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# 日本新記録のIxodes pavlovskyi Pomerantzev(ダニ目,マダニ科)

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# A new record of *Ixodes pavlovskyi* Pomerantzev from Hokkaido, Japan (Acari: Ixodidae)

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**Abstract:** The ixodid tick species closely related with *Ixodes persulcatus* and *I. nipponensis* is recorded from Hokkaido, Japan, for the first time. The field-collected unfed adults and the laboratory-reared immatures are identified as *I. pavlovskyi* Pomerantzev that is new to Japan.

*Ixodes pavlovskyi* Pomerantzev (Acari: Ixodidae) is distributed in the Palearctic region, particularly the Far East and East Siberia (Filippova, 1985a), and until recently this species was unknown from Japan. The authors collected males and females of *I. pavlovskyi* by flagging vegetation in the forests of following localities of Hokkaido. This is the first record of *I. pavlovskyi* from Japan.

Two males and 7 females, May 17, 1990, Iwaonai (44°08′N, 142°44′E); 1 female, May 6, 1991, Jozankei (42°58′N, 141°09′E); 6 males and 10 females, May 11, 1991, Iwaonai; 13 males and 21 females, May 20, 1991, Iwaonai; and 2 males and 2 females, May 26, 1991, Asahikawa (43°43′N, 142°21′E). At these localities, many adults of *Ixodes persulcatus* Schulze and *Ixodes ovatus* Neumann were also collected.

To obtain the immature stages of Japanese *I. pavlovskyi,* 4 females from Iwaonai were fed on ears of a rabbit for 6–8 days. Each engorged female was placed in a 60×30×15 mm plastic box individually, and maintained at 25°C in a saturated humidity with 12 hr of light per day. The preoviposition, oviposition and egg periods were 8–10, 14–28 and 26–36 days, respectively. The larvae were fed on mice for 3–5 days, and reared under the same condition as described above. The engorged larvae molted into nymphs within 18–30 days. The morphologic characters of larvae and nymphs from Hokkaido well accorded with the descriptions of Russian specimens of *I. pavlovskyi* (Filippova, 1985b).

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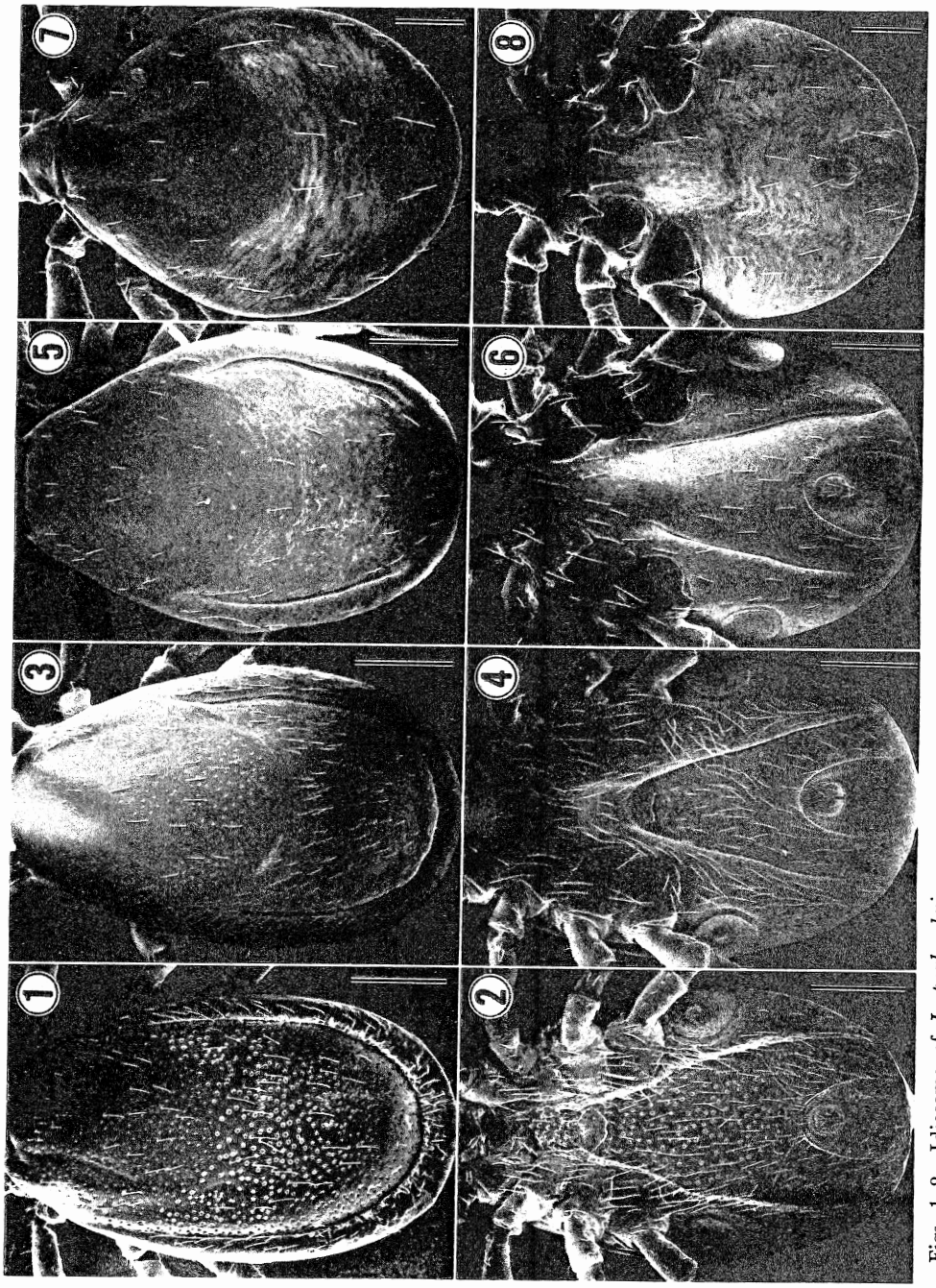
## *Ixodes pavlovskyi* Pomerantzev

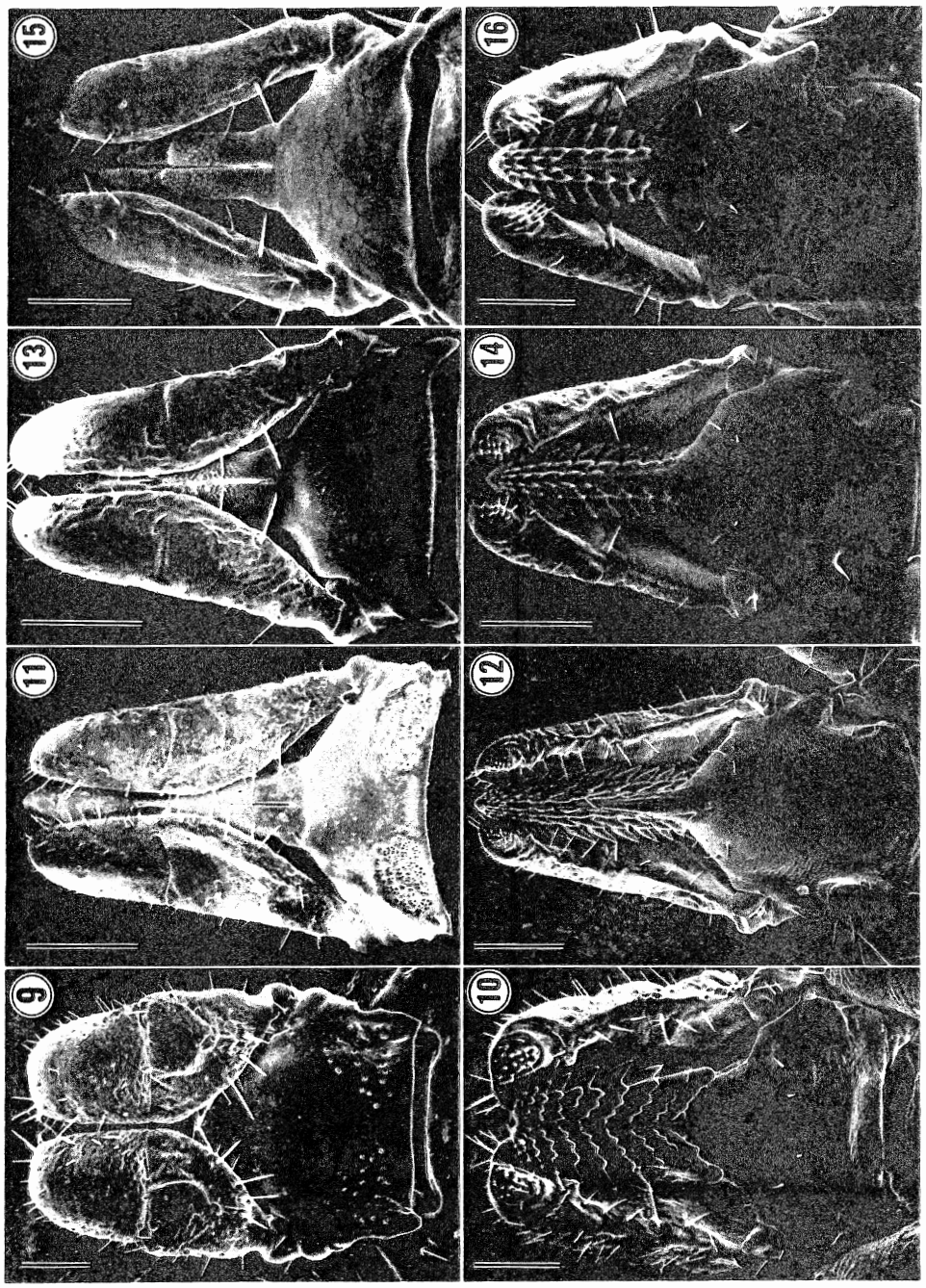
*Ixodes pavlovskyi* Pomerantzev, 1948, Parazitol. Sbornik, Zool. Inst. Akad. Nauk SSSR 9: 39–46.

Specimens were examined by standard light, phase contrast, and scanning electron (Nihon Denshi, JSM T200) microscopes. All measurements are in mm. Specimens examined were as follows: 6 males from Iwaonai, 1 male from Asahikawa, 4 females from Iwaonai, 2 females from Asahikawa, 1 female from Jozankei, 10 laboratory-reared nymphs, 10 laboratory-reared larvae. Body chaetotaxy of larvae was submitted to the description by Clifford and Anastos (1960).

*Male* (Figs. 1, 2, 9, 10, 17, 18, 24). Legs and body excluding scutum and coxae pale brown (live specimen). Idiosomal length

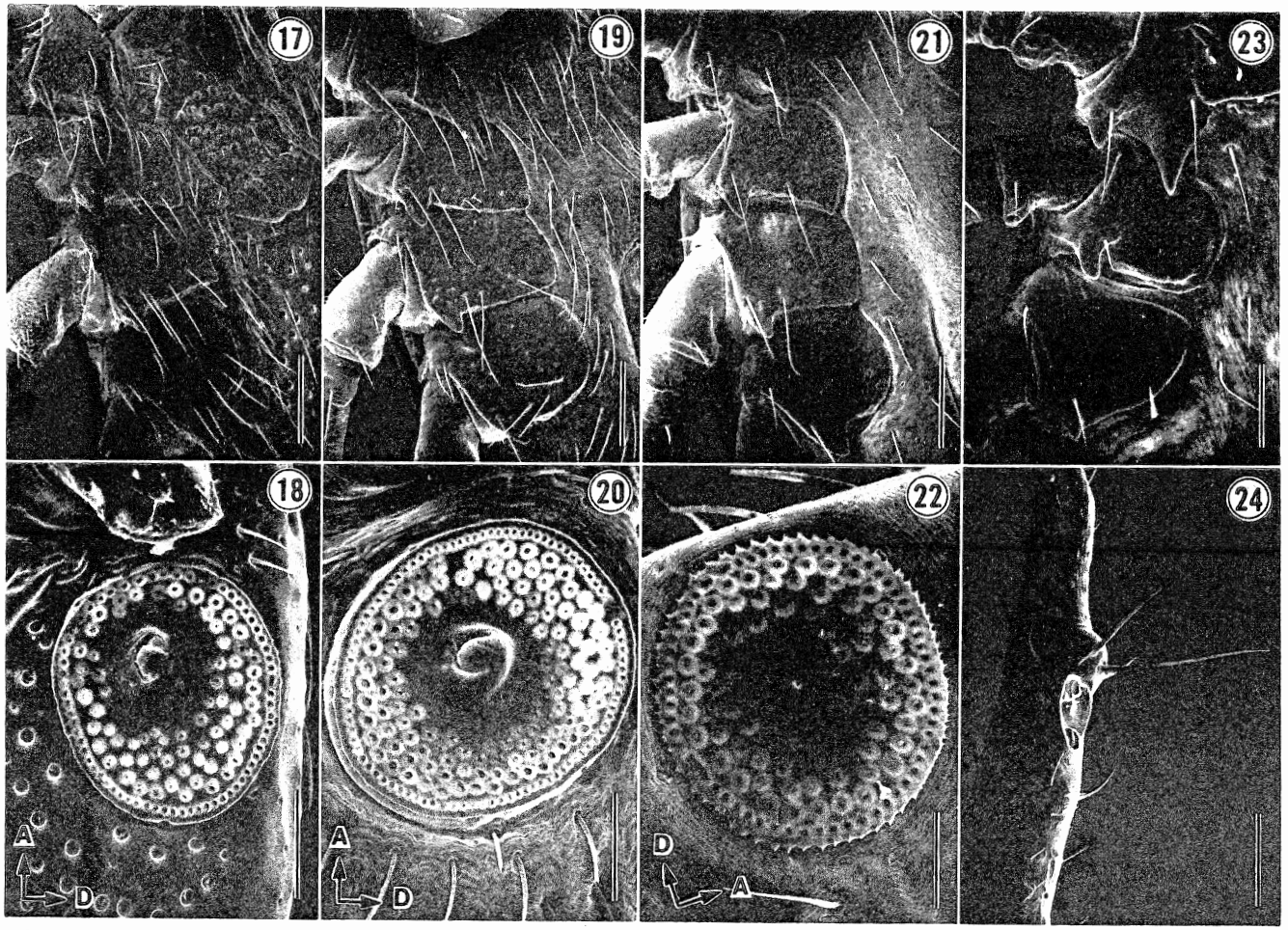


Figs. 1–8 Idiosoma of *I. pavlovskyi*.
1: male dorsum, scale = 0.5 mm. 2: male venter, scale = 0.5 mm. 3: female dorsum, scale = 0.5 mm. 4: female venter, scale = 0.5 mm. 5: nymphal dorsum, scale = 0.2 mm. 6: nymphal venter, scale = 0.2 mm. 7: larval dorsum, scale = 0.1 mm. 8: larval venter, scale = 0.1 mm.




Figs. 9–16 Capitulum of *I. pavlovskyi*.

9: male dorsum, scale = 0.1 mm. 10: male venter, scale = 0.1 mm. 11: female dorsum, scale = 0.2 mm. 12: female venter, scale = 0.2 mm. 13: nymphal dorsum, scale = 0.1 mm. 14: nymphal venter, scale = 0.1 mm. 15: larval dorsum, scale = 0.05 mm. 16: larval venter, scale = 0.05 mm.




Figs. 17–24 Coxa, spiracle and Haller's organ of *I. pavlovskyi*.
17: male coxae I–IV, scale = 0.2 mm. 18: male spiracle, scale = 0.1 mm. A, anterior; D, dorsal. 19: female coxae I–IV, scale = 0.2 mm. 20: female spiracle, scale = 0.1 mm. A, anterior; D, dorsal. 21: nymphal coxae I–IV, scale = 0.1 mm. 22: nymphal spiracle, scale = 0.05 mm. A, anterior; D, dorsal. 23: larval coxae I–III, scale = 0.05 mm. 24: male Haller's organ, scale = 0.1 mm.

2.1–2.4, width 1.3–1.5. Length from palpal apices to posterior margin of basis capituli 0.54–0.57. Basis capituli 0.30–0.32 wide dorsally; tiny cornua present (Fig. 9). Palpi 0.43–0.45 long, 0.15–0.17 wide. Hypostome 0.25–0.26 long, dentation as in Fig. 10. Coxae I–IV each with a distinct external spur; coxa I with a short internal spur reaching to anterior margin of coxa II (Fig. 17). Legs I–IV with lengthy segments; largest length 0.70–0.79 (tarsus I). Haller's organ anteriorly with 2 lengthy setae of 0.15–0.21 long (Fig. 24). Genital aperture between coxae III. Spiracular plates subcircular; greatest diameter 0.30–0.32 (Fig. 18).

*Female* (Figs. 3, 4, 11, 12, 19, 20). Legs and body excluding scutum and coxae pale brown (live specimen). Idiosomal length 2.4–2.6, width 1.6–1.7. Scutum 1.4–1.5 long, 1.1–1.2 wide; outline elliptical (Fig. 3). Length from palpal apices to cornua apices 0.78–0.86. Basis capituli (0.51–0.57 wide dorsally. Palpi 0.66–0.76 long, 0.19–0.21 wide. Hypostome acute at apex, 0.47–0.50 long; dental formula 4/4, 3/3, 2/2 (Fig. 12). Coxae I–IV each with a distinct external spur; coxa I with a long internal spur reaching to anterior 1/3 of coxa II (Fig. 19). Genital aperture between coxae IV. Spiracular plates subcircular; greatest diameter 0.27–0.35 (Fig. 20).

*Nymph* (Figs. 5, 6, 13, 14, 21, 22). Idiosomal length 1.2–1.3, width 0.8–0.9. Scutum 0.60–0.63 long, 0.58–0.63 wide. Scutal setae considerably shorter than postscutal ones (Fig. 5). Length from palpal apices to cornua apices 0.37–0.39. Basis capituli 0.24–0.25 wide dorsally. Palpi 0.32–0.33 long, 0.08–0.09 wide. Hypostome 0.20–0.22 long; dental formula 3/3, 2/2 (Fig. 14). Coxae I–IV each with a distinct external spur; coxa I with an internal spur reaching to anterior margin of coxa II (Fig. 21). Spiracular plates circular; diameter 0.16–0.17 (Fig. 22).

*Larva* (Figs. 7, 8, 15, 16, 23). Body excluding capitulum 0.58–0.60 long, 0.48–0.49 wide. Scutum 0.33–0.35 long, 0.35–0.37 wide. Length from palpal apices to posterior margin of basis capituli 0.19–0.20. Basis capituli 0.14–0.15 wide dorsally; cornua extended laterally (Fig. 15). Palpi 0.17–0.18 long, 0.04 wide. Hypostome 0.10–0.11 long; dental formula 3/3, 2/2 (Fig. 16). Body chaetotaxy (Figs. 7, 8); 5 scutal pairs ($Sc_1$–$Sc_5$) and 12 postscutal pairs ($Md_1$–$Md_7$, $Cd_1$–$Cd_4$, $S_1$) on dorsum; 13 pairs ($St_1$–$St_3$, $Pm_1$–$Pm_4$, $Mv_1$–$Mv_4$, $Pa_1$–$Pa_2$) on venter and 1 anal pair (A). Scutal setae shorter than postscutal ones (Fig. 7); $Sc_3$ 0.022–0.027 long, $Cd_1$ 0.034–0.045 long. Length of ventral setae, $St_1$ 0.049–0.057, $Pa_1$ 0.032–0.040. External spurs of coxae I and II distinctly longer than that of coxa III; coxa I with a long and acute internal spur reaching to anterior margin of coxa II (Fig. 23).

*Host.* In eastern Kazakhstan, the adults of *I. pavlovskyi* were found on birds, mainly *Turdus pilaris,* and its immatures were detected from many species of rodents and birds (Filippova and Ushakova, 1967; Ushakova and Filippova, 1968). In Japan, the authors collected the immature stages of *I. pavlovskyi* from the following rodents captured in Asahikawa: 4 larvae from 4 *Apodemus speciosus ainu,* June 26, 1991; 17 larvae and 2 nymphs from 1 *Rattus norvegicus,* June 26, 1991.

## Key to the species closely related with *I. pavlovskyi* in Hokkaido

In Hokkaido, *I. persulcatus* and *Ixodes nipponensis* Kitaoka et Saito are the species closely related with *I. pavlovskyi.* Key to the adult and immature ticks of these 3 species are as follows:

*Males*

1. Internal spur of coxa I long and acute, reaching to anterior 1/4–1/3 of coxa II ..... *I. persulcatus*
   Internal spur of coxa I short, reaching to anterior margin of coxa II ..... 2
2. Spiracular plate oval; legs blackish brown, not distinctly longer than idiosoma .... ..... *I. nipponensis*
   Spiracular plate subcircular; legs pale brown, distinctly longer than idiosoma .. ..... *I. pavlovskyi*

*Females*

1. Internal spur of coxa I short, reaching to anterior margin of coxa II ..... ..... *I. nipponensis*

Internal spur of coxa I long and acute, reaching to anterior 1/3–1/2 of coxa II ..... 2

2. External spur of coxa IV tiny; hypostome round at apex; legs blackish brown, postscutal idiosoma dark reddish brown ..... *I. persulcatus*
External spurs of coxae I–IV distinctly long; hypostome acute at apex; legs and postscutal idiosoma pale brown ..... *I. pavlovskyi*

*Nymphs*

1. Hypostome sharply pointed at apex ..... *I. nipponensis*
Hypostome round at apex ..... 2
2. External spur of coxa IV considerably shorter than those of coxae I–III; scutal and postscutal setae almost equal in length to one another .... *I. persulcatus*
External spurs of coxae I–IV long and subequal in length to one another; scutal setae shorter than postscutal ones ..... *I. pavlovskyi*

*Larvae*

1. Scutal and postscutal setae almost equal in length to one another ... *I. persulcatus*
Scutal setae shorter than postscutal ones ..... 2
2. External spurs of coxae I–III short and subequal in length to one another; internal spur of coxa I short, not reaching to anterior margin of coxa II ..... *I. nipponensis*
External spurs of coxae I and II distinctly longer than that of coxa III; internal spur of coxa I long and acute, reaching to anterior margin of coxa II ..... *I. pavlovskyi*

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## 摘　要

日本新記録の *Ixodes pavlovskyi* Pomerantzev (ダニ目，マダニ科)

北海道朝日町岩尾内，旭川市上雨粉，札幌市定山渓の森林でハタズリ法により植生上から未吸血のマダニ類を採集したところ，シュルツェマダニやタネガタマダニに類似した雌雄成虫を発見した．これらの成虫と実験室内飼育で得た幼若虫はシベリア大陸に分布する *Ixodes pavlovskyi* Pomerantzev, 1948 と形態が一致したため，北海道からの新記録として報告した．北海道ではライム病が確認されたことにより，その媒介種であるシュルツェマダニを正確に同定する必要がある．*I. pavlovskyi* は検索表に示した特徴で，類似種のシュルツェマダニとタネガタマダニから区別できる．