

Illustrated Key to Florida Species of Tiger Beetles -  
(Coleoptera: Cicindelidae)

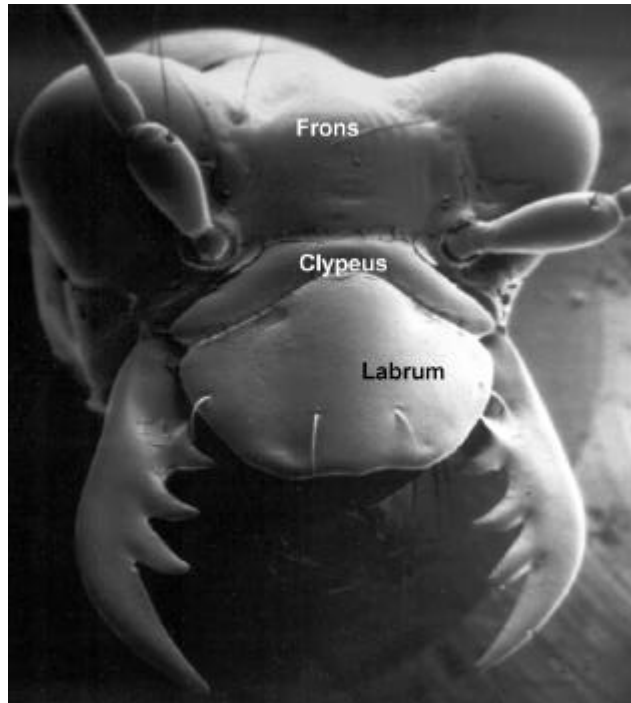


*Cicindela gratiosa* Guérin  
Panacea., Fl.

P. M. Choate, 2003

What are tiger beetles? Various authors have treated them as a separate family of Coleoptera, or as a subfamily of Carabidae (ground beetles), Cicindelinae. How do they differ from other Carabidae? Adult tiger beetles differ from all other Carabidae by the following character:

Clypeus broader (wider) than distance between sockets of antennae...Cicindelidae



Clypeus narrower than distance between sockets of antennae...all other Carabidae



You may wonder if this character is sufficient to warrant family status. The debate goes on. For the moment they are retained here as a separate family.

Willis (1968) published an artificial key to North American *Cicindela* species. There have been several revisions and name changes, as well as new species descriptions since that publication. I present here a key to the Florida species of tiger beetles, including eastern species that may occur here but have not yet been discovered. Most tiger beetle species may be recognized by their overall appearance, but considerable variation may exist in their markings, making sight identification somewhat risky. By using this diagnostic key and comparing photos, one should be able to put species

names on all Florida tiger beetles. This key is a modification of a published key (Choate, 2003). Other references dealing with Florida tiger beetles include Choate 1984, Deyrup 1989, Knisley and Schultz 1997, and Roman 1988. Ciegler (1997) published a taxonomic treatment of South Carolina tiger beetle species. Many Florida species are included, but several are not. Known Florida tiger beetle species number 26 in 2 genera, *Megacephala* (some authors prefer *Tetracha*) and *Cicindela*. For sake of completeness and possibility of future collections, I have included many eastern species not yet known to occur in Florida. Some of these are known from adjacent states, Georgia, Alabama, Mississippi, and may yet be found in Florida's panhandle.

If you have never used a key before, the process is as follows. Always start at couplet 1, and decide between the first 2 choices. Go to the next couplet from the best choice in couplet 1. Follow this process until you arrive at a species name. Look at pictures of the species to see if you are correct. If you do not appear to be correct, backtrack until you find either a mistake in the key (happens often), or a mistake in your choices. Keep working back and forth until you are satisfied you have arrived at the best determination. If you still do not think the key is correct, you may have found a new species or new record not anticipated for this region. Should this occur, please contact the author at [pmc@mail.ifas.ufl.edu](mailto:pmc@mail.ifas.ufl.edu). This key assumes a basic knowledge of insect morphology. An abbreviated glossary of terms is provided here as additional help.

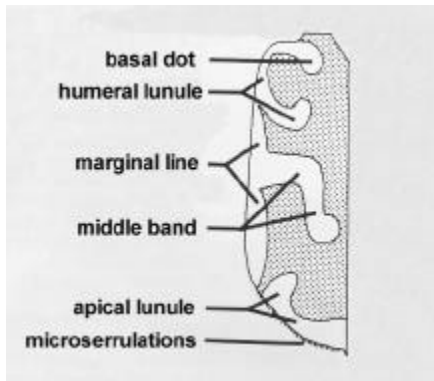
## Glossary of terms used in key

**Decumbent** - bending downward, laying parallel to a surface

**Gena** - the cheek; side of head beneath the eye

**Lunule** - crescent shape

**Maculation** - pale elytral markings (see below)



Tiger beetle "normal" elytral maculations  
(Modified from Willis, 1968)

**Microserrulate** - with tiny teeth, serrate, as in teeth of a saw

**Rufous** - pale red

**Scabrous** - surface rough, irregularly and coarsely rugose (wrinkled)

**Sinuate** - wavy, winding

**Trochanter** - second segment of leg, between coxa and femur

A gallery of color photographs of Florida tiger beetle species is also provided here. These are best viewed and printed online at [http://entnemdept.ifas.ufl.edu/choate/tigerbeetle\\_key.pdf](http://entnemdept.ifas.ufl.edu/choate/tigerbeetle_key.pdf)

**Diagnostic key to genera of eastern US tiger beetles**

- 1. Scutellum hidden (Fig. 1); anterior pronotal angles prominent, projecting forward; third segment of maxillary palpus longer than fourth segment ..... **Megacephala**
- Scutellum visible from above (Fig. 2); anterior pronotal angle not projecting forward; third segment of maxillary palpus shorter than fourth..... **Cicindela**



Fig. 1. *Megacephala carolina*  
- scutellum hidden



Fig. 2. *Cicindela hirticollis*  
- scutellum visible

**Key to Florida species of Megacephala**

- 1. Dorsal surface dark greenish-black throughout, elytra lacking pale apical lunules ..... **virginica (Linnaeus)**
- Elytra with pale apical lunules .....2.
- 2. Anterior lateral regions of elytra usually black or dark green; violet or coppery reflection may be visible near scutellum; apical lunule with anterior portion divergent (Fig. 3) ..... **carolina floridana** (= ? **chevrolati Chaudoir**)
- Anterior lateral regions of elytra usually with extensive violet or coppery reflection; apical lunule with anterior portions convergent (Fig. 4) ..... **carolina carolina (Linnaeus)**



Fig. 3. *Megacephala carolina floridana* - divergent lunules



Fig. 4. *Megacephala carolina* - convergent lunules

### Key to *Cicindela* species

\* indicates eastern species not yet reported from Florida but included here in case they are found. Species known from Florida are listed in **bold**. Some species will key out in more than one couplet. This is done to address variation in characters and color patterns.

1. Front trochanter with one (rarely two) subapical seta (Fig. 5), middle trochanter with or without such seta.....8

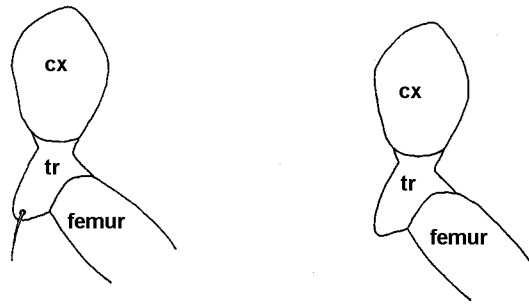


Fig. 5. Left, front trochanter (**tr**) with subapical seta. Right, lacking subapical seta. (Modified from Willis, 1968). If seta is broken off, a visible pore will be present

- Front trochanter lacking subapical seta, middle trochanters also without such seta .....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. Abdominal segments color varied, rufous coloration restricted to last one or 2 segments. White species occurring on coastal beaches and along mudflats of tidal creeks .....3

- Hind femora short, not extending more than one third beyond body; tarsal claws much shorter than last tarsal segment; all abdominal segments rufous; if mostly white, found on inland sand scrub or on sandbars of larger rivers;.....4
- 3. Elytral surface white, largely unmarked (occasional specimens with weak black markings), on beaches of Florida Gulf coast from Keys to Alabama. (Figs. 6, 7 ) ***dorsalis saulcyi* Guérin**



Figs. 6 & 7. *Cicindela dorsalis saulcyi* normal markings (left), more heavily marked (right).

- Elytra marked with heavier dark lines (Fig. 8). Beaches of Atlantic coast south to Florida Keys.  
..... ***dorsalis media* Say**



Fig. 8. *Cicindela dorsalis media*, typical markings

4. Elytral tips not microserrulate. Markings of elytra connected along lateral margins. Abdomen rufous. Found on large cobblestone bars in rivers and streams.....  
 .....*marginipennis* Dejean\*  
 \_ Elytral tips microserrulate (Fig. 9). Abdomen color varied .....5

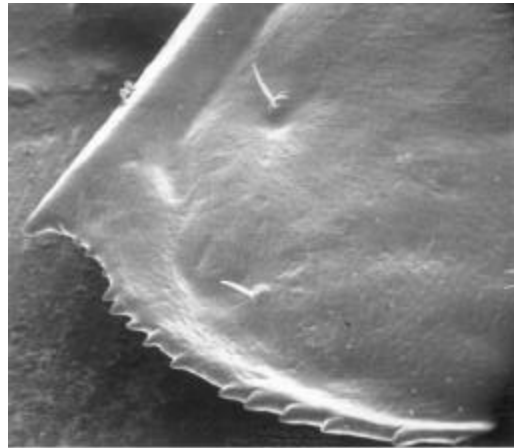


Fig. 9. Micro-serrulations - small teeth along apical margin of elytra.

5. Labrum with 4 erect setae (2 anterior medial setae, 2 lateral setae).(Fig. 10) .....6

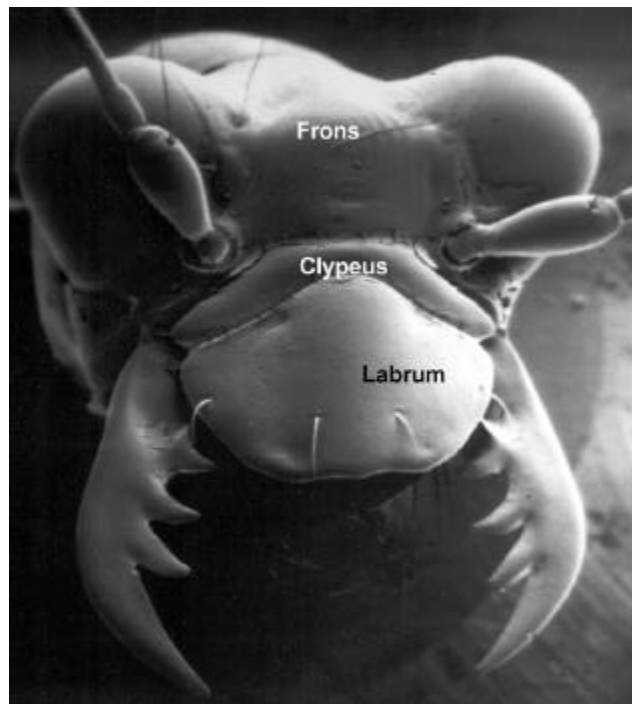


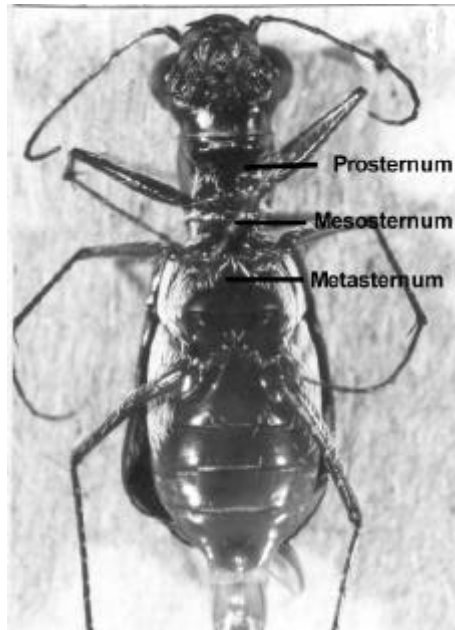
Fig. 10. Anterior medial setae 2, lateral setae 2

- \_ Labrum with 4 anterior medial setae, 2 lateral setae. ....7

6. Ventral surface glabrous, without covering of white hair; pronotum lacking lateral hairs; Highlands and Polk counties only. Dorsal surface frequently with greenish reflections.  
 ..... ***highlandensis* Choate**



– Ventrally, lateral sclerites covered with white decumbent setae, also at least sternites 1-2 with lateral decumbent setae (Fig. 11);



pronotum with at least a few lateral setae, or if absent, their punctures visible along suture.

..... ***abdominalis* Fabricius**

7. Elytra deeply punctured, scabrous; surface shining. Restricted to peninsular Florida. Sand scrub species. .... ***scabrosa* Schaupp**

– Elytra shallowly punctate or impunctate. Surface dull. Known only from Liberty and Gadsden counties in Florida, pinewood paths and roadside clay banks.....

..... ***rufiventris* Dejean**

8. Clypeus densely to sparsely clothed with decumbent setae. (Fig. 12).....9

– Clypeus glabrous or with a few erect setae. (Fig. 13) .....19



Fig. 12.



Fig. 13

- 9. Prosternum with dense decumbent setae .....10
  - Prosternum glabrous .....14
- 10. Elytra impunctate, dull, mostly white dorsally with sutural area coppery .....11
  - Elytra deeply punctate, dull to shiny; color variable.....12
- 11. Labrum with few (<10) or no decumbent setae (ignore marginal row) Panhandle and northeast counties in Florida). (Fig. 14) ..... ***gratiosa* Guérin**
  - Labrum with many (>20) decumbent setae; restricted to peninsular Florida. (Fig. 15) ..... ***hirtilabris* LeConte**

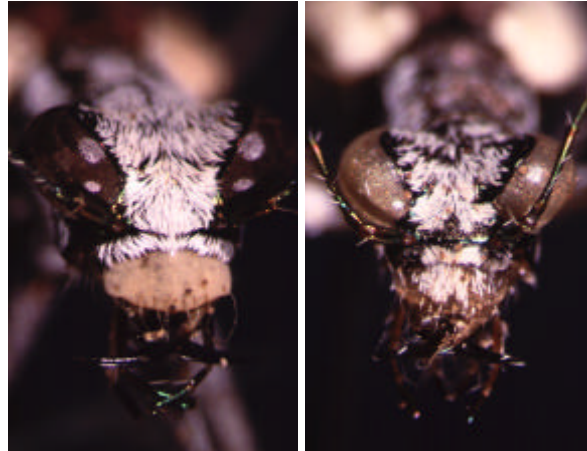


Fig. 14 (left), Fig. 15 (right)

- 12. Sides of pronotum very convex; markings consist of a broad marginal band or elytra almost entirely white..... ***togata* Laferté**
  - Sides of pronotum straight or slightly curved; markings consisting of “normal’ maculations. Coastal marshes and beaches, Gulf and Atlantic coasts.....13
- 13. Elytra of female deflexed at tips, apical spine slightly retracted (Fig. 16); right mandible of male with prominent tooth on under surface . East coast and north along Florida Gulf coast extending to just north of Horseshoe Beach. .... ***marginata* Fabricius**
  - Elytra of female not deflexed at tips, apical spine much retracted (Fig. 17); right mandible of male with bump or no tooth below. Gulf coast region, from Florida Keys ..... ***hamata lacerata* Chaudoir**



Fig. 16. Female *marginata*, deflexed elytral apex

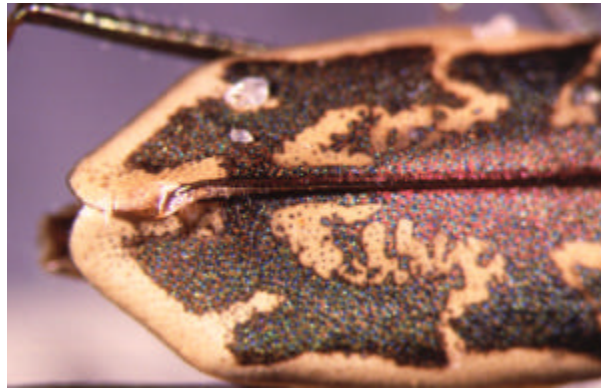


Fig. 17. Female *hamata lacerata*, elytral tooth removed from apex, tip not deflexed

14. Appendages depigmented. Overall pale species, small size

..... *lepida* Dejean\*

– Appendages pigmented, size and color varied .....15

15. Middle band long, “normal” (Fig. 18).....16

– Middle band of elytral macula very short, broad basally, narrow apically; small beetles (< 11mm).

Occurs along western panhandle rivers from Shoal River to Alabama. (Fig. 19)...

..... ***wapleri* LeConte**



Fig. 18 (left). Fig. 19 (right)

16. Middle band slightly sinuate .....17

– Middle band very sinuate. Occurs in panhandle from Apalachicola River west to Alabama.

..... ***blanda* Dejean**

17. Found in northeastern states (Chesapeake Bay to New Hampshire). Isolated populations on Connecticut River, also Calvert Cliffs, Maryland ..... *puritana* Horn\*

– Found west and south of Appalachian mountains .....18

18. Elytra dull, shallowly punctate ..... *macra* LeConte\*

– Elytra shiny, deeply punctate..... *cuprascens* LeConte\*

19. Frons with erect setae (besides supraorbital setae).....34
- 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.....20
- 20 Legs and tarsi clothed throughout with fine decumbent setae; elytra with row of green foveae near suture ..... *pilatei* Guérin - Menéville\*
- Legs and tarsi setose, but not clothed with fine decumbent setae .....21
21. Small size (<9mm long); dorsal elytral color brown; prothorax cylindrical with straight sides .....22
- Size larger (>12mm long); other characters variable.....23
22. Head and pronotum same color as elytra..... *cursitans* LeConte\*
- Head and pronotum brilliant green, contrasting with color of elytra .....  
..... ***viridicollis* Dejean**
23. Proepisternum with setae (may be just a few near coxal margin) .....24
- Proepisternum glabrous ..... *unipunctata* Fabricius\*
24. Labrum longer (taller) than wide. (Fig. 20) Elytra granulate, dull.....

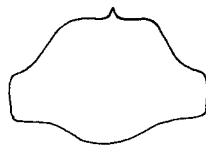
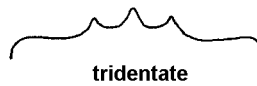
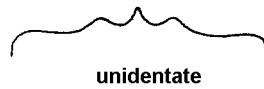


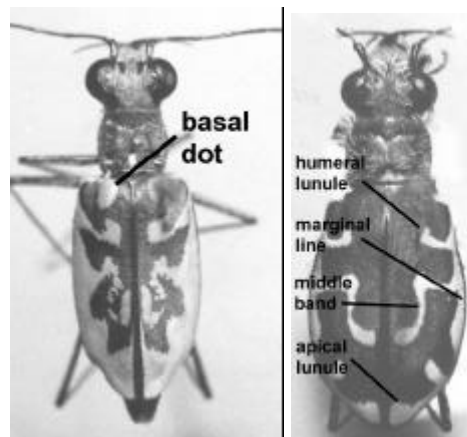
Fig. 20

- ..... *longilabris* Say\*
  - Labrum medium to short.....25
25. Elytral tips microserrulate (Fig. 9).....27
- Elytral tips not microserrulate .....26
26. Cluster of setae near front of eyes. Elytra impunctate except for erect setae; Florida populations lack pale apical markings..... ***scutellaris unicolor* Dejean**
- With only 2 supraorbital setae, pronotum glabrous; elytra shiny, with large deep punctures; elytra with scattered pale markings; also apical white lunule ..... ***striga* LeConte**
27. First antennal segment with single distal sensory seta .....29
- First antennal segment with distal row of 3-4 sensory setae .....28
28. Elytra granulate; lateral margins of abdomen with sparse decumbent setae; middle band of elytra usually complete ..... *patruela* Dejean\*
- Elytra shallowly to deeply punctate; abdomen glabrous laterally; middle elytral band usually broken into dots or absent ..... ***sexguttata* Fabricius**

29. Elytral markings complete, often fused .....33  
 – Elytral markings broken into dots or absent; middle band incomplete .....30
30. Labrum with > 8 setae.....***trifasciata ascendens* LeConte**  
 – Labrum with fewer than 8 setae .....31
31. Labrum unidentate (one median tooth) ..... ***punctulata* Olivier**  
 – Labrum tridentate (3 median teeth) .....32



32. Elytra with complete humeral lunule or at least a dot on humeral angle .....  
 ..... ***olivacea* Chaudoir**  
 – Elytra without dot on humeral angle; markings reduced to apical lunule and broken dots in mid  
 elytra ..... ***severa* LaFerté-Sénectère**



33. Last visible sternite rufous-colored; dorsum olive-green and greasy appearing .....  
 ..... ***olivacea* Chaudoir**  
 – Abdomen dark brown with metallic reflection; middle band of elytra very sinuate (Plate 124)  
 ..... ***trifasciata ascendens* LeConte**
34. Gena with numerous setae .....35

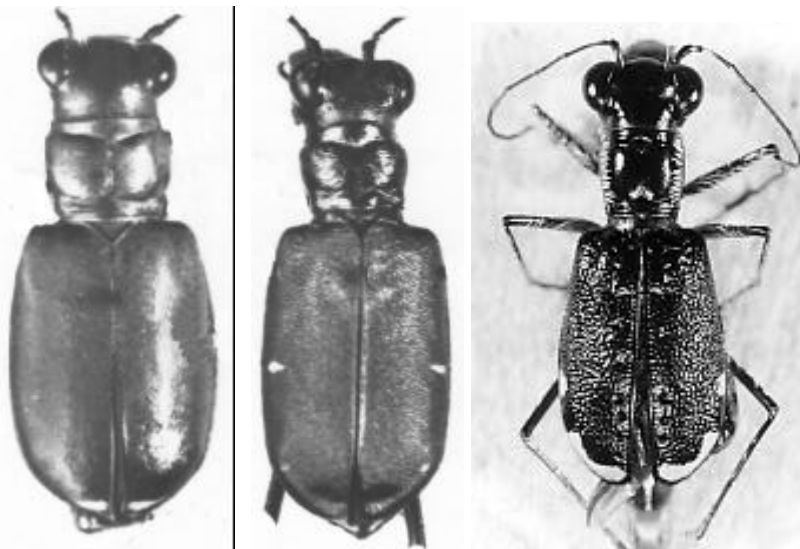


- Gena glabrous .....43
- 35. Labrum unidentate or without median tooth .....36
  - Labrum with 3 or more median teeth .....37
- 36. Pronotum narrow, front angle rounded; humeral lunule usually complete and connected to or slightly removed from marginal line ..... **repanda Dejean**
  - Pronotum wide; frontal angles acute; humeral lunule usually broken and widely separated from marginal line..... *duodecimguttata* Dejean\*
- 37. Humeral lunule complete, projecting far mesad (below), or obliterated by heavy markings ..... 38



- Humeral lunule absent, broken into dots .....39
- 38. Markings not connected along margin of elytra; humeral lunule long and oblique ..... **tranquebarica Herbst**
  - Markings connected along margin of elytra; humeral lunule not long and oblique; larger than normal size species ..... *formosa generosa* Dejean\*
- 39. First antennal segment glabrous (except for sensory setae) ..... *formosa generosa* Dejean\*
  - First antennal segment with few to many setae.....40
- 40. Elytral color dark greenish-brown to reddish brown; all elytral lunules complete.. ..... *ancocisconensis* T. W. Harris\*
  - Elytra purplish to red or green or black; lunules complete, broken, or absent.....41
- 41. Head and pronotum blue-green, much different color than elytra, contrasting with red elytral color ..... *splendida* Hentz\*
  - Head, pronotum, and elytra not differing in overall color .....42
- 42. Humeral and apical lunules usually present, humeral lunule may be reduced to a dot ..... *limbalis* Klug\*

- Humeral and apical lunules absent; markings reduced to median markings .....  
 .....*purpurea* Olivier\*
- 43. Elytra smooth, impunctate, not granulate.....44
- Elytra granulate or punctate .....45



Elytral surfaces; Left (smooth, impunctate), middle (granulate), right (punctate)

- 44. Median tooth of labrum smaller than lateral teeth; diameter of penultimate segment of labial palp ca. 2 times diameter of terminal segment at distal end; uniformly black species (Florida). Green individuals may occur with black individuals in other portions of range .....  
 ..... ***nigrrior* Schaupp**
- Median tooth of labrum larger than lateral teeth; diameter of penultimate segment of labial palp equal to diameter of terminal segment at distal end; unmarked greenish blue species in Florida .....  
 ..... ***scutellaris unicolor* Dejean**
- 45. First antennal segment glabrous or with 1-2 erect setae ..... ***hirticollis* Say**
- First antennal segment with several erect setae .....46
- 46. Humeral lunule complete or with at least a dot on humeral angle.....  
 ..... ***tranquebarica* Herbst**
- Humeral lunule absent, no dot on humeral angle.....*purpurea* Olivier\*

### Selected References

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## Photo Gallery of Florida tiger beetles



*Megacephala virginica*



*M. carolina floridana*



*M. carolina carolina*



*Cicindela highlandensis*



*C. abdominalis*



*C. scabrosa*



*C. rufiventris*



*C. gratiosa*



*C. hirtilabris*



*C. togata*



*C. marginata* (male)



*C. hamata lacerta* (male)



*C. waplery*



*C. blanda*



*C. viridicollis*



*C. striga*



*C. severa*



*C. olivacea*



*C. sexguttata* (Florida)



*C. sexguttata* (GA, north)



*C. trifasciata ascendens*



*C. punctulata*



*C. repanda*



*C. tranquebarica*



*C. nigrior*



*C. scutellaris unicolor* (FLA)



*C. scutellaris unicolor* (GA,SC)



*C. hirticollis* (male)



*C. hirticollis* (female)