

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

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

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### 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 occurrences 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 gener-

ic 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 Laroche (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 Laroche 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**

	<i>Tachyta</i> Kirby
	<i>Elaphropus</i> Motschulsky
	<i>Pericompsus</i> LeConte
	<i>Tachys</i> Stephens
	<i>Paratachys</i> Casey
	<i>Polyderis</i> Motschulsky
	<i>Lynnastis</i> Motschulsky (Cuba)
	<i>Micratopus</i> Casey
	<i>Anillinus</i> Casey
	<i>Stylulus</i> Schaufuss
	<i>Bembidion</i> Latreille
	<b>Pogonini</b>
	<i>Diplochaetus</i> Chaudoir
	<i>Perileptus</i> Schaum (Cuba)
	<b>Patrobini</b>
	<i>Patrobus</i> Dejean
	<i>Nomius</i> Laporte (SC,GA, Florida Keys)
	<b>Morionini</b>
	<i>Morion</i> Latreille
	<b>Loxandriini</b>
	<i>Loxandrus</i> LeConte
	<b>Pterostichini</b>
	<i>Neomyas</i> Allen
	<i>Pterostichus</i> Bonelli
	<i>s.g. Lophoglossus</i> LeConte
	<i>s.g. Poecilus</i> Samouelle
	<i>Piesmus</i> LeConte
	<i>Abacidus</i> LeConte
	<i>Evarthrus</i> LeConte
	<b>Zabrini</b>
	<i>Amara</i> Bonelli
	<b>Harpalini</b>
	<i>Amerinus</i> Casey (Miss, FL; Torreya St.Park )
	<i>Bradycellus</i> Erichson
	<i>Stenolophus</i> Stephens
	<i>Acupalpus</i> Latreille
	<i>Notiobia</i> Perty
	<i>Anisodactylus</i> Dejean
	<i>Geopinus</i> LeConte
	<i>Amphasia</i> Newman
	<i>Cratacanthus</i> Dejean
	<i>Ha.rpalus</i> Latreille
	<i>Episcopellus</i> Casey (SC, to be looked for in northern forests, panhandle)
	<i>Trichotichnus</i> Morawitz
	<i>Selenophorus</i> Dejean
	<i>Athrostictus</i> Bates (Mexl CA., intercepted in Miami)
	<i>Discoderus</i> LeConte
	<i>Gynandropus</i> Dejean
	<i>Amblygnathus</i> Dejean
	<i>Stenomorphus</i> Dejean
	<b>Licinini</b>
	<i>Diplocheila</i> Brulle
	<i>Dicaelus</i> Bonelli
	<i>Badister</i> Clairville
	<b>Panagaeini</b>
<b>Rhysodini</b>	
<i>Clinidium</i> Kirby	
<i>Omoglymmius</i> Ganglbauer	
<b>Cicindelini</b>	
<i>Cicindela</i> Linnaeus	
<i>Megacephala</i> Latreille	
<b>Carabini</b>	
<i>Carabus</i> Linnaeus	
<i>Calosoma</i> Weber	
<b>Cychrini</b>	
<i>Sphaeroderus</i> Dejean ( <b>new record</b> )	
<i>Scaphinotus</i> Latreille	
<b>Elaphrini</b>	
<i>Elaphrus</i> Fabricius	
<b>Omophronini</b>	
<i>Omophron</i> Latreille	
<b>Nebrini</b>	
<i>Nebria</i> Latreille (not yet recorded from Florida but may possibly be found on panhandle rivers)	
<b>Notiophilini</b>	
<i>Notiophilus</i> Dumeril	
<b>Scaritini</b>	
<i>Pasimachus</i> Bonelli	
<i>Scarites</i> Fabricius	
<i>Dyschirius</i> Bonelli	
<i>Clivina</i> Latreille	
<i>Halocoryza</i> Alluaud	
<i>Schizogenius</i> Putzeys	
<i>Oxydrepanus</i> Putzeys	
<i>Ardistomis</i> Patzeys	
<i>Aspidoglossa</i> Putzeys	
<b>Bembidiini</b>	
<i>Mioptachys</i> Bates	

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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 1977:6ssp. *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: Banninger 1950)*marginatus* (Fabricius) Schwarz 1878: 435*floridanus* Casey Casey 1913: 79*subsulcatus* Say Schwarz 1878: 435ssp. *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 comprehensive 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****Patrobis** 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

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**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**

(Rev. Bousquet and Laplante, 1997)

**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

**Lophoglossus** LeConte 1852

(Rev. Will, 1999)

*haldemani* (LeConte) Ibid.  
*tartaricus* (LeConte) Schwarz 1878: 436

**Gastrosticta** Casey, 1918

(Rev. Bousquet 1992)

*ventralis* (Say) Leng 1915: 576  
*obesulus* (LeConte) 1873

**Piesmus** LeConte, 1852*submarginatus* (Say) 1823:45**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*concinus* 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.= *elongatum* (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

(Rev. Bousquet, 1996)

**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, 1992)

**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

<sup>1</sup> 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.

*fasciatus* Haldeman Choate & Rogers 1976: 364

**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  
*haplomis* 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.  
*pennsylvanicus* 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  
*palliatu*s Fabricius Slosson 1895: 9  
*fatuus* LeConte Leng 1915: 597  
*mustus* Casey Casey 1914: 152  
*trepidus* Casey Casey 1924: 117  
*ellipticus* Dejean Leng 1915: 598  
*stigmatosus* 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

**Tribe Pentagonicini**

(Rev: Reichardt 1968)

**Pentagonica** Schmidt-Goebel, 1846

*flavipes* LeConte Leng 1915: 589  
*nigricornis* Darlington Darlington 1934: 121

**Tribe Odacanthini****Colliuris** DeGeer, 1774 (Key: Lindroth 1969a)

*pennsylvanica* (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  
*analisis* 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, especially 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 percent-

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age 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. Zabrinini  
 t. Bascanini  
 t. Peleciini  
 t. Cuneiptectini  
 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

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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**

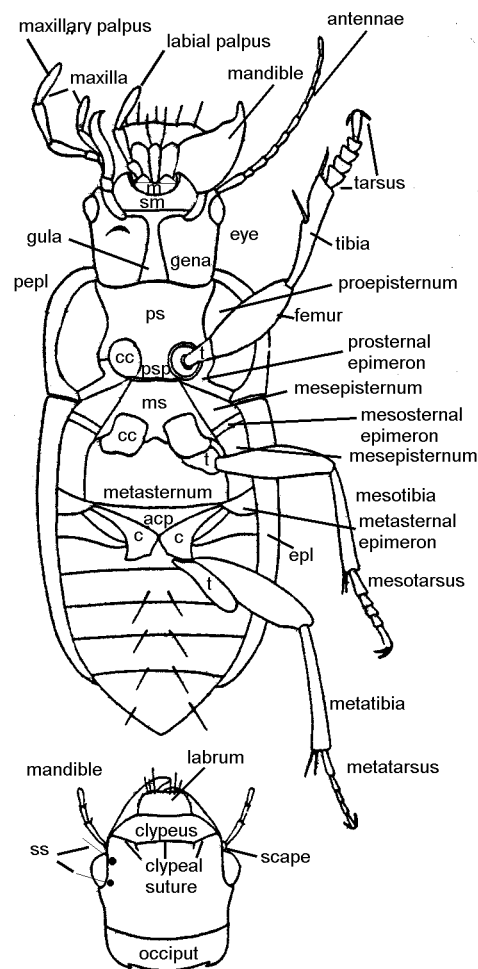


Fig. 1 Ventral view of ground beetle (top), dorsal view of head (bottom). Abbreviations: **m** = mentum; **sm** = submentum; **pepl** = proepipleuron; **cc** = coxal cavity; **ps** = prosternum; **psp** = prosternal process; **ms** = mesosternum; **t** = trochanter; **epl** = epipleuron; **acp** = antecoxal process; **ss** = supraorbital setae.

meso- and metasternum showing coxae disjunct

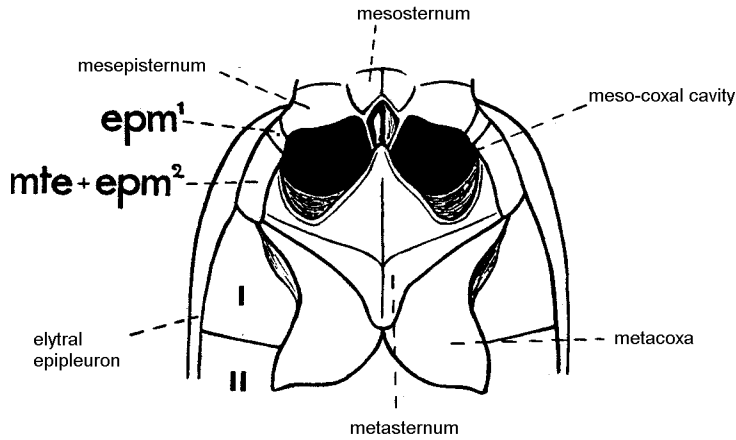


Fig. 2. mesocoxae disjunct - epm<sup>1</sup> reaching coxal cavity

meso- and metasternum, showing conjunct coxae

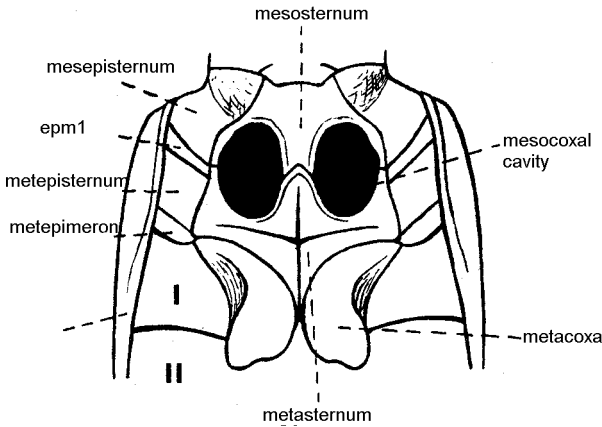


Fig. 3. mesocoxae conjunct - epm<sup>1</sup> not reaching middle coxal cavity

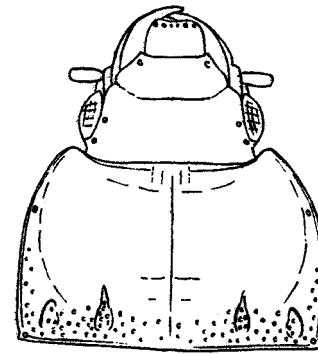


Fig. 5. 2 supraorbial seta

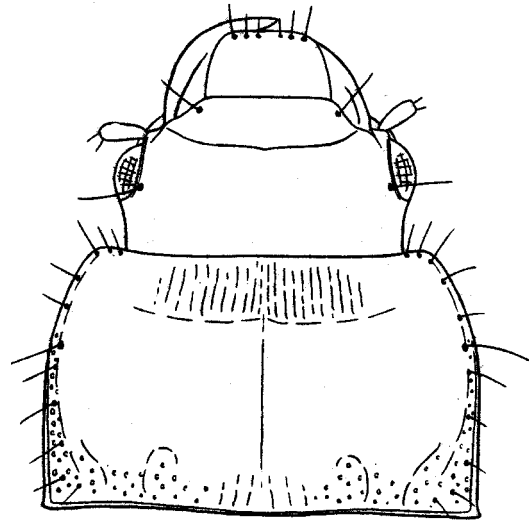


Fig. 6. 1 supraorbial seta

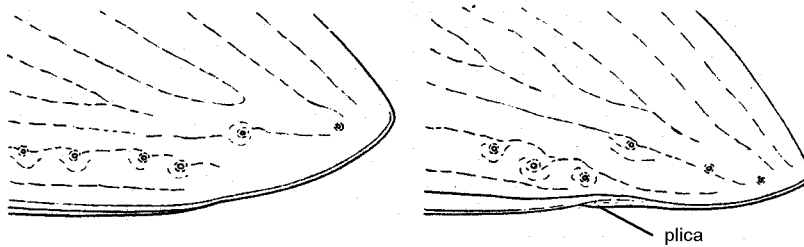


Fig. 4. Elytral plica - fold of the epipleuron near apex of elytra

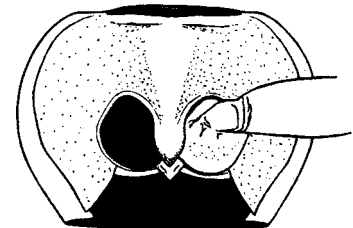


Fig. 7. Procoxae closed behind - the majority of ground beetles

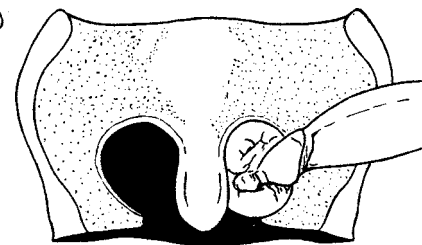


Fig. 8. Procoxae open behind - incompletely surrounded by prosternum behind (occurs in a few tribes, Cychrini, Carabini, Nebriini, and Notiophilini)

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

1. Clypeus broader than distance between sockets of antennae. (Fig.9) 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.11). 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. 12)..... (Pseudomorpha)
  - Antennae with scape dorsally visible. Body shape various ..... 5
  
5. Abdomen with 7-8 visible sterna. Florida species bicolored; head and pronotum testaceous - orange, elytra blue black or brown, legs pale. (Fig. 13) 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.14).Rhysodini ..... (Clinidium)
  - Metasternum with antecoxal suture and shorter in length. Front tibia with one or more apical spurs(fig.??) .. 7
  
7. Middle coxal cavities disjunct (Fig. 2) ..... 8
  - Middle coxal cavities conjunct (Fig. 3) ..... 12
  
8. Anterior coxal cavities open behind (Fig. 8) ..... 9
  - Anterior coxal cavities closed behind (Fig. 7) ..... 11
  
9. Mandibles without a setigerous puncture in scrobe.10
  - Mandible with a setigerous puncture in scrobe.Nebriini (no Florida records)(Fig. 15) ..... (Nebria)

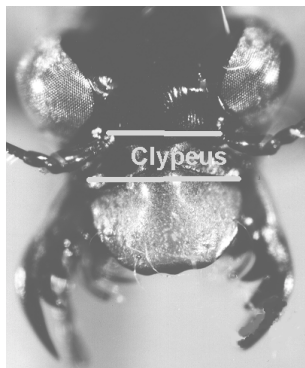


Fig. 9. *Cicindela* sp.



Fig.10. *Megacephala virginica*.



Fig. 11 *Omophron labiatum*, dorsal view



Fig. 12. *Pseudomorpha excrucians*



Fig. 13. *Brachinus* sp. also known as "bombardier beetles."



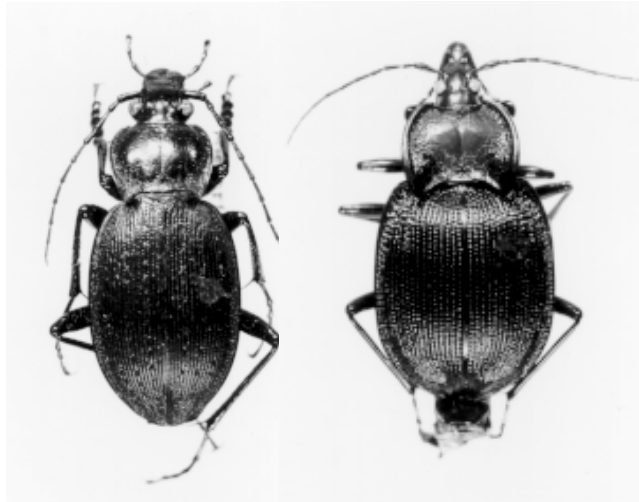
Fig. 15 *Nebria pallipes*.



Fig. 14 *Clinidium* from Florida. Specimens are found in moist hardwood logs.



- 10. Posterior coxae contiguous in midline of body (**Fig. 16**) ..... Carabini.
  - Posterior coxae separated in midline of body. Head narrowed anteriorly (modified to feed on snails)(**Figs. 17, 18**) ..... Cychrini
  
- 11. Mandible with setigerous puncture in scrobe, head with 2 supraorbital setae (**Fig. 19**. Elaphrini .. *Elaphrus*
  - Mandible without seta in scrobe, head with 1 supraorbital seta, body pedunculate (**Fig. 20**) ..... 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. 21**) 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. 22**). 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. 23**), eyes large, bulging. Body flattened dorsally, with some of outer elytral striae obsolete....
  - ..... 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 ..... *Patrobis*
  - Dorsal surface of head without transverse sulcus behind eyes. Eyes various, size various. .... 18



**Fig.16.** *Carabus* sp.

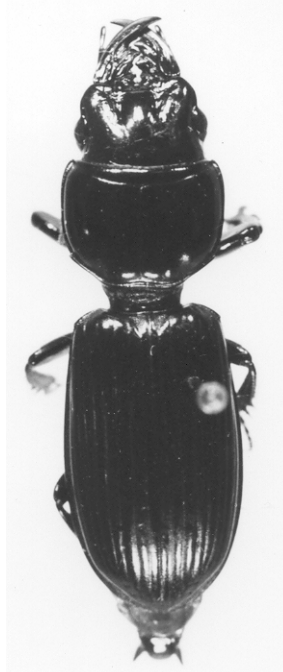
**Fig. 17.** *Scaphinotus* sp., Torrey State Park.



**Fig. 18.** *Scaphinotus* sp. head and prothorax, showing modified mandibles and expanded palps, believed to be used to follow slime trails of



**Fig. 19.** *Elaphrus ruscarius*. In Florida there are few literature records for this species. One specimen has been seen collected on muddy edge of Apalachicola River, Torrey State



**Fig. 20.** *Scarites* sp.



**Fig. 21.** *Panagaeus* sp., dorsal view.

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- 18. Terminal maxillary palpomere much shorter and narrower than penultimate segment. (Fig. 24) Size not greater than 7 mm ..... Bembidiini
  - Terminal maxillary palpomere normal. Color testaceous, size 7-9 mm, found on saline mud flats. Pogonini (Fig. 25) ..... *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. 26) ..... Psydrini
  
- 20. Head with one pair of supraorbital setae ..... 21
  - Head with 2 pairs of supraorbital setae ..... 24
  
- 21. Elytron without internal plica near apex .... Harpalini
  - Elytron with internal plica near apex (Fig. 5) ..... 22
  
- 22. Surface of elytra and pronotum densely punctate and pubescent. Chlaeniini (Fig. 27) ..... *Chlaenius*
  - Surface of elytra and pronotum not densely punctate and pubescent ..... 23
  
- 23. Pronotum without erect setae. Interval 8 of elytra delimited internally at apex by distinct carina ..... Oodini
  - Pronotum with at least median setae. Interval 8 not delimited at apex by carina ..... Pterostichini (in part)
  
- 24. Antennal segments 5-10 moniliform. Margin of pronotum with several pairs of lateral setae. (Fig. 28) Stria 8 in form of zigzag sulcus. Legs flattened. Morionini ..... *Morion*
  - Antennal segments 5-10 filiform, pronotum with 2 pair of lateral setae ..... 25
  
- 25. Elytron with internal plica (Fig. 4) ..... 26
  - Elytron without internal plica ..... 27
  
- 26. Penultimate labial palpomere plurisetose. Amarini .. *Amara*
  - Penultimate labial palpomere bisetose .... Pterostichini
  
- 27. Pronotum narrow, distinctly longer than wide, at apex as wide as posterior part of head (Fig.s. 29,30) 28
  - Pronotum not longer than wide and/or wider at apex than posterior part of head (Fig.31) ..... 29
  
- 28. Tarsomere 4 deeply notched at apex, bilobed (Fig. 29). Abdominal terga completely covered. Ctenodactylini ..... *Leptotrachelus*
  - Tarsomere 4 simple or slightly emarginate at apex. Elytron with apex truncate, exposing last abdominal tergite (Fig. 30). Odacanthini ..... *Colliuris*



Fig. 22. *Ega sallei*, occurs in wet areas.



Fig. 23. *Notiophilus ion* sp.



Fig. 24. *Bembid-*



Fig. 25. *Diplochaetus*



Fig. 26. *Nomius pygmaeus*



Fig. 27. *Chlaenius pusillus*



Fig. 28. *Morion monilicornis*

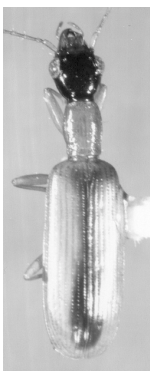


Fig. 29. *Leptotrachelus dorsalis*



Fig. 30. *Colliuris*

- 29. Posterior tibia with inner spur more than 1/2 length of hind tarsal segment 1. Inner spur longer than outer spur (**Fig. 31**) ..... 30
  - Posterior tibial spurs more or less equal and shorter than 1/2 length of hind tarsal segment 1 ..... 31
  
- 30. Labrum elongate, length more than 1/2 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*
  
- 31. Head with one pair of setae ventrally posterior to submentum. Labrum elongate (**Fig. 33**). Lebiini (in part) ..... Pericalina
  - Head without pair of posterior setae ventrally ..... 32
  
- 32. Elytron with apical margin truncate ..... 33
  - Elytron with apical margin entire, sinuate or not ..... 37
  
- 33. Tarsal claws pectinate (toothed, comblike) .... Lebiini
  - Tarsal claws normal, smooth ..... 34
  
- 34 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. 34) ..... *Pentagonica*
  - Dorsal surface finely pubescent. Antennal segments 1-3 pubescent ..... 35
  
- 35. Scape of antenna longer than combined lengths of segments 2+3, (**Fig. 35**). Size small, less than 6mm ZUPHIINI ..... *Zuphium*
  - Scape shorter than segments 2+3, size 10mm or more ..... 36
  
- 35. Antennal segments 5-11 flattened, finely pubescent. Central area of each article triangular and glabrous (**Fig. 37**). HELLUONINI ..... *Helluomorphoides*
  - Antennal segments 5-11 not flattened, uniformly pubescent. GALERITINI (**Fig. 36**) ..... *Galerita*
  
- 37. Clypeus sloped downward, surface concave. Labrum deeply notched (**Fig. 39**) ..... LICININI
  - Clypeus plane not notched. Labrum with anterior margin truncate or slightly concave ..... 38
  
- 38. Elytron with stria 8 impressed and obliquely extended almost to apical suture. Posterior trochanter almost 1/2 length of posterior femur. PERIGONINI ..... *Perigona*
  - Elytron with stria 8 normal (**Fig. 38**) ..... AGONINI

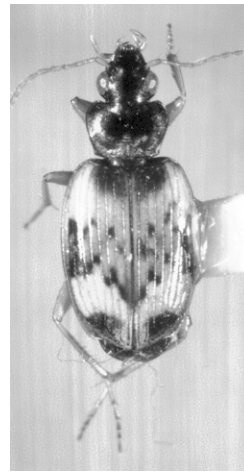


Fig. 31. *Tetragonoderus fasciatus*

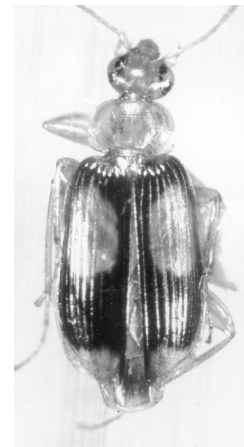


Fig. 32. *Nemotarsus elegans*



Fig. 33. *Mochtherus*



Fig. 34. *Pentagonica*



Fig. 35. *Zuphium*



Fig. 36. *Galerita*



Fig. 37. *Helluomorphoides*

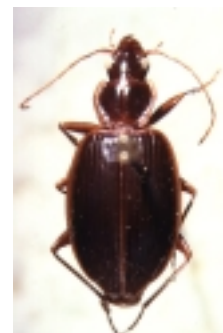


Fig. 38. (Agonini) *Platynus tenuicollis*



Fig. 39. (Licinini) *Badister*

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