

# Revision of the *Stenomorpha* subgenus *Asidina* with the description of five new species

Running title: Revision of *Stenomorpha* subgenus *Asidina*

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## ABSTRACT

The *Stenomorpha* Solier, 1836 subgenus *Asidina* Casey, 1912 is redefined to include the type species, *Stenomorpha (Asidina) parallela* (Leconte, 1851), *Stenomorpha (Platasida) embaphionides* (Horn, 1894) **comb. nov.**, and five previously undescribed species: *Stenomorpha browni*, *clarki*, *desdemonae*, *steineri*, and *pericúensis*.

## INTRODUCTION

*Stenomorpha* Solier, 1836 is the most species rich genus of Asidini (Coleoptera: Tenebrionidae) and one of the largest (the largest?) genera of darkling beetles in North America. Most subgenera within *Stenomorpha* are still awaiting revision, given confusion around subgeneric boundaries across *Stenomorpha* taxa. The subgenus *Asidina* Casey, 1912, is the only one that has been revised (Triplehorn and Brown, 1971) since Casey (1912). However, more recent works (Smith et al. 2011, Smith 2013) highlighted the polyphyletic nature of *Asidina*.

Smith *et al.* (2011) moved *Asidina furcata* (Champion, 1892) and *Asidina wickhami* (Horn, 1894) out of the genus and into an informal grouping, the ‘*furcata* group’, within *Stenomorpha*. Smith (2013) revised the status of nine genera, primarily described by Casey (1912), placing them as subgenera within *Stenomorpha*. Species composition of these groups was maintained pending a more comprehensive revision of the *Stenomorpha* classification, leaving four species within the subgenus *Asidina*: the type species *Stenomorpha (Asidina) parallela* (Leconte, 1851), *Stenomorpha (Asidina) confluens* (Leconte, 1851), *Stenomorpha (Asidina) rugicollis* (Triplehorn and Brown, 1971), and *Stenomorpha (Asidina) semilaevis* (Horn, 1870). However, all phylogenetic reconstructions in Smith (2013) indicated that *S. confluens* and *S. parallela* did not form a monophyletic group and were somewhat distantly related across sampled *Stenomorpha* species. Instead, *S. parallela* was in a well supported sister group relationship with *Stenomorpha (Platasida) embaphionides*.

To place previously undescribed *Stenomorpha* species within this study, new and additional taxa were coded into the morphological matrix used in Smith (2013).



## METHODS and MATERIALS

Specimens. Approximately 69 specimens were examined for this study, including type material for *S. rugicollis*. Specimens were graciously loaned from the following institutions.

ADS  
USNM  
CIDA  
CASC  
Probably more

Images were taken using a Canon [info from Chris] and assembled using Zerene Stacker.

## RESULTS

### ***Stenomorpha (Asidina)***

**Redescription.** Clypeus strongly projecting and medially emarginate. Mentum transverse and oval, cardo and stipes exposed. Apical maxillary palp strongly sexually dimorphic (larger in males). Lateral pronotal marginal carina present and reflexed. Prosternal process not raised, deflexed behind coxae. Marginal carina of elytron present throughout, not or weakly reflexed at humera, often with dorsal branch present and separated from margin.

### **Key to *Asidina* subgenus**

1. Pronotum densely tuberculate.....2
- 1'. Pronotum not tuberculate, densely to finely punctate....3
2. Frons densely foveate with short dark acuminate setae, dorsal branch of marginal costa nearly reaching humera and caudal end of marginal costa, Isla Ceralvo.....*Stenomorpha browni* n.sp.
- 2'. Frons moderately punctate with yellowish acuminate setae, dorsal branch of marginal costa emerging  $\sim\frac{1}{4}$  elytral distance from humera, Isla Catalina.....*Stenomorpha pericúensis* n.sp.

3. Pronotum densely punctate, punctures moderate in size; elytron with two longitudinal rows of tubercles on disc, inner branch of marginal costa present and tuberculate.....*Stenomorpha clarki* **n.sp.**
- 3'. Pronotum moderately or sparsely impunctate, punctures fine; elytron lacking tubercles or with tubercles not arranged in rows.....4.
4. Dorsal branch of marginal costa present.....*Stenomorpha parallela* (LeConte)
- 4'. Dorsal branch of marginal costa absent.....5
5. Pronotal lateral margin thin, not reflexed in anterior half....*Stenomorpha desdemonae* **n.sp.**
- 5'. Pronotal lateral margin expanded and strongly reflexed throughout....6
- 6h. Erect plumose setae present on body; elytral marginal costa angulate near caudal margin, often reflexed.....*Stenomorpha embaphionides* (Horn)
- 6'. Erect plumose setae absent; elytral marginal costa not angulate, smoothly curving toward midline near caudal margin, not reflexed.....*Stenomorpha steineri* **n.sp.**

***Stenomorpha (Asidina) clarki* Gilchrist & Smith, 2024**

**Type material.** HOLOTYPE (sex undetermined, probably male) labeled:

- a) William H. Clark/Paul E. Blom/Collectors
- b) MEXICO, BAJA CALIFORNIA/NORTE, VALLE MONTEVIDEO/LA LAGUNA WASH, LAT 28°/55' N LONG 113°44' W/380 M ELEVATION
- c) 16 March 1986 to/23 April 1990/Ethylene Glycol/Pitfall Trap #1
- d) *Stenomorpha*/(*Asidina*)/n.sp.1/det.ADSmith 2020
- e) *Asidina*/n.sp.1/Det. ADSmith 2011
- f) Tenebrionid Base/Aaron D. Smith/Catalog # 07512
- g) CIDA Loan/College of Idaho/to ADSmith
- h) *Stenomorpha*/(*Asidina*)/clarki

PARATYPE (female) labeled:

- a) MEXICO, BAJA CALIFORNIA/NORTE, VALLE MONTEVIDEO/LA LAGUNA WASH, LAT 28°/55' N LONG 113°44' W/380 M ELEVATION
- b) 16 March 1986 to/23 April 1990/Ethylene Glycol/Pitfall Trap #1
- c) William H. Clark/Paul E. Blom/Collectors
- d) CIDA Loan/College of Idaho/to ADSmith
- e) Tenebrionid Base/Aaron D. Smith/Catalog # 07511

PARATYPE (female) labeled:

- a) MEXICO, Baja California/Norte, El Crucero, Lat/29°16'N, Long 114°09'W/Elevation 610 m
- b) 30 Dec. 1981/William H. Clark/& Paul E. Blom/Collectors
- c) Tenebrionid Base/Aaron D. Smith/Catalog # 25397

PARATYPE (female) labeled:

- a) MEXICO, BAJA CALIFORNIA/NORTE, VALLE MONTEVIDEO/LA LAGUNA WASH, LAT 28°/55' N LONG 113°44' W/380 M ELEVATION
- b) William H. Clark/Paul E. Blom/Collectors
- c) 16 March 1986 to/23 April 1990/Ethylene Glycol/Pitfall Trap #2
- d) CIDA Loan/College of Idaho/to ADSmith
- e) Tenebrionid Base/Aaron D. Smith/Catalog # 07513

**Description.** Holotype male. [size]. Integument ferruginous to brown, clothed in simple recurved golden to light brown setae. Head. Frons possessing shallow, dense punctation and golden hairlike setae.

**Diagnosis.** *Stenomorpha clarki* is can be separated from other *Asidina* species based on the setaceous, tuberculate inner branch of the marginal elytral costa, two longitudinal rows of tubercles on each elytron, and dense punctation on the pronotum.

**Etymology.** This species is named in honor of William H. Clark, one of the collectors of all known specimens, for his contributions to coleopterology and biodiversity research on the Baja California peninsula.

**Remarks.**

***Stenomorpha (Asidina) steineri* Gilchrist & Smith, 2024**

**Type material.**

**Description.** Integument ferruginous; moderately clothed with yellow to golden erect acuminate setae dorsally; greatest elytral width slightly wider than pronotum, 2.5X longer. Head: Moderately to densely foveate with fine dense punctures between fovea, fovea denser along epistoma; clypeus raised above anterior portion of frons, not forming a plane, frontoclypeal suture not indicated, genalclypeal suture faintly visible, indented at margin; medial depression on frons absent; labral and clypeal margins broadly emarginate. Apical segment of maxillary palps expanded, scalene. Mentum cordiform, anterior margin broadly medially emarginate; ligula heavily sclerotized, almost

completely exposed anterior to mentum, and sharply emarginate at apex; submentum width approximately half that of buccal cavity; cardo and stipes exposed.

**Diagnosis.**

**Etymology.**

**Remarks.**

## Manuscraps

-NEW. Single specimen from Isla Santa Catalina is new (large tuberculate) - pericuensis

-NEW. Single specimen from Isla Cerralbo (**Isla Jacques Cousteau**), also large and tuberculate, also new. browni

Two specimens are similar in size, but with different elytral costae, tuberculation, setal color, etc.

-NEW. N.sp1. - 4 specimens from lower Baja Norte, La Crucero and nearby. West of Bahia de Los Angeles. Good species. Setae more decumbent, dense punctures on pronotum, hypomeron, and head. Longitudinal rows of tubercles on elytra where additional standard asinine costae would be. clarki

-NEW. N.sp.3 One specimen from Mulege, BCS collected by Warren. Lacks elytral costae.

One specimen from Comundu (dead when pinned) also lacks elytral costae and has far less expanded pronotal marginal costae. I suspect the Comundu specimen is just a weirdo but they are likely the same species(NEVER Mind - new species). steineri/desdemonae

-Stenomorphia (Asidina) parallela. Described by Leconte (Pelecyporus parallelus) from California. Type image is a female, looks like other California specimens. Some slight differences between Arizona, California, and mainland Mexico, but could be because of limited specimens. I would say all non-Baja specimens are A. parallela.

A. <https://mczbase.mcz.harvard.edu/guid/MCZ:Ent:4535>

Notes: Stenomoprha (Asidina) rugicollis is not part of the species group based on: molecular data, shape of the mentum (more trapezoidal than oval/cordate), thinner ligula, and straight posterior margin of pronotum (versus bisinuate). S. semilaevis and S. confluens also need to be removed.

Species group versus subgenus. Asidina is already a subgenus with S. parallela as the type, so probably better to keep it that way. Will require a redefinition of the subgenus.

### Current species in *Asidina*

S. (A.) parallela - Type species

S. (A.) confluens

S. (A.) rugicollis  
S. (A.) semilaevis

***Stenomorpha (Asidina) clarki* Gilchrist & Smith, NEW SPECIES**  
(Figs. XXX)

**Description.** Holotype male. [size]. Integument reddish brown, not shiny. Head. Frons possessing shallow, dense punctation and golden hairlike setae.

a) "XXXI"; b) "XXX"; c) on red paper, "HOLOTYPE / *Stenomorpha* / *clarki* / Smith, Miller & Wheeler, 2011". (XXX). PARATYPES...

Description (Holotype). Length: 12.2mm, EW: 6.4mm, PW: 5.2.

Integument black, reflective;

Integument ferruginous to brown;

Densely clothed in simple recurved blackish-brown setae interspersed with longer erect setae dorsally;

Clothed in simple recurved golden to light brown setae;

greatest elytral width slightly wider than pronotum, 2.5X longer.

Greatest elytral width slightly wider than pronotum, approximately 2.5X longer;

*S. steineri* at play

Integument ferruginous; moderately clothed with yellow to golden erect acuminate setae dorsally; greatest elytral width slightly wider than pronotum, 2.5X longer. **Head:** Moderately to densely foveate with fine dense punctures between fovea, fovea denser along epistoma; clypeus raised above anterior portion of frons, not forming a plane, frontoclypeal suture not indicated, genalclypeal suture faintly visible, indented at margin; medial depression on frons absent; labral and clypeal margins broadly emarginate. Apical segment of maxillary palps expanded, scalene. Mentum cordiform, anterior margin broadly medially emarginate; ligula heavily sclerotized, almost completely exposed anterior to mentum, and sharply emarginate at apex; submentum width approximately half that of buccal cavity; cardo and stipes exposed.

Densely punctate, both moderate and fine punctures present, moderately sized punctures each with a simple blackish-brown seta;

Dense, deep punctures of uniform size, each with a simple seta

frontoclypeal suture neither impressed or indicated, epistomal suture faintly visible, not indented at margin;

Frontoclypeal suture indistinct, occasionally visible at lateral margins

medial depression on frons absent;

Medial depression on frons present

[Frons\_median\_depression: 1: present\_]

labral margin broadly emarginate;

Labral margin broadly emarginate

[Labrum, emargination: 1: rounded\_emargination]

clypeal membrane concealed.

Clypeal membrane concealed

[Clypeal\_membrane: 1: concealed]

Apical segment of maxillary palps expanded, isosceles.

Apical segment of maxillary palps expanded, isosceles

[Male\_maxillary\_palp\_shape 3: scalene\_]

Mentum transverse, sub-trapezoidal, nearly filling buccal cavity.

Submentum width approximately four-fifths that of buccal cavity, laterally exposing a quadrate space before postgena.

Submentum width nearly four-fifths that of buccal cavity [Submentum\_width: 2: less than 4/5 b.c. width, cardos exposed]

Exposing a triangular space before postgena

Postgenal processes rounded, extending to nearly midline of mentum.

Postgenal processes acute, extending to nearly midline of mentum

[Postgenal\_process\_swollen: 1: no]

[Postgenal\_process\_reaching\_mentum\_apex: 0: no\_]

[Postgenal process, viewed laterally: 4: acute, extending to middle of mentum or less]

Antenna densely clothed in dark brown erect simple setae;



Antenna clothed in white to light brown erect simple setae

[Antennal\_setae.\_predominate\_color: 0: white\_or\_clear 1: golden\_or\_light\_brown]

antennal segment 10 subquadrate, with tomentose sensilla separated, curved around apex.

Antennal segment 11 laterally symmetric, with tomentose sensilla covering one-fourth to half of segment.

[Apical\_tomentose\_sensillum\_on\_antennal\_segment\_11: 1: one-fourth to half of segment

[Antennal\_segment\_11\_laterally\_asymmetric: 0: no]

Tomentose sensilla on antennal segment 10 sometimes meeting on one side and sometimes divided.

[Tomentose\_sensilla\_on\_antennal\_segment\_10\_: 1: separate, outer sometimes divided 2: sometimes\_meeting\_on\_one\_side]

Eye weakly reniform.

Eye elongate and reniform.

[Eye\_shape: 0: elongate\_or\_elongate\_reniform]

### **Prothorax:**

Pronotum gibbose;

pronotal lateral margins arcuate, widest at middle;

marginal costa strongly reflexed, crenate;

anterior apices produced, acute;

posterior apices obtuse;

posterior margin weakly bisinuate, medially weakly depressed.

Pronotal disc moderately punctate, each puncture of moderate size and nearly filled with a long recurved or erect simple seta. Prosternal process longitudinally impressed, declivous behind procoxae. Prosternum moderately punctate, punctures fine, with decumbent brown simple setae.

**Pterothorax:** Scutellum exposed, gradually posteriorly raised above scutum; mesonotum with two deep rounded paramedial depressions. Elytra elongate oval, widest posterior to middle, strongly declivous near apex. Elytral humera weakly constricted before base, apices acute, not reflexed.

Marginal costa tuberculate, weakly raised, bifurcated in basal third; inner branch weakly indicated, not reaching outer branch at base or apical elytron declivity. Discal costa of elytron tuberculate, weakly raised from behind humera to apical third of elytron, parallel to suture. Elytral disc moderately punctate, punctures large; densely clothed in long recurved blackish-brown setae interspersed with longer erect setae along costae and margins. Legs: Femora and tibia densely clothed with decumbent erect dark brown simple setae, pro-, meso-tibia also with sparse socketed black spiniform setae. Femora transversely rugose; tibia weakly rugose; tarsi with plantar surface densely pubescent throughout, setae simple, golden-orange, becoming sparser, darker on distal tarsomere; protibia with outer apical margin forming a small indistinct spine with a ring of socketed spiniform setae running entire margin; inner apical margin with two subequal spurs; combined protarsal segments approximately one-half length of protibia.

**Abdomen:** Moderately punctate with decumbent simple setae.

**Diagnosis.**

**Etymology.**

Remarks.