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 supertending 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... imberbis 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... Helops Fabricius [cisteloides Germar] (Fig. 6)
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... Hypoga Dejean [tricornis (Dalman)] (Figs. 9,10)
1'. Size > 6.0 mm; horns lacking on males... 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.2

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 [tetrathylla 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 ventral 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.2

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)
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 [atraeus (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
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; interstrial punctation not circular, more or less dashed lines. ...................... Cymatothes tristis (Laporte) (Fig. 31)
   1’. Elytral carinae absent, interstrial punctation circular. .................................................. Cymatothes 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
Subfamily Tenebrioninae: Species Profiles

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
Subfamily Tenebrioninae: Species Profiles

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
Subfamily Tenebrioninae: Species Profiles

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
Subfamily Tenebrioninae: Species Profiles

**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
Subfamily Tenebrioninae: Species Profiles

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
Subfamily Tenebrioninae: Species Profiles

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