Tiger Beetles of Missouri

Ted C. MacRae
Presented to Miramiguoa Master Naturalists, May 2012

What is a beetle?

- Insects are animals belonging to the class known as **Insecta**.
- All insects have 3 body parts:
  - Head
  - Thorax
  - Abdomen
- All insects have 6 legs attached to the thorax.
- Most insects have two pairs of wings attached to the thorax.
- **Beetles** have the front wings modified into **elytra** – hard covers for the flying wings that lie flat against the abdomen when at rest.
- Beetles have **mandibles** (jaws) for grasping/chewing and **maxillary palps** (segmented mouth parts) for grasping food.

What is a tiger beetle?

- Belong to a group called ground beetles (Carabidae):
  - Distributed worldwide
  - 20,000 known species
  - Predaceous both as adults and as larvae
  - Most live on the ground
- Tiger beetles recognizable by their distinctive shape:
  - Long legs
  - Cylindrical rather than flattened body
- Larvae live in vertical burrows in the soil
- Many species are strong fliers.
- 2,000 species worldwide
- 24 species live in Missouri


Where do tiger beetles live?

- Roadsides
- Glades
- Open Woodlands
- Sand/gravel bars
- Sand Prairies
- Loess Hills
Habitat partitioning by tiger beetles

Species that live along roadsides
Cicindela limbalis – Common Claybank Tiger Beetle
Common in Missouri along roadsides, open forests, and glades. Red head.

Cicindela splendida – Splendid Tiger Beetle
Same habitats as previous – more common in southern Missouri. Green head.
*Cicindela purpurea* – Cowpath Tiger Beetle
Diagonal marking at middle of elytra – not common in Missouri

* Cicindelidia punctulata – Punctured Tiger Beetle
Our most common species of tiger beetle.
Easily recognized by the rows of brightly colored “punctures” on each elytron.

*Cicindelidia rufiventris* – Red-bellied tiger beetle
Only Missouri species with a “red belly” – more common in southern glades
Individuals show variability in spots and coloration – this one has more spotting than the previous and more bronzy rather than blue coloration.

Species that live along sand/gravel bars
**Cicindela repanda** – Bronzed Tiger Beetle
Common along riversides in Missouri – “C”-shaped shoulder marking

**Cicindela hirticollis** – Hairy-necked Tiger Beetle
Less common – “G”-shaped marking on neck and “hairy” thorax
Cicindela tranquebarica – Oblique-lined Tiger Beetle
Common, prefers drier sand areas away from water – also sand prairies.

Newly emerged male at the entrance to his burrow after summer hibernation.
Ellipsoptera cuprescens – Coppery Tiger Beetle
Not common – elytra “excavated” just before the tips.

Mating Coppery Tiger Beetles. Males grasp females by the thorax (“neck”) with their mandibles. Mate guarding prevents remating by female.
Ellipsoidera macra – Sandy Stream Tiger Beetle
Rare in Missouri – slightly less shiny than Coppery Tiger Beetle

We have only collected Sandy Stream Tiger Beetles by attracting them to ultraviolet lights along the Missouri River in northwest Missouri.
Cicindelidia trifasciata subsp. ascendens – Ascendent Tiger Beetle
Southeastern Coastal Plain – only one specimen known from Missouri.

Species that live in open woodlands
*Cicindela sexguttata* – Six-spotted Tiger Beetle
Most commonly encountered tiger beetle in Missouri

*Cylindera unipunctata* – One-spotted Tiger Beetle
Rarely encountered but locally abundant in eastern Ozark Highlands
This species cannot fly and relies on camouflage and hiding amongst grass clumps and fallen leaves to avoid detection.

Species restricted to glades
Cicindelidia obsoleta – Prairie Tiger Beetle

- Main population in southwestern Great Plains
- Large species – only *Tetracha virginica* is larger.
- Upland species – never found near water. Prefers grasslands and hillsides with exposed soil.
- Small disjunct population in White River Hills of SW Missouri and NC Arkansas – on dolomite/sandstone glades.
- Main population is a “summer species”, but MO/AR adults emerge in late summer and fall after seasonal rains.
- Powerful fliers


Cicindelidia obsoleta subsp. vulturina – Prairie Tiger Beetle
Large, powerful flier, occurs only in glades in the White River Hills
Most individuals are dark olive-green, but some such as this one are brown.

Other individuals show incomplete markings.
Species that live in sand prairies

*Cicindela formosa* subsp. *generosa* – Eastern Big Sand Tiger Beetle

Big, bold white markings and large size identify this species.
Coloration and markings may seem conspicuous but provide excellent camouflage against the pebbly-sand substrate.

Big sand tiger beetles remain one of my favorite tiger beetles in Missouri.
Cicindela scutellaris – Festive Tiger Beetle

- Species occurs broadly east of the Rocky Mountains and exhibits the greatest amount of geographical variation of any tiger beetle species in North America
- Dry, upland sand habitats, including dunes, blowouts, road cuts, and sparsely vegetated pine and pine-oak forests
- “Spring-fall” species
- Disjunct populations in SE, NE, and NW corners of MO

Map 43  Festive Tiger Beetle, Cicindela (Cicindela) scutellaris; A, C. s. scutellaris; B, C. s. flavoviridis; C, C. s. lecontei; D, C. s. rugata; E, C. s. rugifrons; F, C. s. unicolor; G, C. s. yampae.


Cicindela scutellaris subsp. lecontei – Leconte’s Tiger Beetle
This individual from SE Missouri shows more green than those further north.
Another individual from SE Missouri, this one is completely green and contains no white markings on the elytra (matches subsp. *unicolor* to the south).

Species restricted to the southeastern lowlands
*Tetracha carolina* – Carolina Metallic Tiger Beetle
Largest tiger beetle in Missouri (nearly 1”). Similar species is *virginica*.

Toothy mandibles and rapid running capabilities make these and other tiger beetles formidable predators.
*Cylindera cursitans* – Ant-like Tiger Beetle
Smallest tiger beetle in Missouri (1/4-inch long) – flightless.

**Tiger Beetle Conservation**

Historical and current distribution of *Cylindera celeripes* – Swift Tiger Beetle
**Cylindera celeripes** – Swift Tiger Beetle

**Habroscelimorpha circumpicta johnsonii**
Saline Spring Tiger Beetle

*Figure 2. Habroscelimorpha circumpicta johnsonii adults showing the blue to blue-green coloration exhibited by Missouri species individuals:*  
(a) Blue Lake Conservation Area (sunk), 22 May 2001; (b) same locality, 14 May 2002. Photos by CEB.
**Dromochorus pruinina**

Frosted Dromo Tiger Beetle

---

**Tiger Beetle Larvae**
Enemies of Tiger Beetle Larvae

*Anthrax analis* (bee flies) lay eggs in or near tiger beetle larval burrows. Larvae hatch and attach to tiger beetle larva.

The fly larvae kill the host and overwinter. In spring an adult fly will emerge from the burrow.

---

Checklist of Missouri Tiger Beetles

- **Family CARABIDAE** (ground beetles)
- **Subfamily CICINDELINAE** (tiger beetles)
- **Tribe MEGACEPHALINI** (metallic tiger beetles)
  - *Tetracha carolina* – Carolina Metallic Tiger Beetle
  - *Tetracha virginica* – Virginia Metallic Tiger Beetle
- **Tribe CICINDELINI** (flashy tiger beetles)
  - *Cicindela duodecimguttata* – 12-spotted Tiger Beetle
  - *Cicindela formosa* subsp. *generosa* – Eastern Big Sand Tiger Beetle
  - *Cicindela hirticollis* subsp. *shelfordi* – Shelford’s Tiger Beetle
  - *Cicindela limbalis* – Common Claybank Tiger Beetle
  - *Cicindela purpurea* – Cowpath Tiger Beetle
  - *Cicindela repanda* – Bronzed Tiger Beetle
  - *Cicindela scutellaris* subsp. *lecontei* – Le Conte’s Tiger Beetle
  - *Cicindela sexguttata* – Six-spotted Tiger Beetle
  - *Cicindela splendidia* – Splendid Tiger Beetle
  - *Cicindela tranquebarica* – Oblique-lined Tiger Beetle

Species names in bold text shown in this presentation.
Checklist of Missouri Tiger Beetles (cont.)

- Tribe CICINDELINI (cont.)
  - *Cicindelidia obsoleta* subsp. *vulturina* – Prairie Tiger Beetle
  - *Cicindelidia punctulata* – Punctured Tiger Beetle
  - *Cicindelidia rufiventris* – Eastern Red-bellied Tiger Beetle
  - *Cicindelidia trifasciata* subsp. *ascendens* – Ascendant Tiger Beetle
  - *Cylindera celeripes* – Swift Tiger Beetle
  - *Cylindera cursitans* – Ant-like Tiger Beetle
  - *Cylindera unipunctata* – One-spotted Tiger Beetle
  - *Dromochorus pruinina* – Frosted Dromo Tiger Beetle
  - *Ellipsoptera cuprascens* – Coppery Tiger Beetle
  - *Ellipsoptera lepida* – Ghost Tiger Beetle
  - *Ellipsoptera macra* – Sandy Stream Tiger Beetle
  - *Habroscelimorpha circumspicata* subsp. *johnsonii* – Johnson’s Tiger Beetle

Species names in bold text shown in this presentation.

More Information


“Beetles in the Bush”
http://beetlesinthebush.wordpress.com
(or, just Google it!)