



A new beetle species, *Dactylispa (Triplispa) sicienti* sp. nov. (Coleoptera: Chrysomelidae: Cassidinae: Hispini) from Xizang, China

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Abstract

Mêdog County, Xizang Autonomous Region, is situated at the eastern edge of the Himalaya. Almost no survey of Cassidinae (Coleoptera: Chrysomelidae) has been done there. Here we describe one new species, *Dactylispa (Triplispa) sicienti* sp. nov., based on six specimens collected during an insect biodiversity survey conducted in 2024. The new species can be readily separated from other congeners by pronotum yellowish, each elytron bearing only two primary spines on the second elytral interval.

Key words: subgenus, tortoise beetle, new taxon, Qinghai-Xizang Plateau

Introduction

The genus *Dactylispa* Weise, 1897 is one of the most species-rich lineages within the tribe Hispini Gyllenhal, 1813, comprising approximately 387 described species distributed broadly across the tropical and subtropical regions of Asia and Africa (Staines 2015, Zhang *et al.* 2021). Larvae of *Dactylispa* have been reported to exhibit a leaf-mining habit, with many species associated with monocotyledonous hosts, particularly Poaceae (Liu *et al.* 2019; Yang *et al.* 2024).

In mainland China, the last comprehensive taxonomic treatment of Cassidinae was published by Chen *et al.* (1986) in the Fauna Sinica series, and it included 4 subfamilies, 49 genera and 417 species. It also recognized 89 species of *Dactylispa* (Tribe Hispini), classified in three subgenera: *Dactylispa* Weise, 1897 (41 spp.), *Triplispa* Weise, 1897 (37 spp.), and *Platypriella* Chen & Tan, 1961 (11 spp.). The subgenera of *Dactylispa* can be distinguished by the morphology of elytral explanate margins and the arrangement of puncture rows IX–XI: in *Dactylispa*, the elytral margins are not explanate, and rows IX and X are separated at the base and apex but fused medially; in *Triplispa*, the margins are more or less explanate, and rows IX and X remain entirely separate throughout; in *Platypriella*, the elytral margins are distinctly explanate and constricted medially. The elytra bear eleven rows of punctures, but row XI is present only at the base and apex, disappearing in the middle.

Since the publication of Fauna sinica (Chen *et al.* 1986), 10 additional Cassidinae species have been recorded from mainland China, including newly described species and, new country records (Borowiec & Sassi 2002; Świętojańska & Borowiec 2006; Świętojańska 2001; Borowiec 1993; Qi *et al.* 2008; Sekerka 2006; Sun *et al.* 2003; Liao *et al.* 2018; Huang *et al.* 2025). However, among these, only two species belong to the genus *Dactylispa* (Tan & Yu 1993).

During the examination of unidentified specimens collected in Mêdog in 2024, we found six specimens of a previously undescribed species of *Dactylispa*, which we formally described here.

Material and methods

All specimens were softened by soaking in room-temperature distilled water for 24 hours before being removed and positioned. Once a specimen was sufficiently softened, the abdomen was detached and opened to expose the genitalia. Male and female genitalia were extracted and placed in a 10% NaOH solution and heated in a water bath for 5 minutes. Afterward, the genitalia were rinsed thoroughly in distilled water and stored in glycerin.

Images were taken using a Canon EOS R5 mirrorless camera paired with a Canon EF 100 mm macro lens and a Canon MP-E 65 mm macro lens. Additional photographs were captured using a self-assembled bellows system mounted with Mitutoyo 10× and 20× APO objective lenses. Focus stacking was performed using a custom-built motorized rail system, and image stacks were processed with Helicon Focus v. 8.2.2. Final adjustments, including cropping and contrast enhancement, were conducted in Adobe Photoshop.

The descriptive terminology employed herein follows Uhmann (1954) and Chen *et al.* (1986), and we apply standardized terms to the following beetle body regions: the anterior and lateral margins of the pronotum; the sutural and lateral margins of the elytra; the scutellar interval; and elytral intervals II, IV, VI, and VIII. Elytral intervals are defined as the longitudinal areas between adjacent rows of punctures; for example, the area between the first and second rows is referred to as interval I, the next as interval II, and so on.

All the materials are deposited in Institute of Zoology, Chinese Academy of Sciences (IZCAS), Beijing, China.

Taxonomy

Dactylispa (Triplispa) siciens sp. nov.

(Figs 1–4)

Type material. **HOLOTYPE:** CHINA: ♂, three labels: ‘Xizang, Nyingchi City, Mêdog County, 63 km on the Mêdog highway; alt. 2711.31 m; 18 July 2024 // 29°42.278’ N, 95°34.413’ E; shrub-sweep; Liang Hong-Bin & Xu Yuan leg. // TBJ 20240718D4’ (IZCAS); **PARATYPES:** CHINA: 2 ♂♂, 3 ♀♀, same data as that of holotype (IZCAS).

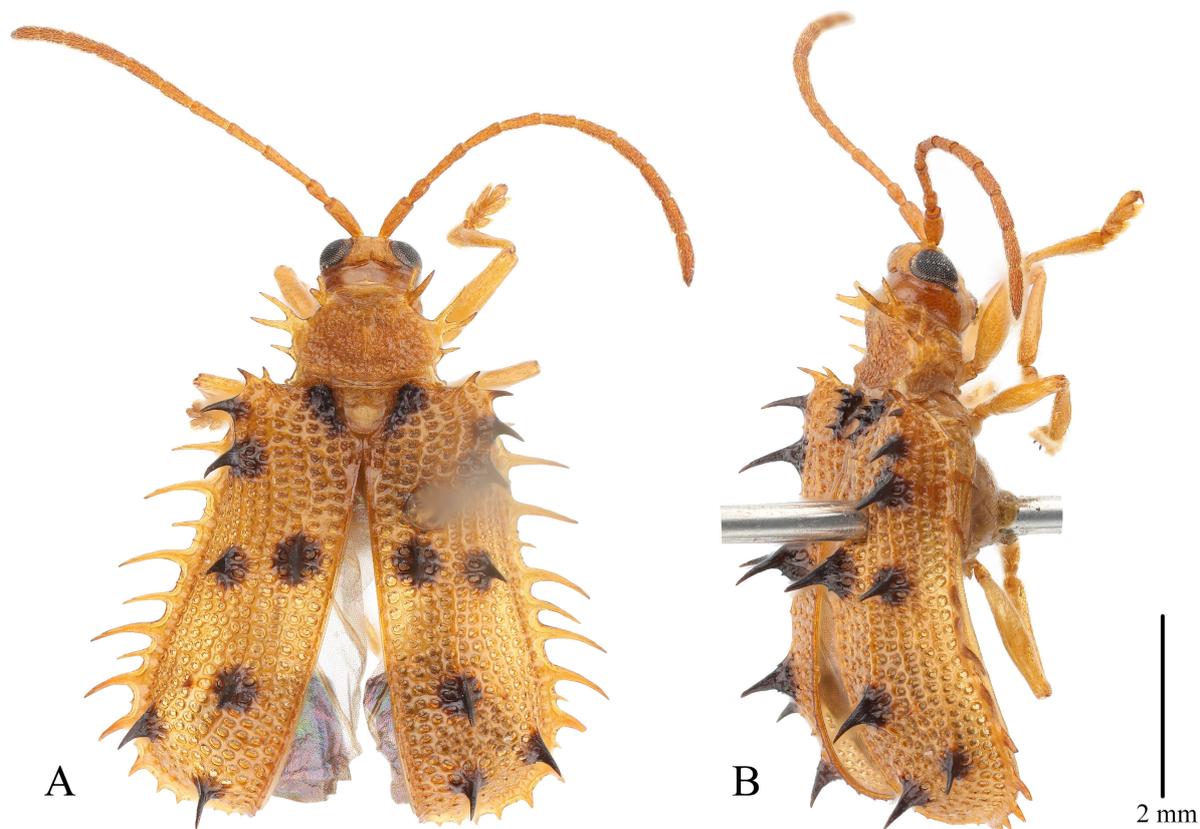


FIGURE 1. *Dactylispa (Triplispa) siciens* sp. nov., holotype. A. Dorsal habitus. B. Lateral habitus. Scale bar: 2 mm.

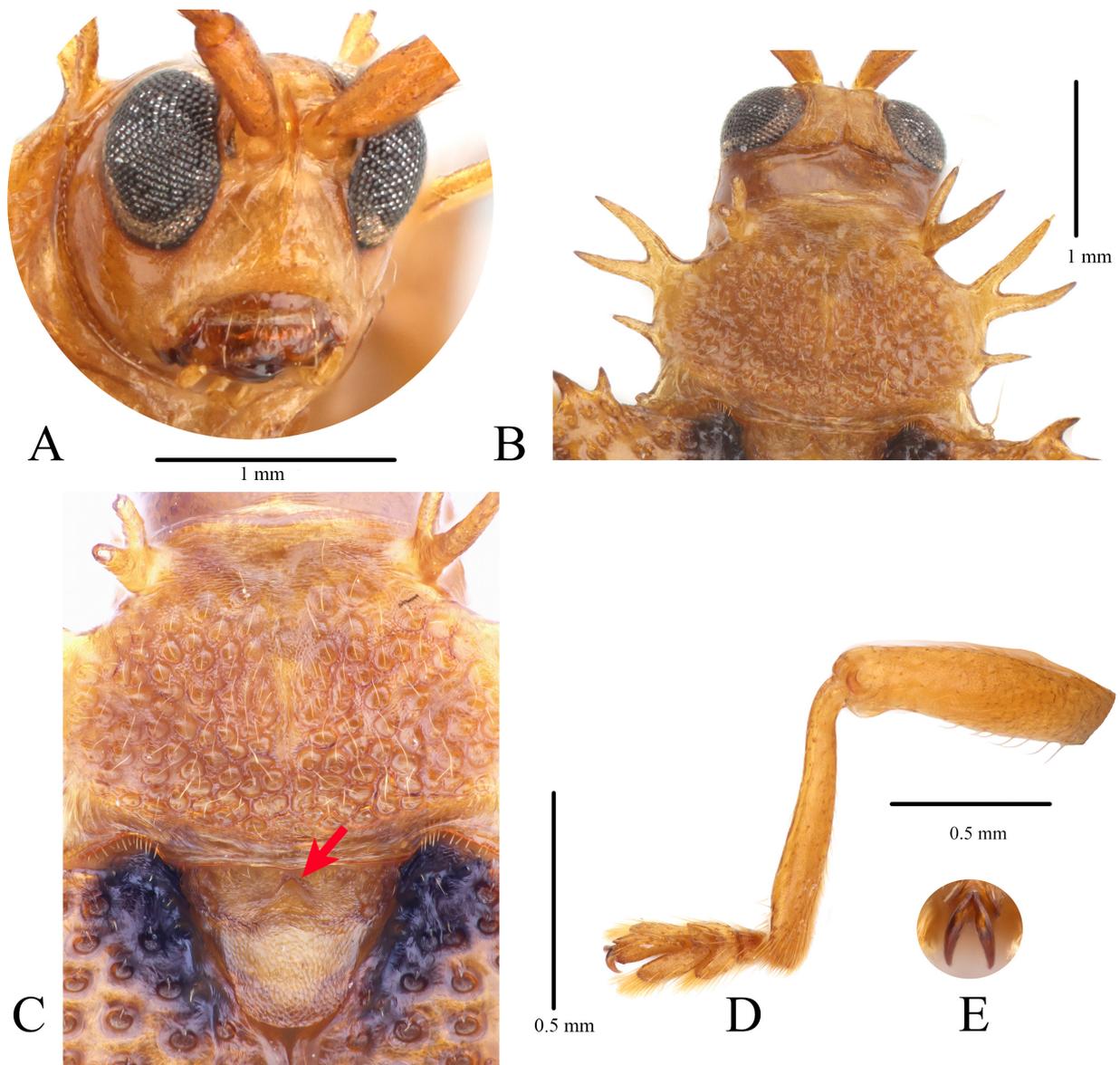


FIGURE 2. Selected morphological features of *Dactylispa (Triplispa) sicieni* sp. nov., holotype. **A.** Head, frontal view; **B.** Head and pronotum, dorsal view, showing vertex and pronotal spines; **C.** Pronotal punctation and scutellum, dorsal view; red arrow indicates basal depression of the scutellum; **D.** Left hind leg; **E.** Tarsal claws, frontal view. Scale bars: 1 mm in A, B; 0.5 mm in C, D, E.

Diagnosis. *Dactylispa (Triplispa) sicieni* sp. nov. can be easily differentiated from all other species of *Dactylispa* recorded from China and adjacent regions by the following combination of characters: integument uniformly bright yellow to pale yellow, elytral interval II with only two large spines (other *Dactylispa* species bear three to five such spines). In the key to subgenus *Triplispa* species provided by Chen (1986), the new species would key out near *Dactylispa (Triplispa) cervicornis*, based on the combination of characters such as the shape of the pronotal lateral spines, where the third spine is approximately half the length of the second, and the relatively short terminal elytral spines.

Description. Body length 4.8–5.5 mm, width 2.5–3.2 mm; Body (Fig. 1A, B) yellow to bright yellow; antennae yellowish brown; primary elytral spines and their bases generally black, lateral spines yellow; ventral side yellow.

Head (Fig. 2A) yellow; antennae long, reaching nearly half the elytral length; length ratios of antennomeres I–XI in male 1.0 : 0.5 : 1.2 : 0.9 : 0.9 : 0.7 : 0.9 : 0.9 : 0.9 : 0.8 : 1.1; in female: 1.0 : 0.6 : 1.3 : 0.9 : 0.8 : 0.7 : 0.9 : 0.7 : 0.8 : 0.7 : 1.0, antennomere II shortest; III longest; IV–X similar in shape and length, densely pubescent with minute tubercles; XI gradually tapering apically. Supraocular grooves with short yellow setae. Frons between antennal

insertions with thin carina, ratio of minimum width of vertex to maximum width across eyes: 0.34–0.37 (n = 6); vertex with median and lateral sulci, slight convex, higher positioned than occiput; occiput smooth. Mouthparts hypognathous. Clypeus elongate-triangular, bearing several long yellow setae; labrum yellow and smooth, with sparse yellow setae; apices of mandibles black, each with two teeth. Maxillary palps with 4-palpomeres; labial palps with 3-palpomeres; palpomeres of both palps similar in shape.

Pronotum (Fig. 2B) transverse, anterior margin slightly constricted, widest medially, posterior margin gently narrowed; trichobothria present at all four pronotal angles. Anterior margin moderately rugose, with two spines on shared base (anterior spine smaller, posterior larger), both directed obliquely upward. Lateral margins with three spines on each side: the two anterior spines on common base and subequal in size, posterior spine smaller and placed at distance of one spine base-width, all lateral margin spines yellow. Midline from anterior margin to disc weakly impressed; remainder of disc with coarse, overlapping punctures, each puncture bearing one short pale-yellow seta; interspaces between punctures forming narrow ridges.

Procoxal cavities closed. Prosternal process narrow, T-shaped, apex expanded; prosternal intercoxal region concave.

Scutellum (Fig. 2C) linguiform, with small central depression at base and rounded apex; surface shagreen, glabrous, without punctures.

Elytra (Fig. 3A, B) subrectangular, with well-developed explanate lateral margins. Acanthotaxy: with four to six small scutellar spines (usually five), all black and forming continuous black row; humeral with three spines, posterior two generally black, anterior one sometimes yellow; elytral interval II with only two spines (II₂ and II₅); IV with one spine (IV₄); VI with two spines (VI₁ and VI₂); VIII with one spine (VIII₅). These are primary elytral spines, slender and sharply pointed, all spines and their bases black, no minute spinules occur between the primary spines; the intervals are otherwise smooth. Lateral margins with 10–11 yellow spines, unequal in length, each large spine followed by a smaller one. Ten rows of punctures present on each elytron; rows 3, 4, 9 and 10 not fused medially, punctures becoming confused toward elytral apex. Apex with four to five small denticles, resembling serrate margin. Each punctal fovea with one small central callus bearing single short erected seta.

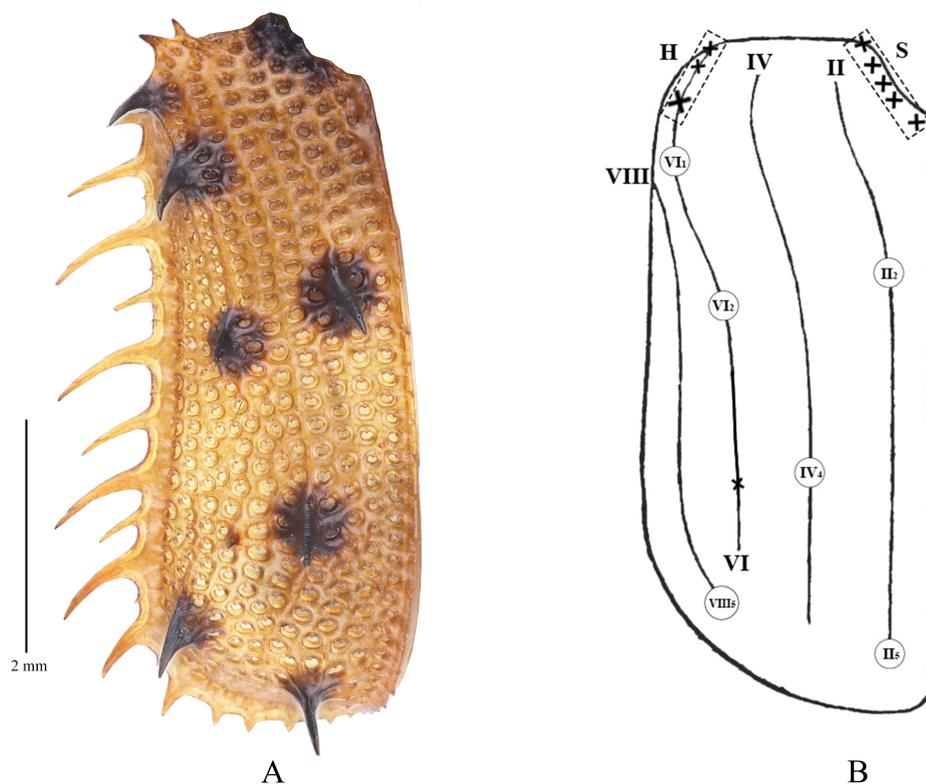


FIGURE 3. Elytral features of the holotype of *Dactylispa (Triplispa) sicieni* sp. nov. **A.** Left elytron, habitus view. **B.** Acanthotaxy. S = scutellar spines; H = humeral spines; II, IV, VI, VIII = elytral intervals II, IV, VI, and VIII, numbers indicate relative positions of spines within each interval. Crosses (×) indicate minor spines, exhibiting variation in number, size, and position; circles (○) indicate primary spines, characterized by consistent number, size, and relative position, serving as reliable diagnostic features. Scale bar: 2 mm.

Metasternum anterior and lateral margins distinctly concave, median portion convex; surface smooth, impunctate, with sparse yellow setae. Shallow transverse wrinkles present on lateral areas.

Legs (Fig. 2D). Femora robust, with sparse yellow setae; tibiae slender, apices densely covered with yellow setae. Tarsi with 4-tarsomeres; tarsomere 3 bilobed; 4 nearly equal in length to 3; claws simple and divergent at acute angle (Fig. 2E). Pro-, meso-, and metathoracic legs are morphologically similar, showing no distinct structural differences.

Abdomen (Fig. 4A) yellow, with sparse coarse punctures and covered with sparse yellow setae.

Aedeagus (Fig. 4B–D) short and stout, with long oval apical opening. In dorsal view with ring-like structure visible on middle-lower part of tegmen; in ventral view with long sclerotized strip.

Sexual dimorphism. Male antennomere XI longer than I; female antennomere XI nearly equal to I (Fig. 4E, F).

Distribution. China: Xizang (Mêdog).

Etymology. This species is named in honor of Sicien H. Chen (陈世骧, 1905–1988) on the 120th anniversary of his birth. The specific epithet *siciens* is formed as a Latinized noun in the genitive singular, derived directly from his given name. Chen was the foremost authority on Cassidinae systematics in China and made seminal contributions to the taxonomy and faunistic of leaf-beetles (Liang 2005; Ge 2022). By bestowing this patronym, we gratefully commemorate his enduring legacy in Chrysomelidae research.

Comments. The collection site, located along the Mêdog Highway at 2711 m, consisted of shrub and herbaceous vegetation under mixed forest near a disturbed roadside. The species was obtained by sweeping, and may be associated with roadside Poaceae weeds, although its host plant remains to be confirmed through further investigation.

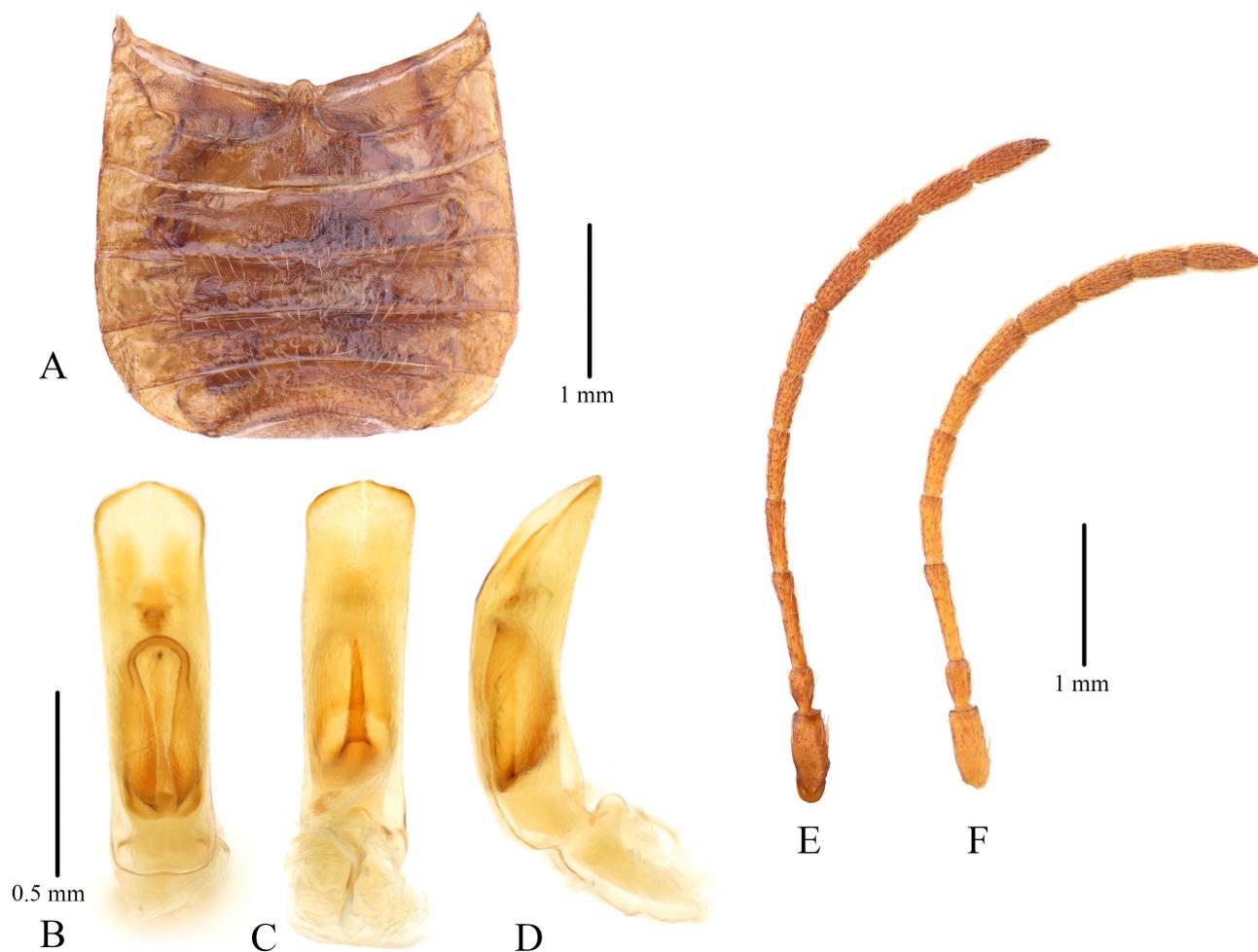


FIGURE 4. Morphological details of *Dactylispa (Triplispa) sicieni* sp. nov. **A.** Holotype, abdomen, ventral view. **B.** Holotype, male genitalia, dorsal view. **C.** Holotype, male genitalia, ventral view. **D.** Holotype, male genitalia, lateral view. **E.** Holotype, male antenna. **F.** Paratype, female antenna. Scale bars: 1 mm in A, E, F; 0.5 mm in B, C, D.

Discussion

Among Chinese species of *Dactylispa*, the new taxon exhibits the least elytral spines recorded to date: the second elytral row bears only two primary spines (versus three to five in all other known congeners). Moreover, antennomere III is generally the longest (Fig. 4E, F), markedly longer than the other antennomeres; however, in some females, antennomeres I and III are nearly equal in length. This intraspecific variation suggests that the length of antennomere III alone is not yet a reliable diagnostic character without examination of additional specimens.

Spine number and length are known to vary in *Dactylispa*. Maulik (1918) reported variation in pronotal spines of *D. xanthopus* Gestro, and Chaboo (2007) and Shinohara & Gotoh (2024) documented the presence of both short and long elytral spines in various species. Indeed, the holotype of *D. sicieni* bears a small additional spine on elytral interval VI (Fig. 3A, B), which is absent in all paratypes; we therefore do not treat this character as stable in our description.

Morphologically, the combination of a distinct lateral margin on each elytron and the non-fusion of the ninth and tenth elytral puncture rows medially would traditionally place this species within the subgenus *Triplispa*. Although Zhang *et al.* (2021) suggested that *Triplispa* and the nominate subgenus *Dactylispa* form a polyphyletic group based on mitochondrial genome data, their study was based on limited taxon sampling and a single genetic marker, which may not provide sufficient resolution for robust phylogenetic inference in Cassidinae. Given the current lack of comprehensive molecular and morphological datasets, and in line with the subgeneric framework adopted in the second edition of the Catalogue of Palaearctic Chrysomelidae (Sekerka & Świątojańska 2024), we here tentatively retain the traditional subgeneric placement. The systematic status and boundaries of these subgenera must await more comprehensive morphological surveys and expanded molecular datasets.

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References

- Borowiec, L.E. (1993) Three new species of Basiprionotini from the Oriental Region (Coleoptera: Chrysomelidae; Cassidinae). *Genus*, 4 (2), 79–85.
- Borowiec, L.E. & Sassi, D. (2002) A new species of Cassida L. from Palaearctic China (Coleoptera: Chrysomelidae: Cassidinae). *Genus*, 13 (1), 143–147.
- Chaboo, C.S. (2007) Biology and phylogeny of the Cassidinae Gyllenhal sensu lato (tortoise and leaf-mining beetles) (Coleoptera: Chrysomelidae). *Bulletin of the American Museum of Natural History*, 305, 1–250.
[https://doi.org/10.1206/0003-0090\(2007\)305\[1:BAPOTC\]2.0.CO;2](https://doi.org/10.1206/0003-0090(2007)305[1:BAPOTC]2.0.CO;2)
- Chen, S.H., T'an, C.C. & Yu, P.Y. (1961) Results of the zoological-botanical expedition to Southwest China, 1955–57 (Coleoptera: Hispidinae). *Acta Entomologica Sinica*, 10 (4–6), 454–481. [in Chinese with English summary]
- Chen, S.H., Yu, P.Y., Sun, C.H., Tan, J.J. & Zia, Y.Z. (1986) *Fauna Sinica. Insecta. Vol. 2. Coleoptera: Hispididae*. Science Press, Beijing, 653 pp.
- Ge, Y.J. (2022) Sicien H. Chen, one of the pioneers and founders of Chinese entomology. *Protein & Cell*, 13 (5), 309–312.
<https://doi.org/10.1007/s13238-021-00829-8>
- Huang, Z.Z., Zhang, C.F., Leng, S.X., Yang, X.K. & Ge, S.Q. (2025) First record of the genus *Macrispa* in China, with a redescription of *Macrispa saundersii* Baly, 1859 (Chrysomelidae: Cassidinae: Botryonopini). *ZooKeys*, 1252, 69–76.
<https://doi.org/10.3897/zookeys.1252.142681>
- Liang, A.P. (2005) In memory of the 100th anniversary of the birth of the late professor Sicien Chen, a distinguished chinese

- systematic entomologist. *Acta Zootaxonomica Sinica*, 30 (4), 643–646.
- Liao, C.Q., Zhang, Z.Y., Xu, J.S., Staines, C.L. & Dai, X.H. (2018) Description of immature stages and biological notes of *Cassidispa relictata* Medvedev, 1957, a newly recorded species from China (Coleoptera: Chrysomelidae: Cassidinae: Hispini). *ZooKeys*, 780, 71–88.
<https://doi.org/10.3897/zookeys.780.23280>
- Liu, P., Liao, C.Q., Xu, J.S., Staines, C.L. & Dai, X.H. (2019) The Cassidinae beetles of Longnan County (Jiangxi, China): overview and community composition. *Biodiversity Data Journal*, 7, e39053.
<https://doi.org/10.3897/BDJ.7.e39053>
- Maulik, S. (1918) Variation in the prothoracic spines of *Dactylispa xanthopus* Gestro. *Annals and Magazine of Natural History*, 1, 70–74.
<https://doi.org/10.1080/00222931808562289>
- Qi, M.J., Li, C.D. & Han, H.L. (2008) Five newly recorded species of the genus *Cassida* from Northeast China with one new record species from China. *Journal of Forestry Research*, 19 (2), 151–153.
<https://doi.org/10.1007/s11676-008-0026-3>
- Sekerka, L. (2006) A new species of the *Cassida undecimnotata* group from Turkey (Coleoptera: Chrysomelidae: Cassidinae). *Genus*, 17 (4), 561–566.
- Sekerka, L. & Świętojańska, J. (2024) Subfamily Cassidinae Gyllenhal, 1813. In: Bezděk, J. & Sekerka, L. (Eds.), *Catalogue of Palaearctic Coleoptera. Vol. 6/2. Updated and Revised 2nd edition. Chrysomeloidea (Orsodacnidae, Megalopodidae, Chrysomelidae)*. Brill, Leiden/Boston, pp. 233–272.
- Shinohara, T. & Gotoh, H. (2024) Variation of the number and size of spines on the adult body in *Dactylispa* Weise, 1897 (Coleoptera: Chrysomelidae: Cassidinae). *Zoomorphology*, 143 (2), 383–393.
<https://doi.org/10.1007/s00435-024-00648-5>
- Staines, C.L. (2015) Tribe Hispini. In: Staines, C.L. (Ed.), *Catalog of the hispines of the world (Coleoptera: Chrysomelidae: Cassidinae)*. Smithsonian Institution, Washington, D.C., pp. 1–185. Available from: <https://naturalhistory.si.edu/sites/default/files/media/file/hispini2015.pdf> (accessed 28 August 2025)
- Sun, J.H., Yu, P.Y., Zhang, Y.Z. & Wang, X.J. (2003) A new invasive coconut pest in Hainan Province. *Entomological Knowledge*, 40, 286–287. [in Chinese]
- Świętojańska, J. & Borowiec, L. (2006) *Aspidimorpha* (*s. str.*) *tibetana*, a new species from China (Coleoptera: Chrysomelidae: Cassidinae). *Genus*, 17 (4), 541–544.
- Świętojańska, J. (2001) A revision of the tribe *Aspidimorphini* of the Oriental Region (Coleoptera: Chrysomelidae: Cassidinae). *Genus*, Supplement 18, 1–318.
- T'an, C.C. & Yu, P.Y. (1993) Coleoptera: Hispidae: Hispinae. In: Huang, F. (Ed.), *Insects of the Wuling Mountains Area, Southwestern China*. Science Press, Beijing, pp. 352–356. [in Chinese]
- Uhmann, E. (1954) Die Hispinae der Klapperich-Fukien (China)-Expedition April–Juni 1938. II. Teil. 128. Beitrag zur Kenntnis der Hispinae (Coleopt. Chrysom.). *Entomologische Blätter*, 50, 186–215.
- Weise, J. (1897) Kritisches Verzeichniss der von Mr. Andrewes eingesandten Cassidinen und Hispinen aus Indien. *Deutsche Entomologische Zeitschrift*, 1897, 97–150.
<https://doi.org/10.1002/mmnd.48018970120>
- Yang, C.K., Liao, C.Q., Xu, J.S., Liu, P., Staines, C.L. & Dai, X.H. (2023) Field survey of Cassidinae beetles (Coleoptera: Chrysomelidae) and their host plants in southern Guangxi, China. *Biodiversity Data Journal*, 11, e107523.
<https://doi.org/10.3897/BDJ.11.e107523>
- Yang, C.K., Liao, C.Q., Xu, J.S. & Dai, X.H. (2024) Host relationships and biological notes of Cassidinae beetles (Coleoptera: Chrysomelidae) in Qiannan Prefecture, Guizhou, China. *Biodiversity Data Journal*, 12, e116267.
<https://doi.org/10.3897/BDJ.12.e116267>
- Zhang, S., Sekerka, L., Liao, C.Q., Long, C.P., Xu, J.S., Dai, X.H. & Guo, Q.Y. (2021) The first eight mitogenomes of leaf-mining *Dactylispa* beetles (Coleoptera: Chrysomelidae: Cassidinae) shed new light on subgenus relationships. *Insects*, 12 (11), 1005.
<https://doi.org/10.3390/insects12111005>

西藏趾铁甲属叉趾铁甲亚属*Dactylispa (Triplispa)*一新种记述 (鞘翅目: 叶甲科: 龟甲亚科: 铁甲族)

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摘要: 西藏自治区墨脱县位于喜马拉雅生物多样性热点东缘, 该地区龟甲亚科至今研究较少。本文基于2024年开展的昆虫多样性系统调查标本, 描述墨脱趾铁甲属叉趾铁甲亚属*Dactylispa (Triplispa)*一新种, 即世骧叉趾铁甲*D. (Triplispa) sicieni sp. nov.*。该新种可通过鞘翅第II行列仅具两个主刺与其他已知种区分。

关键词: 亚属; 西藏; 新分类单元; 龟甲; 中国