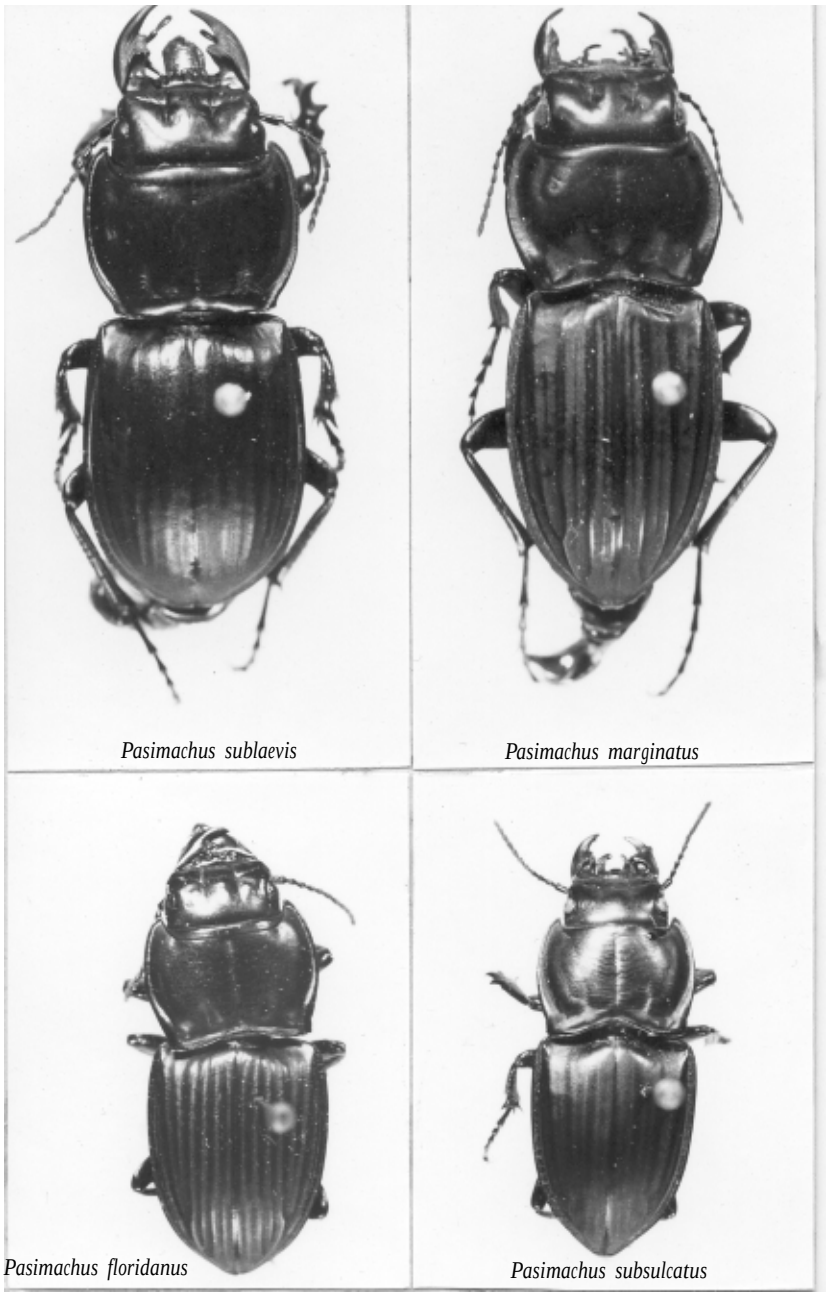

Pasimachus sublaevis

Pasimachus marginatus

Pasimachus floridanus

Pasimachus subsulcatus

Manual for the Identification of the Ground Beetles (Coleoptera: Carabidae) (including tiger beetles) of Florida

[1] This is an original pre-publication manuscript, not for general dissemination or reproduction. This copy may be used as instructional material in an insect ID laboratory exercise.

The ground beetles of Florida (Coleoptera: Carabidae) including tiger beetles, tribe Cicindelini

©1996 - 2001 P. M. Choate[1]
Dept. Entomology and Nematology
University of Florida, Gainesville 32611
email: pmc@gnv.ifas.ufl.edu

Introduction

One of the most intimidating tasks challenging an aspiring entomologist is the identification of species within a family as diverse as ground beetles. Regional faunal works have dealt with northeastern states (Blatchley 1910, Downie and Arnett 1996, and Lindroth 1961, 1963, 1966, 1968, 1969a, 1969b) and the northwest (Hatch 1953). Accurate identification of specimens collected south of New England becomes a challenge, even at the generic level. My intent here is to provide keys to identify genera of ground beetles (including tiger beetles) found or likely to be found in Florida, then provide as many species keys as possible. When necessary, problematic species complexes are indicated, with suggestions for further study.

The inclusion of potentially occurring species is a controversial topic. Where does one draw the line for exclusion? I have based potential species occurences in Florida upon my own personal collecting experiences in Georgia, Alabama, and the southern Appalachian mountains. I have also indicated my best guess as to the likelihood that certain species will be found.

Literature citations are included here for many references that may not seem directly applicable to this work. However, for the beginning student, locating literature is a major obstacle. Therefore, as a service to aspiring students of ground beetle taxonomy I have included a wide variety of references that may simplify literature searches in the future.

Preliminary aspects of a faunal study necessarily involve literature records. Many records may ultimately prove false, being based upon misidentified specimens. But these records are needed to identify new state records, and to provide species lists that are to be used in modern revisions. Therefore, Choate (1990) listed Florida species without attempting to validate their actual presence. Actual specimens seen by me have greatly increased the number listed (Choate, *loc. cit.*). Many new species await description. Large portions of the state remain unsurveyed, and undoubtedly will produce new records. Most new generic records have come from the panhandle of Florida, and these from only a few selected sites. Generic keys have not been available specifically for Florida Carabidae. However, modifications of recent keys (Ball 1968, Reichardt 1977, Erwin & Sims 1984) should permit most generic determinations. Works by Lindroth (1961, 1963, 1966, 1968, 1969a, 1969b) are useful for many species determinations, but must be used with the knowledge that genera and species occur in Florida that are not covered in his volumes on Canada and Alaska. Species keys for Florida genera are virtually non-existent except as part of recent revisions of some genera. When relevant such species keys are listed. I have modified extant keys or manufactured species keys to fit the Florida fauna.

Two major checklists have dealt with Florida Carabidae. Schwarz (1878) listed 150 species for Florida. Leng (1915) increased the list to 262 species (excluding Cicindelidae). Adjacent states of Georgia and Alabama had their ground beetle fauna listed by Fattig (1949) and Loding (1945) respectively. A more recent listing of North American Carabidae (Erwin *et al.* 1977) listed 267 species for Florida, but this list had many omissions. Bousquet and Larochelle (1993) listed 373 species. They also dealt with doubtful records and made decision regarding the likelihood of such records being validated. Therefore their list may be considered the most recent attempt at accurately portraying the known Florida ground beetle fauna composition. However, much remains to be completed before the ground beetle fauna of Florida is as well known as that of Canada and Alaska as published by Lindroth (*loc. cit.*).

Materials and Methods

I repeat here species literature records for Florida listed by me (Choate 1990), and as added by Bousquet (*loc. cit.*). Carabidae (*sensu strictu*) are presented under their currently accepted tribal ranking (Ball 1968, Reichardt 1977, Bousquet and Larochelle 1993). Literature records are listed without species description date, but with literature citation involving the species record for Florida. Species are listed as they were presented in their respective literature. Synonyms are not listed, but may be found in more recent revision. Tiger beetles (Cicindelidae) were previously omitted from this list, but are included here. The word "Rev" following a generic name indicates that a recent revision exists by the author(s) cited.

Keys are provided for tribes of ground beetles (including subfamily Cicindelinae), then followed by ge-

neric, and where possible, species keys. In many cases it has been possible to provide a dorsal habitus photograph which may simplify the identification process. Most genera of Florida ground beetles are recognizable from photographs, especially when compared with other genera and their photographs. Most Florida tiger beetles may be identified to species from photographs. In keeping with popular trends I list the tiger beetles as a subfamily of Carabidae. This popular group of beetles is presented first following tribal and generic keys. Then individual species keys are provided for most Florida genera. Distribution maps, host records, collection tips, and seasonal distribution are provided for each species when known. A detailed list of specimens seen is not presented, but location of material and summary statements are given for each species. Localities are plotted on Florida maps as closely as possible to exact sites.

List of genera of ground beetles (including Cicindelinae) known or expected to occur in Florida

Rhysodini

Clinidium Kirby
Omoglymmius Ganglbauer

Cicindelini

Cicindela Linnaeus
Megacephala Latreille

Carabini

Carabus Linnaeus
Calosoma Weber

Cychrini

Sphaeroderus Dejean (**new record**)
Scaphinotus Latreille

Elaphrini

Elaphrus Fabricius

Omophronini

Omophron Latreille

Nebriini

Nebria Latreille (not yet recorded from Florida but may possibly be found on panhandle rivers)

Notiophilini

Notiophilus Dumeril

Scaritini

Pasimachus Bonelli
Scarites Fabricius
Dyschirius Bonelli
Clivina Latreille
Halocoryza Alluaud
Schizogenius Putzeys
Oxydrepanus Putzeys
Ardistomis Patzeys
Aspidoglossa Putzeys

Bembidiini

Mioptachys Bates
Tachyta Kirby
Elaphropus Motschulsky
Pericompsus LeConte
Tachys Stephens
Paratachys Casey
Polyderis Motschulsky
Lymnastis Motschulsky (Cuba)
Micratopus Casey
Anillinus Casey
Stylulus Schaufuss
Bembidion Latreille

Pogonini

Diplochaetus Chaudoir
Perileptus Schaum (Cuba)

Patrobini

Patrobus Dejean
Nomius Laporte (SC,GA, Florida Keys)

Morionini

Morion Latreille

Loxandrini

Loxandrus LeConte

Pterostichini

Neomyas Allen
Pterostichus Bonelli
s.g. Lophoglossus LeConte
s.g. Poecilus Samouelle
Piesmus LeConte
Abacidus LeConte
Evarthrus LeConte

Zabrini

Amara Bonelli

Harpalini

Amerinus Casey (Miss, FL; Torreya St.Park)
Bradycellus Erichson
Stenolophus Stephens
Acupalpus Latreille
Notiobia Perty
Anisodactylus Dejean
Geopinus LeConte
Amphasia Newman
Cratacanthus Dejean
Ha.rpalus Latreille
Episcopellus Casey (SC, to be looked for in northern forests, panhandle)
Trichotichnus Morawitz
Selenophorus Dejean
Athrostictus Bates (Mexl CA,, intercepted in Miami)
Discoderus LeConte
Gynandropus Dejean
Amblygnathus Dejean
Stenomorphus Dejean

Licinini

Diplocheila Brulle
Dicaelus Bonelli
Badister Clairville

Panagaeini

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Panagaeus Latreille
Coptia Brulle (Cuba)

Chlaenini

Chlaenius Bonelli

Oodini

Oodes Bonelli
Stenocrepis Chaudoir
Anatrichis LeConte
Evolenes LeConte
Dercylinus Chaudoir (LA)

Ctenodactylini

Leptotrachelus Latreille

Odacanthini

Colliuris Degeer

Pentagonicini

Pentagonica Schmidt-Goebel

Platynini

Agonum Bonelli
Olisthopus Dejean
Platynus Bonelli
Atranus LeConte
Rhadine LeConte
Synuchus Gyllenhal (GA)
Calathus Bonelli
Pristonychus
Tetraleucus Casey

Cyclosomini

Tetragonoderus Dejean

Lebiini

Cymindis Latreille
Apenes LeConte
Pinacodera Schaum
Somotrichus Seidlitz (intercepted in Florida)
Phloeoxena Chaudoir
Coptodera Dejean
Mochtherus Schmidt-Goebel
Lelis
Calleida Latreille
Euproctinus Leng & Mutchler
Onota Chaudoir
Plochionus Dejean
Nemotarsus LeConte
Lebia Latreille
Philorhizus Hope
= *Dromius* Bonelli

Perigonini

Perigona Laporte

Lachnophorini

Euphortirus Horn
Calybe Castelnau
= *Ega* Laporte
Eucaerus LeConte

Apristus Chaudoir (Cuba, NC)
Axinopalpus LeConte (ALA)
Microlestes Schmidt-Goebel

Zuphiini

Thalpius LeConte
Pseudaptinus Laporte
Zuphium Latreille

Galeritini

Galerita Fabricius

Helluonini

Helluomorphoides Ball

Pseudomorphini

Pseudomorpha Kirby (SC,GA,ALA,LA)

Brachinini

Brachinus Weber

Florida Carabidae Species List

(Published records, including Cicindelini)

Tribe Cicindelini

(See pages 22-25)

Tribe Omophronini

***Omophron* Latreille, 1802** (Key: Lindroth 1961)
americanum Dejean [Choate & Rogers 1976: 364]
labiatum (Fabricius) [Schwarz 1878: 435]

Tribe Carabini

Calosoma Weber, 1801(Key: Gidaspow 1959)
sayi Dejean [Leng 1915: 565]
scrutator Fabricius [Ibid.]
splendidum Mannerheim [Ibid.]

Carabus Linnaeus, 1758 (Key: Lindroth 1961)
sylvosus Say Leng 1915: 546
vinctus georgiae Csiki Harris & Whitcomb 1974: 99

Tribe Cychrini

Scaphinotus Dejean, 1826 (Key: Lindroth 1961)
unicolor Fabricius Erwin, Whitehead & Ball 1977:6
ssp. *floridanus* Leng Harris & Whitcomb 1974:97
elevatus floridanus Leng Leng 1915: 564
viduus Dejean Erwin, Whitehead & Ball 1977:6

Tribe Notiophilini

Notiophilus Dumeril, 1806 (Key: Lindroth 1961)
novemstriatus LeConte Leng 1915: 565

Tribe Elaphrini

Elaphrus Fabricius (Rev: Goulet 1983)
ruscarius Say Goulet 1983: 371
californicus Mannerheim Ibid.: 373

Tribe Scaritini

Pasimachus Bonelli, 1813(Key: B@nninger 1950)
marginatus (Fabricius) Schwarz 1878: 435
floridanus Casey Casey 1913: 79
subsulcatus Say Schwarz 1878: 435
ssp. *subnitens* Casey Casey 1913: 79
opacipennis Casey Casey 1913: 80
sublaevis Dejean Schwarz 1878: 435
strenuus LeConte Ibid.
ssp. *robustus* Casey Casey 1913: 78
depressus Fabricius Leng 1920: 47

Scarites Fabricius, 1801
subterraneus Fabricius Schwarz 1878: 435
substriatus Haldeman Schwarz 1878: 435
californicus LeConte Ibid.
alternans Chandoir Leng 1915: 567
patruelis LeConte Erwin, Whitehead,& Ball 1977:6

Dyschirius Bonelli, 1810 (Keys: Lindroth, 1961; Whitehead, 1969a; Bousquet 1988)
pumilus Dejean Leng 1915: 568
falciger LeConte Schwarz 1878: 435
pallipennis Say Leng 1915: 568
sphaericollis Say Ibid.
erythrocerus LeConte Schwarz 1878: 435
haemorrhoidalis Dejean Ibid.
globulosus Say Ibid.
filiformis LeConte Ibid.
sublaevis Putzeys Ibid.
sellatus LeConte Ibid.
dentiger LeConte Whitehead 1969a: 186
terminatus LeConte Lindroth 1961: 136
abbreviatus Putzeys Whitehead 1969: 185
edentulus Putzeys Whitehead 1969: 182
exochus Whitehead Frank 1985: 481
curvispinus Putzeys Blatchley 1925: 161
sculptus Bousquet Bousquet 1988: 370
larochellei Bousquet Ibid.: 374
comatus Bousquet Ibid.: 378

Clivina Latreille, 1802 (No species keys)
morula LeConte Leng 1915: 569
americana Dejean Schwarz 1878: 435
striatopunctata Dejean Ibid.: 435
bipustulata (Fabricius) Ibid.
dentipes Dejean Ibid.
cordata Putzeys Ibid.
rufa LeConte Ibid.
rubicunda LeConte Ibid.
picea Putzeys Ibid.
floridae Csiki Erwin, Whitehead, & Ball 1977: 13
picipes Putzeys Schwarz 1878: 435
sulcipennis Putzeys Erwin, Whitehead, & Ball 1977: 13

Schizogenius Putzeys, 1846 (Rev: Whitehead 1972)
sallei Putzeys Schwarz 1878: 435
ferrugineus Putzeys Ibid.
lindrothi Whitehead Whitehead 1972: 199

Oxydrepanus Putzeys, 1866
rufus Putzeys Darlington 1935: 162

Ardistomis Putzeys, 1846
obliquata Putzeys Schwarz 1878: 435
viridis Say Ibid.
puncticollis Putzeys Ibid.
schaumii LeConte Ibid.
morio (Dejean) Leng 1915: 571

Aspidoglossa Putzeys, 1846
subangulata Chaudoir Schwarz 1878: 435

Halocoryza Allaud, 1919
arenaria (Darlington) Whitehead 1969b: 36

Tribe Rhysodini
(Rev: Bell 1970; Bell&Bell 1982, 1985)

Clinidium Kirby, 1835
baldufi Bell Bell 1970: 313
sculptile (Newman) Bell & Bell 1985: 92

Omoglymmius Ganglbauer, 1892
americanus (Castelnau) Bell & Bell 1982: 144

Tribe Patrobini
Patrobus Dejean, 1821
longicornis Say Erwin, Whitehead & Ball 1977: 25

Tribe Bembidiini
(Rev. Genera: Erwin 1974b)
Mioptachys Bates, 1882
flavicauda (Say) Schwarz 1878: 438

Tachyta Kirby, 1837 (Rev: Erwin 1975)
nana Gyllenhal Schwarz 1878: 438
ssp. *inornata* (Say) Erwin 1975: 45
parvicornis Notman Erwin 1975: 50

Paratachys Casey, 1918
albipes (LeConte)Schwarz 1878: 438
columbiensis (Hayward) Ibid.
pumilus (Dejean) Leng 1915: 574
scitulus (LeConte) Ibid.
ventricosus (LeConte) Schwarz 1878: 438
corruscus (LeConte) Leng 1915: 574
aenescens Motschulsky Schwarz 1878: 438

Polyderis Motschulsky, 1862
laevis (Say) Schwarz 1878: 438

Micratopus Casey, 1914
aenescens (LeConte) Barr 1971: 33

Elaphropus Motschulsky, 1839
fuscicornis (Chaudoir) Leng 1915: 573
granarius (Dejean) Schwarz 1878:438
xanthopus (Dejean) Ibid.
incurvus (Say) Ibid.
capax (LeConte) Leng 1920: 53
fatua Casey Ibid.

Anillinus Casey, 1918
dohrni (Ehlers) Leng 1915: 573

Pericompsus LeConte, 1851 (Rev: Erwin 1974a)
ephippiatus (Say) Erwin 1974a: 41

Tachys Stephens, 1829
bradycellinus Hayward Leng 1915: 574
litoralis Casey
= *occultator* Casey Leng 1915: 574
pallidus Chaudoir Schwarz 1878: 438

Bembidion Latreille, 1802
contractum Say Schwarz 1878: 437
constrictum LeConte Leng 1915: 572
versicolor LeConte Schwarz 1878: 437
laevigatum Say Leng 1915: 573
fraternum LeConte Ibid.
assimile Gyllenhal Ibid.
confusum Hayward Choate & Rogers 1976
aenulum Hayward Choate & Miliotis 1979
affine Say Schwarz 1878: 437
picipes Kirby Blatchley 1920: 259
prosperum Casey Casey 1918: 122
luculentum Casey Ibid.
viridicolle Laferte Lindroth 1963: 374

Tribe Pogonini

Diplochaetus Chaudoir, 1871
lecontei (Horn) Leng 1915: 575

Tribe Panagaeini
(Rev: Ogueta 1966)

Panagaeus Latreille, 1804
crucigerus (Say) Schwarz 1878: 435
fasciatus (Say) Leng 1915: 571

Tribe Morionini
(Rev: Allen 1968)

Morion Latreille, 1810
monilicornis Latreille Schwarz 1878: 435

Tribe Pterostichini

Pterostichus Bonelli, 1810
ebeninus Dejean Schwarz 1878: 436
erythropus Dejean Leng 1915: 575
haldemani (LeConte) Ibid.
tartaricus (LeConte) Schwarz 1878: 436

Gastrosticta Casey, 1918
ventralis (Say) Leng 1915: 576

Piesmus LeConte, 1852
mondelus Germar Leng 1915: 576

Abacidus LeConte, 1873
fallax (Dejean) Leng 1915: 575
permundus (Say) Ibid.

Evarthrus LeConte, 1852 (Rev: Freitag 1969)
= *Cyclotrachelus* Chaudoir 1838 Bousquet 1984
obsoletus (Say) Schwarz 1878: 436
laevipennis (LeConte) Ibid.
morio Dejean Schwarz 1878: 436
approximatus (Leconte) Leng 1915: 577
faber (Germar) Schwarz 1878: 436
seximpressus LeConte Ibid.
americanus Dejean Ibid.
nonnitens LeConte Ibid.
engelmanni LeConte Leng 1915: 577
ovulum Chaudoir Freitag 1969: 118
sigillatus (Say) Ibid.: 133
unicolor Say Ibid.: 110
floridensis Freitag Ibid.: 132
blatchleyi Casey Casey 1918: 360
hernandensis Van Dyke Van Dyke 1943: 26
brevoorti LeConte Freitag 1969 114

Loxandrus LeConte, 1852 (Rev: Allen 1972)
reflexus LeConte Schwarz 1878: 436
calathinus Leconte Ibid.
floridanus Leconte Ibid.
brevicollis (LeConte) Leng 1915: 578
erraticus Dejean Schwarz 1878: 436
celeris Dejean Ibid.
agilis Dejean Ibid.
rectus Say Leng 1915: 578
crenatus (Leconte) Schwarz 1878: 436
rectangulus LeConte Ibid.
pravitubus Allen Allen 1972: 72
unilobus Allen Ibid.: 76
gibbus Allen Ibid.: 146
velocipes Casey Ibid.: 136
lateralis Casey Casey 1918: 381
cursitans Casey Ibid: 387
comptus Casey Ibid.
contumax Casey Ibid.: 388
suturalis Casey Ibid.: 384
mundus Casey Ibid.: 385
concinnus Casey Ibid.: 391
breviusculus Casey Casey 1924: 80
brunneus BlatchleyBlatchley 1918: 417
flavilimbus Blatchley Ibid.
nitidulus (LeConte) Allen 1972: 150
saphyrinus Chaudoir Blatchley 1918: 417
uniformis Allen Allen 1972: 130
vitiosus Allen Ibid.: 115
aduncus Allen Ibid.: 96
rossi Allen Ibid.: 106
taeniatus LeConte Ibid.: 84
minutus Allen Ibid.: 134
cervicalis Casey Ibid.: 98
velox Dejean Schwarz 1878: 436

Calathus Bonelli, 1810
gregarius Dejean Leng 1915: 581
opaculus Leconte Harris & Whitcomb 1974: 99

Olisthopus Dejean, 1828
parmatus (Say) Leng 1915: 582

Agonum Bonelli, 1809
decorum Say Schwarz 1878: 436
floridanus LeConte Ibid.
= *elongatulum* (Dejean) Liebherr 1986;
aeruginosum Dejean Leng 1915: 581
punctiforme Say Schwarz 1878: 436
octopunctatum Fabricius Ibid.
picticorne Newman Leng 1915: 582
nutans Say Ibid.
gravidulum Casey Casey 1920: 59
collisum Casey Ibid.
californicum Dejean Erwin, Whitehead & Ball 1977:26
striatopunctatum Dejean Leng 1915: 582
crenulatum LeConte Ibid.
limbatus Say Ibid.

sulcipenne Horn Erwin, Whitehead & Ball 1977: 28

Platynus Bonelli, 1809 (Rev: Lindroth 1966; Whitehead 1973)
cincticollis Say Leng 1915: 581
jonesi Barr Choate & Rogers 1976: 364

Tribe LACHNOPHORINI

Ega Castelnau, 1834
sallei Chevrolat Schwarz 1878: 435

Euphorticus Horn, 1881
pubescens, Dejean Ibid.

Eucaerus LeConte, 1853 Ball & Hilchie 1983
varicornis LeConte Schwarz 1878: 435

Tribe AMARINI

Amara Bonelli, 1810
impuncticollis (Say) Leng 1915: 577
musculus (Say) Ibid.
crassispina LeConte Ibid.

Tribe PERIGONINI

Perigona Castelnau, 1835
nigriceps Dejean Schwarz 1878: 436

Tribe CHLAENIINI

Chlaenius Bonelli, 1809 (Rev: Bell 1960)
herbaceus Chevrolat Schwarz 1878: 437
erythropus Germar Ibid.
fuscicornis Dejean Ibid.
laticollis Say Ibid.
aestivus Say Ibid.
augustus Newman Ibid.
prasinus Dejean Ibid.
nemoralis Say Ibid.
tricolor Dejean Ibid.
floridanus Horn Ibid.
pennsylvanicus Say Ibid.
perplexus Dejean Ibid.
maxillosus Horn Ibid.
niger Randall Ibid.
ssp. *ludoviciana* Leng Leng 1915: 592
impunctifrons Say Ibid: 593
tomentosus Say Ibid:
emarginatus Say Schwarz 1878: 437
pusillus Say Leng 1915: 593
amoenus Dejean Bell 1960: 106
sericeus (Forster) Bell 1960: 123
oxygonus Chaudoir Bell 1960: 140
pertinax Casey Casey 1920: 295

Tribe OODINI

Oodes Bonelli, 1809
amaroides Dejean Schwarz 1878: 437
parallelus (Say) Ibid.
americanus Dejean Ibid.

Stenocrepis Chaudoir, 1857
duodecimstriata (Chevrolat) Schwarz 1878: 437
quatuordecimstriata Chaudoir Ibid.
cuprea Chaudoir Ibid.

Anatrichis LeConte, 1853 (Rev: Spence 1982)
minuta Dejean Schwarz 1878: 437

Oodinus Motschulsky, 1864 (Rev: Spence 1982)
picea Horn Leng 1915: 593

Evolenes LeConte, 1853
exaratus Dejean Leng 1915: 594

Tribe LICININI

(Rev: Ball, 1959)

Diplocheila Brulle, 1834
laticollis LeConte Leng 1915: 579
major LeConte Schwarz 1878: 437
nupera Casey Casey 1897: 347

Dicaelus Bonelli, 1813 (Rev: Ball, 1959)
crenatus LeConte Leng 1915: 580
ambiguus Laferte Ball 1959: 113
purpuratus Bonelli Leng 1915: 580
ssp. *quadratus* LeConte Ibid.: 158
ssp. *darlingtoni* Fall Fall 1932: 19-20, Ball, 1959:159
quadratus LeConte Schwarz 1878: 437
carinatus Dejean Ibid.: 437
alternans Dejean Ibid.
elongatus Dejean Ibid.
subtropicus Casey Casey 1913: 151
politus Dejean Leng 1915: 580
furvus Say Ibid.
dilatatus Say Ball 1959: 126
costatus LeConte Ibid.: 166

Badister Clairville, 1802 (Rev: Ball 1959)
elegans LeConte Leng 1915: 580
micans Leconte Schwarz 1878: 436
reflexus LeConte Leng 1915: 581
flavipes LeConte Schwarz 1878: 436
maculatus LeConte Ball 1959: 208
laticeps Blatchley Leng 1920: 62

Tribe HARPALINI

Bradycellus Erichson, 1837
rupestris Say Leng 1915: 599
tantillus Chaudoir Ibid.
nigriceps LeConte Ibid.
veronianus Casey Casey 1924: 142

Stenolophus Dejean, 1829
conjunctus Say Leng 1915: 599
spretus Dejean Schwarz 1878: 437
plebejus Dejean Ibid.
ochropezus Say Ibid.
infuscatus (Dejean) Ibid.
carbonarius Dejean Blatchley 1918: 419

Acupalpus Latreille, 1829
testaceus (Dejean) Schwarz 1878: 437
pauperculus (Dejean) Leng 1915: 599
longulus Dejean Blatchley 1914: 63
flavilimbus LeConte Ibid.

rectangulus Chaudoir Hamilton 1894: 251

Notiobia Perty, 1830 (Rev: Noonan 1973)
nitidipennis (LeConte) Schwarz 1878: 437
terminata (Say) Ibid.
picea LeConte Erwin, Whitehead & Ball 1977: 46

Anisodactylus Dejean, 1829 (Rev: Noonan 1973)
lodingii Schaeffer Leng 1915: 599
rusticus Dejean Ibid.
merula Germar Schwarz 1878: 437
laetus Dejean Ibid.
harpaloides Laferte Noonan 1973: 360
haplomus Chaudoir Ibid.: 363
Cratacanthus Dejean, 1829
subovalis Casey Casey 1914: 59

Harpalus Latreille, 1802
erythropus Dejean Erwin, Whitehead & Ball 1977: 48
affinis Schrank Lindroth 1968: 768
caliginosus Fabricius Ibid.
pensylvanicus DeGeer Schwarz 1878: 437
texanus Casey Erwin, Whitehead & Ball 1977: 48
fulgens Csiki Lindroth 1968: 811
bicolor Fabricius Lindroth 1968: 763
herbivagus Say Ibid.

Selenophorus Dejean, 1829
opalinus LeConte Schwarz 1878: 437
gagatinus Dejean Slosson 1895: 9
pedicularis Dejean Leng 1915: 597
depressulus Casey Blatchley 1918: 419
vigilans Casey Casey 1914: 137
fossulatus Dejean Schwarz 1878: 437
palliatus FabriciusSlosson 1895: 9
fatuus LeConte Leng 1915: 597
mustus Casey Casey 1914: 152
trepidus Casey Casey 1924: 117
ellipticus Dejean Leng 1915: 598
stigmosus Germar Ibid.
discopunctatus Putzeys Darlington 1935: 162

Gynandropus Dejean, 1831
hylacis elongatus LeConte Schwarz 1878: 437

Amblygnathus Dejean, 1829 (Rev: Ball & Maddison 1987)
mexicanus Bates Ibid.
=*delumbis* (Casey) Casey 1914: 140
iripennis (Say) Slosson 1895: 9
subtinctus (LeConte) Schwarz 1878: 437

Tribe Cyclosomini

Tetragonoderus Dejean, 1829 (Key: Lindroth 1969a)
intersectus Germar Schwarz 1878: 436
fasciatus Haldeman Choate & Rogers 1976: 364

Tribe Pentagonicini

(Rev: Reichardt 1968)
Pentagonica Schmidt-Goebel, 1846
flavipes LeConte Leng 1915: 589
nigricornis Darlington Darlingtron 1934: 121

Tribe Odacanthini

Colliuris DeGeer, 1774 (Key: Lindroth 1969a)
pensylvanica (L.) Leng 1915: 583
ludoviciana Salle Schwarz 1878: 435

Tribe Ctenodactylini

Leptotrachelus Latreille, 1829
dorsalis Fabricius Schwarz 1878: 435
depressus Blatchley Blatchley 1923: 15

Tribe Lebiini

Nemotarsus LeConte, 1853
elegans LeConte Schwarz 1878: 436

Lebia Latreille, 1802 (Rev: Madge 1967)
tricolor (Say) Schwarz 1878: 436
pulchella Dejean Ibid.
marginicollis Dejean Ibid.
viridis Say Ibid.
rhodopus Schwarz Ibid.
pumila Dejean Leng 1915: 585
pectita Horn Madge 1967: 193
lecta Horn Horn 1885: 131
viridipennis Dejean Schwarz 1878: 436
lobulata LeConte Ibid.
ornata Say Leng 1915: 586
collaris Dejean Schwarz 1878: 436
analis Dejean Leng 1915: 586
fuscata Dejean Schwarz 1878: 436
abdominalis Chaudoir Ibid.
scapularis (Dejean) Ibid.
vittata (Fabricius) Leng 1915: 586
furcata (LeConte) Schwarz 1878: 436
chloroptera Chaudoir Leng 1915: 586; Chaudoir 1835: 437
nigripennis Dejean Blatchley 1920: 260
atriventris Say Madge 1967: 153
solea Hentz Ibid.: 187

Coptodera Dejean, 1825 (Rev: Ball 1975)
aerata Dejean Leng 1915: 587

Phloeoxena Chaudoir, 1869 (Rev: Ball 1975)
signata Dejean Schwarz 1878: 436

Dromius Bonelli, 1810
atriceps LeConte Blatchley 1928: 61

Calleida Dejean, 1825
purpurea Say Leng 1915: 587
fulgida Dejean Schwarz 1878: 436
decora Fabricius Ibid.
striata Casey Casey 1913: 177
viridipennis Say Schwarz 1878: 436
punctata LeConte Erwin, Whitehead & Ball 1977: 59

Philophuga Motschulsky, 1859 (Rev: Larson 1969)
viridicollis Leconte Leng 1915: 588

Euproctinus Leng & Mutchler, 1927(Rev:Shpeley 1986)
trivittata (LeConte) LeConte 1878: 373

Plochionus Dejean, 1825
discoideus Schaupp Schaupp 1880: 86
amandus Newman Newman 1840 32
vittatus LeConte LeConte 1844: 48
pallens Fabricius Leng 1915: 588
timidus Haldeman Schwarz 1878: 435
bicolor Notman Notman 1919: 234

Pinacodera Schaum, 1857
limbata Dejean Leng 1915: 588
platicollis Say Schwarz 1878: 436
ssp. *fuscata* Dejean Ibid.
complanata Dejean Dejean 1826: 224
atripennis Casey Casey 1920: 284

Cymindis Latreille, 1805
elegans LeConte Leng 1915: 588
planipennis LeConte Ibid.: 589

Apenes LeConte, 1851
angustata Schwarz Schwarz 1878: 354
sinuata Say Schwarz 1878: 436
opaca LeConte Ibid.

Onota Chaudoir, 1872
floridana Horn Horn 1881: 159

Tribe Dryptini

Pseudaptinus Castelnau, 1834
lecontei (Dejean) Schwarz 1878: 435

Thalpius Leconte, 1851
pygmaeus Dejean Schwarz 1878: 435
dorsalis Brulle Leng 1915: 584

Tribe Galeritini

Galerita Fabricius, 1801 (Rev: Reichardt 1967; Ball & Nimmo 1983)
janus Fabricius Schwarz 1878: 435
lecontei Dejean Schwarz 1878: 435
bicolor Drury Leng 1915: 583
ssp. *obliquata* Casey

Tribe Agriini

Agra Fabricius, 1801 Leng 1915: 584
(Reported with doubt by Leng, *loc. cit*)

Tribe Zuphiini

Zuphium Latreille, 1806 (Rev: Mateu 1981)
americanum Dejean Mateu 1981: 118

Tribe Helluonini

Helluomorphoides Ball, 1951 (Rev: Ball 1956)
ferrugineus (LeConte) Leng 1915: 589
praeustus (Dejean) Schwarz 1878: 435
ssp. *bicolor* Harris Ball 1956: 80
ssp. *floridanus* Ball Ball 1956: 80
clairvillei (Dejean) Leng 1915: 589

Tribe Brachinini

Brachinus Weber, 1801 (Rev: Erwin 1970)
alternans Dejean Leng 1915: 590
americanus LeConte Ibid.
fumans Fabricius Schwarz 1878: 435
quadripennis Dejean Ibid.
cordicollis Dejean Ibid.
lateralis Dejean Schwarz 1878: 435
puberulus Chaudoir Leng 1915: 590
cyanipennis Say Ibid.
adustipennis Erwin Erwin 1970: 81
viridipennis Dejean Ibid.: 90
perplexus Dejean Ibid.: 141
texanus Chaudoir Ibid.: 60
tenuicollis LeConte Ibid.: 123
sublaevis Chaudoir Ibid.: 149
neglectus LeConte Ibid.: 110
ichabodopsis Erwin Ibid.: 150
oxygonus Chaudoir Ibid.: 151
vulcanoides Erwin Ibid.: 155
conformis Dejean Ibid.: 119
rugipennis Chaudoir Ibid.: 91

Discussion

Literature records of Florida Carabidae number 380 species in 87 genera. For comparison, Loding (1945) listed 345 species from Alabama, and Fattig (1949) listed 531 species from Georgia. I have seen specimens of 420 species, including many undescribed forms. At least 12 additional genera are known to occur in Florida (personal collection). Therefore, I estimate the Florida carabid fauna to consist of between 450 and 500 species.

Recent Florida faunal lists of Coleoptera include Scarabaeidae (Woodruff 1973) and Staphylinidae (Frank 1986). Woodruff (1973) lists 248 species of scarabs, and Frank (1986) lists 324. Both authors note that additions to each list will be necessary. Frank (1986) estimates the Staphylinidae fauna of Florida to number 450 species. Certain tribes of Carabidae are well studied and will change little in number of species. Others, especiallly Bembidiini, will expand significantly as generic revisions are completed. Frank (1986) hypothesized that the larger component of Florida Staphylinidae is nearctic, with a smaller neotropical component. He also suggested that a larger nearctic component would exist except for the lack of mountain chains. I concur with his assessment of the composition of Staphylinidae fauna, and feel that the same is true for Florida Carabidae.

Species diversity decreases in Florida from north to south. Florida gulf coastal species suggest closer relationships to Texas and Mexico, rather than with Alabama, Mississippi, and Louisiana. A small percentage of species is known to occur in Florida, the Yucatan peninsula, and Central America. Panhandle elements exhibit a close affinity with northern and western faunas, especially Texas to the west and the Appalachians to the north.

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There are approximately 30,000 described species of ground beetles, making it the largest family among Adephaga. Literature dealing with the identification of ground beetle species is voluminous. Maddison (1995) presented a comprehensive outline of currently accepted higher classification of the ground beetles, citing disagreement over placement of several Adephaga "families", namely the tiger beetles (family Cicindelidae or supertribe Cicindelitae) and the wrinkled bark beetles (family Rhysodidae or tribe Rhysodini). That classification is followed here. Tribes are listed beginning with the most "primitive" groups. The following abbreviations are used in the listing of ground beetle taxa (f = family; s.f. = subfamily; s.t. = supertribe; t = tribe;).

Tribes of Ground Beetles

Coleoptera: Carabidae

s.f. Paussinae
t. Metriini
t. Ozaenini
t. Paussini

s.t. Nebriitae
t. Notiophilini
t. Notiokasini
t. Pelophilini
t. Opisthini
t. Nebriini

s.t. Carabitae
t. Carabini
t. Ceroglossini
t. Pamborini
t. Cychrini

s.t. Cicindelitae
t. Collyridini
t. Megacephalini
t. Ctenostomatini
t. Manticorini
t. Cicindelini

t. Loricerini
t. Omophronini
t. Cicindini
t. Elaphrini
t. Migadopini
t. Amarotypini
t. Promecognathini
t. Siagonini
t. Hiletini
t. Clivinini
t. Scaritini

t. Rhysodini
t. Gehringiini

The remaining tribes of ground beetles are informally grouped into the category classified as "Carabidae conjungtae", referring to middle coxal cavities which are completely surrounded by the mesosternum and metasternum.

t. Psydrini
t. Melaenini
t. Cymbionotini
t. Broscini
t. Apotomini

s.t. Trechitae
t. Trechini
t. Zolini
t. Pogonini
t. Bembidiini

t. Patrobini
t. Amblytelini

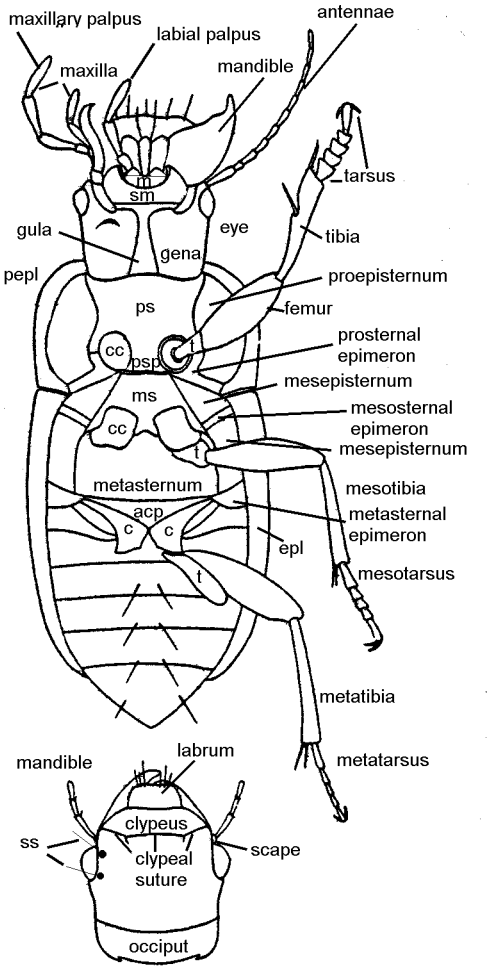
s.t. Brachinitae
t. Crepidogastrini
t. Brachinini

s.f. Harpalinae
t. Pterostichini
t. Morionini
t. Cnemalobini
t. Catapieseini
t. Pseudomorphini
t. Platynini
t. Zabrini
t. Bascanini
t. Peleciini
t. Cuneipectini
t. Chaetogenyini
t. Licinini
t. Oodini
t. Panagaeini
t. Chlaeniini
t. Harpalini
t. Dryptini
t. Zuphiini
t. Galeritini
t. Physocrotaphini
t. Anthiini
t. Helluonini
t. Idiomorphini
t. Orthogoniini
t. Hexagoniini
t. Ctenodactylini
t. Amorphomerini

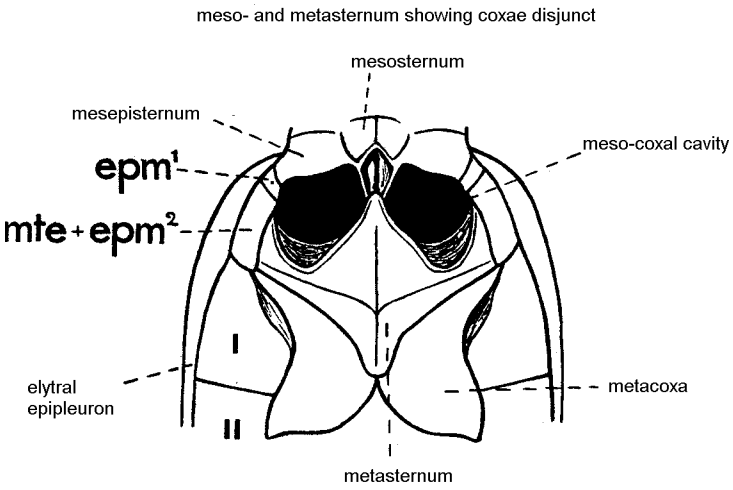
- the informal category "Lebiomorpha" contains the

last few tribes of ground beetles.
t. Lachnophorini
t. Odacanthini
t. Calophaenini
t. Perigonini
t. Graphipterini
t. Cyclosomini
t. Masoreini
t. Lebiini

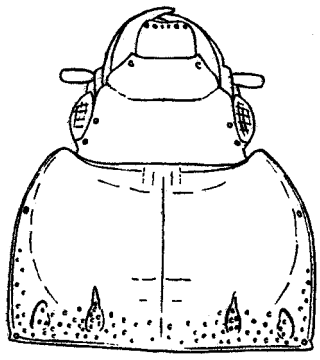
Morphological Characters used to Identify Ground Beetles



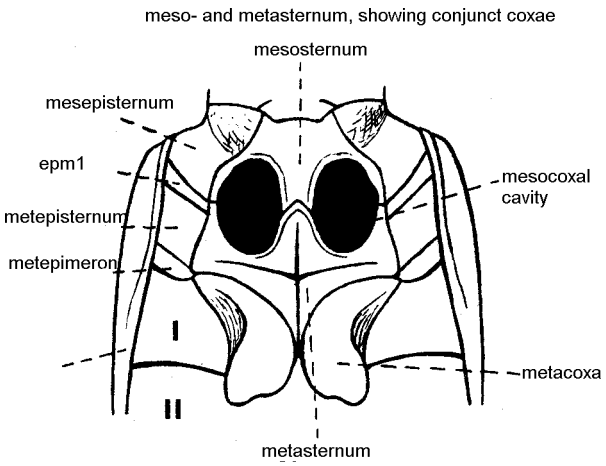
Ventral view of ground beetle (top), dorsal view of head (bottom). Abbreviations: **m** = mentum; **sm** = submentum; **pepl** = proepipleuron; **cc** = coxal cavity; **ps** = prosternum; **psp** = prosternal process; **ms** = mesosternum; **t** = trochanter; **epl** = epipleuron; **acp** = antecoxal process; **ss** = supraorbital setae.



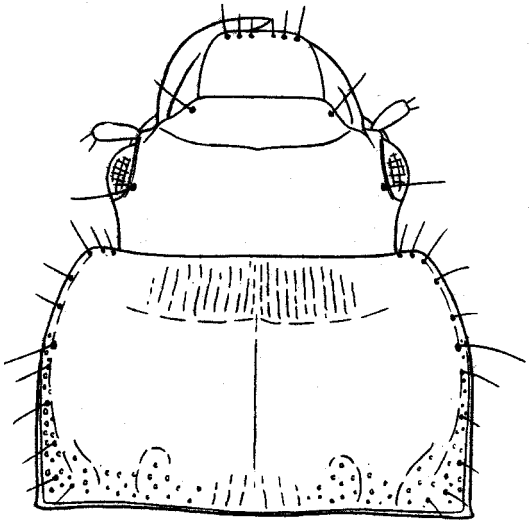
mesocoxae disjunct - epm[1] **reaching** coxal cavity



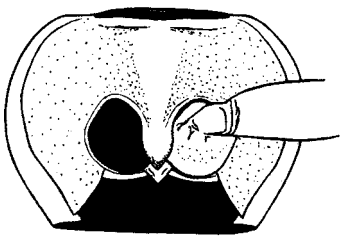
2 supraorbial seta



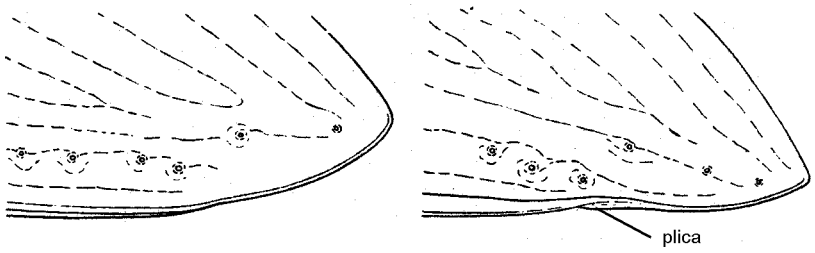
mesocoxae conjunct - epm1 **not reaching** middle coxal cavity



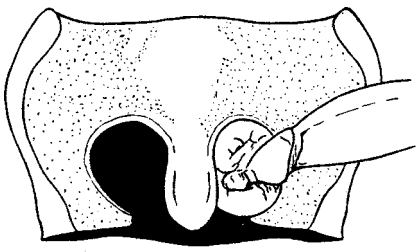
1 supraorbital seta



Procoxae closed behind - the majority of ground beetles



Elytral pica - fold of the epipleuron near apex of elytra



Procoxae open behind - incompletely surrounded by prosternum behind (occurs in a few tribes, Cychrini, Carabini, Nebriini, and Notiophilini)

Key to the tribes of Florida ground beetles (Coleoptera: Carabidae, including Cicindelini)

P.M. Choate

1.Clypeus broader than distance between sockets of antennae. (**Fig.l**.) Florida species not less than 12mm. in length, frequently brightly colored or with maculation. **Cicindelini** (tiger beetles) 2
– Clypeus narrower than distance between antennal sockets .. 3

2.Anterior angles of pronotum more advanced than anterior margin of prosternum, scutellum hidden. Major portion of body glabrous (**Fig. 2**). ..... (**Megacephala**)
– Anterior angle of pronotum not more advanced than anterior margin of prosternum. Scutellum visible. Body often with dense pilose setae on head / underside .... (**Cicindela**)

3. Scutellum concealed by posterior margin of pronotum. Intercoxal process of prosternum very broad, covering mesosternum. Body shape circular in outline (**Fig. 3**). Omophronini ..... (**Omophron**)
– Scutellum visible. Intercoxal process of prosternum not enlarged 4

4. Scape of antennae not visible from above. Head with short deep sulcus ventrally between eyes and mouthparts. Body shape. Pseudomorphini (Fig. 4) .... (**Pseudomorpha**)
– Antennae with scape dorsally visible. Body shape various 5

5.Abdomen with 7-8 visible sterna. Florida species bicolored; head and pronotum testaceus - orange, elytra blue black or brown, legs pale. (**Fig. 5**) Brachinini .... (**Brachinus**)
– Abdomen with 6 sterna normally exposed 6

6.Metasternum without antecoxal suture, almost as long as combined length of abdominal sterna. Front tibia without apical spur (with pair of apical spines). Antennae moniliform. Head and pronotum deeply grooved. (**Fig. 6**).Rhysodini ..... (**Clinidium**)
– Metasternum with antecoxal suture and shorter in length. Front tibia with apical spur 7

7. Middle coxal cavities disjunct 8
– Middle coxal cavities conjunct (touching) 12

8. Anterior coxal cavities open behind 9
– Anterior coxal cavities closed behind 11

9. Mandibles without a setigerous puncture in scrobe. 10
– Mandible with a setigerous puncture in scrobe. Nebriini (no Florida records)(**Fig. 8**) ..... (**Nebria**)

Fig. 1. *Cicindela* sp. Antennal insertions indicated by top line,

Fig. 3 *Omophron labiatum*, dorsal view

Fig. 5. *Brachinus* sp. These are also known as "bombardier beetles."

Fig. 8 *Nebria pallipes.*

Fig.2 *Megacephala virginica*.

Fig. 4. *Pseudomorpha excrucians*

Fig. 6 *Clinidium* from Florida. Specimens are found in moist hardwood logs.

10.Posterior coxae contiguous in midline of body (**Fig. 9**). 2 genera ..... Carabini.
– Posterior coxae separated in midline of body. Head narrowed anteriorly (modified to feed on snails)(**Figs. 10, 11**) .... Cychrini

11. Mandible with setigerous puncture in scrobe, head with 2 supraorbital setae (**Fig. 12**. Elaphrini ..... **Elaphrus**
– Mandible without seta in scrobe, head with 1 supraorbital seta, body pedunculate (**Fig. 13**) ..... Scaritini

12. Terminal article of maxillary palpus arising obliquely from preceding article . Body covered with dense erect setae. Elytra with orange and black pattern (**Fig. 14**) Panagaeini ..... (**Panagaeus**)
– Terminal article of maxillary palpus arising apically from preceding article 13

13. Elytra with striae more deeply impressed in anterior half. Anterior half of striae coarsely punctate, posterior half finely punctate. Hair of integument erect and at least some are about as long as antennal scape (**Fig. 15**). Size small, 5mm. or less, ant-like in appearance. Antennal segments 2-11 densely pubescent. ..... Lachnophorini
– Characters other than above. If body pubescent, hairs of uniform length, short. (Excluding tactile setae which may be longer than surface pubescence) 14

14 Head with several longitudinal grooves between eyes (**Fig. 16**), eyes large, bulging. Body flattened dorsally, with some of outer elytral striae obsolescent .... Notiophilini (**Notiophilus**)
– Head lacking interocular grooves. Body shape various 15

15. Scrobe of mandible with 1 or more setigerous punctures 16
– Scrobe asetose (**without setae**) 20

16. Penultimate maxillary palpomere pubescent. Frontal grooves more widely separated at middle than at anterior part, and terminated before posterior margins of eyes. Anophthalmus specimens with penultimate maxillary palpomere very tumid 17
– Penultimate maxillary palpomere glabrous 19

17. Dorsal surface of head with transverse sulcus behind eyes. Eyes protruding, legs pale. Size 12 mm. Patrobini .... **Patrobus**
– Dorsal surface of head without transverse sulcus behind eyes. Eyes various, size various. 18

18. Terminal maxillary palpomere much shorter and narrower than penultimate segment.(**Fig. 17**) Size not greater than 7 mm ..... Bembidiini

Fig.9. *Carabus* sp.

Fig. 10. *Scaphinotus* sp., Torreya State Park.

Fig. 11. *Scaphinotus* sp. head and prothorax, showing modified mandibles and expanded palps which are believed to be used to follow slime trails of snail prey.

Fig. 12. *Elaphrus ruscarius*. In Florida there are few literature records for this species. One specimen has been seen collected on muddy edge of Apalachicola River, Torreya State Park by Lloyd Davis in March.

Fig. 13. *Scarites* sp.

Fig. 14. *Panagaeus* sp., dorsal view.

– Terminal maxillary palpomere normal. Color testaceus, size 7-9 mm, found on saline mud flats. Pogonini (Fig. 18)... ..... **Diplochaetus**

19. Elytron without internal plica behind epipleuron.. Frontal grooves curved, extending posteriorly to gena and to ventral side of eyes .... Trechini
– Elytron with internal plica. Frontal grooves not extending behind eyes (**Fig. 19**) ..... Psydrini

20.Head with one pair of supraorbital setae 21
– Head with 2 pairs of supraorbital setae 23

21. Elytron without internal plica near apex .... Harpalini
– Elytron with internal plica near apex 22

22. Surface of elytra and pronotum densely punctate and pubescent. Scutellar stria normal. Chlaeniini (Fig. 20) .... **Chlaenius**
– Penultimate labial palpomere bisetose. ..... Pterostichini

23. Antennal segments 5-10 moniliform. Margin of pronotum with several pairs of lateral setae.(**Fig. 21)** Stria 8 in form of zigzag sulcus. Legs flattened. Morionini..... ..... **Morion**
– Antennal segments 5-10 filiform, pronotum with 2 pair of lateral setae 24

24. Elytron with internal plica 25
– Elytron without internal plica 26

25.Penultimate labial palpomere plurisetose. Amarini .... **Amara**
– Penultimate labial palpomere bisetose ..... Pterostichini

26. Pronotum narrow, distinctly longer than wide, at apex as wide as posterior part of head (**Fig.s. 22,23**)..... 27
– Pronotum not longer than wide and/or wider at apex than posterior part of head (**Fig.24**) 28

27.Tarsomere 4 deeply notched at apex, bilobed (**Fig. 22**). Abdominal terga completely covered. ..... Ctenodactylini ..... **Leptotrachelus**
– Tarsomere 4 simple or slightly emarginate at apex. Elytron with apex truncate, exposing last abdominal tergite (**Fig. 23**).Odacanthini ..... **Colliuris**

28. Posterior tibia with inner spur more than 1/2 length of hind tarsal segment 1. Inner spur longer than outer spur (**Fig. 24**) 29
– Posterior tibial spurs more or less equal and shorter than ½ length of hind tarsal segment 1 30

Fig. 15.*Ega sallei*, occurs in wet areas.

Fig. 16. *Notiophilus* sp.

Fig. 17. *Bembidion*

Fig. 18. *Diplochaetus*

Fig. 19. *Nomius pygmaeus*

Fig. 20. *Chlaenius pusillus*

Fig.21. Morion monilicornis

Fig 22. Leptotrsachelus dorsalis

Fig. 23. *Colliuris*

29. Labrum elongate, length more than ½ width at base. Head markedly constricted posteriorly, in form of a neck. (**Fig. 25**). Pronotum widest at base, narrowed anteriorly. . Elytra pale testaceous with dark macula. Lebiini (in part) .... **Nemotarsus.**
– Labrum average, head not constricted posteriorly. Pronotum either widest anteriorly, with sides slightly sinuate before base, or base and apex about equal. Masoreini .... **Tetragonoderus**

30. Head with one pair of setae ventrally posterior to submentum.. Labrum elongate (**Fig. 28**). Lebiini (in part) .... Pericalina
– Head without pair of posterior setae ventrally 31

31. Elytron with apical margin truncate 32
– Elytron with apical margin entire, sinuate or not 36

32. Tarsal claws pectinate(toothed, comblike) ..... Lebiini
– Tarsal claws normal, smooth 33

33. Dorsal surface glabrous, except for normal fixed setae. Antennal segments 1-3 glabrous, except for 1 seta on scape and ring of setae at apex of segments 2 and 3. General aspect of pronotum pentagonal. PENTAGONICINI (Fig. 27 ..... **Pentagonica**
– Dorsal surface finely pubescent. Antennal segments 1-3 pubescent 34

34. Scape of antenna longer than combined lengths of segments 2+3, (**Fig. 28)**. Size small, less than 6mm ZUPHIINI ..... **Zuphium**
– Scape shorter than segments 2+3, size l0mm or more 35

35. Antennal segments 5-11 flattened, finely pubescent. Central area of each article triangular and glabrous (**Fig. 29**).HELLUONINI ..... **Helluomorphoides**
– Antennal segments 5-11 not flattened, uniformly pubescent GALERITINI **(Fig. 30) ..... Galerita**

36. Clypeus sloped downward, surface concave. Labrum deeply notched (**Fig. 31**) ..... LICININI
– Clypeus plane not notched. Labrum with anterior margin truncate or slightly concave 37

37. Elytron with stria 8 impressed and obliquely extended almost to apical suture. Posterior trochanter almost ½ length of posterior femur. PERIGONINI ..... **Perigona**
– Elytron with stria 8 normal (**Fig. 32**) ..... AGONINI


Fig. 24. *Tetragonoderus fasciatus*


Fig. 25. *Nemotarsus elegans*


Fig. 26. *Mochtherus*


Fig.27. *Pentagonica*


Fig. 28. *Zuphium*


Fig.30. *Galerita*


Fig. 29. *Helluomorphoides*


Fig. 32. (Agonini) *Platynus tenuicollis*


Fig. 31.(Licinini) *Badister*

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T. Cicindelini - Generic key

1. Clypeus with large lateral seta near outer angle. Scutellum hidden; Anterior pronotal angles prominent (**Fig. 1**); third segment of maxillary palpus longer than fourth. .... *Megacephala*
– Clypeus lacking large outer angle seta. Scutellum visible; Anterior pronotal angle not projecting forward (**Fig. 2**); third segment of maxillary palpus shorter than fourth. .... *Cicindela*

Key to Florida species of Megacephala

1. Dorsal surface dark greenish-black throughout, elytra lacking pale apical lunules. ..... *virginica* (Linnaeus)
– With pale apical elytral lunules; anterior lateral regions of elytra violet ..... 2.

2. Apical lunule with anterior lobes divergent; Humerus with dark green or black coloration; Restricted to Gulf coast from Florida Keys north to Steinhatchee region. Humerous lacking violet reflections. (Dixie Co.) .... *carolina floridana* Leng and Mutchler
– Apical lunule convergent anteriorly; Humerus with bright violet refelction; Interior peninsula, along rivers, also in towns and in disturbed sparsely vegetated areas .... *carolina* (Linnaeus)

Key to Florida species of Cicindela

l. Front trochanters with one (rarely two) subapical seta (**Fig**. **3**) , middle trochanters with or without such seta **7**
– Front trochanters lacking subapical setae, middle trochanters also without such setae. 2

2.Hind femora long, extending more than one third their length beyond end of body; tarsal claws nearly as long as last tarsal segment (**Fig. 4**). White species occuring on coastal beaches.(**Fig. 5**) 3
– Hind femora short, not extending more than one third beyond body; tarsal claws much shorter than last tarsal segment (**Fig. 6**); *abdominal segments rufous*. 4

3. Largely unmarked elytra, on beaches of Gulf coast of Florida from Keys to Alabama.(**Fig. 7**) .... *dorsalis saulyci* Guerin
– Elytra marked with dark lines (**Fig. 8**). Beaches of east coast south to the Keys. ..... *dorsalis media* Say

4.Labrum with 2 anterior medial setae, 2 lateral setae.(**Fig. 9**) 5
– Labrum with 4 anterior medial setae, 2 lateral setae. 6

5.Ventrally glabrous; lacking lateral pronotal hairs; Highlands and Polk counties. Frequently with greenish reflections.(**Fig. 10**) ..... *highlandensis* Choate
– Ventrally lateral sclerites covered with white decumbent setae, also sternites 1-4 with lateral decumbent setae (**Fig. 11**); pronotum with at least a few lateral setae, or if absent, punctures visible along suture.(**Fig. 12**) .... *abdominalis* Fabricius

6.Elytra deeply punctured, scabrous; surface shining. Found only in peninsular Florida. Scrub species.(**Fig. 13**) .... *scabrosa* Schaupp
– Elytra shallowly punctate or irnpunctate. Surface dull. Known only from Liberty and Gadsden counties in Florida.(Fig.) *rufiventris* Dejean

7.Clypeus densely to sparsely clothed with decumbent setae. (**Fig. 14**) 8
– Clypeus glabrous or with a few erect setae.(**Fig. 15**) 14

8.Prosternum with dense decumbent setae.(**Fig. 16**) 9
– Prosternum glabrous 13

9.Elytra impunctate, dull, mostly white dorsally with sutural area coppery (**Fig. 17**) 10
– Elytra deeply punctate, dull to shiny. 11

10.Labrum with few (<10) or no decumbent setae.(ignore marginal row).(**Fig. 18**) ..... *gratiosa* Guerin
– Labrum with many (>20) decumbent setae; restricted to peninsular Florida.(**Fig. 19**) ..... *hirtilabris* LeConte

11.Sides of pronotum very convex; markings consist of a broad marginal band or elytra entirely white.(**Fig. 20**) .... *togata* Laferte
– Sides of pronotum straight or slightly curved; markings consisting of "normal'maculations. Coastal marshes and beaches, Gulf and Atlantic coasts. 12

12.Elytra of female deflexed at tips, apical spine slightly retracted (**Fig. 21**); right mandible of male with prominent tooth below (**Fig. 22**). East coast and north along Gulf coast to north of Horseshoe Beach. .... *marginata* Fabricius
– Elytra of female not deflexed at tips, apical spine much retracted (**Fig. 23**); right mandible of male with bump or no tooth below (**Fig. 24**). Gulf coast region. .... *hamata lacerata* Chaudoir

13.Middle band of elytral macula very short, broad basally, narrow apically; (**Fig. 25**) small beetles (< 11mm). Occurs in western panhandle from Shoal River to Alabama. (**Fig. 26**) ..... *wapleri* LeConte
– Middle band very sinuate (Fig.). larger beetles. Occurs in panhandle from Appalachicola R. west to Alabama. ..... (**Fig. 27**) ..... *blanda* Dejean

14.Frons with erect setae (besides supraorbital setae).(**Fig. 28**) 15
– Frons glabrous or with a few decumbent setae (besides supraorbital setae; there may be a cluster of 10 or more setae near front of eyes (**Fig. 29**). 19

15. Genae with setae (**Fig. 30**); brown with complete markings. (Fig.) ..... *repanda* Dejean
– Genae glabrous; color uniformly green or black *or* if maculate**,** dorsal color black.. 16

16.Elytra impunctate, appearing smooth except for setiferous punctures (**Fig. 31**); uniformly green or black. 17
– Elytra granulate or punctate; maculate. 18

17.Median tooth of labrum smaller than lateral teeth *and* diameter of penultimate segment of labial palp ca. 2 times the diameter of the terminal segment at distal end.(**Fig**. **32**) *nigrior* Schaupp
– Median tooth of the labrum larger than lateral teeth *and* diameter of penultimate segment of labial palp ca. equal diameter of terminal segment at distal end.(**Fig. 33**) Specimens unmarked green in Florida. ..... *scutellaris unicolor* Dejean

18.First antennal segment glabrous or with 1 or 2 setae besides sensory setae; frons with many long setae ..... *hirticollis* Say
– First antennal segment with at least several erect setae (besides sensory setae) (**Fig. 34**) Humeral macula long and oblique (**Fig. 35**). Florida records literature only. .... *tranquebarica* Herbst

19. Proepisternum with setae (may be just a few near coxal margin).(**Fig. 36**)..... 20
– Proepisternum glabrous. No Florida records. -Woodland paths Georgia and Alabama uplands.(Fig.) .... *unipunctata* Fabricius

20. Elytra microserrulate apically.(**Fig. 37**) 21
– Elytra not apically microserrulate.(**Fig. 38**) ... *striga* LeConte

21. First antennal segment with 3-4 sensory setae (**Fig. 39**). Dorsally bright green with reduced white elytral markings.(**Fig. 40**) ..... *sexguttata* Fabricius
– First antennal segment with 1 sensory seta. 22

22.Markings complete, often fused along lateral margins; medial lunule very sinuate in Florida specimens.(**Fig. 41**) .... *trifasciata ascendens* LeConte
– Markings broken into dots or absent; middle band incomplete. 23

23.Labrum with more than 8 setae (**Fig. 42**). Coastal specimens. *trifasciata ascendeas* LeConte
– Labrum with fewer than 8 setae. 24

24.Labrum unidentate.(**Fig. 43**) ..... *punctulata* Olivier
– Labrum tridentate.(**Fig. 44**) 25

25.With complete humeral lunule or at least dot on humeral angles of elytra. Last visible abdominal sternum orange or reddish; dorsum olive green. Occurs only on outermost Keys in Florida and in Cuba. .... *olivacea* Chaudoir
– Lacking dot on humeral angles of elytra. Apical abdominal segments not rufous, from Florida Keys to Alabama along Gulf coast in disjunct populations. .... *severa* Laferte

Species list - Florida tiger beetles

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Type species: *Cicindela campestris* Linne, 1758, designated by Latreille (1810: 425).

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Cicindela highlandensis Choate

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Additional species to consider:

Cicindela viridicollis (Cuba species collected on Keys)
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C. macra LeConte
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C. cuprascens LeConte

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Keys to Genera of Florida Ground Beetles

Tribe **Carabini (Fig. 33)**

1.Antennal segments 2 and 3 carinate. Mandibles with transverse rugosities, at least basally. Elytra with humeri well developed, wings well developed. Metepimeron longer than wide. ..... **Calosoma** Weber

– Antennal segments 2 & 3 cylindrical, not carinate. Mandibles smooth or finely punctate. Wings reduced, humeri sloping. Metepimeron wider than long or as wide as long. .. .. **Carabus** Linnaeus

*(*Carabus vinctus* collected by Liebherr at Newnan's Lake, Alachua Co., V-1981; also seen from Tall Timbers pitfall collections, Leon Co.)

Tribe **Cychrini (Fig. 34)**

1. Base of labral emargination bi-setose. Elytral striae becoming irregular at middle, becoming difficult to trace posteriorly. Elyta with numerous tubercles at apical declevity. Pronotal disc smooth, polished, with lateral margins not reflexed. Posterior angles of pronotum rounded, never produced posteriorly in form of "wings. Size 13-15mm. .... **Sphaeroderus** Dejean

– Base of labral emargination plurisetose, usually 4 setae. Elytral striae regular, extending almost to apex. Pronotal disc flattened medially, with central rugosities or transverse lines. Pronotal margin greatly reflexed, posterior angles'often prolonged posteriorly in shape of "wings" (Fig.). Size at least 20mm. ..... **Scaphinotus** Dejean

Tribe **Scaritini (Figs. 35, 36)**

1. Antennal scape with single pre-apical setiferous puncture 2

– Antennal scape asetose. ..... **Scarites** Fabricius

2. Clypeus asetose. Size 20mm. or more. .... **Pasimachus** Bonelli

– Clypeus with pair of setae. Body size less than 10mm. 3

3.Elytron with lateral series of umbilicate punctures reduced to two groups behind humerus and before elytral apex. ... . **Dyschirius** Bonelli

– Elytron with lateral series of punctures not interrupted, or not clearly divided into 2 groups. 4

4. Frons with several longitudinal carinae between eyes. 5

– Frons with 2 deep frontal grooves, or smooth, or with shallow transverse grooves, but lacking longitudinal carinae. 6

5. Small beetles, less than 3mm. In length. 2nd antenna] segment plurisetose. Pygidium without a series of fine paramedian longitudinal striae. Eyes reduced and bordered dorsally by a distinct carina, Neck not pitted nor punctate dorsally. ..... **Halocoryza** Alluaud

– Larger beetles, length more than 4mm. long. 2nd antennal segment at most bi-setose. Pygidium bearing a series of fine paramedian longitudinal striae (actually tubercles). Eyes not reduced, lacking distinct dorsal carina. Neck pitted or punctate dorsally. ..... **Schizogenius** Putzeys

6. Dorso-lateral margin of last visible abdominal sterna with a rounded projection fitting between elytral plica and epipleuron. Elytra with well developed internal plica 7

– Last visible sterna without such a projection. Plica of elytra consisting of short tooth-like projection, or absent. 8

7. Clypeus with prominent lobe each side projecting forward of middle portion. Frons with a pair of shallow grooves converging on vertex to form a flaring "V". Mandibles of average size. ..... **Aspidoglossa** Putzeys

– Clypeus without lateral lobes projecting forward of middle. Frons with middle portion smooth. Mandibles long and slender. ..... **Ardistomis** Putzeys

8. Tips of apical segment of maxillary palpi finely produced (Fig.) Length 3mm. or less. Body somewhat flattened. ..... **Oxydrepanus** Putzeys

– Tips of apical segment of maxillary palpi not finely produced. Size larger than 5mm.. Body shape depressed. .... **Clivina** Latreille

Tribe Bembidiini

1. Eyes absent. Depigmented species. ..... 2.

– Eyes present. Color various. ..... 3.

2. Size lmm. Antennae with last 3 segments slightly clavate. Labrum emarginate. ..... **Stylulus** Schaufuss

– Size 1.5mm. Antennae with all segments moniliform .... **Anillinus** Casey

3. Abbreviated scutellar stria present. Recurrent stria of elytra absent (Fig.). At least 5 eltral striae evident. Size larger. **Bembidion** Latreille

– Abbreviated scutellar stria absent. Recurrent groove of sutural stria generally present. ..... 4.

4. Front tibia truncate, not notched apico-laterally. Sides of pronotum strongly reflexed. ..... **Mioptachys** Bates

– Front tibia oblique and strongly notched apico-laterally (Fig.) 5

5. Body pale and generally pilose. Recurrent stria absent or very weak. Head slightly or strongly retracted into pronotum. (labrum deeply notched and covering mandibles) 6

– Elytra and abdominal sterna not obviously pubescent (fine scattered setae may be present). Head not retracted into pronotum.. 7

6. Anal sternum of both sexes with four long setae along posterior margin. Lateral setae falciform. .... **Micratopus** Casey
– Anal sternum with long, erect setae; male with **2,** female with 4. ..... **Lymnastis** Motschulsky

7. Mentum without deep foveae, with or without shallow depressions on each side. 8
– Mentum with two deep foveae, each circular or horseshoe shaped.. 9

8. Recurrent stria of elytron short, curved, closer to suture than to lateral margin. Form convex. .... **Elaphropus** Motschulsky
– Recurrent stria elongate, straight, very close to lateral margin. Form depressed, dark colored. .... **Tachyta** Kirby

9.Recurrent stria elongate., extended anteriorly beyond seta Ed6, and from there curved backward, hook-shaped.. 10
– Recurrent stria short, curved, not extended beyond seta Ed6, or elongate and near margin 11

10.Elytral interneur 8 subsulcate behind middle, with apical portion of sulcus curved medially behind setae Eo5 and 6. Recurrent stria in form of hook around Ed6 .... **Paratachys** Casey
– Elytral interneur 8 subsulcate, but not curved medially next to Eo 6 and 5. Recurrent stria in form of hook around Ed6 or erased near Ed6 (**F ig.**) .... **Tachys** Stephens

11. Elytral interneurs erased or weakly striate. Form small and depressed. Surface with scattered setae. .... **Polyderis** Motschulsky
– Elytral interneurs punctate and striate. Elytra with 8 complete striae. Eltra with central dark cloud. Rest of body pale testaceus. ..... **Pericompsus** LeConte

Tribe Panagaeini

1. Elytra concolorous, black. Lateral margins of pronotum with long spines (**Fig.**)..... **Coptia** Brulle
– Elytra bicolored black and orange. Lateral margins of pronotum regularly curved ..... **Panagaeus** Latreille

Tribe Pterostichini *****

(need to add **Neomyas** Allen based on specimens from Torreya State Park, 28-III-81)

1. Tooth of mentum not emarginate 2
– Tooth of mentum distinctly emarginate (**Fig.**). 3

2. Scutellar stria present. Pronotum with sides broadly margined. ..... **Piesmus** LeConte
– Scutellar stria absent. Pronotum with sides narrowly margined.(**Fig.**) ..... **Loxandrus** LeConte

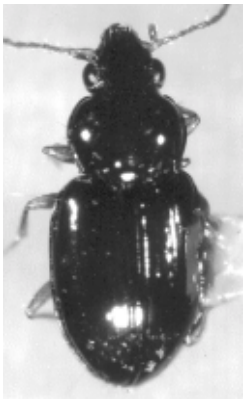
Fig. Elaphropus


Fig. Paratachys


Fig. Tachys


Fig. Pericompsus


Fig. Coptia

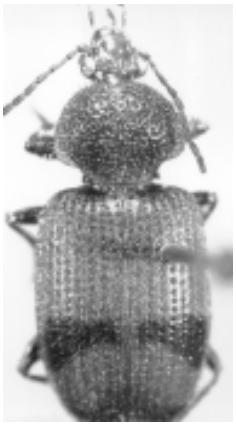
Fig. Panagaeus


Fig. Loxandrus

3.Elytron with 1 setigerous puncture in 3rd interval (posterior 1/3) and terminal article of hind tarsus with a row of setae on ventral - lateral margin ..... **Evarthrus** LeConte
– Elytron usually with more than 1 puncture; if only 1, then the ventral margin of hind tarsus is glabrous. 4

4. Antennae with segments 2 and 3 compressed dorsally, dorsal surface carinate. (Metallic species) .... **Pterostichus** Bonelli (s.g. **Poecilus)**
– Antennae with segments 2 & 3 cylindrical. Non-metallic species. 5

5. Metepisternum with lateral margin distinctly longer than anterior margin., (**Fig.**) large species with eyes prominent. ..... **Pterostichus s.g. Lophoglossus**
– Metepisternum notably short, lateral margin subequal in length to lateral margin. Flightless species. 6

6.Articles of hind tarsus not grooved on outer side. Sides of pronotum very broadly rounded. Abdominal sterna heavily punctate at sides. Elytra with outer striae obsolescent. Elytra with 3 inconspicuous setae. Size 10mm. or less **..... Pterostichus** *(***Gastrostic***ta* Casey)
– At least 1st article of hind tarsus with groove or ridge. Pronotum with parallel sides. Species more than 11 mm. Outer elytral striae impressed ..... **Abacidus** LeConte

Tribe **Agonini**

(add ***Pristonychus complanatus*** - from nursery stock shipped from California)

1. Tarsal claws pectinate. 2
– Tarsal claws not pectinate 3

2. Prosternum with intercoxal process finely, sharply and completely margined.. ..... **Calathus** Bonelli
– Prosternum with tip not margined. .... **Synuchus** Gyllenhal

3. Mentum not toothed. Pronotum rounded, elytral disc often with paler cloud at middle or at anterior edge. .... **Olisthopus** Dejean
– Mentum toothed. Shape various. 4

4. Dorsal surface covered with hairs longer than antenna] pubescence. Hind angles of pronotum rounded, dorsal surface concolorous. Apical segments of abdomen paler than 1st. **Atranus** LeConte
– Dorsal surface various**.** If covered with pubescence**,** then bicolored. 5

5**.** Metepistermum short. Elytral humerus oblique. Eyes flat, body color pale rufous. Antennae with 3rd segment longer than 4th article .... **Platynus** Bonelli s.g. **Rhadine**
– Characters otherwise. If metepisternum short, than color dark and elytra with well impressed striae. 6

Fig. Evarthrus blatchleyi

Fig. Abacidus atratus

Fig. Gastrocsticta sp.

Fig. Pterostichus (Lophoglossus).

Fig. *Atranus pubescens*

Fig. Pterostichus (Poecilus).

Fig. *Olisthopus micans*

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6. Size more than 10mm. Head with neck constricted posteriorly behind eyes**.** Body flattened . ... **Platynus** (**sensu strictu**).
– Size less than 10mm. Head of normal shape. Body shape various. ..... **Agonum** Bonelli


Fig. Agonum

Tribe **Lachnophorini**
(add **Lachnophorus)**

1. Elytron with transverse depression in basal third (Fig.) and several spots of white scales. Dorsal surface with setae of 2 colors and sizes. ..... **Ega** Castelnau
– Elytron without impression. Color black. Setae unicolorous, black, erect, some as long as antennal scape. .... **Euphorticus** Horn

Tribe **Oodini**

1. Mandibles with dorsal surface excavated towards apex (**Fig.**), with a carina. 3rd. elytral interval impunctate. Head with strong carina extending posteriorly beyond eye.. 2
– Mandibles without excavation and carina. Elytra with 2 setae in third interval. 3

2. Elytra rather deeply striate. Stria 7 as distinct as others. All striae crenately punctate. Penultimate segment of labial palpus bisetose. Mentum shallowly emarginate (**Fig.**). ..... **Evolenes** LeConte
– Elytra faintly striate, striae 6 and 7 less distinct than others, all finely punctate. Penuitimate segment of labial palpus glabrous. Mentum deeply emarginate (**Fig**.) .... **Dercylinus** Chaudoir


Fig. *Evolenes*


Fig. *Dercylinus*

3. Clypeus with a setigerous puncture at each antero-lateral margin angle. Labtum with 6 (-5) evenly spaced setae along apical margin (fig.). ..... **Oodes** Bonelli
– Clypeus with or without setigerous punctures. Labrum with 3-6 setae along apical margin (but not evenly spaced)(**Fig.**) 4

4. Anterior margin of labrum with 3-4 setae and elytron with stria 7 absent or finer than 1-6. Size in Florida species 8mm.or more.. .....**Stenocrepis** Chaudoir
– Anterior margin of labrum with 6 or 3 setae. If 3 setae, then stria 7 as well impressed as 1-6. Size 7mm or less, usually 5-6mm. ..... **Anatrichis** LeConte
— 4a. Anterior clypeal setae lacking ..... s.g. **Anatrichis**
— 4b. Anterior clypeal setae present ..... s.g. **Oodinus**


Fig. *Anatrichis*


Fig. *Badister*

Tribe Licinini

1. Dorsal surface of one mandible with broad, deep transverse notch.. ..... **Badister** Clairville
– Dorsal surface of mandibles without notch. 2

2. Episterna of metathorax strongly transverse, rectangular in shape. Margin of pronotum interrupted or absent. Surface dull. Intervals convex. Claw bearing segment of tarsus setose ventrally. ..... **Dicaelus** Bonelli

– Metepisterna elongate, distinctly narrowed posteriorly. Claw bearing segment of tarsus asetose .... **Diplocheila** Brulle

Tribe Harpalini

1.Penultimate segment of labial palp with many setae (though 2 of them are much longer than the rest). 5
– Penultimate segment of labial palp with only 2 setae. Not above 9.1 mm. in length. 2

2.Mandibles excessively long. Labrum short. Prothorax with sides crenulate behind. ..... **Amerinus**
– Mandibles and labrum normaI . Sides of prothorax not crenulate. 3

3.Posterior group of marginal elytral punctures divided into 2 groups with distinct interlying gap. (**Fig.**)Antennae pubescent from 4th segment. Mentum without median tooth .....**Stenolophus**
– Posterior group of marginal punctures continuous, with narrow gap at middle only in species with antennae pubescent from th segment. 4

4.Mentum with median tooth (**Fig.**) Scutellar stria absent except in species smaller than 3.6mm. Small species have distinct microsculpture. ..... **Bradycellus**
– Mentum without tooth. Scutellar stria present except in two small species (2-5-3.4mm.) with virtually absent microsculpture. ..... **Acupalpus**

5. Submentum with one long inner and one short outer seta (**Fig.**).(Mentum toothed on each side, best seen from lateral view). Male protarsi dilated in one genus only) with ventral surface covered with spongy pubescence. 6
– Submentum with one long seta each side. Male protarsi ventrally covered with 2 longitudinal rows of adhesive setae. Mentum toothed. 10

6. Mentum with well developed tooth. Mentum and submentum separated by complete transverse suture (**Fig.**) .... **Notiobia**
– Mentum and submentum completely fused. Mentum without tooth or tooth only weakly suggested. 7

7. Fore tibia with apical portion strongly expanded laterally and with large excavate dilation at external apex. Head with pre-ocular sulcus receiving 1st antennal segment when in repose. Large pale species. (**Fig.**) ....**Geopinus**
– Fore tibia without apical portion strongly expanded laterally, without large dilation at apex. Head lacking preocular sinus. 8

Fig. *Amerinus linearis*

Fig. *Stenolophus*

Fig. *Bradycellus*

Fig. *Acupalpus*

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8. Dorsum, including all of elytron, densely pubescent. Florida species include one bicolored (head and pronotum pale, elytra dark ..... **Amphasia**
– Dorsum mainly glabrous except for normal fixed setae. Elytron at most pubescent along margins. 9

9. Ligula narrow with apex not expanded (**Fig.**). Head broader than normal, apical spur of protibia not dilated basally when viewed laterally. ..... **Xestonotus**
– Ligula broader with apex expanded laterally. Head with no normal proportions. Apical spur of protibia dilated or swollen basally, often trifid. ..... **Anisodactylus**

10. Frons with dentiform process above the insertion of the antenna. (**Fig.**) ..... **Cratacanthus**
– Frons without process. 11

11. At least elytral stria 2 with seriate setigerous punctures, situated in the stria. 12
– Elytron **(except** for usual setae) glabrous or with seriate setigerous punctures confined to intervals. 17

12. Elytron with stria 7 impunctate on discal portion. Prothorax elongate in front of procoxae.(**Fig**.) .... **Stenomorphus**
– Elytron with setigerous punctures in stria 2,5,&7. 13

13.Head enlarged, clypeus with anterior margin distinctly concave. Basal membrane of labrum narrowly exposed.(**Fig**.). Elytra irridescent ..... **Amblygnathus**
– Head of average proportions. Anterior margin of clypeus straight or only slightly concave.. 14

14.Elytral intervals densely setigerous and punctate or rugulose. (Intercepted at Miami, Neotropical in distribution) ..... **Athrostictus**
– Elytral intervals impunctate, smooth. 15

15. Body subcylindrical, Male with middle tibia bowed. .... **Discoderus**
– Body subcylindrical. Male with middle tibia striaght. 16

16. Prothorax almost circuIar. Prothorax very convex, with small , deep, basal fovea.(Fig.) lst pro- and meso- tarsal segments in female dilated; segments 1-4 dilated in male. . **Gynandropus**
– Female tarsi not modified. Prothorax various, but not shaped as above.. ..... **Selenophorus**

17.First metatarsal segment. less than 2+3 in length, and not or only slightly longer than apical spur of tibia. .... **Harpalus**
– lst metatarsal segment longer than 2+3, and much longer than apical spur of tibia. 18

Xestonotus

Stenomorphus

Selenophorus

Amblygnathus

Gynandropus

18. 6.5-8mm. Hind angle of prothorax forming a blunt denticle (Fig.7). Species with isodiametric microsculpture. .... **Episcopellus**
– 9mm. or more. Hind angles of pronotum not denticulate. Species bicolored, head and pronotum paler than elytra. Body irridescent. ..... **Trichotichnus**

Tribe **Lebiini**

1. Hind tibia with inner spur almost as long as lst article of hind tarsus. (**Fig.**) Tarsal claws pectinate. Head strongly constricted posteriorly to form a narrow neck. .... **Nemotarsus**
– Hind tibia with inner spur less than ½ length of lst tarsal segment.. 2

2. Elytron with 3 umbilicate punctures at apex fo,ming a triangle (Fig.). Apical portion of suture expanded slightly and flattened (Fig.) ..... **Lebia**
– Elytron with 3 apical umbilicate punctures in a row. Area near suture not flattened. 3

3. Labrum elongate, only slightly wider than long.(Fig.) Under surface of head with a long seta posterior to submentum (**Fig.**). 4
– Labrum **d**istinctly wider than long, Head without seta posterior to submentum. 6

4. Mentum with median tooth 5
– Mentum without median tooth. Dorsal surface metallic green.. ..... **Coptodera**

5 **.** Dorsal surface of body setose. Pronotum with posterior margin lobulate (**Fig.**). Interception ..... **Somotrichus**
– Dorsal surface glabrous. Pronotum with posterior margin truncate, often with dark macula in middle, rest pale . .. . **Phloeoxena**

6.Mandibles without scrobe..(**Fig.**) Pronotum with sides distinctly angulate at middle. Head and pronotum orange. Elytra metallic green (or bicolored in n.sp.? collected at Myakka St. Pk.). ..... **Onota**
– Mandibles with scrobe. Sides of pronotum rounded at middle, not angulate.. 7

7. Mentum without tooth 8
– Mentum with tooth 11

8. 4th article of hind tarsus bilobed (**Fig.**). Lobes greater in length than ½ length of 4th article. ..... **Euproctinus**
– 4th article not bilobed, at most slightly emarginate. 9

9. Antennae with scape and pedicel hairy. Pronotum almost pentagonal in shape. Outer segments of antennae pale white, contrasting with first segments ..... **Eucaerus**
– Antennae with at least scape glabrous. Pronotum more or less quadrate. Apical antenna] segments not contrasting in color with basal segments. 10

Fig. *Eucaerus*

Fig. *Euproctinus*

Mochtherus tetraspilotus (introduced species, now established in Florida.

Fig. *Phloeoxena*

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10. Pronotum with base truncate. ..... **Dromius**
– Pronotm with base produced into a lobe medially. .....
..... **Microlestes**

ll. Tarsus with 4th article distinctly bilobed. 12
– 4th article only emarginate. 13

12.Elytra metallic colored, green and / blue Pronotum elongate and slender. ..... **Calleida**
– Entire body rufous, piceus, or piceus with rufous markings.
..... **Plochionus**

13.Total length less than 6mm.(3-4mm). 14
– Total length greater than 6mm. 15

14.Pronotum with base truncate. Elytra with impressed striae. **Apristus**
– Pronotum with base slightly lobed medially; elytra bicolored. Terminal article of labial palp dilated. .....
..... **Axinopalpus**

15.Penuitimate article of labial palpus bi-setose. 16
– Penultimate article of labial papius plurisetose. 17

16.Tarsi with dorsal surface glabrous except for fixed setae at apex of articles **(Fig.).** Pronotum with base weakly lobed, anterior angle broadly rounded. .....
..... **Plochionus** (*sensu strictu*)
– Tarsi with dorsal surface densely hairy. Pronotum with base distinctly lobed medially.(**Fig.**) ..... **Apenes**

17.Elytral intervals impunctate. Articles of tarsi with dorsal surface glabrous except at apices. ..... **Pinacodera**
– Elytral intervals punctate, setose. Tarsi with dorsal surface hairy. ..... **Cymindis**

Tribe Zuphiini

1. Head triangular, width across eyes about 3 times width across neck. Scape of antenna 5 times length of pedicel.. .....
..... **Zuphium**
– Head not triangular, width across eyes not much wider than across neck.. 2

2. Pronotum truncate at base. Antenna with 3rd article shorter than fourth. ..... **Pseudaptinus**
– Pronotum with base subpedunculate, posterior angles advanced forward of lateral margin of base. Segments 2-4 of antenna of nearly equal length. ..... **Thalpius**

Tribe **Masoreini - *Tetragonoderus***

1.*s.g.* **Tetragonoderus** (s. str.) - tarsal claws *serrate*, overall color piceus.
– *s.g.* **Peronescelis** - tarsal claws *smooth*, overall color testaceus.

Fig. *Microlestes*

Fig. *Calleida*

Fig. *Apenes*

Fig. *Cymindis*

Fig. *Zuphium*

Fig. *Pseudaptinus*

Fig. *Thalpius*

Carabini

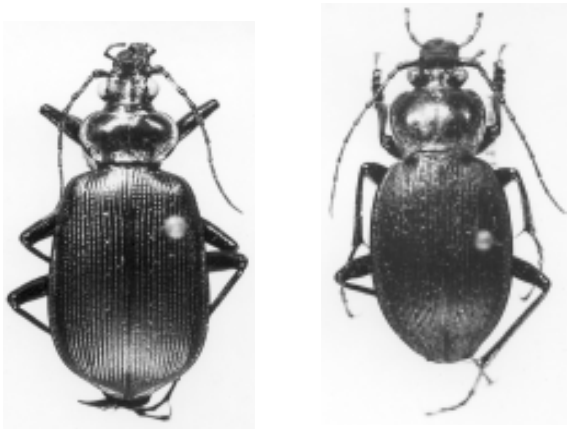

Fig. 33. Left, *Calosoma scrutator;* right, *Carabus limbatus*.

Cychrini

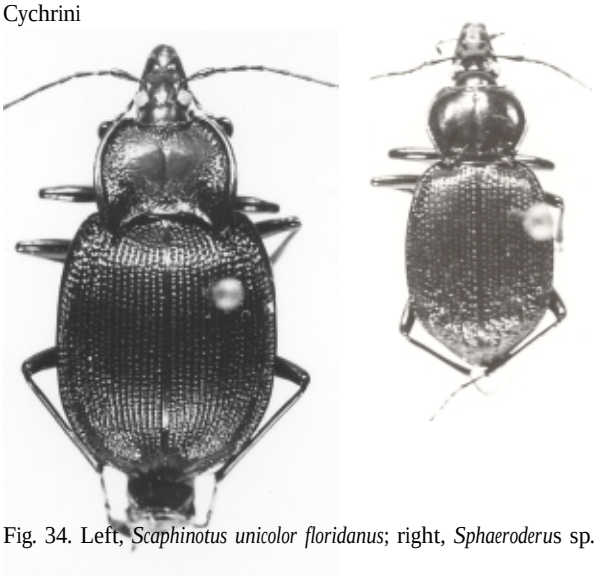

Fig. 34. Left, *Scaphinotus unicolor floridanus*; right, *Sphaeroderus* sp.

Scaritini

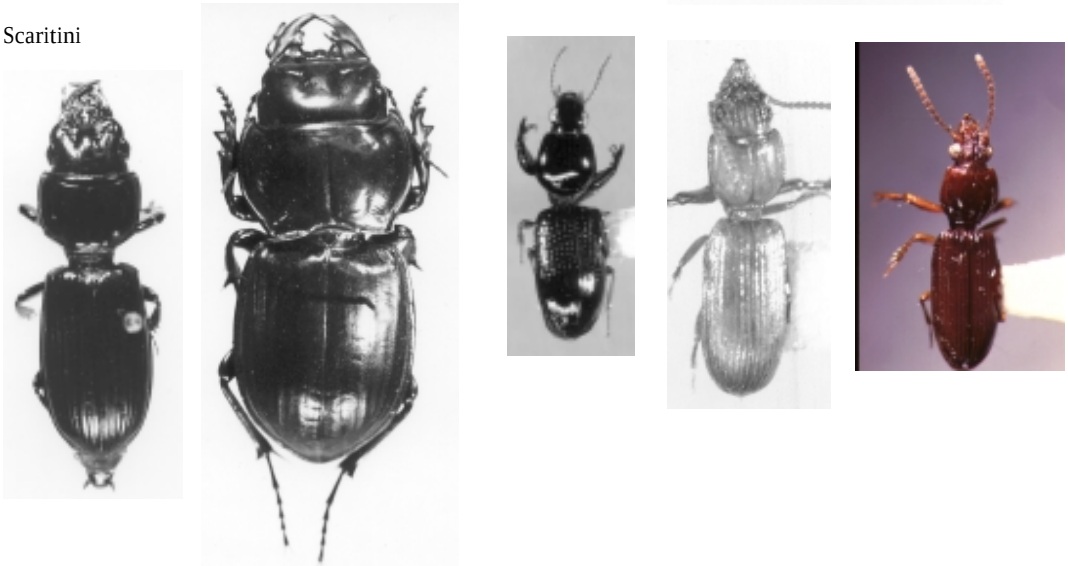

Fig. 35. Scaritini - Left to right; *Scarites, Pasimachus, Dyschirius, Halocoryza, Schizogenius.*

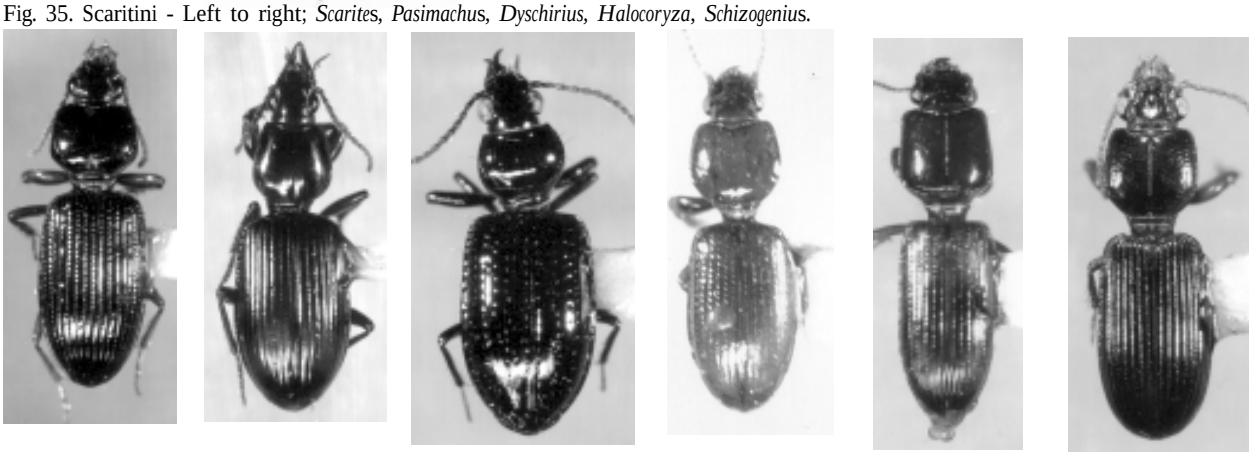

Fig. 36. Scaritini (cont.) - Left to right; *Aspidoglossa, Ardistomis, Semiardistomis, Oxydrepanus, Clivina, Clivina.*

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Species Keys to Florida Carabidae

genus ***Omophron*** Latreille

1.Prothorax dark with even pale band along side-margin. Elytral striae obliterated toward apex. ..... **labiatum** *F.*
– Yellow areas of prothorax more expanded; if restricted to lateral band, this is unevenly limited inwards. Elytral striae evident to apex. ..... **americanum** Dejean

Omophron americanum

genus **Calosoma** *Weber*

1. Ventral surface with pronounced metallic blue luster. Dorsal surface green, pronoturn may be rimmed with metallic blue, copper, or red margins. 2
– Ventral and dorsal surfaces black. Elytra may have small metallic foveae, but overall dorsal color is black. Pronoturn may have blue marginal rim. 4

2.Elytra uniformly green, without metallic borders. Elytral foveae absent. Elytral intervals not interrupted by foveae.(Known only from the Florida Keys, primarily a Caribbean species). ..... **splendidum** Dejean
– Elytra with contrasting metallic borders of blue, red, or gold. Elytral foveae present, often interrupting elytral intervals 3

3. Punctures of intervals 4, 8, and 12 foveate, touching adjoining striae. Raised bead of anterior margin of pronoturn well defined even at the middle (Not recorded from FL). ..... **wilcoxi** LeConte
– Punctures of intervals 4, 8, and 12 smaller,rounded, narrower than elytral intervals. Raised bead of pronotum obsolete at middle. ..... **scrutator** Fabricius

Calosoma scrutator

4. Pronoturn with lateral setigerous puncture near hind angle. Elytra with golden or red foveae. ..... **sayi** Dejean
– Pronoturn with without basal setigerous puncture. Elytral intervals without metallic foveae. Elongate body shape, elytra and pronotm with blue margins. .....` ..... **externum** Say

Genus **Tetragonoderus** *Dejean*

1. Claws serrate internally. Prothorax shiny, not granulate on center. Elytral microsculpture transverse.. 2
– Claws smooth. Prothorax quite dull, microsculpture very strong, granulate all over. Elytral microscultpure isodiametric.. ..... **latipennis** LeConte

2. Appendages entirely pale. Prostemal process between procoxae without raised margin. .... **fasciatus** Haldeman
– At least palpi, antennae from 2nd or 3rd segment and apex of tibiae darkened. Prosternal process margined. Elytra with transverse pale makings that may appear as spots (2-4). **intersectus** Germar

Key to Florida Species of **Ardistomis**

1. Elytra striate. 2
– Elytra seriately punctate; punctures setiferous. 3

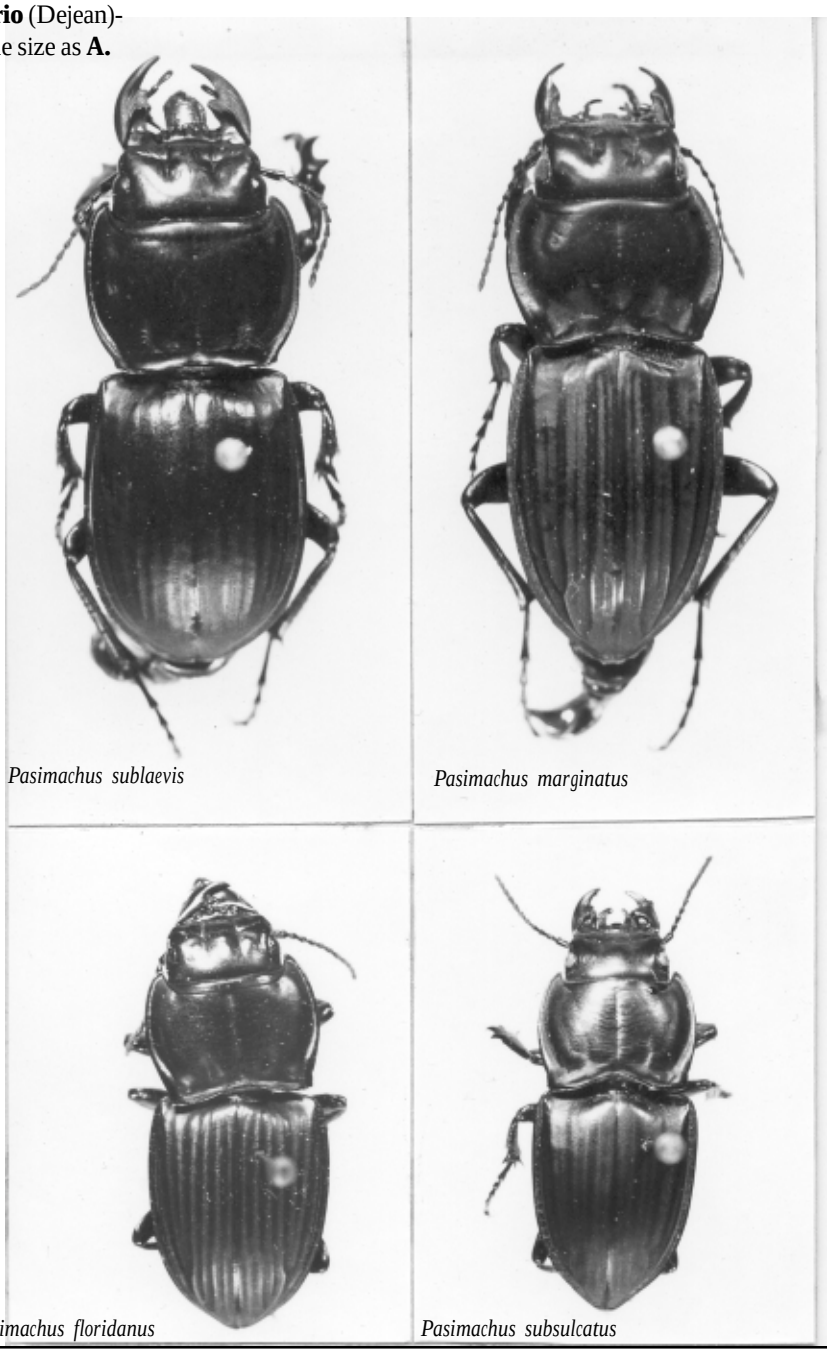
2. Black; antennae, legs, and posterior macula of elytra rufous; size largest of genus ..... **obliquata** Putz.
– Black; antennae and legs piceous; 3rd elytral stria 5-punctate. ..... **schaumi** LeConte

3. Greenish black; antennae and legs rufous; thorax margin with setiferous punctures, thoracic disc impunctate .... **A. viridis** LeConte
– Similarly colored; thoracic disc also punctured, with scattered setiferous punctures. ..... **A. puncticollis** Putz.

Ardistomis schaumi

Ardistomis viridis

NOMEN INQUIRENDUM: **Ardistomis morio** (Dejean)- striae said to be punctate anteriorly, of the same size as **A. obliquata**, unicolorous.



Pasimachus sublaevis

Pasimachus marginatus

Pasimachus floridanus

Pasimachus subsulcatus

Key to species of **Pasimachus** found in Florida
(Modified from Casey, 1913, and Banninger, 1950.)

1. Antennal segments 2-4 (4 less so) compressed dorsally from both sides at least in basal 1/2 and more or less sharply carinate. 2
– Antennal segments 2-4 not or little compressed in basal half, not carinate on upper side. 4

2.Ventral segments 3-5 without setiferous pores; base of protho-ax margined in middle, obliterated laterally. Intervals 3, 5, 7, & 8 raised in form of carina. .... **marginatus** Fabricius.
– Ventral segments 3-5 with setiferous pores. Base of prothorax entirely margined. Elytra smooth or at least without strong carinae. 3

3. Elytra and rest of insect shiny. Pronotum and elytra with obvious violet margins. Elytra with suggestion of striae (fine rows of punctures). cr with hind tibia densely pubescent on inner side. Mandibles long and arcuate. .... **punctulatus** Haldeman
– Elytra and body dull, usually without suggestion of violet borders. Elytra smooth. with hind tibia unmodified. Mandibles shorter and less arcuate. .... **depressus** Fabricius

4. Elytra very convex, abruptly rounded behind at apex, and with an abrupt declivity. Sides nearly straight to behind middle, very little converging basally. 5
– Elytra less cylindrical, flatter, more gradually narrowed to apex and more rounded laterally. Sides of pronotum strongly sinuate. 6

5. Hind tarsi short much shorter than tibia. Body oblong, convex, rather shiny. ..... **brevitarsis** Casey
– Hind tarsi longer, as long as tibia or nearly so. .... **sublaevis** Beauvois

6. Body very large and convex. Humeral carina very short.. .... **strenuus** LeConte
– Body less convex and very much smaller in size. Humeral carina long, evenly continuous with inner lateral ridge. 7

7. Entire surface of elytra deeply, coarsely, and evenly sulcate. Elytral furrows each with 2 series of fine, feeble punctures. Body black with strong violaceous lustre..**floridanus** Casey
– Entire surface nearly smooth or with feeble obtuse ridges, the 2 outer ridges much stronger than the others. Color deep black above, violet color restricted to margins of pronotum and elytra ..... **subsulcatus** Say

Pasimachus strenuus

Pasimachus marginatus

Pasimachus punctulatus

Key to Florida Species of Brachinus
(this key was scanned and need to be proofed)

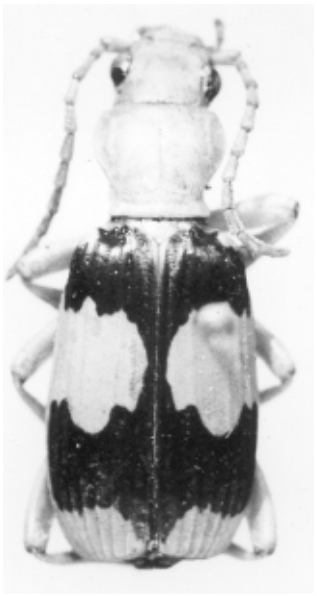
1. Head, prothorax, and elytra concolorous, black or brown; (Cuba)(Greater Antilles) *Brachinus brunneus* Castelnau
– Head and thorax pale, contrasting with elytra.....2

2. Mentum with large deep median sulcus surrounded by a ring of setae *B. mobilis* Erwin (Mobile, Ala.)
– Mentum. flat to shallowly concave OR with two shallow lateral pits 3

3. Metasternum short between middle and hind coxae, no longer than diameter of mid-coxae; humeri strongly sloping; wings rudimentary; abdomen, metepisterna and sides of metasternum infuscated to black; abdominal sterna with ferrugineus paramedian dimples; mentum without central patch of setae, submentum densely setiferous; antennae ferrugineus.o.s*. ..... B. americanus (LeConte)
– Metasterna longer than diameter of mid-coxae; humeri square, sloped, or protruding. 4

4. Elytra blue to brown; epipleura, pale; legs pale testaceous, with dark knees ..... *B. adustipennis* Erwin
– Elytra blue, blue black; legs concolorous 5

5.Median elevated portion of mentum with a dense patch of setae; submentum densely setiferous (± 20) 6
– Median elevated portion of mentum glabrous or with 1-2 small setae; submentum e..06 8



6.Humeri strongly sloped; antennal segments 044 infuscited at least apically; elytra usually greenish.....
..... *B. viridipennis* Dejean
– Humeri square; antenaal segments 3+4 ferrugineus; elytra blue 7

7. Proepipleura pubescent throughout their length; proepisterna completely pubescent; anterior tibiae with anterior surface punctate; elytral costae pronounced .....
..... *B. alternans* Dejean
–Proepipleura and proepisterna pubescent anteriorly and posteriorly, glabrous medially ..... *B. perplexus* Dejean

8. Abdominal sterna ferrugineus except for infuscited. lateral margins and sterna 6 9
– Abdominal sterna infuscated to piceous 10

9. Proepipleura glabrous; proepisternum with scattered setae anteriorly and posteriorly, V Irous

1@ medially.....r..eB. texamus Chaudoir.
_:@@

Proepipleura,with some setae posteriorly; elytra with highly

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elevated costae (9-14mm) ..... B.fumans Chaudoir

10. Proepipleura glabrous .....
– Proepipleura with some setae throughout or at both ends 17
11. Metasternum infuscited at sides 12
– Metasternum not infusctaed. ..... *B. conformis* Dejean

12. Metasternal. process ferrugineus .....
..... *B. quadripennis* Dejean
– Metasternal. process infuscated 13

13. Mesepisternum infuscated to black; elytra strongly costate
B. tenuicollis LeConte
– Mesepisternum not infuscated; elytra not or only moderately infuscated 14

14. Elytra without costae, pubescence dense on elytra .....
..... *B.sublaevis* Chaud.
– Elytra with costae easily visible; pubescence not dense .....
..... 15

15. Protibiae with anterior surface punctate, punctulae small, rarely coalescing 16
– Protibiae with anterior surface strigose..(small beetles) .....
..... *B. medius* Harris

16. Median lobe with ventral ridge; stylus acute. .....
..... *B. neglectus* LeC.
– Median lobe without ventral ridge; stylus rounded apically.

17. Stylus broad, spatulate ..... *B. vulcanoides* Erwin
– Stylus acute apically ..... *B. oxygonus* Chaud.

18. Metasternum not infuscated at sides; ligule of median lobe broad, spatulate
– Stylus vary narrow, elongate ..... *B. rugipennis* Chaud.
Metasternum infuscated at

19. Median lobe with ventral depression; very long beetles, narrow, with long legs and antennae .....
..... *B. ichabodopsis* Erwin
– Median lobe with ventral ridge; short broad beetles; elytra quadrate. ..... *B. quadripennis* Dejean