

NOTES ON AFRICAN HAEMAPHYSALIS TICKS. XI. *H. (RHIPISTOMA) PUNCTALEACHI* SP. N., A PARASITE OF WEST AFRICAN FOREST CARNIVORES (IXODOIDEA: IXODIDAE)*

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ABSTRACT: *Haemaphysalis (Rhipistoma) punctaleachi* sp. n. is described. Adults are recorded chiefly from civets; also from genets and a leopard, jackal, domestic dog, and antelope, in the Guinea Forest Province of West Africa eastward to eastern Uganda between about 11° N and 03° S.

Haemaphysalis (Rhipistoma) punctaleachi sp. n. is described. Adults parasitize carnivores in West African forests; one record is from a duiker. This is the fourth taxon we recognize in the African *H. (R.) leachi* group (Camicas, Hoogstraal, and El Kammah, 1972).

***Haemaphysalis (Rhipistoma) punctaleachi* sp. n.**
West African carnivore haemaphysalid
(Figs. 1-20)

Holotype

Male, from civet, *Civettictis civetta* ssp., Adiopodoumé (ca. 27 miles from Abidjan) (5°21' N, 04°08' W), ca. 100 ft. altitude, Ivory Coast, 2 May 1953, P. C. Morel (HH40, 928); deposited in Rocky Mountain Laboratory (RML54, 904).

Allotype

Female, data and depository as for holotype.

Paratypes

Total: 16♂, 2♀, with same collecting data as holotype and allotype. Paratypes are deposited in collections of J. L. Camicas (for ORSTOM), P. C. Morel, and H. Hoogstraal (for Rocky Mountain Laboratory). (See also Material examined, Table I).

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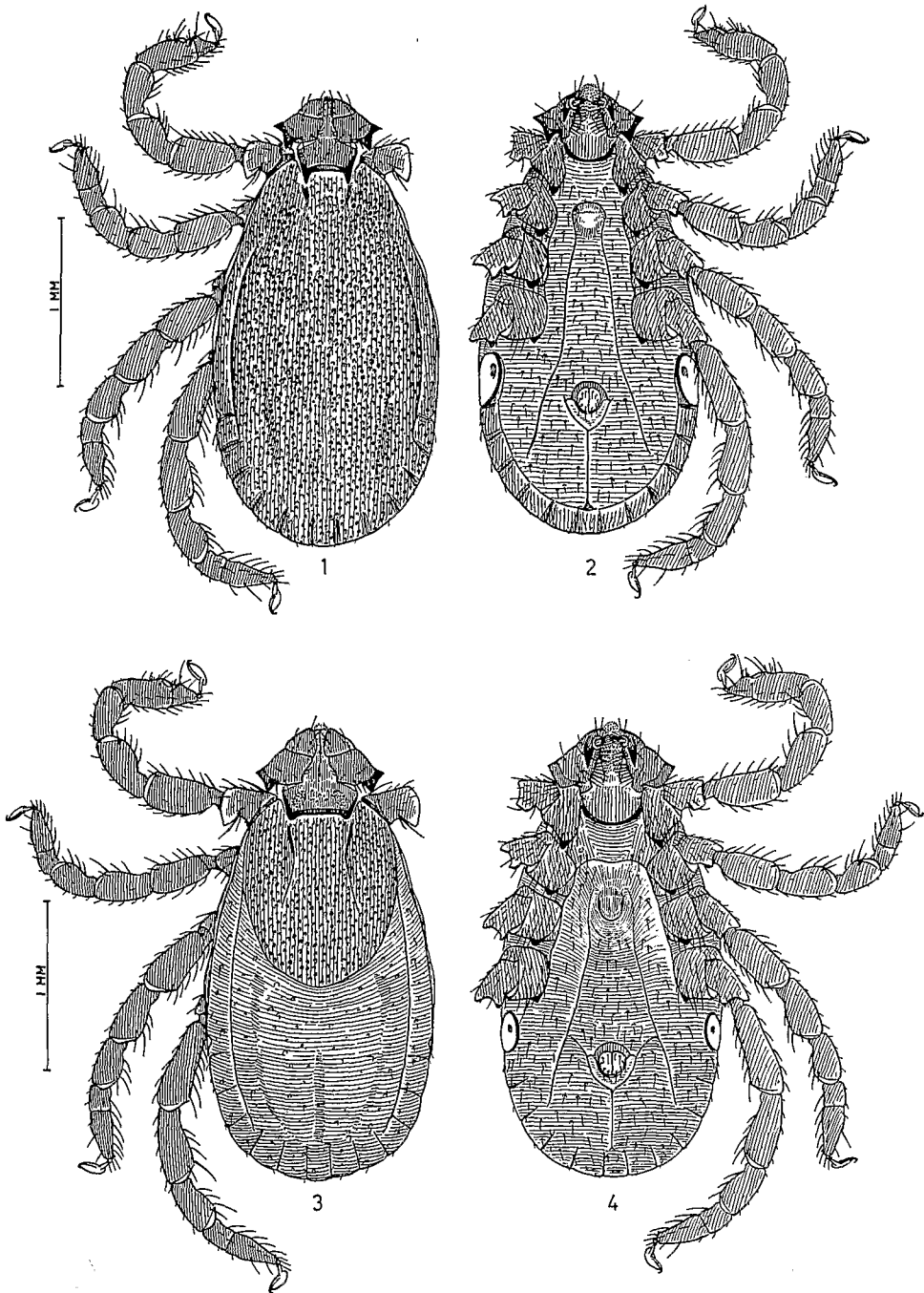
DESCRIPTION

Male (Figs. 1-2, 5-12)

Length from palpal apices to posterior body margin 2.5 to 3.0 (avg 2.65) mm; **breadth** 1.25 to 1.32 (avg 1.29) mm. **Color** yellowish to yellowish-brown.

Capitulum (Figs. 5-7). **Basis capituli** dorsally ca. 1.6 times as broad (anteriorly) as long (including cornua), external margins diverging anteriorly; cornua elongately triangular, almost one-half as long as base of basis capituli. Basis capituli ventrally as illustrated, setae ca. 4 pairs postero-external, 1 pair posthypostomal. **Palpi** broadly salient (*leachi* type; dorsal profile angle intermediate between that of *leachi* and *moreli*); combined palpal breadth ca. 1.9 times breadth of basis capituli; each palpus ca. 1.3 times as broad as long (from posterior margin of segment 2 excluding spur, to apex of segment 3). Segment 1 obsolete dorsally; ventrally as a short undifferentiated pedicle, 1 seta. Segment 2 ca. 2 times as broad as long, posterodorsal margin almost straight from insertion to ca. middle of breadth, thence forming a sharply triangular, posteriorly directed spur the external margin of which continues anteriorly as a concave arc to sharply pointed posteroexternal juncture; posteroventral margin concave between insertion and spur, spur slightly longer than dorsally and arising slightly nearer to midbreadth of segment; external profile acutely converging anteriorly, usually mildly convex; internodorsal margin slightly bulging anteriorly; dorsointernal setae number 2 or 3; ventrointernal setae number 5 or 6, strongly fringed; dorsal setae number 4, ventral setae number 3 to 6 (usually 3). In ventral profile, segment 2 ca. 1.1 times as long as 3. Segment 3 broadly triangular, ca. 1.8 times as broad as long; posterodorsal margin almost straight; ventral spur narrowly elongate, sharply pointed apex at level of midlength of segment 2; setae 5 dorsally, 4 ventrally, 2 or 3 on internoventral margin posteriorly. **Hypostome** (Fig. 7) slightly longer than palpi, ca. 2.4 times as long as broad; apex broadly rounded, corona ca. one-fifth as long as denticle files; dental formula 4/4; denticles in subequal-length files of 8 to 10.

Scutum (Fig. 1) 1.6 to 1.8 times as long as broad; anterior emargination broad, moderately deep; scapulae more or less pointed; margins mildly



FIGURES 1-20. *Haemaphysalis (Rhipistoma) punctaleachi* sp. n., Ivory Coast (HH40, 928), paratypes. 1, 2. Male, dorsal and ventral views. 3, 4. Female, dorsal and ventral views. 5, 6. Male capitulum, dorsal and ventral views. 7. Male hypostome, ventral view. 8. Male genital area. 9. Male spiracular plate (A = anterior; D = dorsal). 10. Male coxae and trochanters I to IV. 11. Male femur IV, internal view. 12. Male tarsi I to IV, external view. 13, 14. Female capitulum, dorsal and ventral views. 15. Female hypostome, ventral view. 16. Female genital area. 17. Female spiracular plate. 18. Female coxae and trochanters I to IV. 19. Female femur IV, internal view. 20. Female tarsi I to IV, external view.

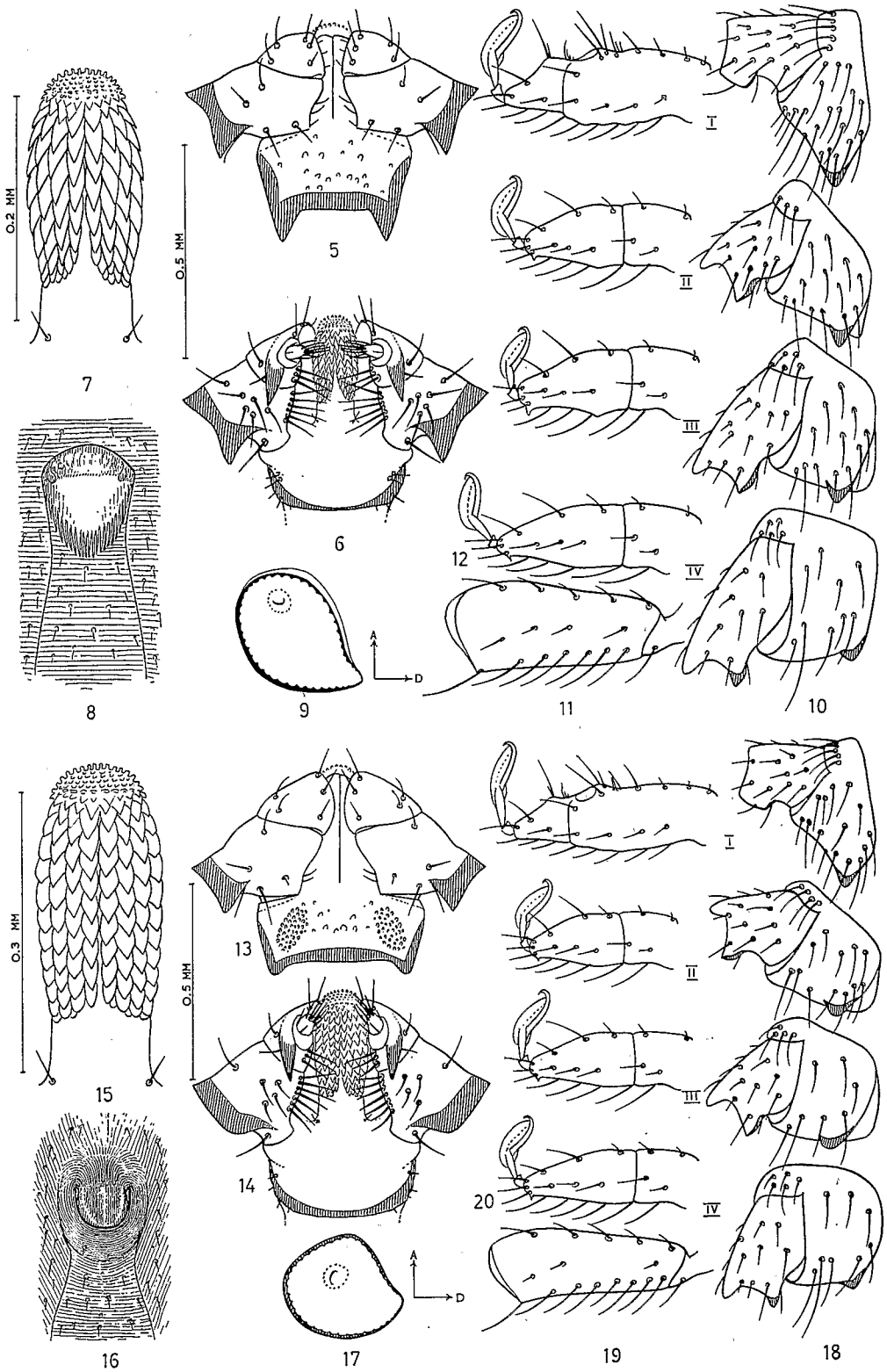


TABLE I. *Haemaphysalis (Rhipistoma) punctaleachi* sp. n., material examined.

No. of ticks		Host (No. examined)	Locality	Month year	Collector
♂	♀				
Guinea					
2	0	<i>Canis</i> sp.	Pita	Oct. '63	M. Eyraud
Liberia					
2	1	<i>Civettictis civetta</i> subsp. (1)	Totota	Nov. '60	R. S. Bray
0	1	<i>Neotragus pygmaeus</i> (1)	Freemanstown	—	—
1	0	<i>Genetta johnstoni</i> (1)	Putu Range	Jan. '71	J. Voelker
Ivory Coast (Abidjan)					
31	6	<i>Civettictis civetta</i> subsp. (2)	Adiopodoume	May '53	P. C. Morel
1	0	Domestic dog (1)	Banolilie	Mar. '61	—
Ivory Coast (West)					
7	0	<i>Felis pardus</i> subsp. (1)	Tai	Jan. '56	—
Ivory Coast (Mt. Nimba)					
6	2	<i>Civettictis civetta</i> subsp. (1)	Yanlé	June '48	—
Cameroun (Occidental)					
3	0	<i>Civettictis civetta</i> subsp. (1)	Atolo, Mamfe	June '33	—
Cameroun					
4	2	<i>Civettictis civetta</i> subsp.	Yaounde	'55	J. Mouchet
11	2	<i>Civettictis civetta</i> subsp.	Obala	Sept. '64	—
5	4	<i>Civettictis civetta</i> subsp. (1)	Nkomakak-Efoulan	July '54	J. Mouchet
4	0	<i>Genetta tigrina</i> subsp. (1)	Molundu	Feb. '20	Haberer
71	22	<i>Civettictis civetta</i> subsp. (?)	Nanga-Eboko	'56	—
23	7	<i>Civettictis civetta</i> subsp. (?)	Evodoula	Oct. '52	—
Rio Muni (North Central)					
15	1	<i>Felis pardus</i> subsp. (1)	—	June '54	K. C. Brown
Gabon (Moyen-Ogooue)					
3	1	<i>Genetta g. senegalensis</i> (1)	Lambarene	—	Ellenberger
Gabon					
10	1	<i>Nandinia binotata</i> (1)	Belinda	June '62	—
Zaire					
7	1	<i>Civettictis civetta</i> subsp. (1)	Ibembo	Mar. '50	R. Fr. Hutsebut
1	0	Not stated	Awaukwi	'50	J. Leroy
Rwanda					
4	9	Not stated	Mwunyanika	Sept. '49	—
Uganda (Kigezi)					
30	13	Not stated	Nakabande	Oct. '40	—
241	73	Total			

convex, broadest at level of spiracular plates, posteriorly gradually rounded. *Cervical pits* narrow, deep, converging. *Cervical grooves* obsolete or short, shallow, diverging. *Lateral grooves* deep, distinct, extend to anterior one-fourth of scutal length; enclose first festoon. *Punctations* dense; medium size, discrete, walls straight, relatively deep, well separated, giving scutum a clearly punctate appearance. *Festoons* number 11.

Venter (Fig. 2) and *genital area* (Fig. 8) as illustrated. *Spiracular plates* (Fig. 9) ca. 1.5 times as long (including dorsal projection) as broad; oval; dorsal projection triangular, elongate.

Legs (Figs. 1, 2, 10–12) moderately long, narrow. *Coxae* (Fig. 10) I to IV spurs each short, subtriangular, more or less bluntly pointed, extending somewhat beyond coxal margin; setae (excluding anteroexternal group) number 13 to 20 on I, 12 to 14 each on II and III, and 8 to 10 on IV. *Trochanters* ventrally (Fig. 10) lack spurs. *Femur* IV (Fig. 11) ventrointernal setae number 8 to 10, more than one-half as long as breadth of femur at point of insertion. *Tarsi* (Fig. 12) II to IV moderately elongate; dorsal surfaces proximally flat, gradually tapering distally; ventral surfaces usually each with a small subapical hook and (II

and III) with a slight subproximal ridge. *Claw* I long, II to IV moderate. *Pulvilli* large, reaching to apical curvature of claws.

Female (Figs. 3, 4, 13–20)

The female differs from the male in sexual characters but is similar in diagnostic details. *Length* (unengorged) 2.6 to 3.0 (avg 2.8) mm; *breadth* 1.3 to 1.6 (avg 1.4) mm.

Capitulum (Figs. 13–15). *Basis capituli* dorsally ca. 2.1 times as broad as long (including cornua); external margins diverging anteriorly; cornua short, broadly triangular, bluntly pointed, ca. one-fifth as long as base of basis capituli; porose areas elongate-oval, tilted, moderate size, widely spaced. *Basis capituli* ventrally as illustrated. *Palpi* similar to those of male except as follows: Segment 2 posteroventral spur reduced to a short, obtuse angle or a curve; dorsointernal setae number 2, ventrointernal setae number 6 or 7 (usually 7). Segment 3 ventral spur narrower and shorter, sharply pointed apex at level of anterior one-third of length of segment 2. *Hypostome* (Fig. 15) ca. 2.5 times as long as broad; essentially as in male; denticles in files of 9 to 12.

Scutum (Fig. 3) ca. 1.3 times as long as broad; anterior emargination moderately deep, broad; scapulae as in male; margins subparallel almost to level of scutal midlength, thence gradually converging, posteriorly bluntly rounded. *Cervical grooves* narrow arcs extending to or slightly beyond scutal midlength. *Punctations* essentially as in male.

Dorsum (Fig. 3) and *venter* (Figs. 4, 16, 17) as illustrated. *Genital operculum* (Fig. 16) broad, posteriorly broadly rounded. *Spiracular plates* (Fig. 17) ca. 1.2 times as broad (including dorsal projection) as long; irregularly subcircular; dorsal projection short, broadly triangular.

Legs (Figs. 3, 4, 18–20) as in male, except as follows: *Coxae* (Fig. 18) setae (excluding antero-external group) number 18 to 20 on I, 12 to 14 each on II and III, 7 to 9 on IV. *Tarsi* (Fig. 20) lack subproximal ridges.

Nymph and larva

These stages are unknown.

DIAGNOSIS (ADULTS)

A moderate-sized haemaphysalid tick (subgenus *Rhipistoma*; group *leachi* [total length (mm): ♂ avg 2.65, ♀ avg 2.8; breadth: ♂ avg 1.3, ♀ avg 1.4]. *Basis capituli* dorsally ca. 1.6 (♂) or 2.1 (♀) times as broad as long; margins diverging anteriorly; cornua elongately (♂) or broadly (♀) triangular, almost one half (♂) or one-fifth (♀) as long as base of basis capituli; porose areas (♀) elongately oval, widely spaced. *Palpi* broadly salient, ca. 1.9 times as broad as basis capituli, each palpus ca. 1.3 times as broad as long. Segment 1 obsolete dorsally, 1 ventral seta. Segment

2 posterodorsal margin forming a large, triangular external spur; posteroventral margin concave proximally, spur (♂) as dorsally but slightly longer and more median, or (♀) reduced to short, obtuse angle or curve; dorsointernal setae number 2 or 3 (♂) or 2 (♀); ventrointernal setae number 5 or 6 (♂) or 6 or 7 (usually 7) (♀). In ventral profile, segment 2 ca. 1.1 times as long as 3. Segment 3 ventral spur narrowly elongate, sharply pointed, extending to midlength (♂) or anterior one-third (♀) of length of segment 2. *Hypostome* dental formula 4/4; denticles in files of 8 to 10 (♂) or 9 to 12 (♀). *Scutum* (♂) 1.6 to 1.8 times as long as broad; margins mildly convex, posteriorly gradually rounded; cervical pits short, converging; cervical grooves obsolete or short; lateral grooves deep, extending to anterior one-fourth of scutal length, enclosing first festoon; punctations numerous, medium size, discrete, wall straight, relatively deep, well separated, giving scutum a clearly punctate appearance. *Scutum* (♀) ca. 1.3 times as long as broad; margins subparallel almost to level of scutal midlength, thence gradually converging, posteriorly bluntly rounded; cervical grooves narrow arcs extending slightly beyond scutal midlength; punctations essentially as in male. *Genital operculum* (♀) broad, posteriorly broadly rounded. *Spiracular plates* elongately oval (♂) or irregularly subcircular (♀); dorsal projection triangular, long (♀) or short (♀). *Legs* moderately long, narrow. *Coxae* each spur short, subtriangular, more or less bluntly pointed, extending somewhat beyond coxal margin; setae (excluding anteroexternal group) number 13 to 20 (♂) or 18 to 21 (♀) on I, 12 to 14 each on II and III, and 8 to 10 on IV (♂) or 12 to 14 each on II and III, 7 to 9 on IV (♀). *Femur* IV ventrointernal setae number 8 to 10. *Tarsi* II to IV moderately elongate, ventrally each usually with a small subapical hook and II and III (♂ only) with a slight subproximal ridge. *Pulvilli* reaching to apical curvature of claws.

RELATED SPECIES

Haemaphysalis (Rhipistoma) punctaleachi is a West African humid forest member of the *H. (R.) leachi* group and related to *leachi* (Audouin) (see Hoogstraal, 1958), *spinulosa* Neumann (see Hoogstraal, 1964), and *moreli* Camicas, Hoogstraal, and El Kammah (1972).

The taxon *spinulosa* differs markedly from *punctaleachi* and the others owing to the presence on the posteroventral margin of female palpal segment 2 of a sharp spur (rather than a curve, arc, or short, obtuse angle), few (rather than numerous) scutal punctations in both sexes, etc. (A detailed redescription of *spinulosa* is in preparation.)

The male scutum of *punctaleachi* is large and relatively broad (avg 2.6 by 1.3 mm), in contrast to *moreli* (avg 2.0 by 0.9 mm) and *leachi* (avg 2.6 by 1.04 mm); the densely punctate surface, with discrete, straight-walled punctations, differs from the shagreened surface of *moreli* and the glossy, moderately punctate surface of *leachi*. The lateral grooves enclose one festoon, as in *moreli*, rather than two or three festoons as in *leachi*.

The female *punctaleachi* basis capituli is ca. 2.1 times as broad as long (ca. 2.6 in *leachi*, 2.8 in *moreli*) and the cornua are longer than in *moreli*. The female palpal outline of *moreli* is distinctly longer than in *punctaleachi* and *leachi*. Segment 2 of the female *punctaleachi* lacks the large anterior bulge of the internodorsal margin characteristic of the other two species. The ventral spur of palpal segment 3 is shortest in *punctaleachi*. The short denticle files of the female *leachi* (8) contrast with the longer files of *punctaleachi* (10 to 12) and *moreli* (9 to 11). Coxal spurs II and III are relatively large in the female *leachi*, moderate in *punctaleachi*, and reduced to ridges in *moreli*.

The spiracular plates of both sexes also differ from species to species in size and outline and are particularly large in *leachi*.

DISTRIBUTION AND HOSTS

The collection data for *Haemaphysalis* (*Rhipistoma*) *punctaleachi* are listed in Table I. This species is recorded chiefly from the Guinea Forest Province of West Africa, from the Atlantic Ocean to eastern Uganda, between about 11° N and 03° S.

Most hosts recorded in Table I are civets. Others are genets, a leopard, jackal, and domestic dog, and a single antelope (*Neotragus pygmaeus*).

The hosts of immature stages are unknown.

LITERATURE CITED

- CAMICAS, J. -L., H. HOOGSTRAAL, AND K. M. EL KAMMAH. 1972. Notes on African *Haemaphysalis* ticks. VIII. *H. (Rhipistoma) moreli* sp. n., a carnivore parasite of the *H. (R.) leachi* group (Ixodoidea: Ixodidae). *J. Parasit.* **58**: 1185-1196.
- HOOGSTRAAL, H. 1958. Notes on African *Haemaphysalis* ticks. IV. Description of Egyptian populations of the yellow dog-tick, *H. leachii leachii* (Audouin, 1827) (Ixodoidea, Ixodidae). *J. Parasit.* **44**: 548-558.
- . 1964. Notes on African *Haemaphysalis* ticks. VI. *H. spinulosa* Neumann, and its relation to biological and nomenclatorial problems in the *H. leachii* group of Africa and Asia (Ixodoidea, Ixodidae). *J. Parasit.* **50**: 786-791.

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