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Described from 1 ♀ in the collection of Mr. L. Bruner and taken by Dunn in Arizona.

HIPPISCUS (X.) PARDALINUS.

Oedipoda pardalina Sauss., Rev. mag. zool., 1861, 324; Orth. nova amer., 2, 27; Thom., Syn. Acrid. N. A., 213-214.

Xanthippus pardalinus Sauss., Prodr. Oedip., 90.

This is a very widespread species. I have seen specimens from Nevada; several localities in Utah, all of E. Palmer's collecting. as Mt. Trumbull, June 7-10, Mokiak Pass near St. George, April 20-30, Parowan, 6000' in irrigated fields near low mountains, July 3-10; San Diego and Rock Spring in southern California (E. Palmer); the state of Vera Cruz, Mexico (Bruner), and the vicinity of Mexico, Mex. (E. Palmer). Saussure mentions it from California, New Mexico, Orizaba and Puebla, Mexico, and from the West Indies and Venezuela. In the United States, then, it has not been found east of the Rocky Mountains nor north of Lat. 40°.

HIPPISCUS (X.) MACULATUS sp. nov.

Head of moderate size not very tumid above; dull cinereous, more or less fuscous above; median carina of vertex slight, terminating in the middle of the fastigium, opposite which the low lateral walls are considerably angulated; biareolate apical foveola subcircular in ♂, obscure and transversely elliptical in ♀; frontal costa rather deeply sulcate, narrowed considerably above. Pro-

notum plane above, the median carina low, of uniform height, cut by both sulci and more or less obsolete between; lateral carinae sharp, distinctly passing over under the prozona; process of metazona rectangular or less, the surface variable but verruculose or coarsely arenaceous, the tendency of the verrucosities to be longitudinal; lateral lobes bluntly subduced verrucose; dorsum of pronotum blackish fuscous with obscure pallid, subdecussate, strongly divergent, posteriorly narrowing stripes; lateral lobes obscure with a median semilunate blackish patch seated on a small quadrate whitish spot. Tegmina cinereous marked with rounded blackish fuscous and minutely black edged spots having much the position of those of the species which have here preceded but generally more rounded, more contracted, and hence more distant than in them, the sutural stripe rather broad, clear, and testaceous. Wings pale citron at base, the apex vitreous with black reticulation, and between a moderately broad, blackish fuliginous, arcuate band scarcely narrowing above and united, except for the slender pallid axillary line, with the humeral vitta, the outer limit of which is opposite the middle or inner margin of the arcuate band, and which narrows and becomes duller as it passes toward the base which it is far from reaching; inner portion of costal margin citron as far as below, followed by a slender blackish stigma. Hind femora externally hoary cinereous below, darker above, with very oblique broad blackish stripes and apically a semilunate black spot; beneath and apically within coral red; hind tibiae coral red, externally hoary with black tipped spines.

Length of body, ♂, 33.5 mm., ♀, 38 mm.; of tegmina, ♂, 35 mm., ♀, 34 mm.

A specimen from Colorado collected by Morrison is in Mr. Henshaw's collection, and in mine a ♂ from Pueblo, Colorado, which I collected on July 8 or 9 and a ♀ from San Luis Potosi,

Mexico (E. Palmer). Mr. Bruner also sends me a specimen from Ft. Grant, Arizona.

Described from 1 ♂, 2 ♀.

HIPPISCUS (X.) TIGRINUS sp. nov.

Dark brownish fuscous, of robust form and medium size. Head narrowed above and rugulose; fastigium of vertex distinct with rather sharp though not high bounding walls, closed behind by a distinct but slight transverse more or less arcuate and irregular carina, the posterior half with a slight median carina which extends back more or less distinctly over the head; lateral foveolae not deeply impressed, triangular, the median foveola between their tips slightly impressed: frontal costa moderately broad, narrowed at summit much more than below the ocellus, deeply sulcate at the ocellus, plane at the considerably expanding base. Pronotum expanding considerably on the metazona, which is centrally a little tumid, the rugosities of the latter, which are considerable, ranged more or less distinctly into series parallel to the sides of the process; median carina subobsolete or at least depressed between the sulci, distinctly arched on the metazona; lateral canthi distinct and sharp in the middle of the pronotum, a faint rather broad ashen band next their inner side; process rectangulate or less. Tegmina ashen gray, brownish at base, vitreous on apical third or more, the transverse bars dark brownish fuscous, mostly crossing the wing, those of apical half not at all rounded, with rare exceptions with ill defined irregular margins, and extending though fainter to the tip of the wing; sutural line testaceous. Wings very pallid citron at base, pellucid at tip, occasionally with one or two fuliginous cellular spots at tip, the veins and cross veins blackish on apical portion, yellow on basal, with a broad, subequal, arcuate, dark fusco-fuliginous, median, scarcely tapering band, leaving four or five lobes free, separat-

ed by a yellow line from the humeral vitta which extends from very nearly as far out to the base of the wing, the costal margin fusco-testaceous. Hind femora externally brownish fuscous with only obscure if any darker very oblique bars, dirty clay yellow below, the under surface, like the tibiae and tarsi, luteous, the spines black tipped.

Length of body, 39 mm.; of tegmina, 37 mm.

The species is somewhat widely spread, mostly at the eastern base of the Rocky Mountains, extending from Colorado? (collected by Lt. E. G. Beckwith's party of Pacific R. R. exploration near Lat. 38°) West Point, Nebraska (Bruner), and Nebraska (Miss Walker) to Ft. Buchanan, south of Tucson, Arizona (E. Palmer). A specimen received from Mr. P. R. Uhler has no designation of locality.

Described from 5 ♀, but the description is drawn up mainly from Mr. Uhler's specimen, the others having been first immersed in alcohol.

HIPPISCUS (X) LEPROSUS.

Xanthippus leprosus Sauss., Prodr. Oedip., 92.

I possess two poor ♀, originally preserved in alcohol, both of which come from much further north than de Saussure's locality (New Mexico), one of them collected by Dr. Suckley below Lake Jessie at Ft. Benton, Montana, during the N. Pacific R. R. surveys, the other from Colorado (?) by Lt. E. G. Beckwith on the Pacific R. R. surveys about Lat. 38°. Mr. Bruner also sends me a specimen from Reno, Nevada, collected by Hillman.

HIPPISCUS (X.) PARADOXUS.

Oedipoda paradoxa Thom.!, Rep. U. S. geol. surv. terr., v, 457; 6, 720-721; Syn. Acrid. N. A., 132.

Not *Oe. paradoxa* Glover.

Brownish fuscous, of robust form and medium size. Head dark above, cinereous or pallid below, often marked laterally by two narrow oblique brownish fuscous stripes, one running from behind the eyes across their lower edge to the middle of the frontal costa, the other parallel to and distant from it across the lower part of the cheeks; rugose above including the fastigium of the vertex which is as broad as long and bordered in its entire circuit, sometimes less distinctly in front and behind, by strongly sinuous sharp and moderately high bounding walls; lateral foveolae moderately deep, short triangular, including between their tips a distinctly biareolate broad oval deep foveola; frontal costa almost exactly as in *H. (X.) tigrinus* but sulcate more deeply and for a longer distance and expanding more considerably at base. Pronotum shaped as in *H. (X.) tigrinus* and as there rather deeply stabbed on either side of the middle of the front margin of the metazona, the latter more vaulted, the rugosities especially in ♀ profuse, subarenaceous, elevated, blunt, and pretty uniformly distributed; median carina of metazona pretty strongly arched but still rather slight and low; lateral carinae generally distinct and sharp but slight; lateral lobes nearly smooth in ♂, bluntly rugulose in ♀; dorsum sometimes marked by a broad bent ashen band on either side. Tegmina cinereous, very heavily barred with dark brown, on the costal margin sometimes blackish, transverse bands nearly or quite crossing the tegmina, almost or quite confluent below and occupying four-fifths or considerably more of the tegmina, extending to the tip, so that the tegmina may be rather regarded as brown with narrow transverse ashen stripes broadening above, one ashen patch larger than the

others usually found situated on the costal margin, its outer limit at the middle of the margin; a rather broad sutural stripe beneath which the tegmina are almost or quite wholly brown. Wings pallid at base with a citron tinge, the veins and cross veins of the same color, vitreous apically, with occasionally a fuliginous cellular spot or two near the apex, the reticulation black with a narrow rather strongly arcuate fusco-fuliginous median band, occasionally broadened a little, especially in the middle of its course, leaving about four marginal lobes free, separated by an often scarcely perceptible yellowish line from the humeral vitta, which reaches to the outer limits of the upper extremity of the arcuate band and extends nearly (♀) or less than three quarters way (♂) to the base, the costal margin testaceous interrupted with fuliginous at the extremity of the vitta. Hind femora pallid cinereous, with three well defined, moderately broad, strongly oblique, distinct dark brown stripes; beneath and within coral red like the tibiae which are more or less pallid externally especially at the base, the spines black tipped; hind tarsi luteous.

Length of body, ♂, 33 mm.; ♀, 37 mm.; of tegmina, ♂, 31 mm., ♀, 37 mm.

Described from 3 ♂, 7 ♀, most but not all killed in alcohol.

One specimen comes from Holt Co., Nebraska (L. Bruner, May); the others from Utah (Parowan, July 3-10, about 6000', near low mountains on an irrigated spot; Mokiak Pass near St. George, April 20-30, E. Palmer), Taos Valley, N. Mex., May 30 (Bruner) and Arizona (Ft. Whipple, E. Palmer; also collected by Dunn, Bruner).

A single type of this species, a ♀, exists in the National museum, dried after immersion in alcohol, leaving no trace

of the red color to the wings. It differs from Thomas's description in that the "dorsal area" (axillary field) of the tegmina is not without spots, though such specimens do occur, especially in the ♂. As his description is very insufficient and his remarks on its relationship misleading, I have printed here the description drawn up from my specimens before I had seen his type. I had formerly supposed his species to be a synonym of *H. (H.) haldemani*. Glover's figure (pl. 18, fig. 14), presumably from specimens furnished by Thomas, is pretty certainly that species. It does not at all agree with the present species.

The distribution of the species as given above must therefore be slightly extended. Thomas's original specimens were found from Ogden to Smithfield in Cache Valley, northern Utah; and he subsequently adds southeast Idaho.

HIPPISCUS (X.) AFFRICTUS sp. nov.

Very dark brownish fuscous, of robust form and medium size, the sexes varying considerably. Head dark on summit but elsewhere mottled with pale cinereous and light brownish fuscous, the summit moderately broad and tumid, gently rugulose, the tolerably smooth-floored vertical fastigium open behind or with the lateral walls incurved somewhat, open also in front to the large and rather deep biareolate median foveola; lateral foveolae very small subcircular, the lower walls obscure; frontal carina of moderate width, deeply sulcate throughout, though the sulcus fades at base, considerably narrowed at summit, more or less expanding at base, at least in the ♀. Pro-

notum expanding but moderately behind, the process variable but generally slightly less than rectangulate, the dorsum broadly edged laterally with an oblique, broad, usually posteriorly narrowing, pallid cinereous band; margin of process edged with testaceous; lateral lobes of prozona cinereous flecked with brown and with a large median oblique dark brown spot; metazona more or less but not greatly tumid centrally, the median carina arched, distinct and sharp, not elevated, and equal; lateral carinae distinct and sharp, longer than usual and centrally elevated; dorsal surface of metazona arenaceo-rugulose but not very heavily marked. Tegmina cinereous and brownish fuscous, the latter in more or less transverse broad belts but all, as in the next species, somewhat confused and blurred, giving it a more maculate appearance than usual, the cinereous markings prevailing along the costal third of the wing, where also the darker markings are usually darkest; a broad and rather bright flavo-testaceous sutural stripe. Wings pale citron, rarely salmon-red at base, the reticulation the same, vitreous with black reticulation at apex, with occasionally a cellular spot or two and a broad or rather broad, arcuate, median, blackish or very dark fuliginous band, gently narrowing toward the anal angle which it just reaches, not at all or but slightly narrowing above and separated by a generally fine yellow line from the humeral vitta, which reaches to or nearly to its outer margin and usually extends almost to the base, the costal margin of the basal color (generally a little dulled) interrupted with blackish at the extremity of the vitta. Hind femora and tibiae as in *H. (X.) devotus*.

Length of body, ♂, 29-30 mm., ♀, 37-43 mm.; of tegmina, ♂, 28-30 mm., ♀, 38-40 mm.

Described from 5 ♂, 12 ♀, mostly fresh.



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