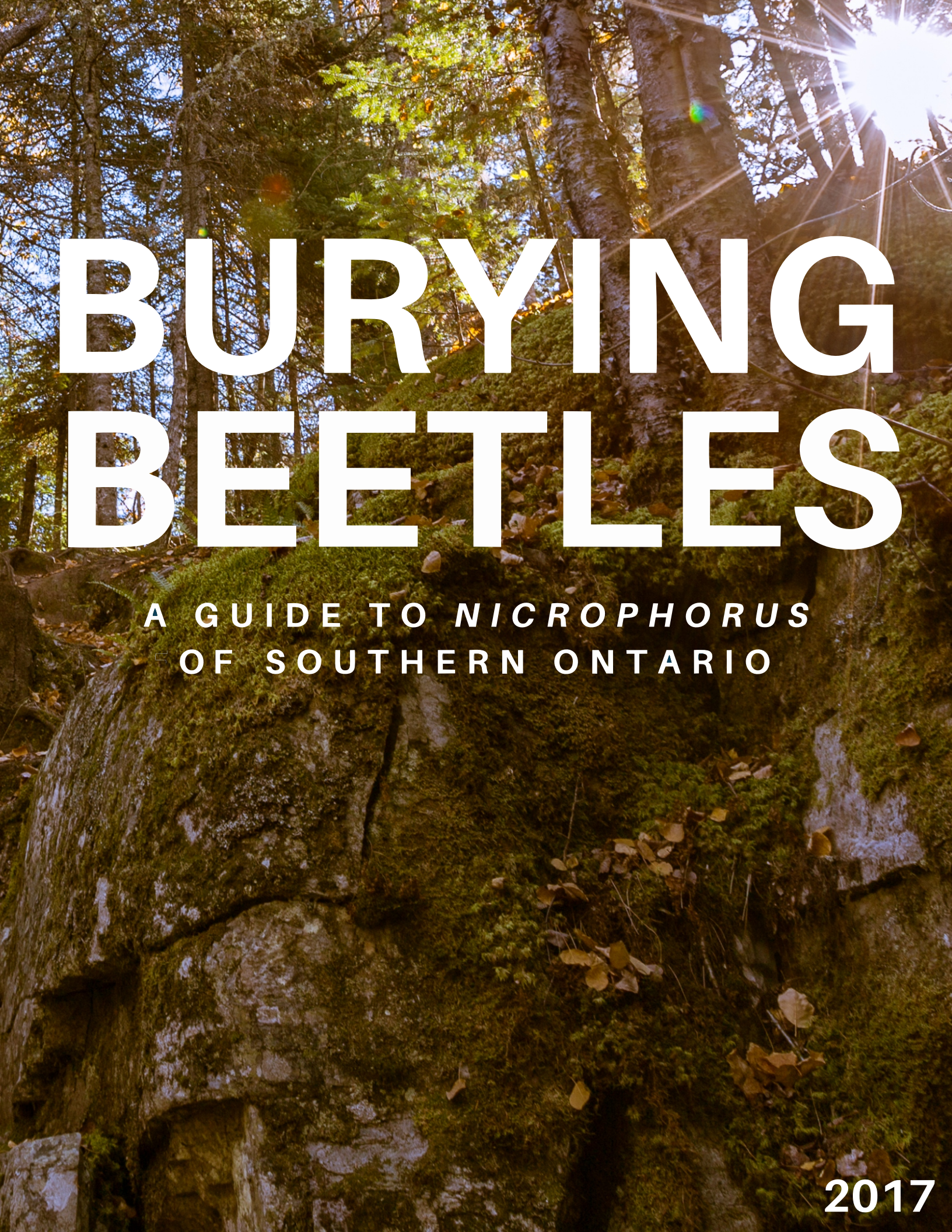




BURYING BEETLES

A GUIDE TO *NICROPHORUS*
OF SOUTHERN ONTARIO

2017

Nicrophorus Identification Key

What colour are the tips of the antennae?

mostly orange

entirely black
(see next page)

Are the elytra
almost entirely
black ?

yes

no



pustulatus

Does orange extend
up the sides toward
the head ?

yes

no

Does orange extend all
the way along the
sides, connecting the
front & back orange
patches?



orbicollis



marginatus (also:
antennae clubs entirely orange)

yes

no



sayi

Nicrophorus Identification Key

What colour are the tips of the antennae?

mostly orange
(see previous page)

entirely black

Is the pronotum
furry & yellow ?

no

yes

Does orange extend
up the sides toward
the head ?

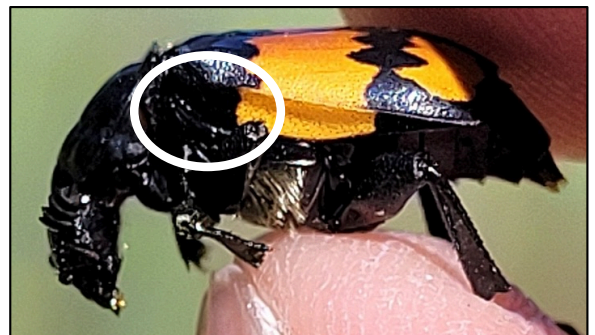
yes

no

tomentosus



hebes



defodiens

INSECTS

Insects are everywhere - they represent half of the animals described today. Not only are they impressive in numbers, they occupy almost all global habitats. From water to land and desert to tundra, the resilience of insects is astounding. Insects are characterized by three pairs of legs, compound eyes, a pair of antennae, a three-part body, and an exoskeleton. While all insects share these characteristics, individual species often have diverse and unique structures. For example, crickets have ears on their legs and common houseflies are able to “taste” with their feet.

BEETLES

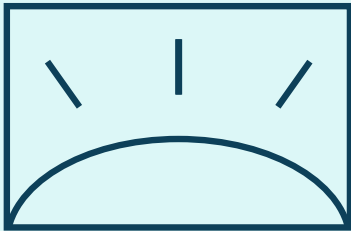
While the diversity among insects is amazing, beetles alone represent the most biodiverse group of organisms known, with more than 380,000 species identified to date. Beetles have a front pair of wings that act as solid wing-cases, also known as elytra. The shapes, markings, and texture of the elytra are a key for identifying beetles and serve in choosing mates and avoiding predators in some species. Beetles are found in all habitats, excluding the depths of the ocean, and play important roles in the breakdown of fungi, plants, animal carcasses, and debris. Some species may be predators, parasites, or agricultural pests. Beetles even play a role in human economy and trade, being used for food and dyes.

NICROPHORUS

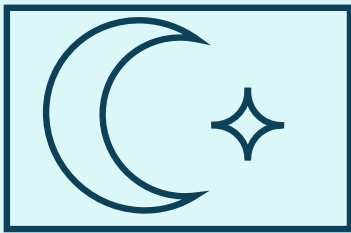
Nicrophorus beetles are often referred to as burying or carrion beetles, due to their feeding habits. While the majority of burying beetles feed on small vertebrate carcasses, some species will also feed on snake eggs, rotting fruit, and faeces. Even within the *Nicrophorus* genus, different species use diverse habitats ranging from wetlands to the forest canopy. *Nicrophorus* possess chemoreceptors on their club-like antennae that act like a nose to help them locate carcasses. *Nicrophorus* compete for carcasses within and between species, and will bury or cover their carcasses to hide them from other insects and vertebrates.

LEGEND

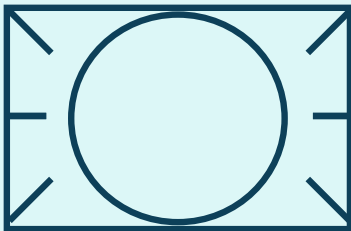
Time Most Active



Evening



Night



Day

MONTH Month Most Active

Common Carrion Size



Small -
Medium



Small

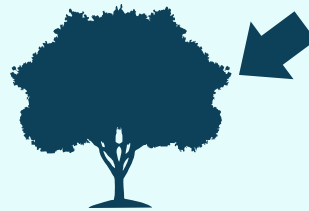
Location



Leaf Litter



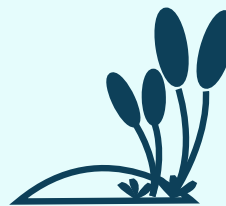
Open
Fields



Forest
Canopy



Forest +
Field



Wetlands



Forest +
Field +
Canopy +
Leaf Litter



Habitat
Generalist

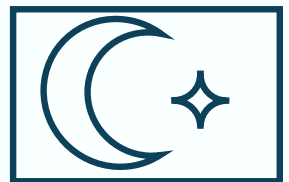
NICROPHORUS PUSTULATUS



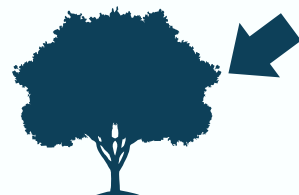
IDENTIFICATION

Mostly black antennae with 3 orange segments at the tips. Moderate size (15-20mm), although larger specimens have been found.

Distinct pattern on elytra with 4 small dots at back end and 2 dots on the sides.



**MAY-
AUG**



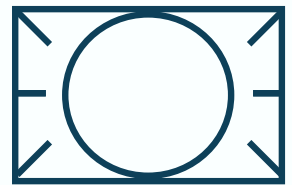
N. pustulatus larvae have been found on snake eggs. Their name means to be “marked with pustules” - referring to their red markings. *N. pustulatus* are commonly attracted to light. They were previously thought to be rare until it was recently discovered that they are fairly common in the forest canopy.

NICROPHORUS TOMENTOSUS



IDENTIFICATION

Completely black antennae and distinctive dense yellow “fur” on the upper back. Small (12-18mm).



JUN-
OCT



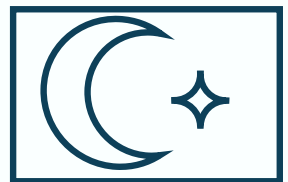
N. tomentosus mimic bumble bees, most obviously during flight. They do not fully bury carcasses making only a shallow pit. The carcass is then covered in leaf litter and debris. *N. tomentosus* also uniquely winter as larvae.

NICROPHORUS SAYI



IDENTIFICATION

Mostly black antennae with 3 orange segments at the tips. Moderate size (15-23mm). Distinct pattern of orange that spreads along the sides of the elytra.



**APR-
AUG**



N. sayi are the first *Nicrophorous* beetle to become active in the spring; some adults will appear when there is still snow on the ground.
N. sayi are named after Thomas Say, the father of modern entomology.

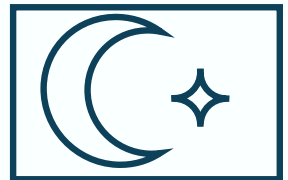
NICROPHORUS HEBES



IDENTIFICATION

Completely black antenna. Dense, yellow underside "fur." Moderately sized (13-22mm).

N. defodiens on the left. *N. hebes* on the right. Note that *N. hebes* orange marking on side extends to front of beetle.



**APR-
AUG**



N. hebes was described as a distinct species (from the mainly Eurasian *N. vespilloides*) in 2016 based on unique habitat and evidence for historical divergence. *N. hebes* remains poorly known, but appears to be a wetland specialist.

NICROPHORUS DEFODIENS



Two types of *N. defodiens* exist - when identifying first look for one of the two patterns (pictured left). While *N. defodiens* looks similar to *N. hebes*, the patterns on the sides of the elytra differ between the two species (shown below).

IDENTIFICATION



JUNE
AUG

BIMODAL DISTRIBUTION
MAY BE DUE TO COMPETITION
IN HOT SUMMER MONTHS



Completely black antennae. Small (12-18mm). As noted above, two characteristic patterns.

N. defodiens on the left. *N. hebes* on the right. Note that *N. hebes*' orange markings on sides extend to front of beetle.



N. defodiens don't bury carcasses, but rather hide them under leaf litter. They are found in boreal, montane, and coniferous forests.

NICROPHORUS MARGINATUS



IDENTIFICATION

Black antennae with 4 orange segments at ends. Dense, yellow underside “fur.” Unique elytra pattern resembling puzzle pieces. Moderate size (15-22mm). Black markings on elytra do not make any contact with the ridges on the sides of the elytra.



**MAY-
AUG**



>25 ha



N. marginatus are found in large, open fields and may have expanded into our region with the proliferation of human agriculture. Little is known about their ecology and behaviours locally.

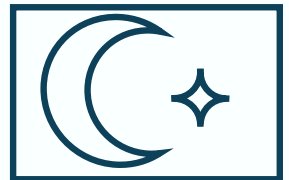
NICROPHORUS ORBICOLLIS



IDENTIFICATION

Black antennae with 3 orange segments at tips and 4 distinctive orange markings on black elytra. Moderately sized (15-22mm). Note the fine “fur”

on the beetle underside and covering the elytra. Look for the “fur” in the top right photo above and pay close attention to the beetle's back.



**JUNE-
AUG**



N. orbicollis can be found in mesic forest habitats and are one of our most abundant species. They will dominate other species of carrion beetles and take over carcasses.

OTHER BEETLES

These beetles are commonly seen when trapping burying beetles.



Necrodes surinamensis
Black, ridged elytra with red spots on rear



Necrophila americana
Yellow upper back with black patch in the middle



Oiceoptoma inaequale
Black, ridged elytra, often quite small in size



Oiceoptoma noveboracense
Black, ridged elytra. Red upper back, wide black marking



Thanatophilus lapponicus
Black elytra with circular bumps and yellow "fur" on upper back



Carabidae - Ground Beetle
Black elytra with thin upper back and thin ridges on elytra

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APRIL 2017

**KIERA LIBLIK AND THE MARTIN LAB
AT QUEEN'S UNIVERSITY, KINGSTON**