DERMACENTOR (INDOCENTOR) TAIWANENSIS (ACARI: IXODOIDEA: IXODIDAE): IDENTITY OF MALE AND FEMALE

BY

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Abstract. *Dermacentor* (Indocentor) *taiwanensis* of Taiwan and southern islands of Japan, where it parasitizes chiefly the Wild Pig, is redescribed and illustrated from study of 230 adult specimens and comparative study of more than 18,000 specimens constituting the Oriental subgenus *Indocentor*. This distinctive species is easily recognized by the short, closely spaced coxa I spurs that are joined anteriorly in each sex; 3–5 spurs on male coxa IV; female external genitalia moderately large, broadly V-shaped, blunt apically; and characteristic scutal ornamentation pattern of each sex.

As a step in revising the Oriental subgenus *Indocentor* Schulze of the genus *Dermacentor* Koch (Wassef & Hoogstraal 1983, 1984a,b; Hoogstraal & Wassef 1984, 1985a,b; Hoogstraal et al. 1986), we redescribe and illustrate the male and female of *D. (I.) taiwanensis* Sugimoto from 220 adult specimens from Taiwan and 10 adult specimens from southern Japan. Host and distribution data for adults and immatures are reported separately (Hoogstraal et al. 1986). The larva and nymph of this taxon were described and illustrated by Kitaoka & Suzuki (1981). *Dermacentor* (I.) *taiwanensis* is the only *Indocentor* species represented in our numerous collections of ticks from Taiwan wildlife and livestock and is the only species of the genus *Dermacentor* recorded from the Taiwan Wild Pig, *Sus scrofa taiwanus* Swinhoe.

*Dermacentor* (Indocentor) *taiwanensis* Sugimoto

Fig. 1–16

Taiwan-Japanese pig *Dermacentor*

Notes and synonymy

*Dermacentor taiwanensis*. Sugimoto (1935: 1–7, fig. 6–10) described 18 collected on Wild Pig at Aoshan, Hsintien, Taipei Prefecture, Taiwan (Formosa) (Nishiyama legit).

*Dermacentor taiwanensis*. Sugimoto (1956: 41–42, pl. V, fig. 1–5; pl. VIII, fig. 5, 6) redescribed δ and described 9 from *Sus scrofa* at Shiten, Taipei; stated that, except for a few differences, *D. taiwanensis* resembles *D. atrosignatus* Neumann, 1906. Sugimoto (1937: 325–27, pl. IV, fig. 1–8) redescribed δ and 9 from *Sus scrofa* in the Formosan Mountain Reservation for Aborigines. Note. Maa & Kuo (1966: 582–83) listed several review papers published by Sugimoto between 1936 and 1942 in which *D. taiwanensis* was mentioned without new data.

*Dermacentor taiwanensis* Sugimoto. Toumanoff (1944: 94) briefly compared *D. taiwanensis* and *D. aurator* Supino, 1897.

*Dermacentor taiwanensis* Sugimoto. Luh & Woo (1950: 204) listed this species as occurring in Taiwan.

*Dermacentor* sp. Keegan & Toshioka (1957: 10–11, pl. 14) illustrated a 4 *Dermacentor* from *Sus* sp. in Kyoto, Japan, that is typical of *D. taiwanensis*.

*Dermacentor taiwanensis* Sugimoto. Arthur (1960: 166–69, fig. 560–69) copied illustrations from Sugimoto (1937) and summarized δ and 9 characters.

*Dermacentor taiwanensis* Sugimoto. Maa & Kuo (1966: 582–83) reviewed Sugimoto literature, as mentioned in paragraph 2 of these notes.

*Dermacentor* sp. Yamaguti et al. (1971: 56–42, pl. 28) copied Keegan & Toshioka (1957) illustration.

*Dermacentor taiwanensis* Sugimoto. Teng (1978: 124–26, fig. 541–50) briefly redescribed δ and 9 and copied illustrations from Sugimoto (1956); stated that he had not seen specimens but considered this taxon probably to be a junior synonym of *D. aurator* Supino.

*Dermacentor taiwanensis* Sugimoto. Kitaoka & Suzuki (1981: 205–11, fig. 1–9) described and illustrated the nymph and larva collected from small and medium-sized mammals in southern Honshu, Kyushu, and Nansel islands of Japan.

Redescription

Note. The 230 adults examined for this study are listed by Hoogstraal et al. (1986).

δ (Fig. 1–6). Length from palpal apices to scutal posterior margin 4.75 to 6.84 (avg. of 20 specimens measured 5.73) mm, breadth 3.24 to 4.86 (avg. 3.79) mm. Color. Ivory enamelling covering all of pseudoscutum (except for narrow cervical grooves) and most of posterior area of scutum. Brownish areas as follows: a large angular area from eye to scutal midlength adjacent to lateral groove extending continuously or discontinuously to lateral margin; a smaller irregular area immediately posterior to scutal midlength close to (but not reaching) lateral groove; 5 central slightly elevated areas (a paired narrow submedian line between posterior margin of pseudoscutum and scutal midlength, a long narrow postmedian line, and 2 narrow paramedian areas); festoons 3, 4, 8, and 9 partially or entirely brownish. (Color intensity variable in preserved specimens but usually bright when specimens are wet.)

*Capitulum* (Fig. 3, 4, 5). Basis capituli dorsally enamelled; ca. 1.7× as broad as long (including cornua); central setae minute (number 2–3 inconspicuous pairs); external margins slightly curving; cornua short, broadly triangular, apices blunt; basis capituli ventrally as illustrated, setae number 1–5 posteroex-
Fig. 1–6. Dermacentor (Indocentor) taiwanensis & Taiwan: 1, dorsal view; 2, ventral view; 3, capitulum dorsal view; 4, capitulum ventral view; 5, hypostome; 6, spiracular plate (A = anterior, D = dorsal).
ternal pairs. *Palpi*. Segment 1 as a short, narrow pedicle, setae number 2–3 dorsally, 1 short ventrally, 3 ventrolaterally. Segment 2 ca. 1.1 × as broad as long, setae number 5 dorsally, 5 ventrally, 3 laterally; dorsointernal and ventrointernal setae number 2 and 4, respectively. Segment 3 ca. 0.7 × as long as 2; setae number 6 dorsally, 2 laterally, 2 ventrionternally, 2 ventroanteriorly. *Hypostome* (Fig. 5) ca. 2 × as long as broad; apex bluntly rounded, corona ca. ⅛ as long as denticle files, dental formula 3/3, denticles in files of 10–11, small crenulations in a few rows posteriorly.

*Scutum* (Fig. 1) broadly oval, ca. 1.3 × as long as broad. *Length* 4.16 to 5.98 (avg. 4.91) mm (for ornamentation, see Color, preceding). Anterior emargination deep, broad; scapulae broad; margins gradually diverging to level of coxa IV, thence converging to broadly rounded posterior margin; spiracular plate projection (minute) visible dorsally. *Pseudoscutum* broader than long, marked posteriorly by a faint brownish line; not always distinctly delineated from rest of scutum. Eye flat, oval, pale; rarely bordered by 1–2 minute punctations. *Cervical pits* short, dark. *Eyes* (Fig. 3) ca. 2 x as long as broad. *Hypostome* (Fig. 5) as illustrated. *Cervical grooves* (Fig. 6) shallow, extending a slight distance anteriorly and posteriorly along scutal margin; irregularly scattered in enameled areas, size large to moderate, small in scapular and posterior areas.

*Venter* (Fig. 2, 6). *Integument* (Fig. 2) smooth, setae small. *Genital area* (Fig. 2) as illustrated. *Spiroplastic plates* (Fig. 6) bluntly oval; dorsal projections bluntly rounded apically; giblets minute, numerous. *Legs* (Fig. 1, 2) large, robust, ivory enamelled dorsally. *Coxae* I (Fig. 2) spurs short, closely spaced, joined anteriorly, length subequal, external spur narrower than broadly triangular internal spur. *Coxae* II and III spurs each number 2, widely separated, small, external spur triangular, internal spur broader, less pointed. *Coxa* IV (Fig. 2) greatly enlarged ca. 1.5 × as broad as long, internal margin generally straight or slightly curving; spurs number 5–5, size and outlines variable, those between internal and external spurs more or less closely spaced. *Trochanter* I dorsal shield (Fig. 1) enamelled, broadly triangular; trochanter II–IV ventral spurs weak or obsolete. *Tarsi* (Fig. 1) stout, II–IV dorsal surfaces abruptly tapering distally; each with 2 stout ventral spurs and a strong ventroapical hook. *Claws* large, subequal. *Pulvilli* short, reaching only to midlength of claws.

9 (Fig. 7–15). Differs from *d* chiefly in sexual characters. *Length* 4.90 to 6.56 (avg. of 20 unfed specimens 6.08) mm; *breadth* 3.02 to 4.28 (avg. 3.91) mm.

*Capitulum* (Fig. 9–11). *Basis capituli* dorsal outline and cornua similar to those of *d*, porose areas oval or subcircular, size moderate, deep, widely spaced. *Basis capituli* dorsally ca. 2.4 × as broad as long, ventrally as illustrated. *Palpi* similar to those of *d* but larger; setae numbers differing from those of *d* as follows: segment 1 ventrointernal setae number 3–4; segment 2 setae number 5–6 dorsally, 4 ventrally, 2 laterally; segment 3 setae number 5 dorsally, 3 ventrally, 2 laterally, 2 ventroanteriorly. *Hypostome* (Fig. 11) essentially as in *d*, corona ca. ⅛ as long as denticle files.

*Scutum* (Fig. 7) 2.05 to 2.68 (avg. 2.48) mm long; 2.17 to 2.91 (avg. 2.71) mm broad, ca. 0.9 × as broad as long. Anterior emargination deep, broad; scapulae blunt; margins gradually diverging to level of eyes, thence gradually converging, posteriorly broadly rounded. Eye flat, oval, rarely bordered by 1–2 punctuations. *Color* light brown, ivory enamel much as in *d*; posteriorly, faint brownish area bordering eyes extending a slight distance anteriorly and posteriorly along scutal margin; irregular brownish median line interrupted or mostly absent (except posteriorly); a pair of irregular brownish areas along postero lateral margins. *Cervical grooves* in *d*. *Cervical grooves superficial*, brownish. *Punctations* moderately numerous; irregularly scattered in enameled areas, size large to moderate, small in scapular and posterior areas.

*Dorsum* (Fig. 7) punctations numbers moderate, few on lateral grooves and festoons; irregularly scattered, size medium, each usually with a single short white seta (sometimes indistinct). *Color* light brown, festoons partly yellowish (color indistinct in fed and dry specimens). *Venter* (Fig. 8) as illustrated. *Cervical operculum* (Fig. 12, 16) size moderate, broadly V-shaped, apex blunt. *Spiracular plates* (Fig. 13) as illustrated. *Legs* (Fig. 7, 8, 14, 15). *Coxae* I–III (Fig. 8, 16) shape and spurs similar to those of *d*. *Coxa* IV not greatly enlarged, spurs number 2, internal spur usually narrower than external spur. *Trochanter* I dorsal shield (Fig. 7) and trochanters ventrally (Fig. 8) as in *d*. *Claws* and *pulvilli* as in *d*.

*Nymph* and *larva*. These stages were described by Kitaoka & Suzuki (1981).

**Diagnosis (adults)**

A moderately large *Dermacentor* (subgenus *Indocentor*) (total *length* (mm): *d* avg. 5.77 (4.73 to 6.79) avg. *C. annulirostris* (4.90 to 6.56)); *Basis capituli* cornua short; porose areas size moderate, widely spaced. *Scutum* (d) ca. 1.5 × as long as broad. *Lateral grooves* each a line of contiguous or noncontiguous, deep, large and medium-sized punctations extending to or beyond scutal midlength. *Punctations* numbers moderate to numerous posteriorly, fewer and smaller anteriorly, irregularly scattered in enameled areas, few present in brown areas. *Festoons* number 11.

**Differential criteria**

*Dermacentor* (I.) *taiwanensis* is easily differentiated from the 3 previously reviewed *Dermacentor* (*Indocentor*) species (*compactus, auratus*, and *atrosignatus*) (Wassef & Hooogstraal 1983, 1984a,b; see "interim key" in the last-listed publication) by the following combination of characters: *d* scutal me-
Fig. 7–15. *Dermacentor (Indocentor) taiwanensis* from Taiwan: 7, dorsal view; 8, ventral view; 9, capitulum dorsal view; 10, capitulum ventral view; 11, hypostome; 12, genital area; 13, spiracular plate; 14, tarsus I external view; 15, tarsus IV external view.
1986
Wassef & Hoogstraal: Dermacentor (Indocentor) taiwanensis identity

FIG. 16. Dermacentor (Indocentor) taiwanensis, Taiwan (HH79,129); Scanning electron microscope view of genitalia and coxae I to IV. 85 x.

idian brown line absent anteriorly; pseudoscutum (d) broader than long (not always distinctly delineated from rest of scutum); coxa IV spurs number 3-5; d and 9 coxa I spurs short, closely spaced, joined anteriorly; 2 external genitalia broadly V-shaped, apex blunt.

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LITERATURE CITED


Dermacentor (Indocentor) taiwanensis (Acarina: Ixodidae): identity of Male and Female — (UNCLASSIFIED)

17 ABSTRACT

Dermacentor (Indocentor) taiwanensis of Taiwan and southern islands of Japan, where it parasitizes chiefly the Wild Pig, is redescribed and illustrated from study of 230 adult specimens and comparative study of more than 18,000 specimens constituting the Oriental subgenus Indocentor. This distinctive species is easily recognized by the short, closely spaced coxa IV spurs that are joined anteriorly in each sex; 3-5 spurs on male coxa IV; female external genitalia moderately large, broadly V-shaped, blunt apically; and characteristic scutal ornamentation pattern of each sex.