

A preliminary annotated checklist and evaluation of the diversity of the Chrysomelidae (Coleoptera) of the Baja California peninsula, Mexico

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Abstract. A preliminary annotated checklist of the Chrysomelidae of the Baja California peninsula, Mexico is presented based on literature records and the examination of approximately 16,000 chrysomelid specimens. Seven subfamilies and 218 described species have been identified. Ninety-one species are recognized from the Baja California peninsula for the first time. Twenty-nine species are listed as endemic. An additional 128 morphospecies have been identified as undescribed or not yet associated with described species of mainland Mexico or the United States. Adult host plant associations have been identified for approximately 120 species or 35% of the leaf beetle fauna of the region. Each of the 218 described species is associated with the eight plant communities as outlined by Wiggins (1980). Two dominant subfamilies comprise 76% of the leaf beetle fauna: Galerucinae, 87 species (40%) and Cryptocephalinae, 78 species (36%). The following new combinations are proposed: *Neolema californica* (Heinze, 1927), transferred from *Lema* Fabricius, 1798; *Pseudoluperus histrio* (Horn, 1895), transferred from *Keithatus* Wilcox, 1965, and *Diachus peninsularis* (Schaeffer, 1906), transferred from *Triachus* J. L. LeConte, 1880. *Lema peninsulae* Crotch, 1873, is removed from synonymy with *L. balteata* J. L. LeConte, 1884 and reinstated as a valid species. A replacement name is proposed: *Longitarsus bajaensis* Andrews and Gilbert for *Longitarsus bicolor* Horn, 1894.

Introduction

The Chrysomelidae is a large and diverse group and is poorly known from the Baja California peninsula. Prior to this publication, 127 species were recorded from the peninsula. This study has greatly increased the number to 218, but by no means is the biodiversity and biology of the family on the peninsula well known. Based on our fieldwork, at least 128 additional morphospecies remain to be described or determined as a known described species. The size of the area, the rugged terrain, the hostile environment of many areas and the general isolation of this part of Mexico have resulted in limited exploration. With the exception of a few resort areas and the border area, much of the landscape remains unchanged by human activity. Unlike many areas of the world, the opportunity to fully understand the extent of this family in this unique area of Mexico and its affinity to the fauna of mainland Mexico and the United States remains open. Development associated with tourism, agriculture, and fishing is moving into the peninsula at

a greater pace than in past years. It is our intention to compile and expand on the knowledge of the Chrysomelidae of the Baja California peninsula so that a foundation exists for continued study. It is our belief that, despite the length of the study, there are many more species on the peninsula that are unrecorded or new to science. This publication is a beginning to a better understanding, but much remains to be accomplished.

The Baja California peninsula is both large and diverse. It extends more than a thousand miles from north to south, extending from slightly north of 32° north latitude, where it adjoins the United States at California and Arizona, to 23° north latitude at the south end of the peninsula. It has a width ranging from 150 miles at its widest near the border between the States of Baja California and Baja California Sur, to approximately 25 miles just north of La Paz. It is bordered on the west by the cold Pacific Ocean and on the east by the warm Gulf of California. The lands adjoining the Pacific Ocean and Gulf of California are relatively low in elevation and principally desert, while the desert areas

of the middle of the peninsula are around 2,000 feet. There are five principal mountainous areas ranging from a height of 10,000 feet in the north to between five and six thousand feet in the southern ranges. They are the northern Sierra de la Juarez, the Sierra San Pedro Martir slightly further south, the Sierra la Asamblera along the east coast north of Bahia de los Angeles, the Sierra de la Giganta extending more than 150 miles between Las Paz and Loreto, and the Sierra de la Laguna in the cape region. Biologically, the regions vary from dry desert in the Microphyllous Desert Region and Magdalenan Region to moist coniferous forests in the higher elevations of the mountains to broad leaf deciduous forests of the Arid Tropical Region. Many microhabitats, including riparian streams, lakes, vernal lakes, springs, marshes and sandy beach areas, add to the complexity of each region.

This diversity of habitat has led to a relatively large leaf beetle fauna. As many as 346 species may inhabit the peninsula, and it is likely that more will be discovered. Just a short time ago, the Baja California peninsula was extremely difficult to travel. The principal access to collectors, before a paved road was built, was a poorly maintained gravel road running from north to south on the peninsula, with numerous poorly known and maintained side branches. Even today, much of the Baja California peninsula is unexplored because the mountainous areas are virtually inaccessible by road. A prime example is the oak-conifer forests of the highest valleys of the Sierra de la Laguna. At present, this area is only accessible by foot, by mule or by helicopter. The authors have made only one trip to this area, using mules to ascend to the main valley and then hiking out. The trip is very arduous and requires a long day to travel one direction to the main valley of the La Lagunas. To take all the necessary collecting materials up to the valley, mules are required at least for the equipment. A helicopter would be cost prohibitive for most researchers. Specimens collected during our trip to the main valley in the Sierra de la Laguna, and the few specimens available from other collections, seem to indicate that the fauna of this area is very different from all other areas of the peninsula, including the lower elevations of the cape region.

Methods and Format

In 1983, the authors began a long-term study of the Chrysomelidae of the Baja California peninsula. The goals of this study were (1) the enumeration

of the chrysomelid species, (2) the association of each species with their host plants, (3) an analysis of their distribution, and (4) the recognition of species endemic to the Baja California peninsula. In the last twenty years, approximately 17 trips of variable lengths have been made to various parts of the peninsula to collect Chrysomelidae and document their host plant associations. Slightly less than 16,000 specimens have been studied, of which approximately 55% were generated from our field-work.

Specimens were borrowed from collections known to contain collections of Coleoptera from the peninsula (see "Acknowledgements"). Most of the literature pertaining to Baja California Chrysomelidae has been gathered and examined for records.

Identifications

The large number of Baja California peninsula species also found in the United States greatly enhanced our ability to identify much of the chrysomelid fauna of the peninsula (see "Summary and Discussion"). Only two genera occurring on the peninsula do not occur in America north of Mexico, and even these two genera were recently included in the chrysomelid chapter of "American Beetles" (Riley *et al.* 2002). Authors who have included species from the peninsula in recent revisionary works also aided our identifications, and, because many genera on the peninsula contain only a few species, it is easier to associate them with species described from or recorded from the peninsula. A primary exception would be the genus *Pachybrachis*, which is in need of revision. In some instances, we have been able to compare specimens with type material. For the identification of the tortoise beetles, we have relied on a specialist for the group. Any material for which we were not able to confidently assign a name has been given a morphospecies designation.

As used in this paper, a morphospecies designation is given to an obvious new species or to like groups of readily separable specimens that we cannot assign a valid name. The term unique is used when referring to a species that occurs in only one plant region on the peninsula, but may or may not be endemic to the peninsula.

History

Few workers have studied the Chrysomelidae of the Baja California peninsula. Most of the de-

scribed species occurring there are species described from other areas that were later found to occur on the peninsula. John L. LeConte was the first to work on the Coleoptera of the peninsula in an 1861 paper titled "Notes on the Coleopterous Fauna of Lower California." In this paper, he credits the collecting of John Xantus as providing the first opportunity for the study of the Coleoptera of the Baja California peninsula and describes a single chrysomelid species, *Metacycla insolita* J. L. LeConte, 1861.

George Horn (1894, 1895) provided the first major works on the Coleoptera of the Baja California peninsula. His work was based on material collected on expeditions to the peninsula by the California Academy of Sciences in the 1890's. The chrysomelid portion of the 1894 paper lists 60 species from the region, including seven described as new species. In 1895, he listed an additional six species, including three new to science.

The next major work was by H. C. Fall (1927). This work was also based on material collected by a California Academy of Sciences Expedition (in 1921). This expedition was to the islands in the Gulf of California and the west coast of mainland Mexico. From the islands associated with the peninsula, he described four new species and listed an additional twenty-two.

A number of workers described new species from the peninsula as part of larger works on the Chrysomelidae, including Crotch, 1873; Horn, 1889; Schaeffer, 1905 and 1906; Fall, 1910 and 1915; Heinze, 1927; Blake, 1937, 1939, 1942, 1966 and 1970; Moldenke, 1970; Karren, 1972; Andrews and Gilbert, 1993; Clark, 1999; and Gilbert and Andrews, 1999 and 2002. At the beginning of this study a total of 116 species were documented as occurring on the Baja peninsula and the associated islands. During the study, various authors have added eleven species to the fauna of the peninsula for a total of 127 species. Six of these were described from the peninsula, including *Dysphenges eichlini* Gilbert and Andrews, 2002, *D. lagunae* Gilbert and Andrews, 2002, *D. rileyi* Gilbert and Andrews, 2002, *Orthaltica capensis* Andrews and Gilbert, 1993, *Scelolyperus clarki* Gilbert and Andrews, 1999, and *Androlyperus nataliae* S. Clark, 2001. *Chaetocnema fulvida* White, 1996 and *Phyllotreta bisinuata* E. Smith, 1985 were described from the southwestern United States with their ranges extending into the Baja California peninsula. Two species, *Orthaltica recticollis* (J. L. LeConte, 1861) and *Scelolyperus phoxus* Wilcox, 1965 were record-

ed as new to the Baja California peninsula by Andrews and Gilbert (1993) and Gilbert and Andrews (1999), while *Brachycoryna pumila* Guérin-Méneville, 1844 was recorded from the peninsula by Staines (1986).

In spite of the few collectors focusing on leaf beetles during their investigations of the peninsula, the coverage has been good, as many of the investigations took collectors to remote areas only accessible by long drives over poor desert roads. However, many areas remain unsampled, as there are no roads through much of the region. Some areas are under-collected simply because they are not verdant, and thus are not appealing to collectors.

Plant Communities

Wiggins (1980) partitioned the Baja California peninsula into eight major plant communities, which he designated as regions (Figure 1). They included the Californian Region (CR), Baja California Coniferous Forest Region (BCcf), Microphyllous Desert Region (MD), Sarcophyllous Desert Region (ScD), Sarcocaulous Desert Region (SR), Magdalenan Region (MR), Sierra de la Giganta Region (SG) and Arid Tropical Region (AT). Three of these regions, the Californian, Baja California Coniferous Forest, and Microphyllous Desert, extend into California, and the Microphyllous Desert Region extends into Arizona. The Microphyllous Desert Region, and Sarcocaulous Desert Region occur in mainland Mexico.

We have attempted to associate each leaf beetle collection record with one of these eight plant communities. For our own collections, the designation of the association was clear, except in instances where these were located in ecotonal areas between communities. For these cases, placement was made based on the closest indicator plants or plant. Records from literature sources were assigned to plant regions only if the localities cited could be definitively associated with a plant region.

Collecting Methods

Specimens were collected in several ways. The preferable way was to locate adults and/or larvae feeding on a host plant, with the adults ovipositing on the plant. This is not possible with most taxa as the larvae are root or detritus feeders. Other ways of acquiring specimens include: sweeping of specific plants, sweeping of mixed vegetation, Malaise traps,

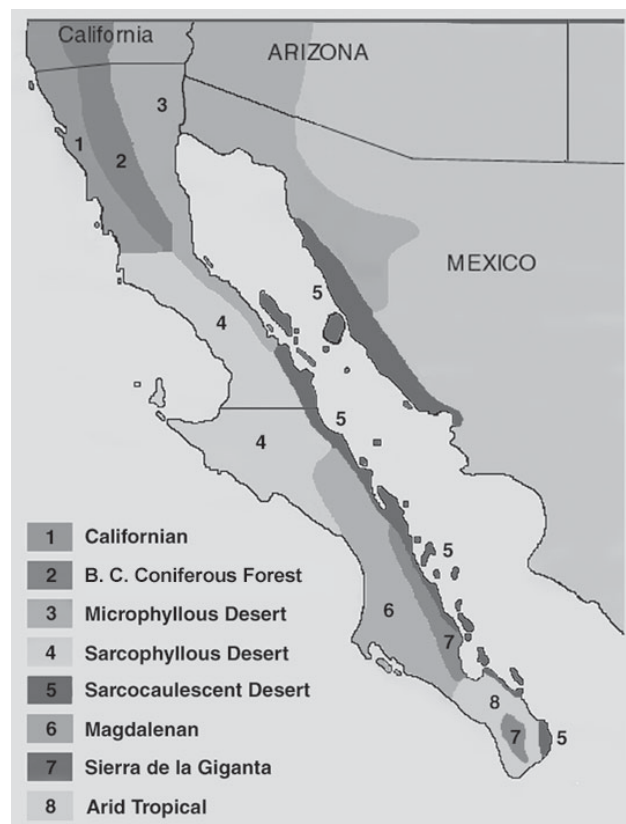


Figure 1. The Baja California peninsula and the eight plant communities as outlined by Wiggins (1980) (redrawn).

Berlese funnel extraction, pit traps, and blacklight. These techniques provide locality data for the various species collected and give information that may lead to intensive search in the area for determining host association.

Classification

The authors have followed the most recent classification of the Chrysomelidae hypothesized by Reid (1995, 2000) and followed by Riley *et al.* (2002), and the "Catalog of leaf beetles of America north of Mexico" (Riley *et al.* 2003). However, the Bruchinae have been excluded since these have not been traditionally included in the family and no attempt was made to gather literature data or field collect the Bruchinae over the twenty-year period.

Endemic Species

A major goal of this study was to identify species that are endemic to the Baja California peninsula. The authors have included the Baja

California peninsula as a whole when determining if a species is an endemic. At present, most species are either found in one state or the other, but a few inhabit both states. It is likely that, as more data are acquired, additional species will fall into the latter category. Species whose entire known range occurs within the states of Baja California and/or Baja California Sur are considered endemic to the Baja California peninsula.

Political Boundaries and Maps

In the past, the Baja California peninsula has been referred to as "Baja California" or "Lower California." When we reference previous citations they are presented in parentheses to separate them from our terminology and avoid confusion. In 1953, the northern part of the peninsula was given statehood, Baja California, and in 1975 the southern part became Baja California Sur (Clark and Westcott, 1992). We have adhered to these political boundaries throughout our investigations and have attempted to locate past collections within either Baja California (BC) or Baja California Sur (BCS). When referring to the entire peninsula, we use the comprehensive "Baja California peninsula" or "the peninsula." In some instances, we refer to the cape region of the peninsula. The cape region is generally meant to include the Arid Tropical, Sarcocaulous Desert and Sierra de la Giganta plant regions of the peninsula from just north of La Paz south to the tip of the peninsula.

Many of the important old collection localities are difficult to precisely locate because they are too vague. Prime examples of such localities are "El Taste" and "El Chinche." Both of these localities are type localities or the site of unique collections. There are no towns with these names, but there are mountain peaks named Cerro El Taste and Cerros La Chinche in the cape region of Baja California Sur.

Locality data are taken from topographic maps in the "Baja Explorer Topographic Atlas Directory," ALTI Publishing, 1991. The 238 large-scale maps provide detailed information of useful features, including dirt roads, mountain peaks, minor "aquatic" features, etc. Travel throughout the peninsula was facilitated with the use of a map distributed by the Automobile Club of Southern California. This map has considerable detail and is useful for locating many localities.

We also agree completely with the suggestion of Clark and Westcott (1992) concerning the use of

latitude and longitude on all collection labels. Hand held GPS units (geographical positioning system) easily enable this important operation. Since the advent of the hand-held GPS unit, we have always included the latitude-longitude on specimen labels, with a few exceptions.

Checklist and Terminology

Each species in the checklist is followed by the abbreviation for the state in which it occurs (BC or BCS) and the abbreviations for the plant communities in which it is found (see "Plant Communities" section). Species for which this information is unknown are followed by the abbreviation "UNK." Endemic species are indicated in the checklist by "End." Abbreviations in the checklist followed by a questionmark (?) indicate that we are not entirely certain of the information, but this is our best guess. Species in the checklist marked with an asterisk (*) were previously recorded from the Baja California peninsula. Species shown in brackets are considered dubious Baja California peninsula records.

An Annotated Checklist of the Described Species of Chrysomelidae from the Baja California Peninsula

Subfamily Donaciinae Tribe Plateumarini

Plateumaris Thompson, 1859

P. pusilla (Say, 1826) BC: BCcf

Subfamily Criocerinae Tribe Lemini

Lema Fabricius, 1798

L. flavida Horn, 1894 * End., BCS: AT

L. omogera Horn, 1894 * End., BCS: AT, SD, SG

L. peninsulae Crotch, 1873 RESTORED STATUS * End., BCS: SG

L. daturaphila Kogan & Goeden, 1970 BC, BCS: AT, BCcf, CR, MD

L. trivittata trivittata Say, 1824 BC, BCS: BCcf, ScD

Neolema Monrós, 1951

N. californica (Heinze, 1927) NEW COMBINATION * End., BCS: SG

Lema aemula Horn, 1894:406

Lema californica Heinze, 1927:142

Oulema Des Gozis, 1886

[*O. texana* (Crotch, 1873)] * BCS: AT

Subfamily Cassidinae Tribe Chalepini

Anisostena Weise, 1910

[*A. ariadne* (Newman, 1841)] * BCS: SD, AT

A. bicolor (J. Smith, 1885) * BCS: AT

A. perspicua (Horn, 1883) * BCS: AT

Baliosus Weise, 1905

B. californicus (Horn, 1883) BC: BCcf

Brachycoryna Guérin-Méneville, 1844

B. hardyi (Crotch, 1874) * BC, BCS: AT, BCcf, MD

B. longula Weise, 1907 BCS: AT

B. pumila Guérin-Méneville, 1844 * BCS: AT

Microrhopala Chevrolat, 1836

M. rubrolineata rubrolineata (Mannerheim, 1843) BC, BCS: CR, MD

M. rubrolineata signaticollis J. L. LeConte, 1859 * BC, BCS: AT, BCcf, CR, MD, MR, ScD, SG

Odontota Chevrolat, 1836

O. arizonica (Uhmann, 1938) BCS: SG

Stenopodius Horn, 1883

S. flavidus Horn, 1883 BC: BCcf, MD, ScD

S. insularis Blaisdell, 1939 BC, BCS: AT, MD, ScD

S. lateralis (Schaeffer, 1933) BC: BCcf, MD, ScD

Tribe Mesomphaliini

Hilarocassis Spaeth, 1913

H. exclamationis (Linnaeus, 1767) * BCS: AT, SG

Tribe Ischyrosomychini

Physonota Boheman, 1854

P. alutacea Boheman, 1854 * BCS: AT

P. pacifica Spaeth, 1932 BCS: ScD

Tribe Cassidini

Agroiconota Spaeth, 1913

A. bivittata (Say, 1826) * BCS: AT

Charidotella Weise, 1896

- C. bifossulata* (Boheman, 1855) BCS: AT
C. sexpunctata bicolor (Fabricius, 1798) * UNK

Deloyala Chevrolat, 1836

- D. guttata* (Olivier, 1791) BCS: AT
D. leontii (Crotch, 1873) * BCS: AT, SD, SG

Gratiana Spaeth, 1913

- G. pallidula* (Boheman, 1854) BC, BCS: AT, CR, ScD

Metrionella Spaeth, 1932

- M. bilimeki* (Spaeth, 1932) BCS: AT, SG

Microctenochira Spaeth, 1926

- M. bonvouloiri* (Boheman, 1862) * BCS: AT, SG

Plagiometriona Spaeth, 1899

- P. clavata testudinaria* (Boheman, 1855) BCS: AT, SD

Subfamily Chrysomelinae**Tribe Chrysomelini****Calligrapha Chevrolat, 1836**

- C. ancoralis* Stål, 1860 BCS: AT, SG

Gastrophysa Chevrolat, 1836

- G. cyanea* F. E. Melsheimer, 1847 BC: CR, BCcf

Leptinotarsa Chevrolat, 1836

- L. behrensi* Harold, 1877 * UNK
L. peninsularis (Horn, 1894) * BCS: AT

Phaedon Megerle von Mühlfeld, 1823

- P. prasinellus* (J. L. LeConte, 1861) * BC, BCS: BCcf MD

Zygogramma Chevrolat, 1836

- Z. tortuosa* (Rogers, 1856) BC, BCS: AT, MR, ScD

Subfamily Galerucinae**Tribe Galerucini****Monoxia J. L. LeConte, 1865**

- M. apicalis* Blake, 1939 BC, BCS: CR, MD, ScD, SD
M. beebei Blake, 1937 * **End.**, BC: BCcf
M. brisleyi Blake, 1939 BC: BCcf
M. consputa (J. L. LeConte, 1857) * UNK

- M. debilis* J. L. LeConte, 1865 * BC, BCS: ScD
M. minuta Blake, 1939 BC, BCS: AT, MD, ScD, SD
M. puberula Blake, 1939 BC, BCS: AT, BCcf, ScD
M. schizonycha Blake, 1939 BC: BCcf, CR
M. sordida (J. L. LeConte, 1858) * BC, BCS: AT, CR, ScD, SD

Ophraella Wilcox, 1965

- O. communis* LeSage, 1986 BC: CR

Trirhabda J. L. LeConte, 1865

- T. caduca* Horn, 1893 * BC: ScD
T. confusa Blake, 1931 BC: BCcf, CR
T. eriodictyonis Fall, 1907 BC: BCcf, CR
T. flavolimbata (Mannerheim, 1843) * BC: BCcf
T. geminata Horn, 1893 BC: CR
T. luteocincta (J. L. LeConte, 1858) * BC: CR
T. nitidicollis J. L. LeConte, 1865 * BC: BCcf
T. sericotrachyla Blake, 1931 BC: CR

Tribe Metacyclini**Metacycla Baly, 1861**

- M. insolita* J. L. LeConte, 1861 * **End.**, BCS: AT, CR, ScD, SG

Tribe Luperini**Acalymma Barber, 1947**

- A. trivittatum* (Mannerheim, 1843) * BC, BCS: AT, BCcf, MD, ScD, SD

Androlyperus Crotch, 1873

- A. incisus* Schaeffer, 1906 * BC: MD, ScD
A. maculatus J. L. LeConte, 1883 * BC: CR
A. nataliae S. Clark, 1999 * **End.**, BC, BCS: AT, MD, ScD

Diabrotica Chevrolat, 1836

- D. balteata* J. L. LeConte, 1865 * BC, BCS: AT, BCcf, CR, MR, ScD
D. undecimpunctata tenella J. L. LeConte, 1858 BC, BCS: AT, BCcf, CR, MR, ScD, SD
D. undecimpunctata undecimpunctata Mannerheim, 1843 BC, BCS: BCcf, CR, MR, ScD
D. variegata Jacoby, 1887 * **End.**, BCS: AT

Luperosoma Jacoby, 1891

- L. nigricolle* Blake, 1966 * **End.**, BCS: AT, MR, SD

Metrioidea Fairmaire, 1881

- M. rugipennis* (Blake, 1942) * **End.**, BC, BCS: AT, MD, MR, ScD, SD, SG

M. varicornis (J. L. LeConte, 1868) BCS: AT

***Pseudoluperus* Beller and Hatch, 1932**

P. cyanellus (Horn, 1895) * BC, BCS: AT, MR, ScD, SG

P. histrio (Horn, 1895) NEW COMBINATION **End.**, * BCS: SG

Keitheatus histrio (Horn, 1895)

Luperodes histrio Horn, 1895:250

P. maculicollis (J. L. LeConte, 1884) * BC, BCS: BCcf, CR, ScD

***Pteleon* Jacoby, 1888**

P. brevicornis (Jacoby, 1887) * BC, BCS: MD, ScD

***Scelolyperus* Crotch, 1874**

S. clarki Gilbert & Andrews, 1999 * **End.**, BC: CR

S. flavicollis (J. L. LeConte, 1859) * UNK

S. phoxus Wilcox, 1965 * BC: BCcf

[*S. schwarzii* Horn, 1893]* UNK

[*S. tejonicus* Crotch, 1874] * UNK

S. torquatus (J. L. LeConte, 1884) * BC: BCcf, CR

S. varipes (J. L. LeConte, 1857) * BC: BCcf

***Synetocephalus* Fall, 1910**

S. diegensis (Blake, 1942) BC, BCS: BCcf, ScD

***Triarius* Jacoby, 1887**

T. melanolomatus (Blake, 1942) BC: BCcf

Tribe Alticini

***Altica* Geoffroy, 1762**

A. foliaceae J. L. LeConte, 1858 * BCS: SG?

A. ignita Illiger, 1807 * BCS: AT

A. prasina prasina J. L. LeConte, 1857 BC: CR

A. tinctoria J. L. LeConte, 1859 * BC: SD

***Asphaera* Duponchel & Chevrolat, 1842**

A. lustrans (Crotch, 1873) * BCS: AT

***Blepharida* Chevrolat, 1836**

B. atripennis Horn, 1895 * **End.**, BCS: AT, SD

B. conspersa (Horn, 1895) * **End.**, BCS: AT

***Chaetocnema* Stephens, 1831**

C. fulvida R. White, 1996 * BCS: AT, MR, ScD

C. opulenta Horn, 1889 BC: BCcf

C. subviridis J. L. LeConte, 1859 BC: BCcf

***Crepidodera* Chevrolat, 1836**

C. aereola (J. L. LeConte, 1857) BC: CR

C. opulenta (J. L. LeConte, 1858) BC: BCcf

C. peninsularis Horn, 1895 * **End.**, BCS: AT

***Disonycha* Chevrolat, 1836**

D. fumata fumata (J. L. LeConte, 1858) BCS: AT, SG

D. glabrata (Fabricius, 1775) BC, BCS: AT, BCcf, MR, SD

D. latiovittata Hatch, 1932 * BC: UNK

D. pluriligata (J. L. LeConte, 1858) * BCS: AT

D. varicornis Horn, 1889 * BCS: AT, ScD

***Dysphenges* Horn, 1894**

D. eichlini Gilbert & Andrews, 2002 * **End.**, BCS: AT, SD

D. elongatulus Horn, 1894 * **End.**, BCS: AT, SG

D. lagunae Gilbert & Andrews, 2002 * **End.**, BCS: SG

D. rileyi Gilbert & Andrews, 2002 * BCS: AT, ScD, SD

***Epitrix* Foudras, 1859**

E. cucumeris (Harris, 1851) * BCS: AT

E. flavotestacea Horn, 1894 * BCS: AT, SG

E. hirtipennis (F. E. Melsheimer, 1847) BC, BCS: BCcf, SD

E. subcrinita (J. L. LeConte, 1857) BC, BCS: BCcf, CR, SD

***Euplectroscelis* Crotch, 1873**

E. xanti Crotch, 1873 * **End.**, BC, BCS: AT, MR, ScD, SD, SG

***Glyptina* J. L. LeConte, 1859**

G. cerina (J. L. LeConte, 1857) * BC: SD

***Hemiglyptus* Horn, 1889**

H. basalis (Crotch, 1874) BC: BCcf, CR

***Kuschelina* J. Bechyné, 1951**

K. gibbitarsa (Say, 1824) BCS: AT

K. laeta (Perbosc, 1839) BCS: AT

***Longitarsus* Berthold, 1827**

L. bajaensis Andrews & Gilbert NEW NAME * **End.**, BCS: MR

L. livens J. L. LeConte, 1858 * BC, BCS: CR, MD, SD

L. mancus J. L. LeConte, 1858 BC, BCS: ScD

L. repandus J. L. LeConte, 1858 * UNK

Orthaltica Crotch, 1873

O. capensis Andrews & Gilbert, 1993 * **End.**, BCS: AT, ScD

O. reticollis (J. L. LeConte, 1861) * BC: CR, ScD

Phyllotreta Chevrolat, 1836

P. albionica (J. L. LeConte, 1857) * BCS: AT

P. bisinuata E. Smith, 1985 * BC: CR

P. pusilla Horn, 1889 * BC: MD?

Psylliodes Berthold, 1827

P. convexior J. L. LeConte, 1857 * BCS: AT

Syphrea Baly, 1876

S. flavicollis (Jacoby, 1884) BCS: AT, MR, ScD, SD, SG

S. nitidiventris (Fall, 1910) * BC, BCS: AT, BCcf, MR, SD

Systema Chevrolat, 1836

S. blanda F. E. Melsheimer, 1847 * BCS: MR

Subfamily Eumolpinae**Tribe Typophorini****Metachroma Chevrolat, 1836**

M. immaculatum Blake, 1970 * BC: MD, ScD

M. insulare Fall, 1927 * **End.**, BCS: SD

M. longulum Horn, 1892 BC, BCS: MD, ScD, SD

M. peninsulare Crotch, 1873 * BCS: AT, SD

M. regulare Jacoby, 1882 BCS: SD

Typophorus Chevrolat, 1836

[*T. nigrinus viridicyaneus* (Crotch, 1873)] * UNK

Tribe Eumolpini**Chrysochus Chevrolat, 1836**

C. cobaltinus J. L. LeConte, 1857 * UNK

Colaspis Fabricius, 1801

[*C. brunnea* (Fabricius, 1798)] * BCS: SD

C. moesta Horn, 1895 * **End.**, BCS: AT

C. viridiceps viridiceps Schaeffer, 1934 * BCS: SD

Tribe Adoxini**Colaspidea Laporte, 1833**

C. smaragdula (J. L. LeConte, 1857) BC: BCcf

Glyptoscelis Chevrolat, 1836

G. sonorensis Blake, 1967 * BCS: MR

G. squamulata Crotch, 1873 BC: BCcf, CR

Myochrous Erichson, 1847

M. longulus J. L. LeConte, 1858 * BC: MD

Subfamily Cryptocephalinae**Tribe Cryptocephalini****Bassareus Haldeman, 1849**

B. brunnipes (Olivier, 1791) * BCS: AT

Cryptocephalus Geoffroy, 1762

C. californicus Clavareau, 1913 * **End.**, BCS: AT?

C. castaneus J. L. LeConte, 1880 BC: BCcf

C. cerinus cerinus B. White, 1937 BCS: ScD

C. maccus R. White, 1968 BC: CR

C. pseudomaccus R. White, 1968 BCS: AT, SD, SG

C. sanguinicollis nigerrimus Crotch, 1874 BC: CR, ScD

C. sanguinicollis sanguinicollis Suffrian, 1852 BC, BCS: BCcf, CR, ScD

C. sprucus sprucus J. L. LeConte, 1858 BC, BCS: AT, BCcf, CR, ScD

C. triundulatus R. White, 1968 BC, BCS: AT, BCcf, MD, MR, ScD, SD, SG

C. vapidus R. White, 1968 BCS: SG

Diachus J. L. LeConte, 1880

D. auratus (Fabricius, 1801) * BC, BCS: BCcf, CR, SG

D. peninsularis (Schaeffer, 1906) NEW COMBINATION * **End.**, BCS: AT, SG

Triachus peninsularis Schaeffer, 1906:234

Griburius Haldeman, 1849

G. montezuma (Suffrian, 1852) BCS: AT, SG

Lexiphanes Gistel, 1847

L. guerini (Perbosc, 1839) * BCS: AT, SG

Pachybrachis Chevrolat, 1836

P. alacris Fall, 1915 * BC: BCcf

P. analis J. L. LeConte, 1861 * BC: CR

P. arizonensis Bowditch, 1909 BC: BCcf

P. atomarius (F. E. Melsheimer, 1847) * BCS: AT

P. bivittatus (Say, 1824) * BC, BCS: AT, BCcf, CR

P. caelatus J. L. LeConte, 1858 BC, BCS: AT, BCcf

P. connexus Fall, 1915 BC, BCS: SD

P. desertus Fall, 1915 BC, BCS: MD

[*P. donneri* Crotch, 1874] * BCS: AT

P. hepaticus heteroderus Fall, 1915 BC, BCS: AT, BCcf

P. hybridus Suffrian, 1852 BC: CR

P. indifferens Fall, 1927 * BC: SD

P. integratus Fall, 1915 BC: BCcf

- P. laevis* Bowditch, 1909 BC: CR
P. livens J. L. LeConte, 1858 BC: CR
P. longus Bowditch, 1909 BC, BCS: AT, MD, ScD, SD
P. lustrans J. L. LeConte, 1880 BC: BCcf
P. marmoratus Jacoby, 1889 BCS: AT, MR, SD
P. melanostictus Suffrian, 1852 BC: BCcf, ScD
P. mellitus Bowditch, 1909 BC, BCS: AT, BCcf, MD, ScD
P. mercurialis Fall, 1915 BC, BCS: AT, BCcf, CR
P. minor Bowditch, 1909 BC, BCS: AT, BCcf, CR
P. nubigenus Fall, 1915 BC: BCcf, CR
P. nubilus Bowditch, 1909 * BC, BCS: SD
P. peltatus Fall, 1915 * UNK
P. peninsularis Fall, 1915 * **End.**, BCS: AT, MR, ScD, SD, SG
P. pusillus Bowditch, 1909 BC, BCS: ScD
P. quadratus Fall, 1915 BCS: MD, ScD, SD
P. turbidus J. L. LeConte, 1880 * BCS: AT, SG
P. uncinatus Fall, 1915 BCS: AT, SD
P. vigilans Fall, 1915 * **End.**, BCS: AT, MR, SG
P. wickhami Bowditch, 1909 * BC, BCS: AT, BCcf, MD, MR, ScD, SD, SG
P. xanti Crotch, 1873 * BC, BCS: AT, MD, MR, ScD, SD

Tribe Clytrini

Babia Chevrolat, 1836

- B. costalisdebaja* Moldenke, 1970 * **End.**, BC, BCS: AT, ScD, SD, SG
B. tetraspilota tetraspilota J. L. LeConte, 1858 BC, BCS: AT, BCcf, CR, MD, ScD

Coleorozena Moldenke, 1981

- C. alicula* (Fall, 1927) * BC, BCS: MD
C. leontii (Crotch, 1873) * BC, BCS: CR, MD
C. pilatei californiensis (Moldenke, 1970) BC: BCcf, CR, MD
C. pilatei subtilis (Horn, 1892) * BC, BCS: BCcf, MD, ScD
C. subnigra (Schaeffer, 1905) * BC, BCS: AT, BCcf, CR, MD, MR, ScD, SD, SG
C. vittata larga (Moldenke, 1970) * BC, BCS: BCcf, CR, MD
C. vittata vittata (J. L. LeConte, 1858) BC: BCcf, MD

Coleothorpa Moldenke, 1981

- C. axillaris corpilosa* (R. Dahl, 1941) BC: BCcf, ScD
C. axillaris panamintensis (Moldenke, 1970) BCS: MD

- C. axillaris quadratominor* (Moldenke, 1970) BC, BCS: MD, ScD
C. mucorea inornata (Fall, 1927) * **End.**, BC, BCS: SD
C. mucorea mucorea (J. L. LeConte, 1858) * BC, BCS: AT, BCcf, CR, MD, ScD, SD, SG
C. mucorea schaefferi (Clavareau, 1907) * BCS: AT, MD, ScD, SD
C. seminuda (Horn, 1892) * UNK

Coscinoptera Lacordaire, 1848

- C. aeneipennis* (J. L. LeConte, 1858) * BC, BCS: AT, BCcf, CR, MD, MR, ScD, SG

Megalostomis Chevrolat, 1836

- M. dimidiata dimidiata* Lacordaire, 1848 * UNK
M. pyropyga pyropyga Lacordaire, 1848 * UNK

Saxinis Lacordaire, 1848

- S. deserticola mojavensis* Moldenke, 1970 BC: BCcf, CR
S. hornii Fall, 1909 * BC, BCS: AT, BCcf, CR, MD, MR, ScD, SD, SG
S. saucia bisignata (Walker, 1866) * BC: BCcf, CR
S. saucia californica Schaeffer, 1906 * BC: BCcf, CR
S. saucia saucia J. L. LeConte, 1857 * BC: BCcf

Tribe Chlamisini

Diplacaspis Jacobson, 1924

- D. prosternalis* (Schaeffer, 1906) * BCS: AT, SG

Exema Lacordaire, 1848

- E. conspersa* (Mannerheim, 1843) * BC, BCS: AT, BCcf, CR, MR, ScD, SG
E. deserti Pierce, 1940 * BC, BCS: AT, BCcf, CR, MD, MR, ScD

Neochlamisus Karren, 1972

- N. moestificus* (Lacordaire, 1848) BC: MD
N. subelatus (Schaeffer, 1926) BC, BCS: AT, MD, SD
N. velutinus Karren, 1972 * BCS: AT, ScD, SG, SD

Selected Annotations

Annotations are given for endemic species, species newly recorded from the peninsula, species known only from literature records and for species for which nomenclatural changes are proposed. Also included are some species for which host data

have been collected. The number of morphospecies by genus is given to provide a broader picture of the leaf beetle fauna of the peninsula. The individual species discussed are not included in the total given for the number of morphospecies of the same genus. Some comments enclosed in brackets are included for clarification.

Criocerinae

Lemini

***Lema flavida* Horn**— Baja California peninsula endemic (BCS). Horn (1894) described this species from San Jose del Cabo. We have compared a series of 29 specimens from San Jose del Cabo and a single specimen from Rosario (BCS) with the type in the California Academy of Sciences. They agree well with the type specimen, except that many of our specimens possess a partial to complete dark lateral elytral stripe. One specimen is completely without a lateral stripe. Horn probably described this species from a unique specimen or at least a very few individuals. In White (1993), our specimens would key out as *L. trivittata trivittata* Say, 1824. *Lema flavida* may in fact be synonymous with *L. trivittata*, but more study is necessary to make this determination.

***Lema omogera* Horn**— Baja California peninsula endemic (BCS). White (1991) reported this species in “Baja California” “ranging from San Felipe in the northeast to San Lucas at the southern tip of the peninsula.” His assessment was based on 18 specimens in the USNM collection from seven localities in “Baja California.” We have examined 256 specimens from 19 localities and all are in the state of Baja California Sur. The furthest specimen north was taken at Loreto, approximately 400 miles south of San Felipe in the northeast of the State of Baja California. Two hundred and fifty-five of the 256 specimens were collected from localities within two plant regions that are located entirely within the State of Baja California Sur, the Arid Tropical and the Sierra de la Giganta. Only the single specimen from Loreto was not collected from one of these two plant communities. White’s reference to San Felipe in the “northeast of Baja California” as the northern limit of this beetle probably does not involve the better-known community of San Felipe in Baja California, but instead refers to a smaller village in Baja California Sur. We have specimens from the small village of San Felipe (about 9.5 miles northwest of San Jose del Cabo) in Baja California Sur

and from Ramal a San Felipe, the road leading to the village. This example demonstrates the need for precise data collection in this area of Mexico, as we have alluded to in our discussion of plant community associations below (see “Summary and Discussion” section).

Two hundred and fifty of the specimens examined have the standard markings as described by White (1991). However, six of the 256 specimens have elytra that are entirely orange or orange with only traces of black along the suture and apical margins.

***Lema peninsulae* Crotch** – RESTORED STATUS. Baja California peninsula endemic (BCS). Without explanation, Wilcox (1975) synonymized this species with an Arizona species, *Lema balteata* J. L. LeConte, 1884; this was reaffirmed by White (1993). *Lema balteata* is recorded from the southeastern corner of Arizona and White (1993) examined two specimens from Los Mochis, Sinaloa, Mexico. In his 1993 revision of North American Criocerinae, White stated that color and color patterns are usually diagnostic, especially in species of *Lema*, to distinguish species, but that variations do occur within a species. In his discussion of the color variations for *L. balteata* the elytra is never entirely blue. There are at least one or two light spots, and more typically, one or two transverse light bands. The abdomen of *L. balteata* “is rarely partly dark basally.” We have examined the type of *L. peninsulae* and four additional specimens acquired during our study. All five specimens have a brilliant metallic blue-purple iridescence with no indication of any light colored markings. The abdomen of all five specimens is entirely black. White (1993) also examined two additional specimens in the USNM collection that agreed well with the type. Our four specimens were all collected in the Sierra de la Laguna, between 4,600 and 6,000 feet elevation. Horn (1894) recorded this species from Cabo San Lucas. However, this represents an arbitrarily assigned locality for species described from material collected by John Xantus, in the cape region between San Jose del Cabo and La Paz, for which no definite localities were known. Pallister (1953) reported the collection of a single specimen of a criocerine from the Mexican state of Durango that he “assigned with some hesitation” to *L. peninsulae*. He collected this specimen in conjunction with a single specimen of a fasciated species, *L. cingulata* Clark, 1866. Although the specimen was entirely blue, Pallister stated that under certain lights, a

faint bronze iridescence marks the position where this fascia [of *L. cingulata*] would normally be. This specimen probably is not *L. peninsulae*, but rather a variant of *L. cingulata*. We have also examined the aedeagus of one of the specimens from La Laguna and found that it has a different shape in both lateral and dorsal aspect from that of *L. balteata*. Considering the color differences, the different shape in the aedeagus, and the unique and isolated high elevation locality of *L. peninsulae*, we are reinstating this species as valid. *Lema balteata* has not been recorded from the peninsula.

Neolema Monrós – An undescribed species occurs in the cape, primarily in the Arid Tropical Region (66 out of 68 specimens examined). The adult host is *Commelina erecta* L. and to a lesser extent *Tradescantia peninsularis* T. S. Brandege (Commelinaceae). The specimens from the cape region were all collected between 800 and 3,000 feet elevation.

***Neolema californica* (Heinze)** – NEW COMBINATION (for *Lema californica* Heinze, 1927). Baja California peninsula endemic (BCS). This species was described by Horn, 1894 as *Lema aemula*. Heinze (1927) provided a new name, as *L. aemula* was preoccupied. We have compared 32 specimens from Baja California Sur with the type in the California Academy of Sciences. They agree well with the type specimen (the type is a specimen of the typical form of *L. aemula* as described by Horn, 1894). Horn also described two other varieties in the original description, an immaculate form and one that has a broad sutural black stripe that abruptly expands apically. Of the 32 specimens of *N. californica* in the authors' possession, only one is immaculate. The other 31 specimens have some degree of the standard markings. None have the character of a broad sutural black stripe that abruptly expands apically. Horn probably included specimens of an undescribed *Neolema* common in the Arid Tropical Region of the cape (see above). In the undescribed species, specimens are either immaculate or have the broad expanding sutural stripe in about a fifty-fifty ratio. The authors collected ten specimens of *N. californica* in 2003 from the main valley of the Sierra de la Laguna feeding on *Gibasis linearis* (Benth.) Rohw. (Commelinaceae). We are transferring this species to the genus *Neolema*, as it fits the diagnostic characters given by White (1993). All 32 specimens were collected from the unique high elevation oak-pine forest of La Laguna

(Sierra de la Giganta Region), elevation approximately 5,700 feet.

***Oulema texana* (Crotch)** – Horn (1894) recorded this species from "El Taste" and Blackwelder (1946) listed *Lema texana* from "Baja California." Both records are most likely mis-identifications of a single, abundant morphospecies of *Oulema* from Baja California Sur.

Cassidinae Chalepini

Anisostena Weise – A single morphospecies of this genus exists in the cape region. Adult specimens were collected from *Setaria liebmannii* E. Fourn (Poaceae).

***Anisostena ariadne* (Newman)** – Horn (1894) recorded this species from San Jose del Cabo (as *Charistena ariadne* Newman). Fall (1927) recorded it from "Mulege, Lower California" and Blackwelder (1946) listed it from "Baja California." Staines (1994) listed this species from the southeastern United States, no further west than eastern Texas. Records of this species from the peninsula were most likely based on misidentified specimens. We have yet to associate this name with specimens examined from the region.

***Anisostena perspicua* (Horn)** – Horn (1894) recorded this species from San Jose del Cabo (as *Charistena perspicua* Horn). Blackwelder (1946) listed it from "Baja California" (as *Charistena perspicua* Horn). It is quite possible that this species occurs on the Baja California peninsula, but as yet we have not associated this name with specimens examined from the region.

Baliosus Weise – A single morphospecies of this genus occurs in the cape region of Baja California Sur. All specimens are from the Arid Tropical Region.

Brachycoryna Guérin-Ménéville – In addition to the three described species in the peninsula, a single morphospecies occurs in Baja California Sur. The ten specimens in our possession are all from the cape region.

Glyphoroplata Uhmann – A single morphospecies occurs in Baja California Sur, primarily in the Arid Tropical Region.

Odontota Chevrolat – We have numerous specimens of a single morphospecies from Baja California Sur. Most were collected in the Sierra de la Giganta Region, principally La Laguna. Two were collected at sites in the Arid Tropical Region. One series of ten specimens indicates *Quercus devia* Goldman (Fagaceae) as an adult host. *Quercus devia* is endemic to the Sierra de la Laguna in the cape region at elevations between 1,000 to 1,850 meters (Wiggins, 1980).

***Stenopodius flavidus* Horn** – We have examined 63 specimens. Fifty-four were collected from *Sphaeralcea* sp. or *Sphaeralcea orcuttii* Rose (Malvaceae).

***Stenopodius insularis* Blaisdell** – We have examined 25 specimens of this species. Most of the specimens, 23 of 25, are from the cape region of Baja California Sur. Nearly half of the specimens, 12 of 25, were collected from *Sphaeralcea* sp. (Malvaceae).

***Stenopodius lateralis* (Schaeffer)** – We have examined only five specimens, all from Baja California. Two were collected from *Sphaeralcea orcuttii* Rose (Malvaceae).

Sumitrosis Butte – A single morphospecies of this genus occurs in the Arid Tropical Region of Baja California Sur.

Ischyrosonychini

***Physonota alutacea* Boheman** – Horn (1894) recorded this species from “El Taste.” Blackwelder (1946) recorded it from “Baja California.” In 2003, a large series of this beetle was collected from *Cordia brevispicata* Mart. & Gal. (Boraginaceae) in the Sierra de la Laguna west of Todos Santos at 4,600 feet elevation.

***Physonota pacifica* Spaeth** – Wilcox (1975) listed this species from California and Borowiec (1999) included Sonora, Mexico in its distribution. We have a series of five specimens collected from near the village of San Francisco in the very northern part of Baja California Sur.

Cassidini

***Charidotella sexpunctata bicolor* (Fabricius)** – Blackwelder (1946) listed this species from “Baja California” (as *Mettriona bicolor* Fabricius). As yet,

we have not associated this name with specimens examined from the region.

Chrysomelinae Chrysomelini

***Leptinotarsa behrensi* Harold** – Blackwelder (1946) listed this species from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

Galerucinae Galerucini

Miraces Jacoby – Five specimens of a single morphospecies of this genus have been examined. Four of the specimens are from the Arid Tropical Region of Baja California Sur. A single specimen is from the Baja California Coniferous Forest Region of Baja California.

Monoxia J. L. LeConte – Five morphospecies of this genus occur on the peninsula, three in the Sarcocaulous Desert Region and two in the Arid Tropical Region.

***Monoxia apicalis* Blake** – In the Sarcophyllous Desert Region of Baja California Sur, this species has been collected from *Encelia farinosa* A. Gray (15 specimens) and *Encelia* sp. (12 specimens) (Asteraceae). In the Microphyllous Desert Region of Baja California, a series of 18 specimens was taken from *Salicornia* sp. (Chenopodiaceae).

***Monoxia beebei* Blake** – Baja California peninsula endemic (BCS). Fourteen specimens have been examined. All are from the Baja California Coniferous Forest Region.

***Monoxia consputa* (J. L. LeConte)** – Blackwelder (1946) listed this species from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Monoxia debilis* J. L. LeConte** – Blackwelder (1946) listed this species from eight islands in the Gulf of California in “Baja California.” Of the eight islands listed, six are part of Baja California and two belong to the state of Baja California Sur. All of the islands are included in the Sarcocaulous Desert plant region. As yet, we have not associated this name with specimens examined from the region.



Figure 2. A gravid female of *Metacycla insolita* J. L. LeConte on its host.

***Monoxia minuta* Blake** – We have examined 156 specimens of this species. Most, 103 specimens, were taken in the Microphyllous Desert Region 16 miles north of Puertocitos, Baja California on *Atriplex barclayana* (Benth.) D. Dietr. cf spp. *barclayana* (Chenopodiaceae).

***Trirhabda* J. L. LeConte** – Three morphospecies of this genus have been examined.

***Trirhabda nitidicollis* J. L. LeConte** – Horn (1894) recorded this species from “San Pedro Martir” [Baja California]. Blackwelder (1946) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

Metacyclini

***Metacycla insolita* Baly** (Figure 2) – Baja California peninsula endemic (BCS). We have examined 672 specimens from 18 localities in Baja California Sur. Adults and larvae of this common species feed externally on the leaves of *Ambrosia ambrosioides* (Cav.) Payne (Asteraceae). To our knowledge, larvae of the tribe Metacyclini were previously unknown. The leaf-feeding habit of the larvae may indicate a closer relationship with the Galerucini rather than with the root-feeding Luperini (Shawn Clark, personal communication). No specimens have been seen from Baja California, but this species most likely occurs uncommonly in this state as well. One of our collections is from San Francisco at the northern border of Baja California Sur. The range of the host plant extends into the very southern coastal area of extreme southern San Diego Coun-

ty, California. A single record of this beetle from San Diego exists in the collection of the San Diego County Museum of Natural History. There is no date on the specimen, but judging from the labels it appears to be an old collection. Habitat for the host plant in San Diego County has become entirely urbanized, and, as a result, the host plant probably no longer exists in California (Payne, 1993). This species has been given endemic status for Baja California Sur.

Luperini

***Androlyperus nataliae* S. Clark** – Baja California peninsula endemic (BC, BCS). This species was described by Clark (1999), and our specimens were included as part of the type series. Clark (1999) recorded this species from Baja California and Baja California Sur.

***Diabrotica variegata* Jacoby** – Baja California peninsula endemic (BCS). Jacoby (1887) described this species from Presidio, Mexico. We have yet to encounter a “Presidio” on the Baja California peninsula. Horn (1894) recorded it from San Jose del Cabo. Leng (1920), Blackwelder (1946), and Wilcox (1975) all listed this species from “Baja California” or “Lower California.” As yet, we have not associated this name with specimens examined from the region.

***Luperosoma nigricolle* Blake** – Baja California peninsula endemic (BCS). We have examined 101 specimens from five localities in Baja California Sur. Adults feed on *Aeschynomene vigil* Brandege (Fabaceae).

***Metrioidea* Fairmaire** – We know of three morphospecies from the region.

***Metrioidea rugipennis* (Blake)** – Baja California peninsula endemic (BC, BCS). This common species, described by Blake (1942), occurs in every plant community on the Baja California peninsula, except the Californian and Baja California Coniferous Forest Regions. We examined 992 specimens from as far north as Catavina, Baja California. However, only 18 of the 992 specimens were from Baja California. The other 974 were from Baja California Sur at elevations between 500 and 2,000 feet. The species becomes more common in the Arid Tropical Region. Most collections were at black-light.

***Metrioidea varicornis* (J. L. LeConte)** – Horn (1894) recorded this species from “El Taste.” Blackwelder (1946) listed it from “Baja California” (as *Luperodes varicornis* J. L. LeConte). As yet, we have not associated this name with specimens examined from the region.

***Pseudoluperus cyanellus* (Horn)** – There are three specimens in the type series of *P. cyanellus* (as *Scelolyperus cyanellus* Horn) in the California Academy of Sciences collection. Numbers 84, 85, and 86 are all males. These three specimens represent two species. Specimen number 84 is labeled as a lectotype, and specimen numbers 85 and 86 as paratypes. It is unclear who made these designations. To our knowledge, such designations have not been published. Specimen number 84 is actually a male of *P. histrio*, and specimen numbers 85 and 86 are males of what is normally recognized as *Pseudoluperus cyanellus* (Horn). Since the lectotype designation was never published, we here designate type specimen number 85 as the lectotype of the species [label data: (white label printed) El Taste; (white label printed) Horn/Type; (white label handwritten) No. 68. F.; (yellow label, printed/handwritten) PARATYPE/*cyanellus*; (white determination label with red border on left side, printed/handwritten) Type No. 85 [vertical]/ *Scelolyperus cyanellus* Horn [folded]; (white label) California Academy of Sciences/ Type No. 85.] Type number 86 is designated as a paralectotype of the species [same label data as lectotype except No. 86]. Type specimen number 84 is labeled as *Pseudoluperus histrio* (Horn).

***Pseudoluperus histrio* (Horn)** – NEW COMBINATION (for *Keithatus histrio* (Horn, 1895)), Baja California peninsula endemic (BCS). Horn (1895) described this species as *Luperodes histrio* from Sierra San Lazaro and Sierra El Chinche. Wilcox (1975) transferred this species to *Keithatus*. In his 1965 revision of the North American Galerucinae, Wilcox stated that this species was similar to *K. blakeae* Wilcox from Texas, but that males needed to be examined. Males of *P. histrio* do not possess the enlarged first tarsomere of the hind leg nor an aedeagus with the apical third upturned, two of the principal defining characters of the genus *Keithatus*. The females of *P. histrio* and both sexes of *K. blakeae* are superficially similar in color pattern. However, the males of *P. histrio* are entirely metallic blue with a greenish-blue pronotum and are generally smaller and of a different body shape

than females of the species. It is apparent that the sexual dimorphism of *P. histrio*, with females of a similar color pattern to *K. blakeae*, has led to this confusion. The three specimens in the type series of *P. histrio* (as *Luperodes histrio*) in the California Academy of Sciences collection are all females. They correspond to the typical form and the two varieties described by Horn. One, number 87, bears a label designating it as a lectotype, and the other two, numbers 88 and 89, are designated as paratypes. It is unclear who made these designations. To our knowledge, such designations have not been published. Type number 87 is hereby designated as the lectotype of the species [label data: (white label) Sierra San Lorenzo; (white label) Horn/Type; (red label) Lectotype *histrio*; (white label) California Academy of Sciences Type n. 87]. Type numbers 88 [label data: (white label) Sierra El Chinche; (white label) No. 65f; (white label) Paratype/*histrio*/Var A; (white determination label) Type 88 [vertical] California Acad Sciences/ *Luperodes histrio*; (white label) California Academy of Sciences Type n. 88] and 89 [label data: (white label) Sierra El Chinche; (white label) No. 67f; (white label) Paratype/*histrio*/Var B; next two labels same as 88, but 89] are designated as paralectotypes.

In addition to the type specimens, we have examined 41 specimens, all from the higher elevations of the Sierra de la Laguna (above 5,500 feet elevation) in the Sierra de la Giganta plant region. Thirty-eight of the 41 specimens were collected on the flowers of *Verbesina erosa* Brandege (Asteraceae) by the authors. The majority of the 38 specimens were observed together on a single plant.

***Pseudoluperus maculicollis* (J. L. LeConte)** – Most specimens examined, 93 of 135, were collected from *Aeschynomene vigil* Brandege (Fabaceae).

***Pteleon brevicornis* (Jacoby)** – Adults of this species have been associated with the flowers of a number of plants, including, in declining order of the number of specimens examined: *Opuntia echinocarpa* Engelm. & Bigel. (61) (Cactaceae), *Aeschynomene vigil* Brandege (43) (Fabaceae), *Sphaeralcea orcuttii* Rose (15), *Sphaeralcea* sp. (14) (Malvaceae), *Solanum hindsianum* Benth. (10) (Solanaceae), and *Yucca* sp. (6) (Liliaceae).

***Scelolyperus clarki* Gilbert & Andrews** – Baja California peninsula endemic (BC). This species was described from near Maneadero in the Califor-

nian Region of Baja California. Adult beetles are associated with *Ceanothus* sp. (Rhamnaceae).

***Scelolyperus flavicollis* (J. L. LeConte)** – Blackwelder (1946) listed this species from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Scelolyperus schwarzii* Horn** – Weise (1924) and Blackwelder (1946) listed this species from “Baja California.” Additionally it is recorded from British Columbia, Canada, and the Pacific Northwest United States, including the northern half of California. The authors have not collected nor seen any specimens of this species from the Baja California peninsula. It is very unlikely that it occurs in this region.

***Scelolyperus tejonicus* Crotch** – Weise (1924) and Blackwelder (1946) listed this species from “Baja California.” However, this species is reliably known only from the holotype collected at Ft. Tejon [Kern County, California]. It is very unlikely that it occurs on the Baja California peninsula.

***Triarius* Jacoby** – A single morphospecies of this genus occurs in Baja California.

Alticini

***Altica* Geoffroy** – Twelve morphospecies of this genus have been examined from the region.

***Altica foliaceae* J. L. LeConte** – Horn (1894) recorded this species from “Baja California” (as *Haltica punctipennis* J. L. LeConte) and from “La Chuparosa” [Cerros Chuparrosa?] in the cape region of “Baja California” [Sur]. Blackwelder (1946) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Altica ignita* Illiger** – Horn (1894) recorded this species as “widely distributed,” but only gave San Jose del Cabo as a locality. Blackwelder (1946) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Altica tinctoria* J. L. LeConte** – Horn (1894) recorded this species from “San Francisquito” [Baja California]. Blackwelder (1946) listed it from “Baja

California.” As yet, we have not associated this name with specimens examined from the region.

***Asphaera lustrans* (Crotch)** – Horn (1894) recorded this species from “El Chinche, 2000 feet” elevation. Blackwelder (1946) listed it from “Baja California” (as *Omophoita lustrans* Crotch). As yet, we have not associated this name with specimens examined from the region.

***Blepharida atripennis* Horn** – Baja California peninsula endemic (BCS). We have examined 75 specimens of this species. All specimens examined are from the Arid Tropical Region. A single adult specimen and larvae were observed on *Bursera* at a site 14.8 miles SW of Puerto Escondido during a trip by the authors in 2003. The adult eluded collection, but this locality is on the interface between the Sierra de la Giganta and the Sarcocaulous plant regions and is the only observation of this species from a plant region other than the Arid Tropical. A large series of adults (26) and larvae (14) were collected feeding on *Bursera odorata* Brandegees (Burseraceae) in the mountains east of Todos Santos (Arid Tropical Region). This was only a portion of the total adults and larvae that were feeding on the tree.

***Blepharida conspersa* (Horn)** – Baja California peninsula endemic (BCS). This species was described by Horn (1895) from a single specimen. He placed it in a new genus, *Metacolaspis*, in the subfamily Eumolpinae. It has since been recognized as belonging to the genus *Blepharida* in the subfamily Galerucinae, tribe Alticini (Furth, 1998). We have examined the holotype in the California Academy of Sciences collection and nine additional specimens that have been collected during our study. All specimens are from the Arid Tropical Region. During 2003, five adults were collected on heavily defoliated *Bursera epinnata* (Rose) Engler at a site nine miles west of San Jose del Cabo. The Cape Region was very verdant in 2003 owing to excellent rainfall. But, judging from the low numbers of all chrysomelids collected and significant feeding damage to many plant species, the authors concluded that peak adult chrysomelid emergence had occurred 10-14 days earlier. At that time, the *Bursera* were probably heavily populated with *B. conspersa*.

***Capraita* J. Bechyné** – Twenty-three specimens of a single morphospecies are known from localities

in the Arid Tropical and Sierra de la Giganta Regions in Baja California Sur.

***Chaetocnema* Stephens** – Five morphospecies of this genus have been examined from the region.

***Chaetocnema fulvida* White** – A large number of adults (131) was collected from *Trianthema portulacastrum* L. (Aizoaceae) in the Sarcophyllous Desert Region near Santa Rosalia, Baja California Sur. Some specimens collected during one of our trips were included in the original description by White (1996).

***Crepidodera peninsularis* Horn** – Baja California peninsula endemic (BCS). Horn (1895) described this species from San Jose del Cabo. Furth and Savini (1998) listed this species from the Baja California peninsula. Heikertinger and Csiki (1939) listed it from California, but this is probably in error. We know of no examples of this species from California, and Parry (1986) did not include this species in his paper on the *Crepidodera* of America north of Mexico. As yet, we have not associated this name with specimens examined from the Baja California peninsula. Since the only record of this species is from San Jose del Cabo in Horn's original description, we have given this species endemic status.

***Disonycha fumata* (J. L. LeConte)** – Adults are associated with *Aster spinosus* Benth. (Asteraceae) in the Arid Tropical Region of Baja California Sur.

***Disonycha glabrata* (Fabricius)** – This species can be found in at least four of the plant communities on the Baja California peninsula, but it is most abundant in the Arid Tropical Region of Baja California Sur. Adults are associated with *Amaranthus watsonii* Standley (Amaranthaceae).

***Disonycha latiovittata* Hatch** – Blake (1955) listed this species from "Baja California." The collection locality given is vague and does not allow for placement within any particular plant community. However, the collection locality does seem to indicate the northern part of the peninsula, and since this is a species of western North America it is logical to conclude that *D. latiovittata* is found in the state of Baja California. Furth (2004) also included this species in the Baja California fauna. As yet, we have not associated this name with specimens examined from the region.

***Disonycha pluriligata* (J. L. LeConte)** – Horn (1894) recorded this species from San Jose del Cabo (as *Disonycha quinquevittata* Say). Blackwelder (1946) listed it from "Baja California." As yet, we have not associated this name with specimens examined from the region.

***Disonycha varicornis* Horn** – Adults are associated with *Opuntia cholla* Weber (Cactaceae) in the Arid Tropical Region of Baja California Sur.

***Dysphenges eichlini* Gilbert & Andrews** – Baja California peninsula endemic (BCS). This species occurs primarily in the Arid Tropical Region, but some individuals have been collected in the Sarcocaulous Desert Region at 650 – 1600 feet elevation. Adult beetles are associated with *Mimosa purpurascens* Robinson (Fabaceae).

***Dysphenges elongatulus* Horn** – Baja California peninsula endemic (BCS). This species was described by Horn (1894) from "El Taste." We have examined 73 specimens. All are from the cape of Baja California Sur in either the Arid Tropical or Sierra de la Giganta Regions at 1,300 – 1,600 feet elevation. This species was included in a checklist of Mexican Alticinae by Furth (2004) for the Mexican states of Puebla and Tamaulipas. However, these records were based on an external examination of two specimens (Furth, personal communication). There are numerous undescribed species of *Dysphenges* from mainland Mexico, some very similar to *D. elongatulus* in external appearance, and until the authors have described these species and revised the genus we will continue to consider this species as endemic to Baja California Sur.

***Dysphenges lagunae* Gilbert & Andrews** – Baja California peninsula endemic (BCS). When described, this species was known only from a single male specimen collected from La Laguna in the Sierra de la Giganta Region, 5,800 – 6,100 feet elevation. In 2003, the authors collected 93 specimens in and around the main valley of the Sierra de la Laguna. Adults were collected from *Calliandra brandegeei* (Britt. & Rose) Gentry (Fabaceae).

***Dysphenges rileyi* Gilbert & Andrews** – A series of 22 specimens was collected from *Mimosa purpurascens* Robinson (Fabaceae).

Epitrix Foudras – Five morphospecies of this genus have been examined from the region.

***Epitrix cucumeris* (Harris)** – Horn (1894) recorded this species from “El Taste.” Blackwelder (1946) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Epitrix flavotestacea* Horn** – Horn (1894) described this species from “El Taste.” We have examined 281 specimens from eleven localities in the Arid Tropical Region between 200 – 1,600 feet elevation. A single specimen was collected in the Sierra de la Giganta Region. This species is also recorded from southeastern Arizona (Riley *et al.* 2003). Adult beetles are associated with *Datura* sp. (Solanaceae) in Baja California Sur.

***Euplectroscelis xanti* Crotch** – Baja California peninsula endemic (BC, BCS). This is an abundant species, particularly in the Arid Tropical Region. It can also be found in the Magdalenan, Sarcocaulis Desert, Sarcophyllous Desert and Sierra de la Giganta Regions. This species is usually collected at lights or by sweeping vegetation, but in 1988 adults (11) and larvae (11) were found feeding on *Bursera epinnata* (Rose) Engler (Burseraceae) in the mountains east of Todos Santos. This was only a portion of the total adults and larvae that were feeding on the tree. This *B. epinnata* was very near the *B. odorata* that was serving as the host for *Blepharida atripennis*. There did not appear to be a mix of the two species on either tree. In 2003, this scenario was repeated at a site 14.8 miles SW of Puerto Escondido where adults and larvae of both species were present on two different species of *Bursera*. The two plants were not collected for identification, so it is unknown if the same two species of *Bursera* from east of Todos Santos were the hosts.

***Glyptina* J. L. LeConte** – Seven morphospecies of this genus, from nearly all plant regions on the peninsula, have been examined.

***Glyptina cerina* (J. L. LeConte)** – Fall (1927) recorded this species from “Angel de la Guarda Island (Palm Canyon)” [Isla Angel de la Guarda, Baja California]. Blackwelder (1946) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Kuschelina* J. Bechyné** – A single morphospecies of this genus occurs in the northern portion of Baja California.

***Kuschelina gibbitarsa* (Say)** – Horn (1896) recorded this species from San Jose del Cabo (as *Oedionychis gibbitarsis* Say). As yet, we have not associated this name with specimens examined from the region.

***Longitarsus* Berthold** – Four yet unidentified morphospecies of this genus occur on the peninsula.

***Longitarsus bajaensis* Andrews and Gilbert** – NEW NAME. Baja California peninsula endemic (BCS). Horn described *Longitarsus bicolor* (1889) from New Mexico and *Longitarsus bicolor* (1894) from “Santa Margarita Island” [Isla Santa Margarita, Baja California Sur]. We have compared the type (MCZ type number 33919, label data “N. M.”) of *L. bicolor* from New Mexico in the collection of the Museum of Comparative Zoology (MCZ) with the lectotype (type number 98) of *L. bicolor* from “Santa Margarita Island” in the collection of the California Academy of Sciences (CAS) and concluded, based on obvious differences in external appearance, that the two specimens represent two distinct species. Therefore, *L. bicolor* Horn, 1894 is a primary homonym of *L. bicolor* Horn, 1889, and a replacement name is here provided for the 1894 species. The MCZ collection also contains three specimens from “Santa Margarita Island” in the type series of *L. bicolor*. These are indeed specimens of *L. bajaensis*. It is unclear who made the lectotype designation in the CAS collection. To our knowledge, this designation has not been published.

***Longitarsus livens* J. L. LeConte** – Horn (1894) recorded this species from San Quintin [Baja California]. Fall (1927) recorded it from “Las Animas Bay, Lower California” [Bahia las Animas, Baja California] and “Loreto and Mulege, Lower California” [Baja California Sur]. Blackwelder (1946) and Wilcox (1975) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

***Longitarsus repandus* J. L. LeConte** – Horn (1894) recorded this species from “Baja California.” Blackwelder (1946) and Wilcox (1975) listed it from “Baja California.” As yet, we have not associated

this name with specimens examined from the region.

Margaridisa J. Bechyné – Seven specimens of a single morphospecies, as defined by Riley *et al.* (2001), have been examined. Five of the seven specimens are from La Laguna in the Sierra de la Giganta Region in Baja California Sur. The other two were collected near a spring at lower elevations in the Arid Tropical Region.

Orthaltica capensis Andrews & Gilbert – Baja California peninsula endemic (BCS). This species is primarily found in the Arid Tropical Region on *Cyrtocarpa edulis* (Brandege) Stanley (Anacardiaceae). Two specimens have been collected from the Sarcophyllous Desert Region.

Orthaltica recticollis (J. L. LeConte) – Adults are associated with *Rhus integrifolia* (Nutt.) (Anacardiaceae).

Phyllotreta Chevrolat – Four morphospecies of this genus occur on the peninsula.

Phyllotreta albionica (J. L. LeConte) – Fall (1927) recorded this species from “La Paz, Lower California” [Baja California Sur]. Blackwelder (1946) and Wilcox (1975) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

Phyllotreta bisinuata E. Smith – Smith (1985) recorded a single specimen of this species from “Rosarito Bch, L. Cal.” There is more than one “Rosarito” on the Baja California peninsula, but this locality probably refers to the “Rosarito” just south of the California border, south of Tijuana. This is a popular beach location for Americans to visit. As yet, we have not associated this name with specimens examined from the region.

Phyllotreta pusilla Horn – Horn (1889) described this species from the central and southwestern United States. Later, Horn (1894) recorded this species from localities in “Baja California” including San Luis [which is in the state of Sonora, Mexico although on the border with Baja California] and “San Julio” [locality unknown]. Blackwelder (1946) listed this species from “Baja California.” As yet, we have not associated this name with specimens examined from the region.

Psylliodes Berthold – Three morphospecies of this genus have been examined from the region.

Psylliodes convexior J. L. LeConte – Horn (1895) recorded this species from San Jose del Cabo. As yet, we have not associated this name with specimens examined from the region.

Symphrea Baly – A single morphospecies of this genus occurs in the cape region.

Symphrea flavicollis (Jacoby) – Adults are associated with *Ditaxis serrata* (Torr.) Heller and *D. lanceolata* (Benth.) (Euphorbiaceae).

Systema Chevrolat – Five morphospecies of this genus occur on the peninsula.

Systema blanda Melsheimer – Horn (1894) recorded this species from “Baja Purisima” [La Purisima?]. Blackwelder (1946) listed it from “Baja California” (as *Systema taeniata v. ochracea* J. L. LeConte). As yet, we have not associated this name with specimens examined from the region.

Systema contigua Jacoby – This species was included in a checklist of Mexican Alticinae by Furth (2004) for Baja California Sur. However, this record was mistakenly included (Furth, personal communication). *Systema contigua* has not been recorded from the Baja California peninsula.

Trichaltica Harold – A large series of 52 specimens of a single morphospecies, in the collection of the California Academy of Sciences, has been examined. All 52 specimens are from La Laguna in the Sierra de la Giganta Region of Baja California Sur.

Eumolpinae Typophorini

Metachroma Chevrolat – Four morphospecies of this genus exist on the peninsula.

Metachroma insulare Fall – Baja California peninsula endemic (BC). This species was described by Fall (1927) from a single specimen collected on Isla Angel de la Guarda. We have examined two additional specimens from Isla San Lorenzo.

Metachroma peninsulare Crotch – This species is apparently nocturnal and although it does respond to lights, it does not do so in great numbers.

Of the 210 specimens examined, only 23 were taken at blacklights. A series of 85 specimens was swept from a species of *Ambrosia* (Asteraceae) at night near La Paz with a blacklight and a mercury vapor light operating within 10 to 100 feet of all the specimens collected.

***Typophorus nigratus viridicyaneus* (Crotch)** – Wilcox (1975) listed this subspecies from “Baja California.” The range of this subspecies is central to eastern United States. It is unlikely that it occurs on the Baja California peninsula. However, there are other subspecies that occur in mainland Mexico, and it is possible that one of these subspecies will eventually be collected, particularly in the tropical cape region of Baja California Sur.

Eumolpini

***Chrysochus cobaltinus* J. L. LeConte** – Horn (1894) recorded this species from “Baja California.” This is a common California species and probably exists on the Baja California peninsula. However, we have yet to encounter this species during our trips or in collections.

***Colaspis brunnea* (Fabricius)** – Fall (1927) recorded this species from “Mulege, Lower California” [Baja California Sur]. Blackwelder (1946) listed it from “Baja California.” As yet, we have not associated this name with specimens examined from the region. This species is normally found in the eastern United States, and it is unlikely to occur on the Baja California peninsula. A species that is similar in external appearance, *C. hesperia* Blake, 1974, may occur on the Baja California peninsula. At present, we have seen no specimens of *Colaspis* that we have not been able to identify.

***Colaspis moesta* Horn** – Baja California peninsula endemic (BCS). We examined 34 specimens of this species, all from the Arid Tropical Region of Baja California Sur. Specimens can be collected at lights.

Adoxini

***Colaspidea* Laporte** – Two morphospecies of this genus have been examined from the region.

***Myochrous longulus* J. L. LeConte** – Blackwelder (1946) listed this species from “Baja California.” Blake (1950) recorded it from Calexico, Baja Cali-

fornia and Mexicali, California. These cities are actually reversed. Mexicali is in Baja California and Calexico is in California. This species is common on *Pluchea sericea* (Nutt.) Coville (Asteraceae) along the Colorado River in Imperial County, California and most likely occurs on this plant in Baja California in the Microphyllous Desert plant region. *Myochrous longulus* almost certainly occurs in Baja California in the Californian plant region as well. We have collected this species at Del Mar, San Diego County, California on *Isocoma menziesii* (Hook. & Arn.) G. Nesom (Asteraceae). This plant also occurs in Baja California, and our coastal Del Mar collection locality is only 30 miles north of the Mexican border.

Cryptocephalinae Cryptocephalini

***Bassareus brunnipes* (Olivier)** – Horn (1894) recorded this species from San Jose del Cabo (as *Bassareus congestus* Fabricius). Blackwelder (1946) listed it from “Baja California.” As yet, we have not seen this genus from the Baja California peninsula.

***Cryptocephalus* Geoffroy** – Three morphospecies of this genus occur on the peninsula. One of these was collected abundantly (30 specimens) on *Rhus integrifolia* (Nutt.) (Anacardiaceae) near Bahia Tortugas, Baja California Sur.

***Cryptocephalus californicus* Clavareau** – Baja California peninsula endemic (BCS). Schaeffer (1905) described this species (as *Cryptocephalus crenatostrigatus*) from “Santa Rosa, Lower California” [Baja California Sur]. Clavareau (1913) provided a new name, as *C. crenatostrigatus* was preoccupied. There are at least two “Santa Rosas” in Baja California Sur. The larger community of Santa Rosa north of San Jose del Cabo in the Arid Tropical Region is the most likely candidate. As yet, we have not associated this name with specimens examined from the region.

***Diachus* J. L. LeConte** – Two morphospecies of this genus have been examined.

***Diachus peninsularis* (Schaeffer)** – NEW COMBINATION (for *Triachus peninsularis* Schaeffer, 1906). Baja California peninsula endemic (BCS). Schaeffer (1906) placed this species in the genus *Triachus*, even though he realized that it did not belong there. This species has antennomeres 6-11

widened, and is between 1.8 and 2.3 mm in length (twice the size of all known species of *Triachus*). These are diagnostic characters that place it in the genus *Diachus*. Schaeffer described this species from "Santa Rosa, Lower California" [Baja California Sur]. We have examined 39 specimens. All are from the Arid Tropical and Sierra de la Giganta plant regions in the cape region of Baja California Sur.

Pachybrachis Chevrolat – Forty-two morphospecies of this genus have been examined. This genus presents a great deal of difficulty associating a specimen with a name. There is substantial intraspecific variation in color and sculpture. In addition, many species descriptions are based on few specimens, and most species show strong sexual dimorphism, with many important taxonomic characters present only in the males. The extent of the fauna on the Baja California peninsula will not be known until this genus is revised.

***Pachybrachis alacris* Fall** – A single female specimen was recorded by Fall (1927) from "Agua Verde, Lower California." Blackwelder (1946) and Wilcox (1975) listed this species from "Baja California." As yet, we have not associated this name with specimens examined from the region.

***Pachybrachis analis* J. L. LeConte** – Fall (1915) recorded this species from Ensenada [Baja California]. We have examined 27 specimens, all from the Baja California Coniferous Forest plant region.

***Pachybrachis atomarius* (F. E. Melsheimer)** – Horn (1894) recorded this species from San Jose del Cabo. Blackwelder (1946) (as *Pachybrachis atomaria*, Melsheimer) and Wilcox (1975) listed it from "Baja California." As yet, we have not associated this name with specimens examined from the region.

***Pachybrachis donneri* Crotch** – Horn (1894) recorded this species from "Coral de Piedra" and "El Taste" [Baja California Sur]. Blackwelder (1946) listed this species from "Baja California." Riley *et al.* (2003) listed this species from the northwestern United States and western Canada. It is very unlikely that it occurs in either Baja California or Baja California Sur. As yet, we have not associated this name with specimens examined from the region.

***Pachybrachis indifferens* Fall** – Fall (1927) described this species from mainland Mexico and San Esteban Island [Isla San Esteban] in the Gulf of California. As yet, we have not associated this name with specimens examined from the region.

***Pachybrachis melanostictus* Suffrian** – In the Sarcophyllous Desert Region of Baja California, adults of this species are associated with *Haploppus sonorensis* (A. Gray) S. F. Blake (Asteraceae).

***Pachybrachis nubilus* Bowditch** – Fall (1927) recorded this species from "San Francisquito Bay [Bahia San Francisquito], Aqua Verde and San Marcos Island [Isla San Marcos], Lower California." Blackwelder (1946) listed it from "Baja California" (as *Pachybrachis nubila* Bowditch). Bahia San Francisquito, Baja California and Isla San Marcos, Baja California Sur are both in the Sarcocaulous Desert Region.

***Pachybrachis peltatus* Fall** – This species was described by Fall (1915) from "Lower California, Mexico" from a single female specimen. As yet, we have not associated this name with specimens examined from the region.

***Pachybrachis peninsularis* Fall** – Baja California peninsula endemic (BCS). We have examined 48 specimens from 27 localities in Baja California Sur. Eight specimens were collected at blacklight. Most of the collection records were single individuals.

***Pachybrachis turbidus* J. L. LeConte** – Horn (1894) recorded this species from four localities in the cape region of Baja California Sur. Blackwelder (1946) listed it from "Baja California" (as *Pachybrachis turbida* J. L. LeConte). As yet, we have not associated this name with specimens examined from the region.

***Pachybrachis vigilans* Fall** – Baja California peninsula endemic (BCS). We have examined 17 specimens from four localities in Baja California Sur. All were collected at blacklight, except for one specimen.

***Pachybrachis xanti* Crotch** – Adults are associated with *Larrea tridentata* (DC.) Coville (Zygophyllaceae).

Table 1. A summary of the subfamilies, and the number of genera and species of described Chrysomelidae in the Baja California peninsula.

Subfamily/Tribe	Genera	Species	Subfamily/Tribe	Genera	Species
Donaciinae/Plateumarini	1	1	Galerucinae/Luperini	10	24
Criocerinae/Lemini	3	7	Galerucinae/Alticini	18	44
Cassidinae/Chalepini	6	13	Eumolpinae/Typophorini	2	6
Cassidinae/Mesomphaliini	1	1	Eumolpinae/Eumolpini	2	4
Cassidinae/Ischyrosomychini	1	2	Eumolpinae/Adoxini	3	4
Cassidinae/Cassidini	7	9	Cryptocephalinae/Cryptocephalini	6	48
Chrysomelinae/Chrysomelini	5	6	Cryptocephalinae/Clytrini	6	24
Galerucinae/Galerucini	3	18	Cryptocephalinae/Chlamisini	3	6
Galerucinae/Metacyclini	1	1	Totals	78	218

Clytrini

***Babia costalisdebaja* Moldenke** – Baja California peninsula endemic (BC, BCS). We examined 163 specimens of this common species from 28 localities. All but five specimens were from Baja California Sur. The principle hosts are *Prosopis glandulosa* Torr. var. *torreyana* (L. Benson) M. C. Johnston or *Prosopis* sp. (Fabaceae).

***Babia tetraspilota tetraspilota* J. L. LeConte** – Adults are associated with *Prosopis* sp. (Fabaceae).

***Coleorozena subnigra* (Schaeffer)** – The principle hosts are *Prosopis glandulosa* Torr. var. *torreyana* (L. Benson) M. C. Johnston or *Prosopis* sp. (Fabaceae).

***Coleothorpa* Moldenke** – Two morphospecies of this genus occur on the peninsula.

***Coleothorpa mucorea inornata* (Fall)** – Baja California peninsula endemic (BC, BCS). Fall (1927) described this subspecies from Carmen Island [Isla del Carmen] and San Estaban Island [Isla San Estaban]. Blackwelder (1946) listed it from “Baja California” (as *Coscinoptera inornata* Fall). As yet, we have not associated this name with specimens examined from the region.

***Coleothorpa mucorea schaefferi* (Clavareau)** – Adults are associated with *Prosopis* sp. (Fabaceae).

***Coleothorpa seminuda* (Horn)** – Blackwelder (1946) listed this species from “Baja California” (as *Coscinoptera seminuda* Horn). Moldenke (1970)

did not record this species from the peninsula. Since this species does occur in the desert areas of the adjacent western United States, it is not unreasonable to assume that it occurs on the peninsula. As yet, we have not associated this name with specimens examined from the region.

Megalostomis Chevrolat – A single morphospecies of this genus occurs on the peninsula, primarily in the Arid Tropical Region.

***Megalostomis dimidiata dimidiata* (Lacordaire)** – Blackwelder (1946) listed this species from “Baja California” (as *Megalostomis major* Crotch). Moldenke (1970) did not record this species from the peninsula. However, this species does occur in Texas and adjacent western Mexico, and it is not unreasonable to assume that it occurs on the peninsula. As yet, we have not associated this name with specimens examined from the region.

***Megalostomis pyropyga pyropyga* Lacordaire** – Fall (1927) recorded this species from “San Pedro Bay, Sonora.” Moldenke (1970) recorded it from “San Pedro Bay, Baja California”. We have not identified a “San Pedro Bay” on the peninsula and therefore must assume this locality is in the State of Sonora, Mexico. This is a common species in Arizona and adjacent Mexico, and it is probable that it occurs on the peninsula, but we have not yet examined any specimens.

Saxinis Lacordaire – A single morphospecies has been examined from the region.

Table 2. A summary of the Chrysomelidae endemic to the Baja California peninsula.

Species	State	Plant Community
Criocerinae - Lemini		
<i>Lema flavida</i> Horn	BCS	AT
<i>Lema omogera</i> Horn	BCS	AT, SD, SG
<i>Lema peninsulae</i> Crotch	BCS	SG
<i>Neolema californica</i> (Heinze)	BCS	SG
Galerucinae - Galerucini		
<i>Monoxia beebei</i> Blake	BC	BCcf
Galerucinae - Metacyclini		
<i>Metacycla insolita</i> J. L. LeConte	BC, BCS	AT, CR, ScD, SG
Galerucinae - Luperini		
<i>Androlyperus nataliae</i> S. Clark	BC, BCS	AT, MD, ScD
<i>Diabrotica variegata</i> Jacoby	BCS	AT
<i>Luperosoma nigricolle</i> Blake	BCS	AT, MR, SD
<i>Metroidea rugipennis</i> (Blake)	BC, BCS	AT, MD, MR, ScD, SD, SG
<i>Pseudoluperus histrio</i> (Horn)	BCS	SG
<i>Scelolyperus clarki</i> Gilbert & Andrews	BC	CR
Galerucinae - Alticini		
<i>Blepharida atripennis</i> Horn	BCS	AT, SD
<i>Blepharida conspersa</i> (Horn)	BCS	AT
<i>Crepidodera peninsularis</i> Horn	BCS	AT
<i>Dysphenges eichlini</i> Gilbert & Andrews	BCS	AT, SD
<i>Dysphenges elongatulus</i> Horn	BCS	AT, SG
<i>Dysphenges lagunae</i> Gilbert & Andrews	BCS	SG
<i>Euplectroscelis xanti</i> Crotch	BC, BCS	AT, MR, ScD, SD, SG
<i>Longitarsus bajaensis</i> Andrews & Gilbert	BCS	MR
<i>Orthaltica capensis</i> Andrews & Gilbert	BCS	AT, ScD
Eumolpinae - Typophorini		
<i>Metachroma insulare</i> Fall	BC	SD
Eumolpinae - Eumolpini		
<i>Colaspis moesta</i> Horn	BCS	AT
Cryptocephalinae - Cryptocephalini		
<i>Cryptocephalus californicus</i> Clavareau	BCS?	AT?
<i>Diachus peninsularis</i> (Schaeffer)	BCS	AT, SG
<i>Pachybrachis peninsularis</i> Fall	BCS	AT, MR, SD, ScD, SG
<i>Pachybrachis vigilans</i> Fall	BCS	AT, SG, MR
Cryptocephalinae - Clytrini		
<i>Babia costalisdebaja</i> Moldenke	BC, BCS	AT, SD, ScD, SG
<i>Colethorpa mucorea inornata</i> (Fall)	BC, BCS	SD

States: BC – Baja California, BCS – Baja California Sur.

Regions: AT- Arid Tropical, BCcf – Baja California Coniferous Forest, CR – Californian, MR – Magdalenan, MD – Microphyllous Desert, SD – Sarcocaulous Desert, ScD – Sarcophyllous Desert, SG – Sierra de la Giganta.

Chlamisini

Exema Lacordaire – A single morphospecies has been examined from the region.

***Exema conspersa* (Mannerheim)** – Adults are associated with a variety of plants in the Asterace-

ae, including *Ambrosia ambrosioides* (Cav.) Payne and *Hymenoclea monogyra* Torrey & A. Gray.

***Exema deserti* Pierce** – Adults are associated with a variety of plants in the Asteraceae, including *Baccharis sarothroides* A. Gray, *Encelia farinosa*

Table 3. A summary of species listed by plant communities.

Plant Community	Number of Species in the Region *	Species Unique to the Region	Peninsular Endemic Species Occurring in the Region *
Arid Tropical	98	27	20
B. C. Coniferous Forest	72	18	1
Californian	56	14	2
Magdalenan	27	3	6
Microphyllous Desert	44	6	2
Sarcocaulous Desert	49	10	10
Sarcophyllous Desert	62	5	7
Sierra de la Giganta	40	7	13

* Some species occur in more than one plant community.

A. Gray, *Encelia* sp., and *Hymenoclea salsola* var. *salsola* Torrey & A. Gray.

***Neochlamisus moestificus* (Lacordaire)** – Adults are commonly associated with *Prosopis* sp. (Fabaceae).

***Neochlamisus subelatus* (Schaeffer)** – Adults and larvae are associated with *Larrea tridentata* (DC.) Cov. (Zygophyllaceae).

***Neochlamisus velutinus* Karren** – Adults are commonly associated with *Prosopis glandulosa* Torrey var. *torreyana* (L. Benson) M. Johnston or *Prosopis* sp. (Fabaceae).

Summary and Discussion

Diversity of Chrysomelidae in the Baja California peninsula

From the more than 16,000 specimens examined from the Baja California peninsula, 346 described species or morphospecies have been identified. Two hundred and eighteen of these have been identified as described species, and 128 have been assigned morphospecies identity. One hundred and twenty-seven of the 218 described species have been documented in the literature as having a Baja California peninsula distribution. Thus, a total of 91 species have been recorded from the Baja California peninsula for the first time, with the possibility that the various morphospecies will further increase the total.

The 218 described species are arrayed into seven subfamilies and 78 genera (Table 1). Six additional genera have been collected from the

peninsula, but the morphospecies in these genera have not been described or associated with a known species. They include *Glyphoroplata* and *Sumitrosis* (Cassidinae: Chalepini), *Capraita*, *Margaridisa*, and *Trichaltica* (Galerucinae: Alticini), and *Miraces* (Galerucinae: Galerucini). The dominant subfamily is the Galerucinae, with 32 genera. The subfamilies present on the Baja California peninsula are similar to those found in the adjacent regions of California, Arizona and Mexico.

While the Galerucinae contains the largest number of genera, the Cryptocephalinae is the dominant group in number of species (when morphospecies are included) and total specimens in collections. The Cryptocephalinae is represented by fifteen genera, but two of these contain the largest number of species. *Pachybrachis* has 33 described species from the peninsula and an additional 42 morphospecies, while *Cryptocephalus* has ten described species with an additional three morphospecies. When all described species are considered, the two dominant subfamilies comprise 76 percent of the fauna (Galerucinae, 87 species or 40%; Cryptocephalinae, 78 species or 36%).

Forty-two species have been described from the Baja California peninsula. Thirteen of these also have United States or mainland Mexico distributions, leaving twenty-nine of the described species as endemic to the Baja California peninsula (Table 2). The species identified as morphospecies number 128. If these turn out to be valid species and are not found in mainland Mexico or the United States, the number of endemics from the Baja California peninsula will be 157 species or approximately 46% of the total chrysomelid fauna. A few of the endemics are known only from original descriptions, and the information provided in the text of the descriptions

does not give enough detail to know exactly where the specimens were collected. The locality for *Longitarsus bajaensis* Andrews & Gilbert is given as "Margarita Is." It is likely this is Isla Santa Margarita, an island off the Pacific Coast of Baja California Sur. If this is the correct locality of *L. bajaensis*, then it would be associated with the Magdalenan Region and would give this region three unique species, two of them endemic only to this plant region. *Metachroma insulare* Fall, 1927, an endemic species, is also unique to islands, Isla San Lorenzo and Isla Angel de la Guarda in the Gulf of California.

There are still few data from the islands of either the Gulf of California or the Pacific Ocean. The authors have records for only six described and one morphospecies from two Pacific Coast islands, Isla de Cedros and Isla Magdalena. The islands in the Gulf of California (Sea of Cortez) have received more attention. The authors have specimens from Isla Espiritu Santo, Isla La Partida, Isla San Estaban, Isla San Francisco, Isla San Jose, Isla San Lorenzo, Isla San Marcos, and Isla Santa Cruz; however, species diversity is low. Only seven described and six morphospecies have been found on these eight islands. Isla Angel de la Guarda is also the recorded collection locality for a few species, but we have not seen any specimens from this island.

The chrysomelid fauna of the peninsula has a high degree of association with the chrysomelid fauna of the southwestern United States and the northwestern areas of mainland Mexico. Of the 218 identified species occurring on the peninsula, 181 also occur in the southwestern United States. Sixty-nine species are recorded from mainland Mexico (this figure is undoubtedly low as data from this area are lacking). Only eight of the sixty-nine species are shared solely between the peninsula and mainland Mexico. The remaining twenty-nine species are endemic to the peninsula.

The Baja California peninsula, with the exception of the cape region, is very arid, and the composition and abundance of species seems to be a function of this. All of the subfamilies and included genera that are most abundant have life histories that mitigate against arid conditions. Most of the Galerucinae and Eumolpinae are only present as adults in the spring in Baja California and in late summer in Baja California Sur, when plants are flowering and fresh vegetative growth is available; most of the year is spent in the larval stage, in the soil, where temperatures are cooler. The Clytrini may spend their larval stages as associates with

ants (Moldenke, 1970), again in the soil where high desert temperatures are avoided. Larvae of the Chlamisini are folivorous casebearers. Their hardened case probably protects them from desiccation in the hot, dry climate of many parts of the peninsula. Little is known of the larval stages of Cryptoccephalini, other than they are casebearers and many species feed on plant detritus on the soil surface (White, 1968 and Riley *et al.* 2002). The Chalepini spend their immature stages as larval miners where plant moisture is available and enclosure in the leaf prevents moisture loss. With the exception of one species, the tortoise beetles (Mesomphaliini, Ischyrosonychini and Cassidini) are restricted to the cape region of the peninsula where the climate is more tropical with summer and fall rain. The same is true for the Criocerinae.

Plant Community Associations

Approximately 16,000 specimens of Chrysomelidae have been studied. Each specimen has been identified or given a morphospecies designation and associated with one of Wiggins' plant communities. Slightly over 3,000 individual species localities were recorded and assigned to one of the plant communities. In making these assignments, several problems had to be overcome. Many of the label localities are cryptic, in that they refer to individual homes or ranches whose names have been placed as road signs along the highway. Also, names may be used several times for different towns. An example of this is the several "El Rosarios" and several "Rosaritos." From small-scale maps presented by Wiggins, it is difficult to determine where any particular collecting locality lies when it is close to the boundary of two plant community regions. This is particularly true in the cape region of the peninsula, where there is frequently an overlap of indicator plants in the ecotonal boundaries.

The greatest diversity of the 218 described chrysomelid species is in the Arid Tropical Region where 98 species are found. Slightly less diverse are the Baja California Coniferous Forest Region with 72 species, the Sarcophyllous Desert Region with 62 species, and the Californian Region with 56 species. Fewer species are recorded from within the dry desert areas of the Sarcocaulous Desert Region (49 species), the Microphyllous Desert Region (44 species), and the Magdalenan Region (27 species). The Sierra de la Giganta Region has 40 species. However, species diversity in the Sierra de la Giganta Region is expected to increase signifi-

cantly when the area can be collected and studied intensively.

The Arid Tropical Region plant community also contains the most unique species (described species occurring in the Baja California peninsula, but only within one particular plant region), having 27. The Baja California Coniferous Forest Region has 18 unique species, and is closely followed by the Californian Region with 14 and Sarcocaulous Desert Region with ten. The Sierra de la Giganta Region has seven and the Sarcophyllous Desert Region has five. The Microphyllous Desert Region and the Magdalenan Region follow with six and three species, respectively. However, when the high elevation oak-conifer forests of the Sierra de la Laguna can be seriously collected and studied, the number of unique species in the Sierra de la Giganta Region is likely to increase significantly. Forty-one percent of the 218 species known from the Peninsula occur in only one plant region.

Adult host plant associations for 120 chrysomelid species have been recorded from 61 plant genera. This represents approximately 35% of the potential 346 species. Larval associations are far fewer, with only three beetle species associated with their host plant. A majority of the larval chrysomelids in the Baja California peninsula are not found on the above ground portion of their host plant, which will make larval host associations difficult.

Discussion

Analysis of the chrysomelid fauna is at best preliminary because the fauna is still largely unknown. Only two researchers, George Horn (1894, 1895) and H. C. Fall (1927) worked on the Baja California peninsula leaf beetle fauna; this was at a time when little material was available because collectors were unable to travel due to the lack of roads. Recent collecting has provided a starting point in developing a faunal list, but is lacking in providing enough data to fully understand the composition, distribution and host relationships within the family.

This is illustrated when one looks at the number of times any particular species has been collected. Sixty-nine species have only been collected once and 46 of these species are only known from a single specimen. Fifty-three percent (184 out of 346) of the species have been collected six times or less. A few species have been collected numerous times. *Coleo-rozena subnigra* (Schaeffer, 1905) has been collect-

ed 158 times. This is likely because it is commonly found on mesquite, a plant from which insect collectors commonly collect, that occurs throughout the peninsula in all eight plant regions. *Euplectroscelis xanti* Crotch, 1873, has been collected 65 times and in five of the plant community regions, but only once not at night at lights.

Future Work

Future fieldwork will focus on three areas: 1. Investigating localities that are not well collected or have never been collected; 2. Relating both adult and larval chrysomelids to their respective host plants, with greater emphasis on larval associations, and; 3. Attempts to collect additional specimens of the large number of described species or the morphospecies represented by one or two specimens. Systematic work will continue on the morphospecies. Most of these are known from few specimens and locations and can only be worked on if additional material is collected.

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