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**First record of the bow-legged bug, *Hyalymenus subinermis*  
Van Duzee, 1923 (Hemiptera: Heteroptera: Alydidae),  
in California, with description of the mimetic immature stages**

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*Abstract.* The bow-legged bug genus *Hyalymenus* Amyot & Serville, 1843 (Hemiptera: Heteroptera: Coreoidea: Alydidae) includes 20 New World species. Of these, nymphs of only one species, *H. tarsatus* (Fabricius, 1803), have been described, and the description was restricted to the fifth instar. Nine specimens of *H. subinermis* Van Duzee, 1923, representing the first through the fifth instars, were collected on two *Schinus terebinthifolia* Raddi (Anacardiaceae) shrubs from a residential neighborhood (approximately 177,828 m<sup>2</sup> surveyed) in Long Beach, California, U.S.A. in June 2021. Several other locations within the city were surveyed (i.e., parks, residential areas, and riparian habitats; approximately 109,177 m<sup>2</sup> surveyed, collectively), but this species was not observed on other *S. terebinthifolia* plants or other plant species in these areas. Here, we give the first California record for *H. subinermis*, describe the five nymphal instars, provide habitus images of each instar, and discuss the distribution of the species in California, known host plants, and putative ant models that nymphs may mimic.

*Keywords.* Coreoidea, host plants, instars, mimicry, taxonomy

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## INTRODUCTION

*Hyalymenus* Amyot & Serville, 1843, is a genus of broad-headed bugs (Heteroptera: Coreoidea: Alydidae) comprising 20 described species in two subgenera distributed from the southern regions of the United States to Argentina (Brailovsky & Flores 1979, Froeschner 1988, Melo et al. 2017, CoreoideaSF Team 2021). Species in this genus feed on plants in several families, e.g., Anacardiaceae, Asteraceae, Fabaceae, and Solanaceae, among other families (Schaefer 1980, Schaefer & Mitchell 1983, King & Saunders 1984, Oliveira 1985, Cassani 1986, Ceballos et al. 2002), including at least one invasive plant of economic importance, *Triadica sebifera* (L.) Small (Euphorbiaceae) (Panizzi et al. 2000). Distinctive features of *Hyalymenus* species are the ant mimetic behavior and appearance in nymphs, which protect them from ant-avoiding predators (Oliveira 1985). Interestingly, while this phenomenon is generally noted in the literature (e.g., King & Saunders 1984), almost none of the species of *Hyalymenus* have had their nymphal stages described; only the fifth-instar nymph of *H. tarsatus* (Fabricius, 1803) was described by Distant (1893) (as *Galeottus formicarius*).

During the early summer of 2021, we encountered several nymphs of *H. subinermis* Van Duzee, 1923, in southern California, U.S.A., representing a new state record. Here, we describe the five nymphal instars of *H. subinermis* and briefly discuss the distribution of this species in California, its host plant, and ant-mimicry.

#### METHODS AND MATERIALS

Several locations in Long Beach, California, U.S.A. were surveyed for *H. subinermis*, including the El Dorado Nature Reserve (33°48'35.0"N, 118°5'13.0"W; approximately 80,750 m<sup>2</sup> surveyed), along the San Gabriel River (33°46'26.0"N, 118°5'50.0"W; 17,886 m<sup>2</sup>), the Colorado Lagoon (33°46'11.8"N, 118°7'53.8"W; 7,501 m<sup>2</sup>), and two residential areas. Nine nymphs of *H. subinermis* were hand collected from two *Schinus terebinthifolia* Raddi (Anacardiaceae) plants in one of the residential neighborhoods (33°49'20.7"N, 118°10'22.8"W; approximately 177,828 m<sup>2</sup>). Specimens were transported to the California Department of Food and Agriculture (CDFA), Sacramento, California, U.S.A., and transferred to a greenhouse (25–30°C) in separate containers with *S. terebinthifolia* berries and a vial of water capped with Kimwipes®. Nymphs were reared through the five nymphal instars, with at least one nymph of each instar preserved in 95% ethanol; only one specimen was reared to the adult stage to confirm species identity using taxonomic descriptions and identification keys (Van Duzee 1923, Torre-Bueno 1939, Brailovsky & Flores 1979), as well as images of type specimens available on Coreoidea Species File Online catalogue (CoreoideaSF Team 2021). External morphology was examined using Nikon SMZ1500 and SMZ645 stereoscopes. Measurements (in millimeters [mm]) were documented using a Leica MC120 HD camera mounted to a Nikon SMZ1500 stereoscope and the Leica Application Suite X Microscope Software; measurements are reported for each instar in Table 1. Dorsal habitus images of the specimens were produced using a Visionary Digital™ imaging system (Canon 5D camera, 65 mm lens, and an automated vertical stage). Images were taken and compiled using Capture 1 and Zerene Stacker software, respectively. All specimens are deposited at the California State Collection of Arthropods, CDFA, Sacramento, California, U.S.A. (CSCA).

#### Taxonomy

##### *Hyalymenus (Tivarbus) subinermis* Van Duzee, 1923

##### Figure 1

*Hyalymenus subinermis* Van Duzee, 1923:12 (description); Torre-Bueno, 1939:34 (keyed; faunal record); Brailovsky & Flores, 1979:1 (keyed; faunal record)

*Description of Traits Common for All Instars.* Vestiture: body with numerous long, erect, slender white setae, interspersed with sparse, long, slender, erect, darkened setae on dorsal surface of thorax, antennal articles I–III, femora, and abdominal tergites I–IV; few, straight, slender, erect, white setae on labial articles I and II and abdominal sternites; antennal article IV and tarsomeres covered in short, semi-erect, slender white setae; apex of ventral surface of tibiae and ventral surface of tarsomeres with dense stout, short, semi-erect darkened setae. Structure: integument smooth, habitus appearing antlike. Head: dorsally elongate subhexagonal, laterally ovate, longer than width across eyes; tylus (or clypeus) not dorsally elevated above jugum; lateral margin of jugum curved in dorsal view and projecting into shelflike structure; frons

Table 1. Measurements (in mm) of nymphs by instar. Asterisk (\*) indicates measurement biased by deformity. Abbreviation: N, sample size.

	1st (N = 1)	2nd (N = 1)	3rd (N = 2)	4th (N = 2)	5th (N = 2)
Total length	3.39*	4.24*	6.28–6.84	8.32–9.14	12.48–13.09
Head length	1.18	1.64	1.90–2.15	2.16–2.47	2.83–2.93
Head width across eyes	1.01	1.25	1.64–1.71	1.97–2.02	2.39–2.53
Anteocular length	0.49	0.78	0.82–0.85	0.87–1.11	1.46–1.50
Postocular length	0.46	0.65	0.53–0.54	0.71–0.72	0.63–0.65
Minimum interocular with	0.60	0.74	0.92–0.98	1.04–1.20	1.33–1.40
Eye length, dorsal view	0.32	0.34	0.53–0.54	0.56–0.64	0.71–0.74
Eye width, dorsal view	0.18	0.27	0.34–0.36	0.42–0.45	0.51–0.60
Maximum distance between antennifers	0.46	0.57	0.69–0.75	0.88–0.93	0.98–1.08
Antennal article I length	0.78	0.88	1.26–1.30	1.39–1.47	1.77–1.78
Antennal article II length	0.68	0.98	1.19–1.28	1.40–1.42	1.63–1.77
Antennal article III length	0.81	1.06	1.23–1.29	1.37–1.45	1.58–1.73
Antennal article IV length	1.46	1.82	2.39–2.45	2.93–2.97	4.03–4.07
Labial article I length	0.34	0.60	0.81–0.97	1.02–1.04	1.30–1.32
Labial article II length	0.38	0.72	0.91–0.98	1.05–1.09	1.37–1.42
Labial article III length	0.28	0.43	0.54–0.55	0.62–0.63	0.74–0.75
Labial article IV length	0.57	0.74	0.89–0.92	1.01–1.02	1.18–1.20
Pronotum medial length	0.41	0.52	0.77–0.78	0.99–1.20	1.52–1.53
Pronotum maximum width	0.64	0.78	1.03–1.08	1.47–1.58	2.37–2.42
Mesonotum medial length	0.28	0.40	0.55–0.67	0.85–0.88	1.20–1.72
Profemur length	0.89	1.14	1.59–1.64	1.87–1.91	2.48–2.59
Mesofemur length	0.94	1.22	1.64–1.77	2.11–2.13	2.68–2.84
Metafemur length	1.32	1.66	2.49–2.53	3.04–3.13	4.10–4.24
Protibia length	1.24	1.57	1.95–2.11	2.29–2.38	2.77–2.87
Mesotibia length	1.45	1.92	2.48–2.53	2.83–3.04	3.59–3.61
Metatibia length	2.11	2.79	3.35–3.75	4.32–4.40	5.28–5.38
Protarsus length	0.55	0.63	0.77–0.87	1.02–1.11	1.24–1.27
Mesotarsus length	0.59	0.65	0.84	1.05–1.12	1.26–1.39
Metatarsus length	0.62	0.71	0.93–0.96	1.16–1.24	1.57–1.63
Abdomen length	Deformed	Deformed	2.77–3.08	3.72–4.50	6.15–6.31
Abdomen width	Deformed	Deformed	1.62–2.15	1.55–2.08	3.97–4.19

and vertex flat; antennal tubercles closer to anterior margin of eye than apex of head; eye small, subspherical, slightly projecting beyond lateral margin of head, laterally rounded; postocular region without lateral tubercle; constriction between postocular region and neck distinct; antennal articles I–III subequal in length; antennal article I curved, slightly surpassing apex of head; antennal article IV the longest and curved; labial article I thicker than remaining articles. Thorax: lateral pronotal margin carinate; humeral angle rounded with lateral spine; metapleuron without visible spiracle. Legs: slender; meso- and metafemora with ventral tubercles or spines; metatibia curved towards body; tarsi with two articles; tarsomere I longer than II. Abdomen: segments I–III and VII–X narrower than segments IV–VI, which appear bulbous; tergite I with small medial projection on posterior margin; sutures between tergite I, segments II and III, and IX and X not fused, while sutures on remaining segments fused; dorsal abdominal glands II and III present (anterior margins of tergites V and VI, respectively), with small paired ostioles; sulcus between dorsal abdominal gland ostioles straight to curved; abdominal trichobothrial pattern typical of coreoids.

*1st Instar.* Coloration: dark reddish brown with white and yellow to red markings; body densely covered with small bright red spots. Head: dark brown; apex of tylus,

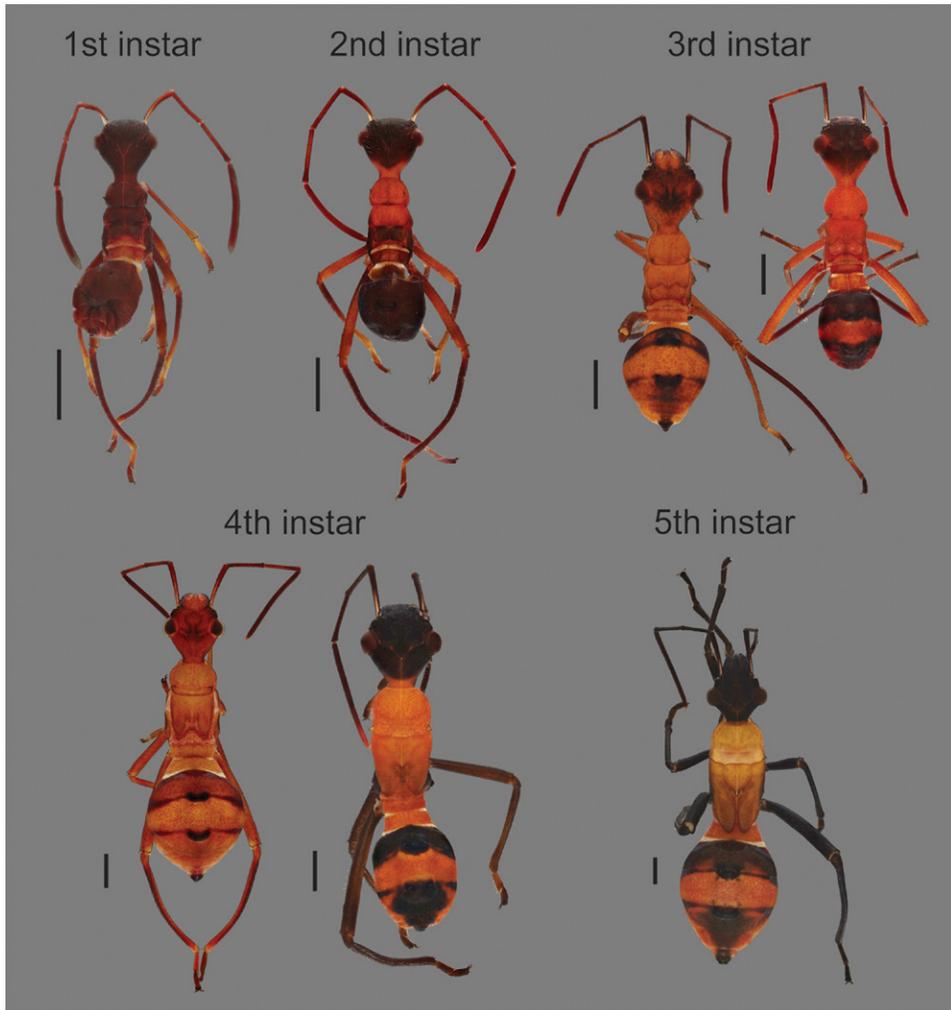


Figure 1. Dorsal habitus images of *Hyalymenus subinermis* nymphs. Scale bars = 1 mm.

ventral surface of juga, ventral margins adjacent to eyes, neck, labial article I and apex of II orange to orangish brown; eyes dark red; ventral surface with wide, medial, longitudinal, bright red stripe; antennal article I basally white transitioning to reddish brown apically, remaining antennal articles darker reddish brown (except base of each narrowly pale), with segment IV the darkest; labial articles III and IV (except brownish black apical half) light brown. Thorax: orange except pronotum (including posterolateral pronotal spines), meso- and metanotum, and meso- and metapleuron dark reddish brown; sterna reddish orange. Legs: mostly dark reddish brown; external sides of pro- and mesocoxae (internal surfaces paler), entire metacoxa, and trochanters dark reddish brown; femora dark reddish brown (except orangish brown apex); protibia reddish brown on basal half, orange on apical half; mesotibia dark reddish brown on basal half, transitioning apically to orange, then narrowly yellowish apex; metatibia mostly dark reddish brown, with base narrowly reddish orange and

apex narrowly yellowish; tarsomere I yellowish orange with apex reddish orange; tarsomere II (except black apex) dark reddish brown; tarsal claws black. Abdomen: dark reddish brown except tergite I white; tergites II and III (except anterior and posterior margins of III white) orange to bright red and tinged with brown; sternite II reddish orange; sternites III and medial area of IV white to light yellowish brown; sternites VI posteriorly, VII, and VIII brown; dorsal abdominal glands, segments IX and X blackish. Structure: Head: about twice as long as pronotum; antecular region as long as postocular; tylus same width as jugum, reaching apex of juga, with lateral margins parallel; apex of jugum rounded and projecting anteriorly; interocular width about three times eye width; labrum reaching basal half of labial article II; labium surpassing meso coxae; labial articles I and II subequal in length, III the shortest, and IV the longest. Thorax: pronotum trapeziform, anterior margin nearly straight, lateral margin straight to slightly convex, posterior margin straight; spines on humeral angles projecting vertically and laterally; mesonotum subrectangular with slight sublateral depression on posterior two-thirds, lateral margins nearly straight, posterior margin broadly rounded; metanotum with lateral margins straight and slightly elevated, sublateral depression present, posterior margin broadly emarginate; pleura not divided into episterna and epimera; mesopleuron with transversely elongate, small spiracle on the dorsoposterior margin (spiracle not visible on propleuron); meso- and metasternum with medial longitudinal carina. Legs: procoxae contiguous; mesocoxae nearly touching; distance between metacoxae about half width of metacoxa; profemur unarmed; mesofemur with small subapical tubercle on ventral surface; metafemur with two small spines on apical third, subapical spine longer and thicker; pro- and mesotibiae straight. Abdomen: tergite I shorter than segment II; segments II and III subequal in length; segments IV and V (possibly VI [deformed]) longest, with remaining segments progressively shorter.

*2nd Instar.* Coloration: mostly reddish orange with dark brownish black areas and whitish and yellowish markings; body densely covered with small bright red spots. Head: dark brownish black; apex of tylus, ventral surface of juga, ventral margins adjacent to eyes, labrum (except dark brown basal fifth), and labial article I orange to orangish brown; eyes dark red; posterior region of postocular and neck orange; ventral surface with wide, medial, longitudinal, bright red stripe; antennal article I basally white transitioning to brown and dark reddish brown apically, remaining antennal articles dark reddish brown (except base of each segment narrowly paler); labial articles II (except orangish apex), III, and IV (except apical half brownish black) brown. Thorax: orange except anterior and posterior margins of pronotum, tips of posterolateral pronotal spines, lateral and posterior margins of mesonotum, metanotum, posterior area of mesopleuron, and metapleuron dark brownish black; sterna reddish orange except paramedial metasternal protuberance dark brownish black. Legs: external surfaces of pro- and mesocoxae, metacoxa, trochanter, basal half of meso- and basal third of metafemora, tibiae (except for small basal area orange tinged with brown and small distally area brown), and tarsomere II dark reddish brown; femoral spines dark brownish black; tarsomere I dark reddish brown except basally light brown; tarsal claws black. Abdomen: dark brownish black except tergite I white; tergites II and III (except anterior and posterior margins of III white) orange tinged with brown; sternite II reddish orange; sternites III and medial area of IV white to light yellowish brown; sternites V near posterior margin and VI–VIII light brown; dorsal abdominal glands and sternites IX and X black. Structure: Head: about twice as long as pronotum;

anteocular region as long as postocular; tylus same width as jugum, reaching apex of juga, with lateral margins parallel; apex of jugum rounded and projecting anteriorly; interocular width about four times eye width; labrum reaching basal half of labial article II; labium surpassing mesocoxae; labial articles I and II subequal in length, III the shortest, and IV the longest. Thorax: pronotum semicircular, anterior margin rounded, lateral margin slightly convex, posterior margin straight; spines on humeral angles projecting vertically and laterally; mesonotum subrectangular with faint sublateral depression on posterior two-thirds, lateral margins nearly straight, posterior margin broadly rounded; metanotum lateral margins straight and slightly elevated, sublateral depression present, posterior margins broadly emarginate; pleura divided into episterna and epimera; mesopleuron with transversely ovate, small spiracle on the dorsoposterior margin (spiracle not visible on propleuron). Legs: procoxae nearly touching; distance between meso- and metacoxae about width of labial article IV; pro- and mesofemora with small subapical tubercle on ventral surface; metafemur with two spines on apical third, subapical spine longer and thicker; pro- and mesotibiae straight. Abdomen: tergite I shorter than segment II; segments II and III subequal in length; segments IV–VI longest, with remaining segments progressively shorter; cuticle slightly elevated above dorsal abdominal gland ostioles.

*3rd Instar.* Coloration: orange to dark orange, with brown to dark brown and whitish markings; body densely covered with small bright red spots. Head: orange except tylus, lateral third of juga on exterior side, antennifers, small area adjacent to dorsoposterior margin of eye, and vertex dark brown to black; interocular space and narrow paramedial longitudinal stripes on ventral head surface infuscated with brown; eyes dark red, with small area adjacent to ventral margin whitish; ventral surface with wide, medial, longitudinal, bright red stripe; antennal article I with basal half of dorsal and ventral surfaces longitudinally whitish to yellowish, remaining antennal articles dark reddish brown (except base of each segment narrowly paler and apex of segment IV tinged with orange); labrum basally dark reddish brown, with medial half of segment bright red and remainder of apex translucent orange; apical half of labial article IV transitioning to black. Thorax: orange except posterior margin of pronotum, posterolateral spines on humeral angles, and lateral and posterior margins of meso- (including wing pads) and metanota dark brown; thoracic sterna red. Legs: mostly orange tinged with brown; coxae with large red spot on anterior surface; femoral spines black; apex of tibiae with narrow paler area; mesotibia with subbasal half slightly darker; metatibia mostly dark reddish brown; tarsomere I on pro- and mesolegs orange infuscated with brown at apex; metatarsomere I dark reddish brown except with small pale base; tarsomere II and tarsal claws dark brownish black. Abdomen: orange except tergite I, medial posterior third and posterolateral margin of sternite III, triangular area on anteromedial half of sternite IV, and lateral margins of sternites VI and VII (except medially darkened area) grayish; anterior and posterior margins of tergite III whitish; tergites IV and VI–VIII infuscated with brown; dorsal abdominal glands, all margins of tergite IV, anterior and posterior margins of VI, posterior margin of tergites VII and VIII, posterior half of sternite IV, sternite V (except orange lateral area), and segments IX and X dark brownish black. Structure: Head: about 2.5–3 times as long as pronotum; anteocular region longer than postocular portion; tylus about two-thirds width of jugum at midpoint, not reaching apex of juga, with lateral margins convergent apically (basal third of tylus wider); apex of jugum rounded and projecting anteriorly; interocular width about three times eye width; labrum reaching basal fourth

of labial article II; labium reaching metacoxae; labial articles I, II, and IV subequal in length, III the shortest. Thorax: pronotum semicircular, anterior margin concave, lateral margins broadly rounded, posterior margin straight; spines on humeral angles projecting vertically and laterally; mesonotum without differentiated scutellum, lateral margins straight, posterior margin deeply sinuate, medially extending posteriorly with apex broadly rounded and reaching half the length of wing pads; wing pads slightly developed, extending onto anterolateral area of metanotum, apex rounded; posterior and lateral margins of metanotum straight, with posterolateral margin rounded; pleura divided into episterna and epimera; dorsoposterior margin of pro- and mesopleura with large, transversely elongate spiracle. Legs: procoxae nearly touching; distance between meso- and metacoxae about width of labial article IV; pro- and mesofemora with small subapical tubercle on ventral surface; metafemora slightly enlarged, with three ventral spines on apical half, subapical spine longer with others decreasing in size towards body; pro- and mesotibiae slightly curved towards body. Abdomen: tergite I shorter than segment II; segments II and III subequal in length; segments IV–VI longest, with remaining segments progressively shorter; cuticle above dorsal abdominal gland ostioles elevated and with a small tubercle. Variation: coloration can be darker overall, with dark markings on the head and abdomen more extensive and ranging from dark brown to black, gray coloration on abdominal sternites absent, and white coloration on sternite II greatly reduced, almost indistinguishable.

*4th Instar.* Coloration: orange to brown with whitish and dark brown to black markings and dense, small, irregular bright red spots. Head: reddish orange except lateral third of jugum on exterior side, anterior and posterolateral margins of antennal tubercles, four infuscated areas on vertex, labrum, and apex of labial article IV dark brown to black; basal two-thirds of antennal article I on dorsal and ventral surfaces with longitudinal whitish to orangish stripe, remaining antennal articles dark reddish brown; interior margin of juga and narrow area near dorsal and dorsoposterior margins of eye orange; eyes brown; ventral surface with wide, medial, longitudinal, bright red stripe. Thorax: orange except thin anterior and posterior margin of pronotum and lateral and posterior margins of meso- and metanota (including margins of wing pads) reddish orange; posterolateral spines on humeral angles dark brown; wing pads dark orange; sterna lighter, appearing whitish. Legs: reddish orange except apex of femora and apex of tibiae narrowly pale orange; femoral spines black; dorsal surface of metatibia and apex of tarsomere II on each leg dark brown to black. Abdomen: orange except tergite I pinkish; anterolateral and posterior margins of tergite III whitish; tergites IV and VI–VIII, and sternites IV (except grayish medial triangular) and medial area of V infuscated with brown; dorsal abdominal glands, all margins of tergite IV, anterior margin of tergite VI, and segments IX and X dark brown to black; sternite VIII grayish. Structure: Head: about twice as long as pronotum; antecular region longer than postocular portion; tylus about half width of jugum at midpoint, reaching apex of juga, with lateral margins convergent apically (basal third of tylus wider); apex of juga rounded; interocular width about twice eye width; labrum slightly surpassing apex of labial article I; labium extending to about middle of metasternum; labial articles I, II, and IV subequal in length, III the shortest. Thorax: pronotum semicircular, anterior margin straight, lateral margins broadly rounded, posterior margin slightly convex; spines on humeral angles projecting vertically; mesonotum without differentiated scutellum; mesonotal wing pads present, extending over metanotal wing pads and reaching the anterior half of abdominal tergite I, with apex broadly

rounded; posteromedial margin of mesonotum rounded; metanotal wing pads small, extending onto abdominal tergite I, slightly beyond apex of mesonotal wing pads; pleura divided into episterna and epimera; ventroposterior and dorsoposterior margins of pro- and mesopleura, respectively, with large, transversely elongate spiracle. Legs: distance between procoxae about width of labial article IV; mesocoxae separated by about width of mesocoxa; metacoxae separated by a distance slightly shorter than distance between mesocoxae; pro- and mesofemora with small subapical tubercle on anteroventral surface; metafemora slightly enlarged, with three ventral spines on apical half, subapical spine longer and most basal one barely noticeable; pro- and mesotibiae straight. Abdomen: tergite I and segment II subequal in length, segment III slightly longer, segments IV–VI longest, remaining segments progressively shorter; cuticle above dorsal abdominal gland ostioles elevated and with a small tubercle. Variation: head, antennae (except whitish longitudinal stripe on basal half of dorsal and ventral surfaces of segment I and bright orange apex of segment IV), tergite IV, anterior margin and large medial area of tergite VI, and large medial area of tergite VIII black; labial articles II and III, ventral surface of mesopleuron, metapleuron, legs (except dorsal area of procoxa) dark brown; medial triangular area of sternites IV yellow orange; remainder of body (except bright red ventral surface of head and white margins on tergite III) bright orange; pronotum longer, bell-shaped, about as long as wide; spines on humeral angles projecting vertically and laterally; mesonotum with a slightly more differentiated scutellum; mesonotal wing pads almost reaching posterior margin of abdominal tergite I.

*5th Instar.* Coloration: orange and black with whitish and dark brown markings and dense, small, irregular bright red spots. Head: black except apex of antennal article IV, apical fourth of labial article III, and basal half of labial article IV orange; apex of tylus and labrum subbasally, light brown; labial articles I and II brown; eyes dark red; basal third of dorsal and ventral surfaces of antennal article I, small area adjacent to ventral margin of eye, subapical medial ventral spot, and medial ventral surface of neck whitish; ventral surface with wide, medial, longitudinal, bright red stripe. Thorax: orange except posterior fourth of pronotum, small spot on medial apex of mesonotum, dorsoposterior area of mesopleuron, and narrow dorsal area of metapleuron grayish; posterolateral pronotal spines, medioapical margin of mesonotum, ventral half of propleuron, ventral two-thirds of mesopleuron, and most of metapleuron dark brown to black; mesonotal wing pads orangish brown with margins darker; pro- and mesosterna (except anterolateral white spot) medially light red; metasternum (except orangish brown margin) white. Legs: entirely black, except procoxa dorsally orange, infuscated with brown, with interior and ventroposterior exterior surfaces bright red; mesocoxa with anterodorsal area and thin interior dorsal margin orange, infuscated with brown; meso- and metacoxae with anteroventral half and posterior areas on interior surfaces bright red to dark red. Abdomen: reddish orange except anterior and posterior margins of tergite III and wide medial triangle on anterior half of sternite IV white; small posterior spot on tergite III, tergite IV (except for reddish orange paramedial spots on posterior third), one pair of small paramedial spots posterior to dorsal abdominal gland II and another pair anterior to dorsal abdominal gland III, tergite VI (except narrow paramedial spots on anterior fourth of VI and lateral margin of VI), large medial regions of tergites VII and VIII, tergite IX, remainder of sternite IV (except lateral reddish orange margin and white anterior triangle), sternite V (except lateral and posterior margins orange), posterior two-thirds of sternite IX, segment X,

and dorsal abdominal glands dark brown to black; sternite VIII and anterior area of sternite IX yellow; small anterolateral spots on sternite IV grayish. Structure: Head: almost twice as long as pronotum; anteocular region longer than postocular portion; tylus about two-thirds width of jugum at midpoint, reaching apex of juga, with lateral margins convergent apically (basal third of tylus wider); apex of jugum rounded and projecting anteriorly; interocular width about 2.5 times eye width; labrum slightly surpassing apex of labial article I; apex of labium reaching or slightly surpassing anterior margin of metasternum; labial article I subequal in length to segment II, segment III the shortest, segment IV slightly shorter than segment I. Thorax: pronotum subquadrate, anterior margin straight to slightly concave, anterolateral margin rounded, lateral margin slightly convex, posterolateral margin rounded, posterior margin straight with small, rounded, lateral extension over mesonotum; anterior pronotal disc slightly rounded dorsally in lateral view, with posterior pronotal lobe very elevated above anterior lobe and strongly declivent; spines on humeral angles projecting vertically and laterally; mesonotum with scutellum beginning to differentiate from wing pads; scutellum suborbiculate with distinctly rounded apex, basally half the width of pronotum and nearly half the length of wing pads; mesonotal wing pads reaching middle of tergite III, obscuring metanotal wing pads; pleura divided into episterna and epimera; ventroposterior and medioposterior margins of pro- and mesopleura, respectively, with large, transversely elongate spiracle. Legs: procoxae nearly touching; mesocoxae separated by a little less than width of mesocoxa; distance between metacoxae about width of labial article IV; profemur with small subapical tubercle on anteroventral surface; mesofemora with two small subapical tubercles on anteroventral surface; metafemora slightly enlarged, with three ventral spines on apical half, subapical spine longer and most basal one barely noticeable; pro- and mesotibiae straight. Abdomen: tergite I obscured by wing pads, segment II slightly shorter than III, segments IV–VI longest, remaining segments progressively shorter; cuticle above dorsal abdominal gland ostioles elevated. Variation: orange-red areas appear more yellow to light brown, with darker regions more extensive; dorsal postocular region, anterior margin of pronotum, anterior pronotal disk brown, mesonotum (including wing pads), tergite II, tergite III medially dark brown; orange red paramedial spots on tergites IV and VI absent; ventral, longitudinal, medial stripe pale pink; dark markings on thoracic pleura extend further dorsally, with more distinctly defined margins; thoracic sterna, sternite II, sternite III medially, and anteromedial triangle on sternite IV pale yellow, almost whitish. posterior third of sternite IV, sternite V and VI, sternite VII, and sternite VIII (except posterior margin) light brown to brown.

*Specimens Examined.* U.S.A.: California: Los Angeles Co.; Long Beach; Falcon Ave. between E 36th and E 37th Streets, on *Schinus terebinthifolia* Raddi by sidewalk, 33°49'20.7"N 118°10'22.8"W, 13 June 2021, M. Forthman, K. Adler, A. Schill, A. Stolberg (1 adult female, 8 nymphs) (CSCA).

#### DISCUSSION

*Hyalymenus subinermis* was originally described from several adults in the Upper Sonoran region of Mexico (Van Duzee 1923). Since then, additional adults have been collected in other regions of Mexico (e.g., Baja California), as well as Arizona, U.S.A. (Torre-Bueno 1939, Brailovsky & Flores 1979, Froeschner 1988, CoreoideaSF Team

2021). However, information regarding the presence of *H. subinermis* in California has not been published to our knowledge. Moreover, seven entomological collections in California, as well as material at the National Museum of Natural History, Washington D.C., U.S.A. and the American Museum of Natural History, New York, U.S.A., do not possess any specimens collected within the state. So far, our collection of *H. subinermis* in California confirms its presence only in Los Angeles County.

Published host plant records for *H. subinermis* are lacking. Our specimens of *H. subinermis* were collected from *S. terebinthifolia* in a frequently disturbed residential area. *Schinus terebinthifolia* is native to several South American countries (e.g., Argentina, Brazil, and Paraguay) and has become established in other regions of the world, including several U.S.A. states. (Mukherjee et al. 2012, Wheeler et al. 2016, Tropicos.org 2021). Our observations in the laboratory indicate that our population of *H. subinermis* feeds on the berries of *S. terebinthifolia*.

Morphological and behavioral ant mimicry in two species of *Hyalymenus* was studied by Oliveira (1985): *H. tarsatus* and *H. limbativentris* Stål, 1870. Oliveira (1985) noted that nymphs of both species exhibit rapid, zig-zagged locomotion, “agitated” antennal movements, and abdominal movements that resemble motion observed in alarmed ants. Oliveira (1985) proposed two potential ant models for these species: species within *Camponotus* Mayr, 1861, and *Ectatomma* Smith, 1858 (Hymenoptera: Formicidae). While we did not observe any ant species at the time of our collection, *Camponotus* species do occur throughout California and may thus serve as a potential model for *H. subinermis*. Species of *Ectatomma* do not occur in California. Other ant genera, such as *Formica* Linnaeus, 1758, and *Liometopum* Mayr, 1861, however, do occur in California and may, thus, also be potential models. Within Los Angeles County, potential model ant species include, e.g., *F. moki* Wheeler, 1906, *F. francoeuri* Bolton, 1995, or *L. occidentale* Emery, 1895, but further natural history observations and experiments with both *H. subinermis* and sympatric ant species are needed to determine the likely model species.

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