**Pterygodermatites (Paucipectines) baiomydis** n. sp. (Nematoda: Rictulariidae), a parasite of *Baiomys taylori* (Cricetidae)

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**Abstract** – *Pterygodermatites (Paucipectines) baiomydis* n. sp., an intestinal parasite of the northern pygmy mouse, *Baiomys taylori* (Cricetidae), collected in La Yerbabuena, Colima, Mexico, is described herein. Specimens were studied using light and scanning electronic microscopy. This is the 19th species of the subgenus *Paucipectines* described worldwide and the fourth collected in Mexico. It is differentiated from the remaining species in the subgenus by having 25 perioral denticles, arranged in a triangle (seven on each lateroventral margin, and eleven on the dorsal margin), and 10 pairs of caudal papillae.

**Key words:** Nematoda, Pterygodermatites, Baiomys taylori, Rodentia, Cricetidae, Mexico.

**Résumé** – *Pterygodermatites (Paucipectines) baiomydis* n. sp. (Nematoda: Rictulariidae), parasite de *Baiomys taylori* (Cricetidae). *Pterygodermatites (Paucipectines) baiomydis* n. sp., parasite intestinal du rongeur *Baiomys taylori* (Cricetidae), collecté dans La Yerbabuena, Colima, Mexique, est décrit. Les échantillons ont été étudiés en utilisant microscope photonique et microscope électronique à balayage. Ceci est la dix-neuvième espèce du sous-genre *Paucipectines* décrite dans le monde et la quatrième au Mexique. Elle se distingue des autres espèces dans le sous-genre par la possession de 25 denticules périoraux disposés en triangle (sept sur chaque marge latéroventrale et onze sur la marge dorsale) et dix paires de papilles caudales.

**Introduction**

Cricetid rodents are one of the most speciose groups of mammals of the New World with approximately 600 species [25]. From the 141 species known to occur in Mexico [25], only 25 had been examined for helminths prior to this study. These surveys resulted in the inventory of 45 species of helminths [5].

As part of an ongoing project to describe the metazoan fauna associated with rodents from Mexico, we analyzed 27 cricetid taxa in seven localities from the Mexican states of Colima, Guerrero, Jalisco, Michoacán, and Oaxaca. The main goal of this paper is to describe a new species of the nematode subgenus *Pterygodermatites (Paucipectines)* Quentin, 1969, as a parasite of the northern pygmy mouse *Baiomys taylori* (Thomas, 1887) in Colima, Mexico.

**Materials and methods**

In December, 2011, two specimens of *B. taylori* were collected in La Yerbabuena (19°28′39″ N, 103°40′46″ W) in Comala, Colima, Mexico. Hosts were collected with permission (FAUT-0170), issued by Secretaría del Medio Ambiente y Recursos Naturales, Mexico. Rodents were anesthetized by isoflurane inhalation, euthanized by cervical dislocation, and examined for helminth parasites. Helminths were removed from the intestine and placed in 0.85% saline solution, fixed...
in hot 4% formaldehyde, and stored in 80% ethanol. Nematodes were cleared with Amman's lactophenol and temporarily mounted for morphological study. Population parameters follow Bush et al. [1]. Measurements, expressed in micrometres unless otherwise stated, are given as the range, followed by mean, standard deviation, and sample size in parentheses. Figures were drawn with the aid of a drawing tube. Specimens for scanning electron microscopy were dehydrated in a graded ethanol series, critical-point dried with CO₂, and then coated with a gold-palladium mixture. Specimens

![Figure 1](image-url)

**Figure 1.** (A–F) *Pterygodermatites (Paucipectines) baiomydis* n. sp., a parasite of *Baiomys taylori* from Colima, Mexico. A. Female, anterior region. B. Female, cephalic end, dorsal view. C. Cephalic end, lateral view. D. Male, caudal region, lateral view. Caudal papillae numbered. E. Spine, lateral view. F. Comb, lateral view.
were examined with a Hitachi SU1510 electron microscope. Type specimens were deposited at the Colección Nacional de Helmintos (CNHE), Instituto de Biología, Universidad Nacional Autónoma de México, Mexico City, Mexico.

Pterygodermatites (Paucipectines) baiomydis n. sp.

urn:lsid:zoobank.org:act:6B93D4D1-44B0-44C4-80CC-0F8018B9E950
(Figs. 1A–1K)

Type host: Baiomys taylori (Thomas, 1887) (Rodentia: Cricetidae). Symbiotype deposited at Museo de Zoología Alfonso L. Herrera, Facultad de Ciencias (MZFC-M) de la Universidad Nacional Autónoma de México, Mexico City, Mexico (MZFC-M 11988, 12294). Date of collection: December, 2011.

Type locality: La Yerbabuena (19°37’26.36” N, 103°32’41.20” W), Colima, Mexico.

Site of infection: Intestine.

Prevalence and intensity of infection: two of two hosts examined were infected; mean intensity 3.5, range 1–7.
VENTRALLY, WITH BLUNT TIPS; LEFT 110 LONG (FIG. 3K); RIGHT SPICULE 30 LONG. TAIL LENGTH 110. SPICULES MARKEDLY UNEQUAL, CURVED LICHENFELS [8]). ANTERIOR FAN 47 LONG, SECOND AND THIRD FAN, 20–40 (30 ± 5, n = 15) LONG (Fig. 1B). TOTAL LENGTH OF ESOPHAGUS 2260–2650 (2470 ± 140, n = 5) (13.6% OF BODY LENGTH), MUSCULAR PORTION 310–440 (380 ± 70, n = 3) LONG, 50–70 (60 ± 8, n = 3) WIDE AT LEVEL OF NERVE RING; GLANDULAR PORTION 1630–1860 (1710 ± 130, n = 3) LONG, 80–110 (94 ± 10, n = 3) WIDE. NERVE RING AND DEIRIDS LOCATED 210–350 (280 ± 70, n = 5) AND 460–660 (560 ± 100, n = 4) FROM ANTERIOR END, RESPECTIVELY (Fig. 1A). EXCRETORY PORE NOT OBSERVED. VULVA 2220–3950 (3420 ± 780, n = 5) FROM ANTERIOR END AND 770–1830 (1190 ± 410, n = 5) FROM ESOPHAGO-INTESTINAL JUNC-
TION, AT LEVEL OF THE 42ND CUTICULAR PROJECTION. TWO SUBVENTRAL ROWS WITH 64–75 (71 ± 5, n = 5) CUTICULAR PROJECTIONS (FIGS. 2G AND 2H); 38–44 (42 ± 5, n = 5) PREVULVAR COMBS (Fig. 1F) AND 25–31 (29 ± 2.22, n = 5) POSTVULVAR SPINES (Fig. 1E); –16 (12 ± 2.13, n = 5) COMBS BETWEEN POSTERIOR END OF ESOPHAGUS AND VULVA. MAXIMUM LENGTH OF COMBS AND SPINES 100–220 (160 ± 50, n = 5) AND 130–240 (170 ± 40, n = 5), RESPECTIVELY. LAST SPINE LOCATED 2020–2108 (1632 ± 420, n = 5) FROM POSTERIOR END. TAIL 160–250 (210 ± 20, n = 5) LONG (Fig. 2I). LARVATED EGGS 30–40 (31 ± 4, n = 10) BY 15–34 (25 ± 4, n = 10).

REMARKS


TO DATE, 18 SPECIES OF THIS SUBGENUS HAVE BEEN DESCRIBED AS PARASITES OF RODENTS (12 SPECIES), ARMADILLOS (1 SPECIES), BATS (1 SPECIES), AND MARSUPIALS (4 SPECIES) (TABLE 1). PTERYGDERMATITES (P) BAIOMYDIS MOST CLOSELY RESEMBLES...
### Table 1. Selected features of the species included in the subgenus *Pterygodermatites (Paucipectines)* worldwide.

<table>
<thead>
<tr>
<th>Distribution/species/ (host family)</th>
<th>Shape of buccal capsule</th>
<th>DN male*</th>
<th>DN female*</th>
<th>No. of prevulvar combs/total</th>
<th>No. of combs in male</th>
<th>No. of fans</th>
<th>Spicule size left/right</th>
<th>CP: p/u†</th>
<th>Last spine-tip distance</th>
<th>Vulva-esophago-intestinal junction distance</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
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<td></td>
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<tr>
<td><em>P. chaetophracti</em> (Dasyopodidae)</td>
<td>Trapezoidal</td>
<td>16–18</td>
<td>18</td>
<td>–/62–67</td>
<td>41</td>
<td>3</td>
<td>130/50</td>
<td>8/0</td>
<td>900–920</td>
<td></td>
<td>[13, 15]</td>
</tr>
<tr>
<td><em>P. massoai</em> (Cricetidae)</td>
<td>–</td>
<td>–</td>
<td>Numerous</td>
<td>39/76</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>108</td>
<td>At junction or immediately posterior to it</td>
<td>[21]</td>
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<tr>
<td><em>P. spinicaudatis</em> (Microbiotheriidae)</td>
<td>Triangular</td>
<td>11–12</td>
<td>11–12</td>
<td>36/68–69</td>
<td>43</td>
<td>4</td>
<td>120/50</td>
<td>–</td>
<td>–</td>
<td></td>
<td>[16]</td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
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<tr>
<td><em>P. elegans</em> (Molossidae Didelphidae)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0</td>
<td>110/50</td>
<td>8/2</td>
<td>–</td>
<td></td>
<td>[24]</td>
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<tr>
<td><em>P. jagerskioldi</em> (Didelphidae)</td>
<td>Trapezoidal</td>
<td>–</td>
<td>16</td>
<td>36–40/80</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>660–1070</td>
<td>Anterior to posterior end of esophagus</td>
<td>[10]</td>
</tr>
<tr>
<td><em>P. zygodontomys</em> (Cricetidae)</td>
<td>Triangular</td>
<td>17</td>
<td>21</td>
<td>38/81</td>
<td>41</td>
<td>3</td>
<td>100/50</td>
<td>10/1</td>
<td>770</td>
<td></td>
<td>[18]</td>
</tr>
<tr>
<td><em>P. hymanae</em> (Didelphidae)</td>
<td>Triangular</td>
<td>14</td>
<td>14</td>
<td>35/63</td>
<td>42</td>
<td>3</td>
<td>80–90/40–50</td>
<td>8/0</td>
<td>–</td>
<td></td>
<td>[7]</td>
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<tr>
<td>Colombia</td>
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<tr>
<td><em>P. kozeki</em> (Didelphidae)</td>
<td>Triangular</td>
<td>14–20</td>
<td>14–20</td>
<td>40/65–67</td>
<td>41</td>
<td>1</td>
<td>250</td>
<td>10/0</td>
<td>–</td>
<td></td>
<td>[14]</td>
</tr>
<tr>
<td>Mexico</td>
<td>Hexagonal</td>
<td>25</td>
<td>25</td>
<td>38–44/71</td>
<td>42</td>
<td>3</td>
<td>110/50</td>
<td>10/0</td>
<td>1020–2108</td>
<td></td>
<td>Present</td>
</tr>
<tr>
<td>Mexico</td>
<td>Hexagonal</td>
<td>25</td>
<td>25</td>
<td>38–44/71</td>
<td>42</td>
<td>3</td>
<td>110/50</td>
<td>10/0</td>
<td>1020–2108</td>
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<td>Present</td>
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<td>Russia</td>
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<tr>
<td><em>P. baicalensis</em> (Muridae)</td>
<td>–</td>
<td>–</td>
<td>18</td>
<td>Bicuspid</td>
<td>31/62</td>
<td>42</td>
<td>3</td>
<td>260/130</td>
<td>9/0</td>
<td></td>
<td>[20]</td>
</tr>
<tr>
<td>USA</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><em>P. coloradensis</em> (Cricetidae, Sciuridae)</td>
<td>Oblong</td>
<td>17</td>
<td>17</td>
<td>32–34/65</td>
<td>42</td>
<td>0</td>
<td>240/200</td>
<td>10/1</td>
<td>–</td>
<td>At junction</td>
<td>[9]</td>
</tr>
<tr>
<td><em>P. dipodomis</em> (Heteromyidae)</td>
<td>Rounded</td>
<td>–</td>
<td>18</td>
<td>40/70–74</td>
<td>38–40</td>
<td>3</td>
<td>100–110/50</td>
<td>9/0</td>
<td>2150</td>
<td></td>
<td>[17, 23]</td>
</tr>
<tr>
<td><em>P. ondatrae</em> (Cricetidae)</td>
<td>Rounded</td>
<td>–</td>
<td>18</td>
<td>32/73–75</td>
<td>52</td>
<td>1</td>
<td>110/100</td>
<td>4/1</td>
<td>2500–3000</td>
<td>500–1000</td>
<td>[2]</td>
</tr>
<tr>
<td><em>P. onychomis</em> (Cricetidae)</td>
<td>Rounded</td>
<td>–</td>
<td>26</td>
<td>32/56–60</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Anterior to posterior end of esophagus</td>
<td>[4]</td>
</tr>
<tr>
<td><em>P. parkeri</em> (Cricetidae, Dipodidae, Sciuridae)</td>
<td>Oval</td>
<td>13</td>
<td>14–19</td>
<td>30–31/61–67</td>
<td>42</td>
<td>0</td>
<td>270/260</td>
<td>10/1</td>
<td>–</td>
<td>Posterior to end of esophagus</td>
<td>[9]</td>
</tr>
<tr>
<td><em>P. peromysci</em> (Cricetidae, Sciuridae)</td>
<td>Oval</td>
<td>12</td>
<td>16–19</td>
<td>29/61–64</td>
<td>41</td>
<td>3</td>
<td>90–10/40–50</td>
<td>10/1</td>
<td>–</td>
<td>Anterior to posterior end of esophagus</td>
<td>[9]</td>
</tr>
</tbody>
</table>

* DN = Number of denticles.
† CP: p/u = Caudal papillae: paired/unpaired.
P. (P.) dipodomis and P. (P.) zygodontomys (Quentin, 1967). All three species share traits such as the number of prevulvar combs and fans, unequal spicules, and all three parasitize rodents (Table 1). However, the number of denticles is greater in P. (P.) baiomydis (25 vs. 18 and 17–21, respectively); the distance from the last spine to the tip of the tail in females of P. (P.) zygodontomys is smaller (770), and the distance from the vulva to the esophago-intestinal junction in P. (P.) baiomydis is greater (1190) than in the other two species (730 and 580, respectively). Pterygodermatites (P.) zygodontomys features an unpaired papilla, which makes it different from P. (P.) baiomydis. The new species differs from P. (P.) dipodomis by the rounded oral opening, and the smaller number of caudal papillae (9 vs. 10).

In addition, P. (P.) baiomydis can be differentiated from P. (P.) elegans (Travassos, 1928), P. (P.) coloradensis (Hall, 1916) [6], and P. (P.) parkeri Lichtenfels, 1970, because these three species lack fans and have unpaired caudal papillae, whereas the new species has three fans and all papillae are paired. From P. (P.) hymenae jíménez and Patterson, 2012, P. (P.) jagerskioldi, and P. (P.) spinicaudatis Navone and Suriano, 1992, the new species is distinguished based on the number of perioral denticles (14, 16, and 11–12, respectively). From P. (P.) baiomydis, Suriano, 1992, the new species is distinguished based on the number of perioral denticles (14, 16, and 11–12, respectively vs. 25 in P. (P.) baiomydis), as well as the host group (marsupials vs. rodents) and distribution (South America vs. North America). The number of fans and spicule size allow us to differentiate P. (P.) kozecki, P. (P.) ondracea (Chandler, 1941) and P. (P.) microti (McPherson and Tiner, 1952) from the new species, since these three species have only one fan (instead of three fans as in the new species) and their spicules are almost equal in size, whereas in P. (P.) baiomydis spicules are unequal. Two other species, P. (P.) peromysci Lichtenfels, 1970 and P. (P.) onychomis (Cuckler, 1939), differ from the new species by the position of the vulva, which in those species is anterior to the esophago-intestinal junction, whereas in P. (P.) baiomydis it is situated 1190 posterior to the esophago-intestinal junction. Moreover, the oral opening in P. (P.) peromysci and P. (P.) onychomis is a rounded oval, but hexagonal in the new species. In having fewer denticles, arranged in a trapezoid, P. (P.) chaetophracti (Navone and Lombardero, 1980) and P. (P.) azrai (Sutton, 1984) can be distinguished from the Mexican species (16–18 and 17–19, respectively vs. 25 disposed in a hexagon).

For most of the species of the subgenus, males are unknown or insufficiently described; for that reason, female morphological traits are commonly used in species differentiation, partially solving this problem. However, in species such as P. (P.) massoai (Sutton, 1979), females are poorly described and the morphology of males is still unknown. Because of this, we only compared a few characters of this species with our material; nonetheless, the following traits are sufficient to distinguish them: body size 8.44–9.1 mm in Sutton’s species vs. 18.35–21.41 mm in P. (P.) baiomydis; distance from the last spine to the tip of the tail (108 vs. 1660), and distribution (South America vs. North America).

Besides their distribution (Russia), P. (P.) baiicalensis (Spassky, Ryzhikov and Sudarikov, 1952) and P. (P.) sibiricensis (Morozov, 1959) differ from the new species in having fewer prevulvar combs (31, 33–34, and 38–44, respectively). In addition, P. (P.) baiicalensis has 18 bicuspid perioral denticles (instead of 25 unicuspid ones), and the shape of the oral opening of P. (P.) sibiricensis is rectangular, not hexagonal.

Pterygodermatites (Paucipectines) baiomydis is the 19th species of the subgenus described worldwide and the fourth collected in Mexico. Since cricetid rodents are one of the most speciose groups of mammals of the New World with approximately 600 species [25], its helminth fauna is incompletely documented. From the 141 cricetid species known to occur in Mexico [25], only 26 have been examined for helminths. The surveys of more species of this host group could result in the description of numerous new species of helminths, including representatives of Pterygodermatites.

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References


