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This contribution is published to honor Dr. Amnon Freidberg, a scientist, a colleague and a friend, on the occasion of his 75th birthday.

The first record of the genus *Merus* Gistel (Curculionidae: Molytinae: Mecysolobini) in the Western Palaearctic, with description of *Merus freidbergi* n. sp. from Israel

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ABSTRACT

Merus freidbergi, a new species of the Palaeotropical genus *Merus*, developing on *Blepharis attenuata* (Acanthaceae), is described from Israel, based on two specimens (male and female) collected in the Jordan Valley – the northern part of the Great Rift Valley. Description of the external morphology and genitalia of both sexes is given and illustrated with photographs and line drawings. The species has Afrotropical affinities and belongs to the Afrotropical *denticulatus* species group, being its northernmost representative. The new species is characterized by a narrow slender body about 4 mm long and elytral pattern composed of white longitudinal stripes covering incompletely interstriae 2, 3, 4, 7 and 9 with scaled parts of the 3rd interstria corresponding to bare parts of 4th interstria and vice versa; a thick, cylindrical, slightly bent rostrum that is as long as the pronotum; medially toothed femora, with the profemur having an additional denticle anterior to the tooth; and the tibia bearing a long acute mucro, a stout premucro and rounded ventral tooth. The specimens were reared in 1973, no additional specimens have been found since then; thus, the species can be endangered or extinct. This is the first record of the genus *Merus* from the Western Palaearctic and from the East Mediterranean, the fourth species of the predominantly tropical Mecysolobini in the Western Palaearctic fauna, the first host record and an additional evidence of the existence of Afrotropical elements in the Jordan Valley fauna.

KEYWORDS: Coleoptera, Curculionidae, Molytinae, Mecysolobini, *Merus*, weevils, Acanthaceae, *Blepharis attenuata*, endangered species, endemic, new species, new record, new host, Jordan Valley, Middle East.

תקציר

מין חדש של חדקונית, המתפתחת על ריסן דק (קוציציים), מתואר מישראל, משני פרטים (זכר ונקבה), שנאספו באזור צומת אדם ושפך נחל תרצה, בבקעת הירדן. מובא בזאת תיאור של המראה החיצוני ומבנה אברי ההזדווגות של שני הזוויגים, בתוספת צילומים ואיורים קוויים. המין החדש שייך לסוג פליאוטרופי, הידוע בעיקר מאפריקה דרומה לסהרה, דרום מזרח אסיה והמזרח הרחוק, ובתוכו לקבוצת המינים האפרוטרופית, בת כתריסר מינים, החיים במזרח, מרכז ודרום אפריקה, לרוב לאורך השבר הסורי-אפריקאי. המין החדש הינו הנציג הצפוני ביותר לקבוצת מינים זו. מלבד תיאור מין חדש זהו הדיווח הראשון של נציג הסוג במערב האיזור הפליארקטי והמזרח הציכון, והנציג הרביעי של השבט כולו במערב פליארקטיקה, הדיווח הראשון של צמח הפונדקאי בקבוצת מינים זו, והוכחה נוספת לקיומה של הכמות המשמעותית של האלמנטים האפרוטרופיים בפאונה של בקעת הירדן. הפרטים גודלו בשנת 1973, ומאז לא נמצאו פרטים נוספים; ייתכן והמין נתון לסכנת הכחדה

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או נכחד. המין החדש נקרא על שמו ולכבודו של דר' אמנון פרידברג, המומחה העולמי לטקסונומיה של זבובים בכלל ושל משפחת הפריזבוביים בפרט, שהנחה את המחבר בעבודת המוסמך, והיה למורה, מנהל וחבר שלו במשך כ-25 שנה, לכבוד יום הולדתו ה-75. במשך הקריירה המדעית בת יותר מ-50 שנה, התגלה אמנון כחוקר דגול, אספן מעולה ואוצר אוסף אחראי. יעידו על כך שני הפרטים של המין החדש, שגודלו במקרה וכלאחר יד, כתוצר לוואי של סקר הפריזבוביים בישראל, בעודו אמנון סטודנט במחלקה לזואולוגיה, אוניברסיטת תל אביב. אף על פי שלא היה זאת מתפקידו, כבר אז הקפיד אמנון לאסוף, לשפד ולפתק את הפרטים הנדירים האלו, וכך הם היגיעו לידי המחבר במצב מעולה ועם כל המידע החשוב.

מילות מפתח: חדקוניות, חדקונית הריסן, קוציציים, ריסן דק, מין חדש, פונדקאי חדש, מין אנדמי, מין בסכנת הכחדה, נכחד, בקעת הירדן, ישראל, מזרח התיכון.

INTRODUCTION

The Mecysolobini is a large and well-defined tribe within the Molytinae, counting up to 600 species, mainly in the Old World tropics (Andrew & Ramamurthy 2010). Just slightly over 60 species in six genera are found in the Palaearctic Region, most of them of the Oriental origin with very few Palaearctic endemics. The Mecysolobini are easily recognized by the very large convex lobe of the elytral basal margin around the 3rd interstria, which extends over the pronotum; a large, strongly convex to semiglobular pronotum with a triangular basal pointed prescutellar lobe; a small to lacking scutellum; appendiculate claws (except for one genus); usually coarsely sculptured elytra, with patches or bands of pale scales; and usually enlarged fore legs with well-developed femoral tooth (Lyal & Curran 2000; Morimoto & Kojima 2007; Lyal 2014). Some Mecysolobini resemble the Lixini in their habitus. The morphology of Mecysolobini was recently summarized by Lyal (2014). The taxonomy and nomenclature within the tribe are extremely complicated and controversial, and are briefly discussed by Lyal (1996), Lyal and Curran (2000), Morimoto and Kojima (2007), Andrew and Ramamurthy (2010) and Gültekin *et al*. (2019). The Palaearctic fauna of Mecysolobini includes 62 species, with 16 assigned to *Merus* Gistel, most of them of the Oriental origin, distributed over the eastern and southeastern boundaries of the Palaearctic Region (Alonso-Zarazaga *et al*. 2017). The Mecysolobini fauna of the Near East has been represented so far by three species of *Alcidodes* G.A.K. Marshall, 1939: *A. karelinii* (Boheman, 1844) in Turkey (Gültekin *et al*. 2019) and Iran (Alonso-Zarazaga *et al*. 2017), *A. wilcocksi* (Pic, 1913) in Egypt (Pic 1913; Hammad & El-Deeb 1955), and *A. haemopterus* (Boheman, 1836), a widely distributed Tropical African species, surprisingly recorded in Iran (Moderres Awal & Hossein Pour 2010). Neither of these species has ever been recorded from the Levant, nor any *Merus* was recorded in the Western Palaearctic.

The knowledge on the biology of the tropical Mecysolobini is scarce, based mainly on the scattered data. With nearly 200 species of Mecysolobini in the Tropical Africa (Haaf 1961, 1964; Andrew & Ramamurthy 2010), only for about 20 species host plants are known, both native and alien: Convolvulaceae (*Ipomoea*), Crassulaceae (*Bryophyllum*, *Sedum*), Euphorbiaceae (*Aleurites*, *Hevea*, *Macaranga*, *Ricinus*), Fabaceae (*Phaseolus*, *Vigna*), Malvaceae (*Ceiba, Gossypium*, *Hibiscus*, *Malva*, *Ochroma, Theobroma, Triumfetta*), Rubiaceae (*Coffea*), and a few species

were recorded feeding on the Anacardiaceae, Myricaceae, Myrtaceae, with no record of development (Haaf 1961; Couturier & Perrin 1982; Couilloud 1993; Witt *et al*. 2004). Most of the species were reared from stems, twigs, roots or stem galls (Haaf 1961; Couilloud 1993). The majority of the recorded host plants are domesticated (agricultural or ornamental), hence no targeted study of the host association between African Mecysolobini and wild plants has been made. Most of the museum specimens seen by me were collected occasionally by beating or sweeping. No African species has ever been recorded from the Acanthaceae. No host plant for any species from the *denticulatus* species group has ever been recorded. The biology of many Oriental Mecysolobini is likewise enigmatic, the known species are associated with the Dipterocarpaceae, Juglandaceae, Lauraceae, Malvaceae, Myrtaceae and Sapotaceae, some are known to be stem-borers, about 30 species are recorded as seed-predators on the Dipterocarpaceae and Myrtaceae (Lyal 1996; Lyal & Curran 2000).

In the Palaearctic the following host plants are recorded for *Merus* species: Acanthaceae (*Strobilanthes*), Anacardiaceae (*Rhus*), Fagaceae (*Quercus*, *Castanea*), Hydrangeaceae (*Hydrangea*), Urticaceae (*Boehmeria*); all Palaearctic *Merus* are stem-borers (Lee & Morimoto 1988; Morimoto & Kojima 2007; Hong *et al*. 2011).

Species of the Afrotropical *denticulatus* species group (Figs 1–3), in general appearance resembling small *Lixus*, are characterized by a narrow, slender, sub-



Figs 1–3: African *Merus* spp., habitus, dorsal view: (1) *Merus cribrithorax*, Namibia, Otjiwarongo District, Ahachaus (ZSM); (2) *Merus denticulatus*, Malawi, Nyika NP, Chelinda (SMNHTAU); (3) *Merus subtilis*, Kenya, 20 mi S Mombasa (USNM).

parallel-sided or nearly so small body (length 3.5–8.0 mm), fore legs slightly to imperceptibly larger than mid and hind legs, the sculpture of the pronotum surface being formed by tubercles, not punctures, the elytra with longitudinal white stripes along part of interstria, and by the male submentum without a denticle. Haaf (1961) included eight Afrotropical species in this species group: *M. cribrithorax* (Kolbe, 1898) (Fig. 1), *M. denticulatus* (Kolbe, 1898) (Fig. 2), *M. vicinus* (Haaf, 1961), *M. albolineatus* (Boheman, 1836), *M. subtilis* (Fahraeus, 1871) (Fig. 3), *M. exilis* (Boheman, 1836), *M. kuvanguensis* (Hustache, 1937) and *M. murranus* (Marshall, 1942), and considered *M. griseolineatus* (Kolbe, 1883) closely related to this species group. Haaf (1961) also considered *M. cribrithorax* and *M. vicinus* subspecies of *M. denticulatus*, and *M. subtilis* a subspecies of *M. albolineatus*. *Merus murranus* should be excluded from the *denticulatus* species group because of its punctate pronotum, whereas *M. franzi* (Hoffman, 1965) should be added based on its description (Hoffman 1965) (no specimens have been studied), although its pubescence is uniform, yellowish brown, not forming longitudinal stripes. Therefore, at the moment the *denticulatus* species group includes 10 described and a few undescribed species in East, West, Central and South Africa, with the majority of the species concentrating along the Great Rift Valley.

Andrew and Ramamurthy (2010) placed only 27 species in *Merus*, among them 10 Afrotropical, and 508 species, including those of the *denticulatus* species group, are assigned to the genus *Sternuchopsis* Heller, 1918. I follow the concept of *Merus* suggested by Morimoto and Kojima (2007) for the Oriental species: body more or less parallel-sided; procoxae separated; metasternum without projections toward hind coxae, much longer than mesocoxae; onychium projecting by more than half of its length from lobes of third tarsal segment; claws connate, bifid. Based on this combination of characters, I place the *denticulatus* species group in *Merus*. However, a revision of the Afrotropical Mecysolobini is urgently needed.

MATERIALS AND METHODS

The Mecysolobini materials were studied in the insect collections of the IZIKO, Cape Town, South Africa (SAMC), the Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, Israel (SMNHTAU), Zoologische Staatssammlung München, München, Germany (ZSM), Zoological Institute, St. Petersburg, Russia (ZIN) and the Smithsonian Institution, Washington DC, USA (USNM). Some specimens in the SAMC, ZSM and USNM were identified by the late E. Haaf and used in his revision of the Afrotropical Mecysolobini (Haaf 1961), which remains the only comprehensive taxonomic study on the group to date. The type material of the new species is deposited in the SMNHTAU.

The holotype of the new species was dissected, mounted on a cardboard triangle, genitalia and abdomen glued on a cardboard rectangle, pinned under the specimen and marked with a red label. The paratype was dissected, mounted on a cardboard triangle, the genitalia and abdomen were glued on a cardboard rectangle, pinned

under the specimen and marked with a blue label. The type location is situated in the Jordan Valley, the spill of Nahal Tirza (in Arabic Wadi Faria), probably north to Zomet Adam (=Adam Junction), west to Road 90 approximately at 32°08'N 35°30'E (Amnon Freidberg, pers. comm.). The holotype label is quoted verbatim, with extra information added in square brackets.

The genitalia were extracted by soaking dry specimens in hot water, detaching the posterior sternites of the abdomen and boiling them in 10 % KOH. The extracted genitalia were glued on cardboard rectangles and pinned together with the specimens.

Drawings and measurements were made using a drawing tube and a Leica M125 stereomicroscope. Drawings were scanned and processed with Adobe Illustrator 9.0. Images were taken with a Leica DFC295 digital camera mounted on a Leica M205C microscope, image stacks were processed with Leica Application Suite 4.2.0 and Helicon Focus 5.3. Final image editing was done with Adobe Photoshop CS5. Total body length was measured along a straight line extending from the base of the rostrum to the tip of the elytra in dorsal view.

Terminology and measurements mainly follow Lyal and Curran (2000).

TAXONOMY

Genus *Merus* Gistel, 1857

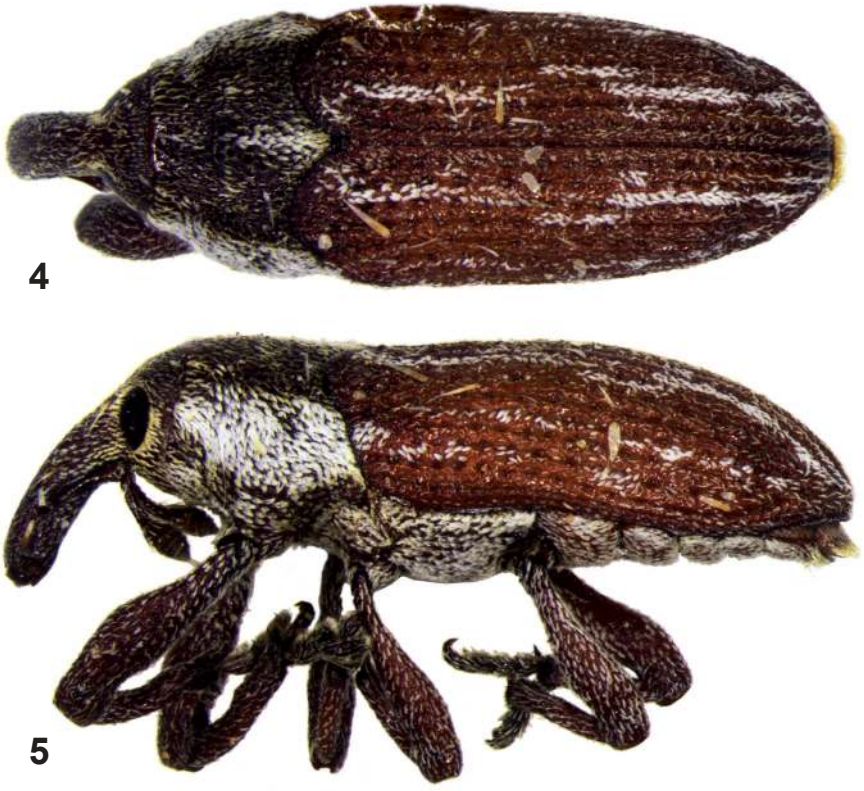
Merus freidbergi n. sp.

(Figs 4–18)

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Etymology: This species is dedicated to my dear teacher, supervisor, boss, colleague and friend, Dr Amnon Freidberg, on the occasion of his 75th anniversary. This is an excellent opportunity to express my deepest appreciation to Amnon as an extraordinary collector, responsible collection curator and top professional entomologist, since the very beginning of his career. Amnon reared these two precious specimens of weevils in 1973, when he was only a PhD student in the Department of Zoology, Tel Aviv University, studying the fruit flies (Tephritidae) of Israel. Looking forward and taking care of the science and not just of his own studies, he mounted and labelled carefully these specimens, saving and providing this precious information for future generations. He could not know that one day he would have a student working on weevils; it was three months before this student was born.

Diagnosis: *Merus freidbergi* n. sp. belongs in the *denticulatus* species group, being small (3.9–4.1 mm), slender species. Among other members of the species group *M. freidbergi* possesses a unique pattern of incomplete longitudinal stripes, while covered parts of neighboring interstriae correspond to bare parts and vice versa; tibial ventral tooth is obtuse, rounded, slightly prominent, while in other species it is triangular, pointed, moderately to strongly prominent. *Merus freidbergi* resembles *M. denticulatus*, *M. cribrithorax*, *M. albolineatus*, *M. vicinus* and *M. kuvanguensis*



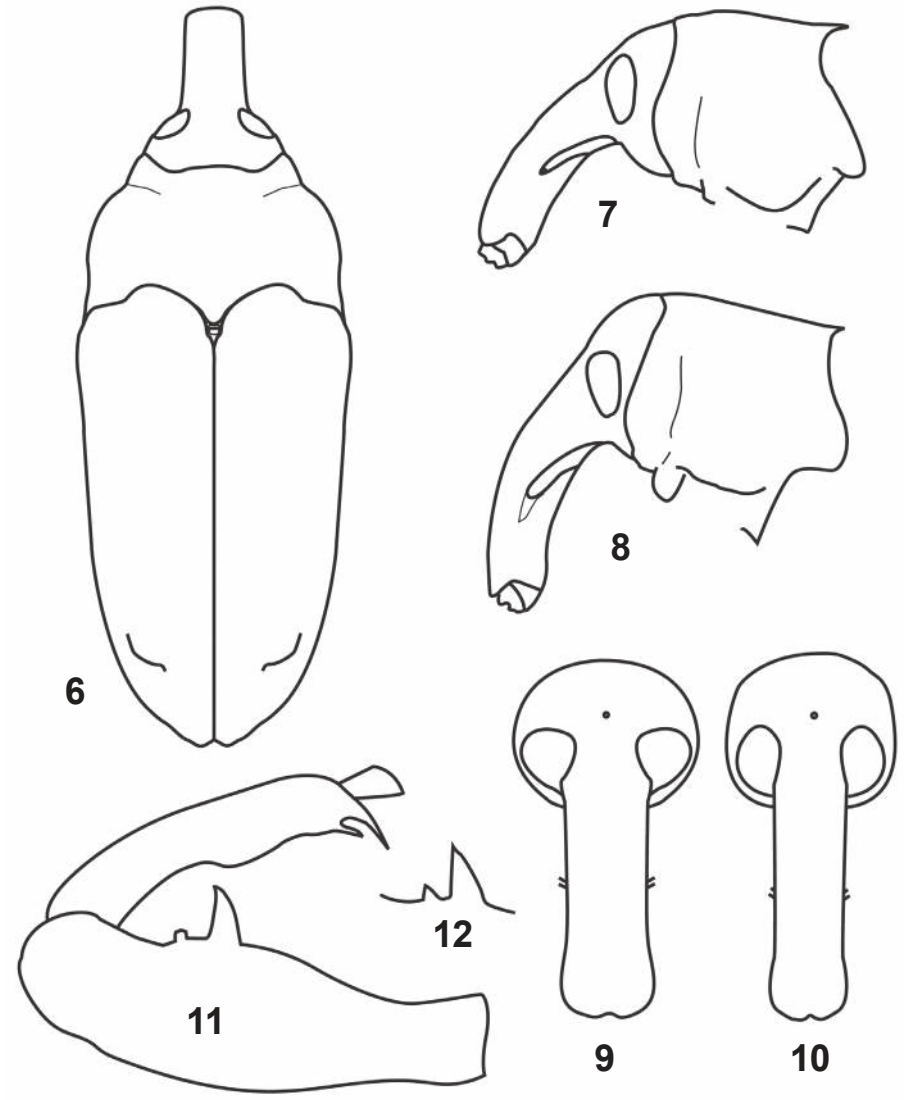
Figs 4, 5: *Merus freidbergi* n. sp., habitus, male holotype, dorsal (4) and lateral (5) views.

in the body shape, but is much smaller; it has about the same size and shape of the rostrum, head and pronotum as the Southern African *M. subtilis* and *M. exilis*, but is wider at the humeri and at the mid-length part of the body. The aedeagus of *M. freidbergi* is wide, stout, and tapering and pointed at apex, while in other species of the *denticulatus*-group, of which males were dissected or illustrations were available (e.g. *M. albolineatus*, *M. denticulatus*, *M. vicinus*, *M. exilis*), the aedeagus is slenderer, apically truncate, blunt or rounded.

Description: Male (Figs 4–7, 9, 11, 13–15). Measurements (mm): Body length 3.9, body maximum width 1.7, rostrum length 1.1, pronotum length 1.0, length of elytra 3.2, length of femora and tibia: profemur 1.4, mesofemur 1.2, metafemur 1.1, protibia 1.0, mesotibia 1.0, metatibia 0.8.

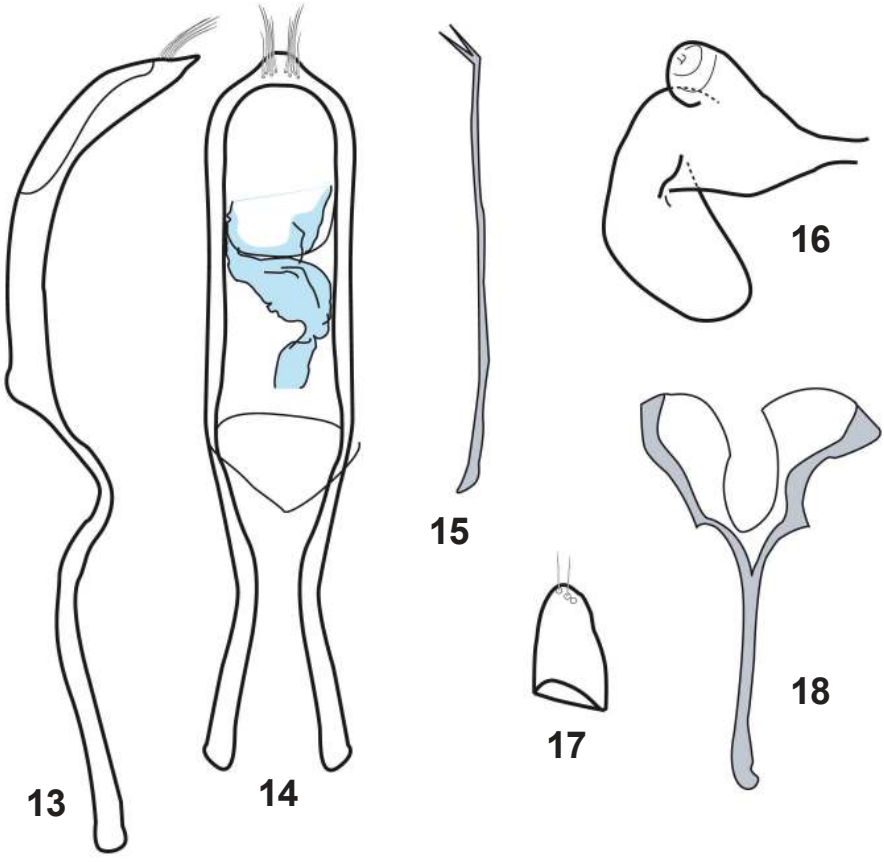
Body (Figs 4–6) oblong oval, with sides in middle part subparallel, integument reddish brown, covered with white and creamy-whitish scales. Dorsal part of body covered with variable types of scales (see description of body parts), ventral part of body covered with appressed fringed scales.

Rostrum (Figs 4–5, 7, 9) cylindrical, slightly gradually bent, as wide as interocular space, 0.8× as long as pronotum, 0.9× as wide as profemur, at apex slightly widening. Submentum without denticle. Surface of rostrum with partly merged shallow oval punctures and wrinkles. Basal half of rostrum sparsely covered with thin white



Figs 6–12: Details of *Merus freidbergi* n. sp.: (6) body outline, male, dorsal view; (7) head and pronotum, male, lateral view; (8) head and pronotum, female, lateral view; (9) head and rostrum, male, dorsal view; (10) head and rostrum, female, dorsal view; (11) male profemur and protibia; (12) dentation of female profemur.

scales, areas around eye and on gular region with denser stout creamy to yellowish scales. Forehead (Figs 5, 7, 9) flat, with weak but distinct pit. Eyes (Figs 5, 7, 9) obovoid, 1.3× as long as wide, flat. Antenna (Fig. 2) inserted in middle of rostrum. Scape claviform, surface longitudinally wrinkled. Funicular segments glabrous, covered with semi-erect white piliform scales; trapezoidal, successively shortening and widening from 1st to 6th segment, 7th segment as long as 5th and 6th segments combined, separated from other segments and incorporated into club. Club oviform, apically acute, densely covered with piliform scales; basal half of 1st claval segment glabrous. Pronotum (Figs 4–6, 7, 8) 0.7× as long as wide, in anterior third tapered, with sides rectilinear, in posterior two-thirds expanded, with sides slightly rounded; anterior margin straight, posterior margin sinuate, with wide triangular medial prescutellar lobe. Postocular lobes nearly indistinct. Pronotal disc flat. Surface of pronotum covered with large flat round granules. Pronotum covered with sparse



Figs 13–18: Genitalia of *Merus freidbergi* n. sp.: (13) aedeagus, lateral view; (14) aedeagus, dorsal view; (15) spiculum gastrale; (16) spermatheca; (17) gonocoxite; (18) spiculum ventrale.

creamy semi-erect scales, inserted between granules, in median part, and with dense white fringed scales, apically fringed to splitted nearly to base into 3–5 rays, in lateral part and along median line; median stripe narrow and more sparsely scaled apically, and wide and densely scaled basally, particularly on prescutellar lobe.

Scutellum (Fig. 6) distinct, convex, glabrous, not enclosed by basal lobes of elytra, pentagonal, with distinct angular apex.

Elytra (Figs 4–6) oblong, 1.8× as long as wide at humeri, laterally subparallel, gradually narrowing and rounding in apical third. Basal lobes large, round. Humeri nearly indistinct, rounded. Sculpture of elytra coarse, stria 3× as narrow as interstria, consisting of deep isolated pits; interstriae convex, shiny, transversely wrinkled. Vestiture comprise two types of appressed scales: sparse, minute white and creamy piliform scales, forming irregular rows along interstria, denser on basal half of 1st interstria; and oval, white scales, fringed apically, forming white stripes: along 3rd interstria, interrupted medially, on middle one-fourth of 4th interstria, along bare part of 3rd interstria, apical half of 7th interstria and basal half of 9th interstriae, and form white patches at base of 1st and 2nd interstriae, behind middle of 2nd and 9th interstriae, and on humeri.

Legs (Figs 5, 11). Procoxae separated. Femora stout, coarsely punctate, sparsely and regularly covered with fringed scales, swollen in middle part, with large acute ventral tooth. Profemur (Fig. 11) distally with additional smaller obtuse denticle 0.3× as long as larger tooth. Fore tibia (Fig. 11) slightly bent, less coarsely punctate than femur, covered with piliform and peg-like white scales, with rounded obtuse ventral tooth, weaker but distinct on meso- and metatibia. All tibiae at apex with long acute mucro and stout premucro. Apical comb distinct, composed of dark peg-like setae. Tarsi densely covered by white piliform scales. 5th tarsal segment protruding from lobes of 3rd tarsal segment by more than half of its length. Claws bifid, connate at base.

Abdominal ventrites convex, 5th ventrite apically rounded, with apical margin fringed with dense setae.

Male terminalia (Figs 13–15). Aedeagus (Figs 13, 14) flatten, moderately curved in lateral view, in dorsal view stout, subparallel-sided, at apex strongly tapering and pointed, subapically with a pair of tufts of fine erect setae. Ostial area wide, membranous. Endophallus with fine granulation, visible only at high magnification. Temones as long as tube. Tegminal ring with short pointed ventroapical projection. Spiculum gastrale (Fig. 15) thin, straight.

Female (Figs 8, 10, 12, 16–18). Measurements (mm): Body length 4.1, body maximum width 1.8, rostrum length 1.4, pronotum length 1.1, length of elytra 3.3, length of femora and tibia: profemur 1.4, mesofemur 1.2, metafemur 1.2, protibia 1.0, mesotibia 0.9, metatibia 0.9.

Rostrum (Figs 8, 10) scarcely, longer and narrower than in male. Scutellum distinct, convex, glabrous, spherical, without distinct angular apex. Profemur with additional smaller denticle pointed (Fig. 9). The single female specimen has colour brighter than the male, probably, because it is teneral.



Figs 19–22: Host plant and habitats of *Merus freidbergi* n. sp.: (19) *Blepharis attenuata* in bloom, Mt. Sartava, 8.v.2019; (20) flowers of *Blepharis attenuata*, Mt. Sartava, 8.v.2019; (21) dry bush of *Blepharis attenuata*, Nahal Mezin, 24.ix.2019; (22) typical landscape of the western slopes of Mt. Sartava.

Female terminalia (Figs 16–18). Spermatheca (Fig. 16) C-shaped, sclerotized, duct-lobe (collum, nodulus) apically tapering, gland-lobe (ramus) swollen, produced, tail (cornu) swollen, obtuse. Gonocoxite (Fig. 17) strongly sclerotized, without styli, with 2 or 3 erect thin setae at apex. Spiculum ventrale (Fig. 18) weakly sclerotized, with long narrow manubrium and with membranous apical plate.

Holotype: ♂ **Israel:** W[adi]. Faria, 31.v.1973, A. Freidberg, ex *Blepharis attenuata*, 20.vi.[19]73.
Paratype: ♀, same data as holotype.

Distribution: Endemic to Israel. The species is so far known from the single locality in the Jordan Valley (Fig. 23), although its host plant is widely spread throughout all the desert area, particularly along the central and southern areas of the Jordan Valley. It is possible that this species is as common as its host plant, but adults are not found because of their short life-span, nocturnal activity, or being hidden on a lower part of the stem or under the dense and extremely spiny leaves. On the other hand, it is possible that *M. freidbergi* is extinct or its population has strongly degraded in the last decades as a result of human activity.

Biology: *Merus freidbergi* was reared from *Blepharis attenuata* Napper (Acanthaceae) (Figs 19–21). This small, extremely thorny bush is widely distributed throughout the desert areas of Israel, common—but rarely seen in large masses—over the Jordan Valley, the Dead Sea area, in the Samarian and Judean deserts; it is less



Fig. 23: A presumed type locality of *Merus freidbergi* n. sp., Zomet Adam (Adam Junction), Rt. 90, 21.v.2018, from West to East.

common in the Negev Desert and the Arava Valley. Three sites with dense populations of *B. attenuata* have been discovered so far: western slopes of Mt. Sartava in the Samarian Desert (Fig. 22), spill of Nahal Mezin (Wadi Madin) (Fig. 21) and spill of Nahal Zeruya in the Dead Sea Area. The original site, where the type specimens were reared from, spill of Nahal Tirza (Fig. 23), was searched, but no plants were found; they probably disappeared as a result of the intense human activities (road construction, agriculture, etc.). Being an obligatory misanthropic plant, *B. attenuata* cannot survive close proximity to man (Danin & Fragman-Sapir 2019). According to Danin and Fragman-Sapir (2019), the vegetative period of *B. attenuata* lasts from May to December and flowering is in May–December, culminating in September–October. I visited the aforementioned sites several times in different seasons, particularly in May–June, searching for the plant in the suitable condition, but failed to find or to rear additional specimens.

The only known record of the Mecysolobini from the Acanthaceae, *Merus unifasciatus* Morimoto & Kojima, 2007 from the Rykyu Islands and Taiwan, develops in stems of *Strobilanthes tashiroi* Hayata (Acanthaceae) (Morimoto & Kojima 2007). However, *M. freidbergi* is distant from *M. unifasciatus* both taxonomically and geographically.

Fairly strongly sclerotized gonocoxites suggest that the female is capable of digging into a more or less solid substrate, like stem tissues, for oviposition.

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REFERENCES

Alonso-Zarazaga, M.A., Barrios, H., Borovec, R., Bouchard, P., Caldara, R., Colonnelli, E., Gültekin, L., Hlaváč, P., Korotyaev, B., Lyal, C.H.C., Machado, A., Meregalli, M., Pierotti, H., Ren, L., Sánchez-Ruiz, M., Sforzi, A., Silfverberg, H., Skuhrovec, J., Tryzna, M., Velázquez de Castro, A.J. & Yunakov, N.N. 2017. Cooperative catalogue of Palaearctic Coleoptera Curculionoidea. *Monografías electrónicas de la Sociedad Entomológica Aragonesa* **8**: 1–729.
http://sea-entomologia.org/PDF/MeSEA_8_Catalogue_Palaeartic_Curculionoidea.pdf

Andrew, J.P. & Ramamurthy, V.V. 2010. A checklist of weevils of the tribe Mecysolobini (Coleoptera: Curculionidae: Molytinae). *Oriental Insects* **44** (1): 271–336.
https://doi.org/10.1080/00305316.2010.10417619

Couilloud, R. 1993. Coléoptères déprédateurs du cotonnier en Afrique et à Madagascar. *Supplément à Coton et fibres tropicales, Série Les déprédateurs du cotonnier en Afrique tropicale et dans le reste du monde*. No. 7. CIRAD-CA, Paris. 92 pp.
http://agritrop.cirad.fr/316700

Couturier, G. & Perrin, H. 1982. *Alcidodes brevirostris* ssp. *simus* Chevr. (Col. Curculionidae) un important déprédateur du gombo dans la région de Taï, en Côte-d'Ivoire. *Agronomía Tropical* **37** (2): 195–202.
https://core.ac.uk/download/pdf/39875003.pdf

Danin, A. & Fragman-Sapir, O. 2019. *Flora of Israel Online*.
http://flora.org.il/en/plants/bleatt/ (accessed 30 October 2019)

Gistel, J.N.F.X. 1857. Achthundert und zwanzig neue oder unbeschriebene wirbellose Thiere. *In*: *Vacuna oder die Geheimnisse aus der organischen und leblosen Welt. Ungedruckte Originalien-Sammlung von grösstentheils noch lebenden und verstorbenen Gelehrten aus dem Gebiete sämmtlicher Naturwissenschaften, der Medizin, Litteraturgeschichte, des Forst- und Jagdwesens, der Oekonomie, Geschichte, Biographie, und der freien schönen Künste, herausgegeben von Professor Dr. Johannes Gistel*. Vol. 2. Verlag der Schorner'schen Buchhandlung, Straubing, pp. 513–606.

Gültekin, L., Korotyaev, B.A., Gültekin, N., Davidian, G.E. & Güdek, M. 2019. Diagnosis and distribution of *Alcidodes karelinii* (Boheman, 1844): a new record for Turkey (Curculionidae: Molytinae: Mecysolobini). *Transactions of American Entomological Society* **145**: 91–100.
https://doi.org/10.3157/061.145.0110

Haaf, E. 1961. Uber die Afrikanischen Arten der gattung *Alcidodes* (Col. Cure.) mit besanderer Berucksichtigung des materials des Musee royal de l' Afrique Centrale. *Annale Musee Royal de l'Afrique Centrale, Tervuren (ser. 8°) Sci. Zoologie* **94**: 7–166.

———1964. Neue *Alcidodes* Arten aus Ostafrika und New-Guinea. (Col. Curc.). *Entomologische Arbeiten aus dem Museum G. Frey* **15** (1): 291–295.
https://www.zobodat.at/pdf/Entomologische-Arbeiten-Museum-Frey_15_0291-0295.pdf

Hammad, S.M. & El-Deeb, A.L. 1955. The morphology of three weevil larval from Egypt (Coleoptera: Curculionidae). *Bulletin de la Société Entomologique d'Égypte* **39**: 385–389.

Hoffmann, A. 1965. Curculionides neuveaux du Tanganyika (Col.). *Annales de la Société Entomologique de France* **1** (2): 393–409.
https://gallica.bnf.fr/ark:/12148/bpt6k6140253c/f406.image.texteImage

Hong, K-J., Park, S. & Han, K. 2011. Arthropoda: Insecta: Coleoptera: Curculionidae: Bagoninae, Baridinae, Ceutorhynchinae, Conoderinae, Cryptorhynchinae, Molytinae, Orobitidinae. Weevils I. *In*: *Insect Fauna of Korea*. Vol. 12, No. 2. National Institute of Biological Resources, Incheon, Republic of Korea. 301 pp.
https://www.zin.ru/animalia/coleoptera/pdf/insect_fauna_of_korea_weevils_2011_1.pdf

Lee, Ch-Y. & Morimoto, K. 1988. Larvae of the weevil family Curculionidae of Japan. Part 2. Hyperinae to Cioninae (Insecta: Coleoptera). *Journal of The Faculty of Agriculture Kyushu University* **33** (1–2): 131–152.
http://hdl.handle.net/2324/23924

Lyal, C.H.C. 1996. Weevil (Coleoptera: Curculionoidea) seed-predators of *Syzygium* and *Eugenia* spp. (Myrtaceae), with description of the *Alcidodes expansitarsis* species group (Coleoptera: Curculionidae: Molytinae: Mecysolobini). *Journal of Natural History* **30** (11): 1683–1706.
https://doi.org/10.1080/00222939600770991

———2014. Molytinae Schoenherr, 1832. *In*: Leschen, R.A.B. & Beutel, R.G. (Eds), *Coleoptera, Beetles. Morphology and Systematics.* Vol. 3. Handbook of Zoology. Arthropoda: Insecta. De Greuyter, Berlin and Boston, pp. 529–570.

Lyal, C.H.C. & Curran, L.M. 2000. Seed-feeding beetles of the weevil tribe Mecysolobini (Insecta: Coleoptera: Curculionidae) developing in seeds of trees in the Dipterocarpaceae. *Journal of Natural History* **34** (9): 1743–1847.
https://doi.org/10.1080/00222930050122165

Marshall, G.A.K. 1939. New tropical African Curculionidae (Col.). *The Annals and Magazine of Natural History* (11) **3** (18): 561–583.

Moderres Awal, M. & Hossein Pour, F. 2010. A contribution to the snout beetles fauna of Khorasan province in Iran (Coleoptera: Curculionidae). *Munis Entomology & Zoology* **5** (2): 623–626.
https://www.munisentzool.org/yayin/vol5/issue2/623-626.pdf

Morimoto, K. & Kojima, H. 2007. Taxonomic notes on the tribe Mecysolobini (Coleoptera, Curculionidae), with descriptions of three new taxa from Japan. *Elytra* **35** (1): 226–237. http://coleoptera.sakura.ne.jp/Elytra/35(1)226MorimotoK_&_KojimaH.pdf

Pic, M. 1913. Notes diverses, descriptions et diagnoses. *L'Échange* **29**: 105–106.

Witt, A.B.R., McConnachie, A.J. & Stals, R. 2004. *Alcidodes sedi* (Col.: Curculionidae), a natural enemy of *Bryophyllum delagoense* (Crassulaceae) in South Africa and a possible candidate agent for the biological control of this weed in Australia. *Biological Control* **31** (3): 380–387. https://doi.org/10.1016/j.biocontrol.2004.07.008