epimyodex talpae*, from a mole *Talpa europea* Linn. The mites were embedded into the loose connective tissues enveloping the muscles of the body. This new genus was tentatively included in the family Demodicidae. Pence and Casto (1975) described 2 new species of the genus *Caminacarus* Fain, from the cloacae of North American turtles.

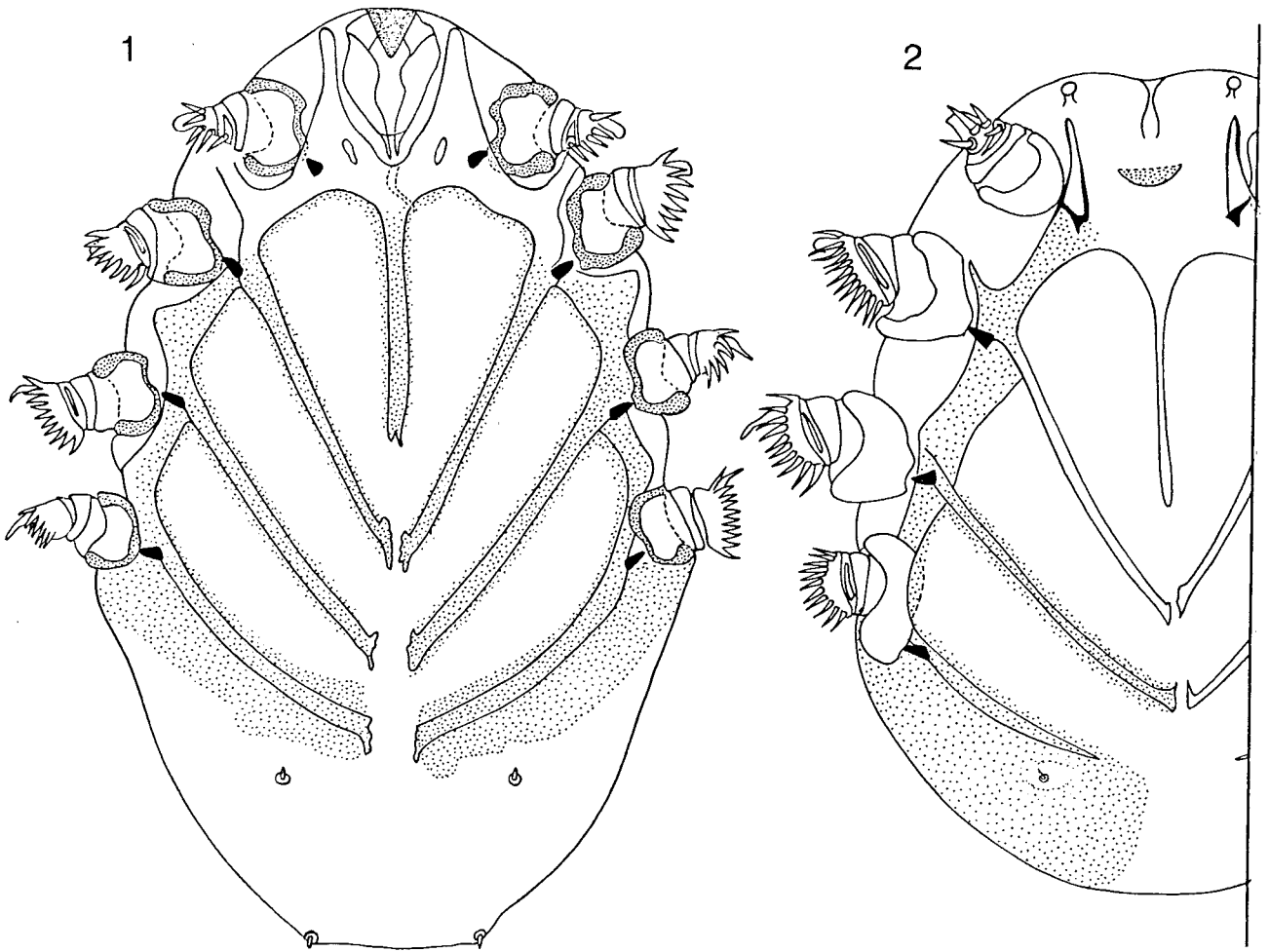
In 1982, Fain, Lukoschus and Rosmalen described 2 new species of *Epimyodex* found in the loose deep connective subcutaneous tissues of a vole (*Microtus arvalis*) (Pallas) and of an insectivore (*Crocidura russula* (Hermann)). They transferred the genus *Epimyodex* from the Demodicidae to the Cloacaridae and into a new subfam-

ily, Epimyodicinae.

In the present paper we describe a new genus and species of Cloacaridae from the lungs of a Great Horned Owl, *Bubo virginianus* (Gmelin), in the U.S.A.

KEY TO THE CLOACARIDAE

1. Legs relatively long, with 5 free segments. All tarsi ending in a pair of normally curved claws. Palps short, curved, with bifid or trifid apex. Chelicerae small, with bulbous bases present (From the deep connective tissues of voles and insectivores) Epimyodicinae Fain et al., 1982
- Legs short, with 4 free segments (3 normally developed and one incomplete or vestigial). Tarsi III and IV without claws. Tarsi I-II either with 2 slightly curved or straight claws or without claws. Palps elongate, directed backwards with apex not forked. Chelicerae completely lacking 2
2. All tarsi rounded; tarsi I-II with paired claws; tarsi II-IV bearing 4 to 6 spines not arranged in a file; tarsi I only slightly smaller than other tarsi. Tibiae I-IV with a spine. Palps not sinuous but straight or very lightly curved. Male with normally developed palps (From cloaca and connective tissues of turtles) Cloacarinae Camin et al., 1967
- Tarsi I rounded and distinctly smaller than tarsi II-IV; tarsi I-II without claws; tarsi II-IV compressed laterally and bearing 8 to 11 spines almost in a line. Tibiae I with a spine, other tibiae vestigial and without a spine. Palps sinuous. Male lacking palps and palpal cavities (From the lungs and deep



Figs. 1-2. *Pneumophagus bubonis* n.sp.: 1. Female in ventral view; 2. Male in ventral view.

connective tissues around the trachea and bronchi of a great horned owl)
 *Pneumophaginae* n. subfam.

FAMILY CLOACARIDAE

SUBFAMILY PNEUMOPHAGINAE, NEW SUB-FAMILY

DIAGNOSIS - General aspects of the body and the legs as in the Cloacarinae. It differs from this subfamily by the following characters: In both sexes: Dorsal shields very poorly sclerotized. All tarsi without claws. Tarsi II-IV strongly compressed laterally and bearing more than 7 spines placed almost in a line. Tibiae II-IV vestigial, without spines. Palps sinuous. Male: Palps and palpal cavities lacking.

TYPE-GENUS - *Pneumophagus*, n.g.

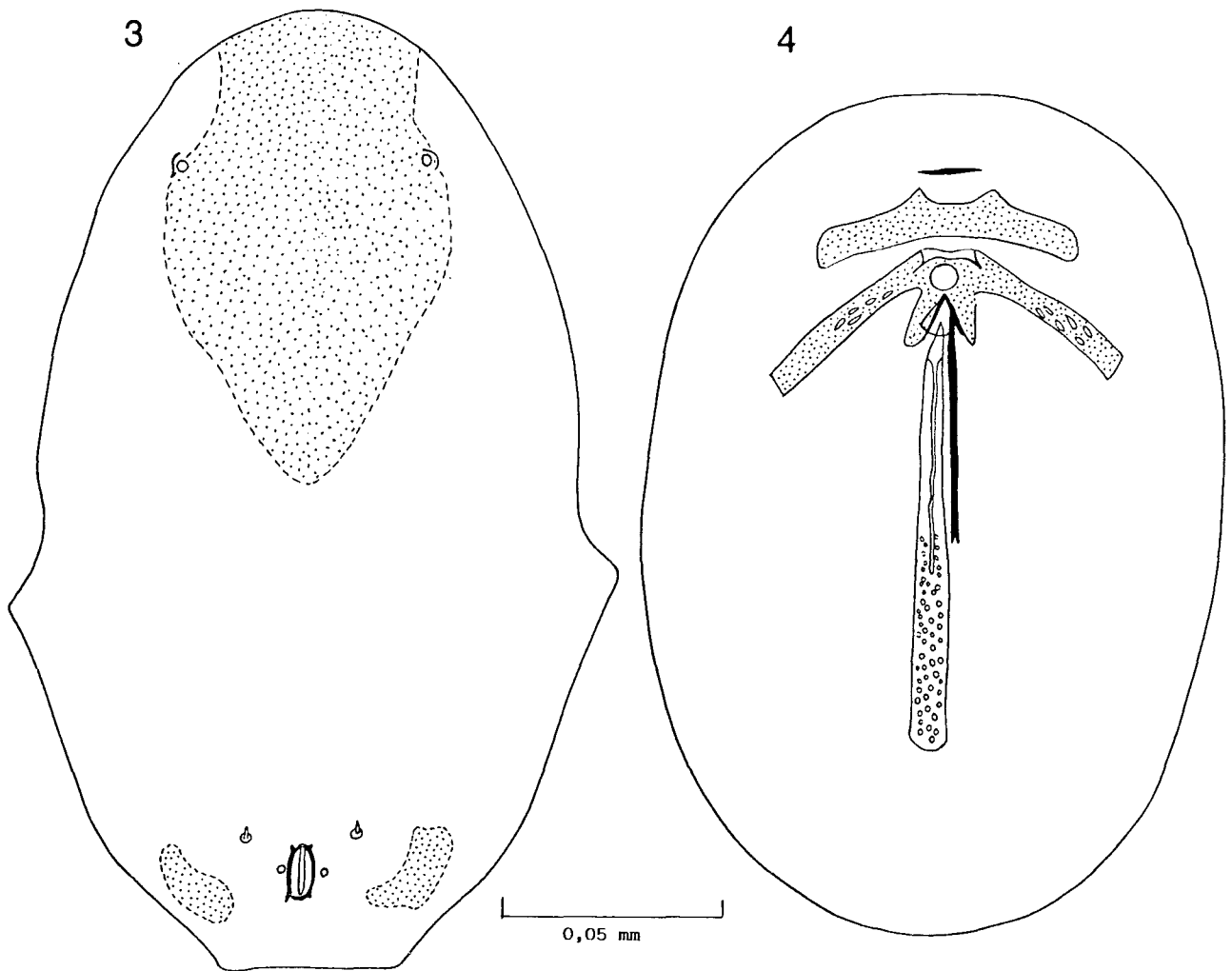
Genus *Pneumophagus*, n.g.

DIAGNOSIS - With the characters of the subfamily. Body very small and poorly sclerotized, with 3 pairs of very short setae and 2 pairs of pores in the female and 1 pair of microsetae and 1 pair of pores in the male. Legs short and thick with flattened tarsi bearing numerous spines. Male with a long penis situated dorsally. Male genital aperture situated in anterior third of dorsum. Vulva dorsal. Anus lacking in both sexes.

TYPE-SPECIES - *Pneumophagus bubonis*, n.sp.

Pneumophagus bubonis, n.sp.
 (Figs. 1-15)

FEMALE - Length of holotype 219 μ m, maximum width 139 μ m. Length and width of 7 paratypes in μ m: 198x120; 210x140; 225x135; 226x150; 228x140; 231x132; 234x150. Dorsum: Shield poorly sclerotized



Figs. 3-4. *Pneumophagus bubonis* n.sp.: 3. Female in dorsal view; 4. Male in dorsal view.

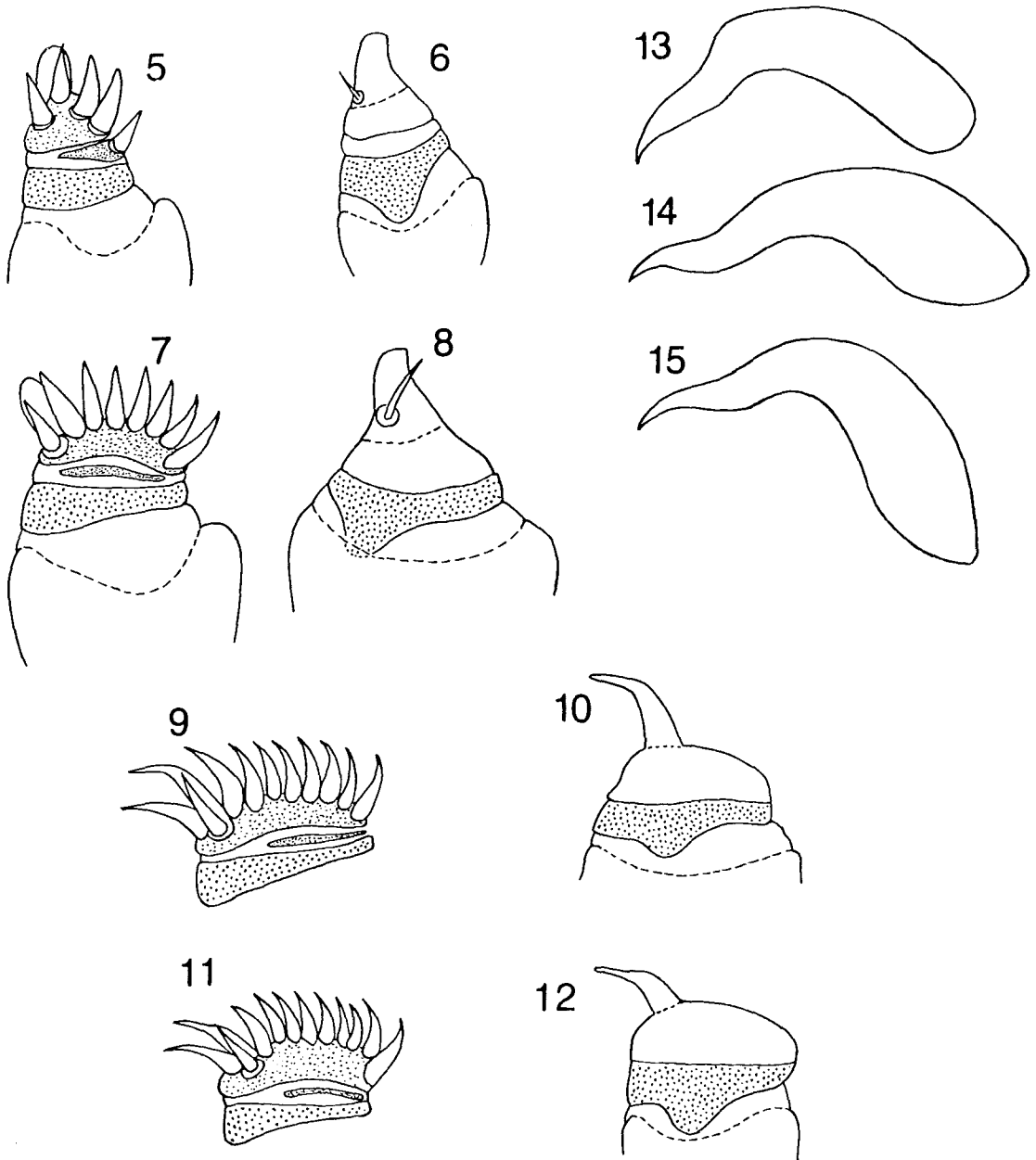
and punctate on anterior half, with pair of pores situated on margins of anterior third of shield. Posterior margin of body straight. Vulva situated on posterior fifth of dorsum, flanked by a pair of small pores. A pair of very small setae anterolateral to the vulva and located lateral to vulva, a pair of small punctate, poorly sclerotized shields. Venter: Epimera as in genus *Cloacarus*. Posterior margin of body with a pair of short spinelets, a second pair of spinelets behind epimera IV. Palps directed backwards and lying in a cavity. Anterior margin of cavity reinforced by a strong median triangular sclerite resembling a beak. Palps smooth and distinctly sinuous, apices sunken into a small depression which connects deeply with a narrow sclerotized channel.

LEGS - Leg I: Tarsus reduced, rounded and strongly produced dorsally, bearing one thick dorsal seta and 4 strong ventral spines. Tibia very short and incomplete, represented only by a ventral part, bearing a spine; dorsal-

ly, tibia fused with tarsus. Genu-femur forming a complete ring; trochanter well developed; these segments without setae. Leg II: Tarsus strongly compressed laterally, produced dorsally and bearing a thick seta; ventrally with 8-9 spines situated almost in a file. Tibia vestigial, only visible ventrally and without a spine. Other segments as in leg I. Legs III and IV: same as leg II but with more tarsal spines (10 to 11) and narrower dorsal projection of tarsus, tarsus attenuate and cylindrical on apical half or third.

MALE (Figs. 2 and 4) - Length of body 189 μm , maximum width 138 μm . Dorsum: With two poorly sclerotized median shields wider than long. Genital aperture on anterior third of dorsum, opening in posterior shield. Penis 98 μm long, with sheath 58 μm long. Venter: Palps and palpal cavities lacking. Legs as in female but tarsi II with more spines (10-11).

HOST AND HABITAT - Holotype female from the lungs of *Bubo virginianus* (Gmelin). Paratypes: 24



Figs. 5-15. *Pneumophagus bubonis* n.sp. Female: 5. Leg I, ventral view of tarsus, tibia and genu-femur; 6. Leg I, dorsal view of tibio-tarsus and genu-femur; 7. Leg II, ventral view of tarsus, tibia and genu-femur; 8. Leg II, dorsal view of tibio-tarsus and genu-femur; 9. Leg III, ventral view of tarsus, tibia and genu-femur; 10. Leg III, dorsal view of tibio-tarsus and genu-femur; 11. Leg IV, ventral view of tarsus, tibia and genu-femur; 12. Leg IV, dorsal view of tibio-tarsus and genu-femur; 13-15. Palps in three different females.

females and 1 male from the same specimen. The mites were taken from the deep connective tissues around the trachea and the bronchi. The mites were collected by Dr. Tjaart Schillhorn van Veen, Clinical Parasitology Section, Animal Health Laboratory, Michigan State University, East Lansing, Michigan, 1 December 1986. Holotype

female, paratypes (15 females and 1 male) in the U.S. National Museum of Natural History, Washington, D.C. Paratypes in the collections of the authors and in the Institut Royal des Sciences Naturelles de Belgique. One paratype female in the British Museum, (Natural History).

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