

Subfamily Tenebrioninae: Keys

(underlined terms are defined to the right)

Key S

Key to the Florida genera [including species] of Ulomini

1. Eighth elytral interval not produced apically as a rounded crest superintending the enlarged punctures of the epipleural stria; protibiae with outer (dorsal) margin coarsely serrate.....*Uloma* Dejean (see **Key T**)
1'. Eighth elytral interval produced apically as a rounded crest superintending the enlarged punctures of the epipleural stria; protibiae with outer (dorsal) margin not coarsely serrate.....*Eutochia* LeConte [*picea* (Melsheimer)] (**Fig. 1**)

Key T

Key to the Florida species of *Uloma* Dejean

1. Front femora with lower edge grooved entire length.....2
1'. Front femora with lower edge not grooved, but with broad pit near tip.....*mentalis* Horn (**Fig. 3**)
2 (1). Apical antennomere oblique, pointed; mentum with middle plate transverse.....*imberbis* LeConte (**Fig. 2**)
2'. Apical antennomere rounded at tip.....*punctulata* LeConte (**Fig. 4**)

Key U

Key to the Florida genera [including species] of Helopini

1. Mesosternum nearly flat, horizontal; prosternum bent down behind procoxae and prolonged posteriorly.....*Tarpela* Bates [*undulata* (LeConte)] (**Fig. 8**)
1'. Mesosternum excavate, declivous in front.....2
2 (1'). Metasternum short.....*Helops* Fabricius [*cisteloides* Germar] (**Fig. 6**)
2'. Metasternum very elongate; mesosternum triangularly notched in front....*Nautes* Pascoe [*viridimicans* Horn] (**Fig. 7**)

Key V

Key to the Florida genera [including species] of Triboliini

1. Size < 6.5 mm; males with three horns located on head;.....*Hypogena* Dejean [*tricornis* (Dalman)] (**Figs. 9,10**)
1'. Size > 6.0 mm; horns lacking on males.....2
2 (1). Elytral intervals finely carinate.....*Tribolium* Macleay (see **Key W**)

Antennomere-subunit of the antennae

Carinate-keeled or having raised lines

Declivous-sloping downward

Epipleural striae-longitudinal depressed lines located laterally when elytra are closed

Excavate-scooped out depression

Mentum-ventral fused plate derived from the labium (lower lip)

Mesosternum-ventrally, the middle thoracic segment

Metasternum-ventrally, the third thoracic segment

Oblique-slanting

Prosternum-ventrally, the first thoracic segment

Serrate-with notched edges like the teeth of a saw

Transverse-running across

Subfamily Tenebrioninae: Keys

- 2'. Elytral intervals flat or convex, sometimes with weak carina on seventh or eighth interval.....3
- 3 (2'). Elytral epipleuron ending abruptly well before elytral apex.....*Tharsus* LeConte [*seditiosus* LeConte] (Fig. 18)
- 3'. Elytral epipleuron tapering gradually posteriorly, attaining elytral apex.....4
- 4 (3'). Antennae with last four segments forming distinct, capitate club.....
.....*Lyphia* Mulsant and Rey [*tetraphylla* Fairmaire] (Fig. 13)
- 4'. Antennae gradually clavate.....4
- 5 (4'). Eyes reniform, emarginated in dorsal third by epistomal canthus.....*Latheticus* Waterhouse (see Key X)
- 5'. Eyes round, entirely ventrad of epistomal canthus.....
.....*Palorus* Mulsant (see Key Y)

Key W

Key to the Florida species of *Tribolium* Macleay

1. Body uniformly ferrugineous.....2
- 1'. Body black with red appendages.....
.....*audax* Halstead (Fig. 19)
- 2 (1). Antennae with distinct three antennomere club; space separating eye ventrally equal to diameter of eye; eyes not margined above.....*castaneum* (Herbst) (Fig. 20)
- 2'. Antennae gradually enlarged; space separating eyes virtually equal to three times diameter of eyes; eyes margined above.....*confusum* (Jacquelin du Val) (Fig. 21)

Key X

Key to Florida species of *Latheticus* Waterhouse

(this key needs to be developed)

1. *oryzae* Waterhouse (Fig. 11)
- 1'. *prosopis* Chittenden (Fig. 12)

Key Y

Key to Florida species of *Palorus* Mulsant

(this key needs to be updated to include *P. cerylonoides* (Pascoe) Fig. 14)

1. Pronotum with a deep, broad, long depression on each side of the midline; each elytron with a distinct carina on the seventh interval.....*foveicollis* Blair (Fig. 15)

Antennomere-subunit of the antennae

Capitate-with an apical knoblike enlargement

Carina-elevated ridge or keel

Clavate-thickening gradually towards the tip

Convex-curved or rounded outward

Epipleuron-deflexed or inflexed portion of the elytra, laterally when the elytra are closed

Epistomal canthus-a chitinous process more or less completely dividing the eyes into an upper and lower half

Ferrugineous-rusty red-brown

Pronotum-upper dorsal plate of the first thoracic segment

Reniform-kidney-shaped

Ventrad-in the direction of ventral

Subfamily Tenebrioninae: Keys

1'. Pronotum evenly convex, without depressions; each elytron evenly convex transversely, without carina.....2

2 (1'). Head with reflexed sides of front extending to about middle of dorsal border of eye, eye large and irregularly rounded.....*subdepressus* (Wollaston) (Fig. 17)

2'. Head with reflexed sides of front extending just posterior to anterior border of eye, eye small and rounded.....*ratzeburgi* (Wissmann) (Fig. 16)

Key Z

Key to Florida species of *Alphitobius* Stephens

1. Eyes completely or almost completely divided.....*laevigatus* (Fabricius) (Fig. 23)

1'. Eyes not divided.....*diaperinus* (Panzer) (Fig. 22)

Key AA

Key to Florida genera [including species] of Tenebrionini

1. Tarsi with ventral pads of dense, pilose, yellowish setae; clypeolabral membrane usually exposed, at least medially.....*Zophobus* Blanchard [*atratus* (Fabricius)] (Fig. 28)

1'. Tarsi with stiff, sparse, usually dark colored setae ventrally, clypeolabral membrane concealed.....2

2 (1'). Eyes divided by epistomal canthus into dorsal and ventral lobes...*Idiobates* Casey [*castaneus* (Knoch)] (Fig. 24)

2'. Eyes not divided by epistomal canthus.....3

3 (2'). Fifth visible sternite with very fine marginal groove.....*Neatus* LeConte [*tenebrioides* Beauvois] (Fig. 25)

3'. Fifth visible sternite without marginal groove.....*Tenebrio* Linnaeus (see Key BB)

Key BB

Key to the Florida species of *Tenebrio* Linnaeus

1. Surface dull, opaque; black to dark reddish brown.....*obscurus* Fabricius (Fig. 27)

1'. Surface more or less shining; dark reddish brown to piceous.....*molitor* Linnaeus (Fig. 26)

Tribe Centronopini (see Coelometopinae Key p. 82)

Centronopus calcaratus (Fabricius) (Fig. 29)

Key CC

Clypeolabral membrane- membrane between the clypeus (on the head below the frons) and labrum (upper lip)

Convex-curved or rounded outward

Epistomal canthus-a chitinous process more or less completely dividing the eyes into an upper and lower half

Opaque-without any surface luster but not transparent

Piceous-black

Pilose-covered with setae or hairs

Pronotum-upper dorsal plate of the first thoracic segment

Reflexed-bent or turned back

Sternite-a subdivision of the sternum (ventral segmentation)

Tarsi-distal leg segments often bearing a claws

Key CC

Key to the Florida genera [including species] of Amarygmini

- 1. Elytra with humeral angles prominent; pronotum finely and shallowly punctate or impunctate.....
.....*Cymatothes* Dejean (see **Key C-1**)
- 1?. Elytra with humeral angles obtusely rounded; pronotum coarsely, confluently punctured.....
.....*Meracantha* Kirby [*contracta* (Beauvois)] (**Fig. 32**)

Key C-1

Key to the Florida species of *Cymatothes* Dejean

- 1. Elytral carinae present; interstitial punctation not circular, more or less dashed lines.....
.....*tristis* (Laporte) (**Fig. 31**)
- 1?. Elytral carinae absent, interstitial punctation circular.....
.....*opaca* (Solier) (**Fig. 30**)

Carinae-elevated ridges or keels

Confluently-running together

Elytra-the forewings of beetles

Humeral-relating to the shoulder; located in the anterior portion of the wing

Obtusely-at an angle greater than a right angle

Pronotum-upper dorsal plate of the first thoracic segment

Punctate-with punctures



Fig. 1: *Eutochia picea* (Melsheimer)

Length: ~8.5 mm

Habitat: ---

Comments: May be more than 1 sp. in this genus in FL



Fig. 2: *Uloma imberbis* LeConte

Length: 8.0-9.5 mm

Habitat: Under bark of hardwoods

Comments: 3 of the 5 known *Uloma* spp. in the U.S. occur in FL



Fig. 3: *Uloma mentalis* Horn

Length: 8.0-9.0 mm

Habitat: Prob. under bark

Comments: ---



Fig. 4: *Uloma punctulata* LeConte

Length: 7.0-8.5 mm

Habitat: Common on *Pinus* spp.

Comments: ---



Fig. 5: *Uloma* sp. (Florida)

Length: ~8.5 mm

Habitat: label data indicated 'in dead wood'

Comments: An undescribed species; Triplehorn identified it as *Uloma* sp.



Fig. 6: *Helops cisteloides* Germar

Length: 10-12.5 mm

Habitat: Prob. under bark

Comments: Additional undescribed *Helops* spp. occur in FL



Fig. 7: *Nautes viridimicans* Horn

Length: 6.0-7.0 mm

Habitat: Under bark of oak spp.

Comments: Northern-most FL record is in Levy Co.; appearance is more metallic bluish-green which is not depicted in picture

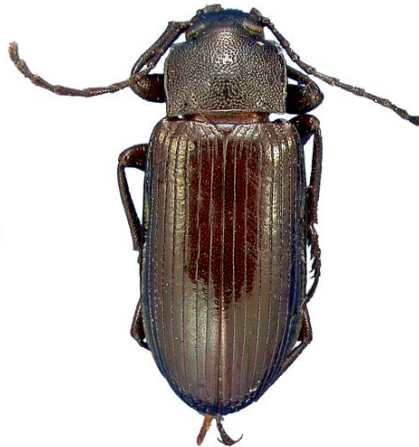


Fig. 8: *Tarpela undulata* (LeConte)

Length: 10-13 mm

Habitat: On oak spp.

Comments: 3 *Tarpela* spp. occur in the eastern U.S.



Fig. 9: *Hypogena tricornis* (Dalman) (male)

Length: ~7.0 mm

Habitat: ---

Comments: 2 *Hypogena* spp. occur in the U.S.



Fig. 10: *Hypogena tricornis* (Dalman) (female)

Length: ~7.0 mm

Habitat: ---

Comments: 2 *Hypogena* spp. occur in the U.S.



Fig. 11: *Latheticus oryzae* Waterhouse

Length: 2.0-3.0 mm

Habitat: Stored products; attracted to lights

Comments: Known to infest wheat, rice, corn rye, flour etc.; 'long-headed flour beetle'; cosmopolitan



Fig. 12: *Latheticus prosopis* Chittenden

Length: 2.0-3.0 mm

Habitat: Stored products

Comments: Cosmopolitan



Fig. 13: *Lyphia tetraphylla*
Fairmaire

Length: 3.0-4.0 mm

Habitat: Stored products; attracted to lights

Comments: Introduced from Europe; Cosmopolitan



Fig. 14: *Palorus cerylonoides*
(Pascoe)

Length: 2.5-3.5 mm

Habitat: ---

Comments: Recently recorded from FL and perhaps the U.S.



Fig. 15: *Palorus foveicollis* Blair

Length: 3.7-4.0 mm

Habitat: Moldy stored grains

Comments: May be a pest; introduced to U.S.; cosmopolitan



Fig. 16: *Palorus ratzburgi*
(Wissmann)

Length: 2.5-3.0 mm

Habitat: Stored grain and mill products

Comments: Stored products pest; 'small-eyed flour beetle'; cosmopolitan



Fig. 17: *Palorus subdepressus*
(Wollaston)

Length: 2.5-3.0 mm

Habitat: Stored products; attracted to lights

Comments: Stored products pest; 'depressed flour beetle'; cosmopolitan



Fig. 18: *Tharsus seditiosus*
LeConte

Length: 5.0-5.5 mm

Habitat: Under bark; attracted to lights

Comments: Known to occur primarily in southern states



Fig. 19: *Tribolium audax*
Halstead

Length: 2.8-4.5 mm
Habitat: Stored products
Comments: ‘American black flour beetle’; also recorded from cells in the nest of megachilid bees; cosmopolitan



Fig. 20: *Tribolium castaneum*
(Herbst)

Length: 3.0-3.8 mm
Habitat: Stored products
Comments: Considered a major pest; ‘red flour beetle’; cosmopolitan



Fig. 21: *Tribolium confusum*
Jacquelin du Val

Length: 2.5-4.5 mm
Habitat: Stored products
Comments: Considered a major pest; ‘confused flour beetle’; cosmopolitan



Fig. 22: *Alphitobius diaperinus*
(Panzer)

Length: 5.8-6.3 mm
Habitat: Many kinds of dried materials; dung
Comments: Pest of stored cereal products; ‘lesser mealworm’; cosmopolitan; can vector poultry disease and has been known to feed on sick bats, young chickens and other organisms (Falomo 1986)



Fig. 23: *Alphitobius laevigatus*
(Fabricius)

Length: 5.0-6.5 mm
Habitat: Many kinds of dried materials
Comments: ‘black fungus beetle’; cosmopolitan



Fig. 24: *Idiobates castaneus*
(Knoch)

Length: 9.0-10 mm
Habitat: Under bark of oak spp.
Comments: not commonly collected



Fig. 25: *Neatus tenebroides* (Beauvois)

Length: 10-12 mm

Habitat: Under loose bark

Comments: Common



Fig. 26: *Tenebrio molitor* Linnaeus

Length: 13-16 mm

Habitat: Stored products

Comments: Typically infest grain that is not allowed to remain dry; 'yellow mealworm'; larvae used as pet food; cosmopolitan



Fig. 27: *Tenebrio obscurus* Fabricius

Length: 14-17 mm

Habitat: Stored products

Comments: Similar habits as *T. molitor*; 'dark mealworm'; cosmopolitan



Fig. 28: *Zophobas atratus* (Fabricius)

Length: ~20 mm

Habitat: ---

Comments: Frequently sold in pet stores as 'giant mealworm'; 2 *Zophobas* spp. is U.S.



Fig. 29: *Centronopus calcaratus* (Fabricius)

Length: 14-17 mm

Habitat: Under bark of many deciduous tree spp.

Comments: 2 *Centronopus* spp. occur in the U.S.; may occur only in northern FL



Fig. 30: *Cymatothes opaca* (Solier)

Length: 12-13 mm

Habitat: ---

Comments: Known to occur in southern FL



Fig. 31: *Cymatothes tristis* (Laporte)

Length: ~12 mm

Habitat: ---

Comments: Taken at blacklight in Monroe Co. FL



Fig. 32: *Meracantha contracta* (Beauvois)

Length: 11-14 mm

Habitat: Under bark, dead stumps, typically those with lichens and moss growing on them

Comments: May be an undescribed *Meracantha* sp. known at Torreya State Park, FL (Dunford *in litt.*); *M. contracta* records in FL are currently restricted to Liberty Co. in the panhandle