

Bronzed Cutworm



# Crawling and Flying Insects in Alberta

By Robert Bercha

[www.insectsofalberta.com](http://www.insectsofalberta.com)

# Introduction

- The Insect Body Design
- What Insects Need to Survive
- Common Alberta Insects



Tiger Moth

# The Insect Body Design

- The insect body has the following characteristics
  - An external skeleton or exoskeleton
  - 3 body divisions
  - 1 pair of antennae
  - 3 pairs of jointed legs
  - Usually 1 or 2 pairs of wings



Darner Dragonfly Larva stalking prey

# What is an Exoskeleton?

- An exoskeleton is a hard shell that surrounds and supports an insects body.
- It protects the insects internal organs.
- The insects muscles are attached to the inside surface.

# What do Insect Exoskeletons Look Like?



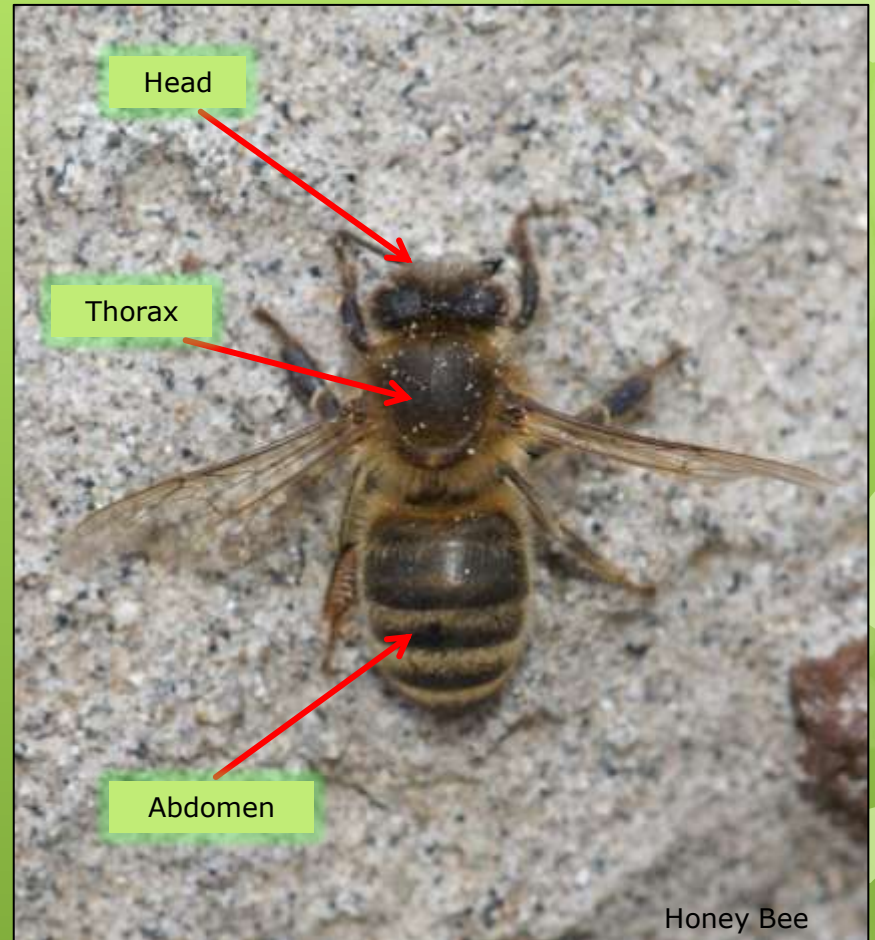
A photo showing the inside of a Granulated Carabid's exoskeleton – specifically the thorax.



A weevil with a very hard exoskeleton.

# Subdivisions of the Insect Body

- The Insect body has three subdivisions
  - Head
  - Thorax
  - Abdomen

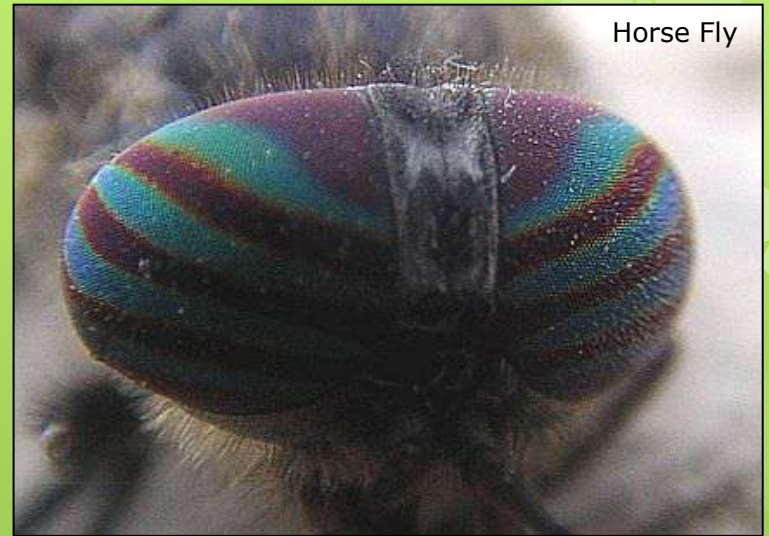


# Head

- The head has:
  - Eyes - 1 or 2 types
  - Antennae - 1 pair
  - Mouth parts - chewing or sucking



Simple Eyes



Compound Eyes



1 pair of antennae



Sucking mouth parts



Chewing mouth parts

# Thorax

- The Thorax has:
  - Legs (3 pairs - jointed)
  - Wings (1 or 2 pairs)



3 pairs of jointed legs.



An insect with 4 wings.



An insect with 2 wings.

# Abdomen

- The Abdomen has:
  - Up to 10 complete segments
  - Cerci (apendages)
  - Ovipositor - females



# Quiz #1 – Is this an insect?



# Quiz #1 – Answer

- No it is not an insect as it has:
  - 2 body segments
  - and eight legs

This is the Zebra Spider  
(*Salticus scenicus*)



## Quiz #2 – Is this an Insect?



# Quiz #2 – Answer

- Yes it is an insect as it has:
  - 3 pairs of legs
  - 3 body subdivisions
  - Two wings
  - and 2 antennae



This is a Beeish Robberfly  
(*Laphria sp.*)

# Quiz #3 – Is this an insect?



# Quiz #3 – Answer

- No it is not an insect as it has:
  - 2 main body divisions
  - Four pairs of legs
  - A set of claw-like pedipalps



This is an pseudoscorpion  
(order Pseudoscorpiones)

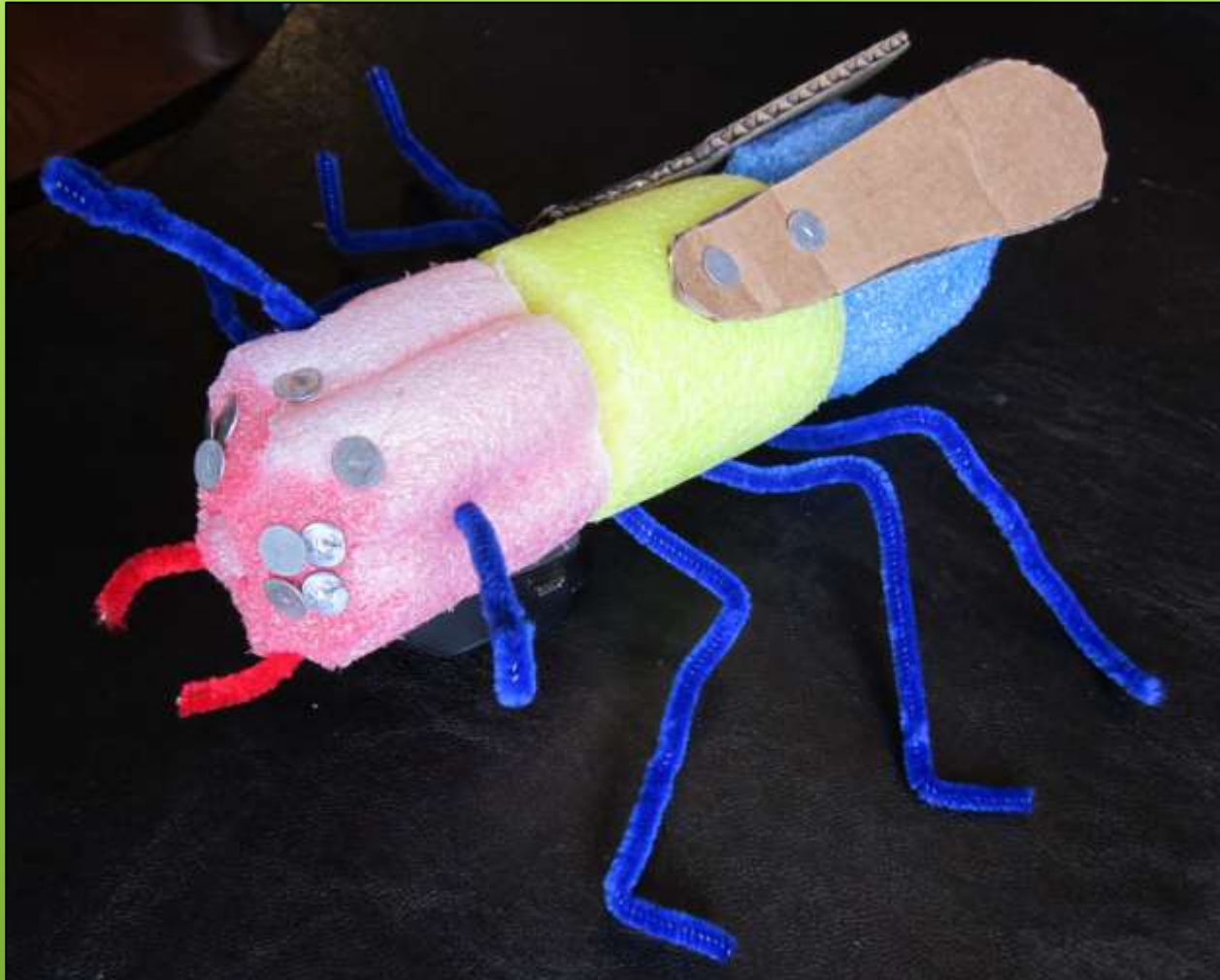
# Project #1: Build an Insect

## Materials

- 3 – 2" foam pool noodle pieces (for the 3 body divisions)
- 4 tooth picks (to hold foam pieces together)
- 14 small nails (compound and simple eyes and to attach wings)
- 5 pipe cleaners (cut in half for legs and in quarters for antenna and mandibles)
- Cardboard (wings)



# The finished insect



# What do Insects Need to Survive?

- Insects need the following to survive:
  - Food
  - Water
  - Shelter
  - Warmth



Giant Water Bug

# Food – What do insects eat?



Pollen & Nectar from flowers



Plant leaves and stalks



Dead animals



Wood



Blood and fluids from animals



Other insects



Dung

# Water – How do insects get water?

- No insect can survive without water.
- Insects get water by drinking it or through their food.
- Some have evolved to live in very dry places while others live in very moist places.



Tiger Beetle drinking water off of grains of wet sand



Baldfaced Hornet drinking water from a stream

# Shelter – where do insects live?



Nests



Small burrows or holes



Dead trees



Leaves



Rocks



Galls



Man made



Needle and soil mounds

# Warmth – How do insects stay warm?

- In general the sun is the main source of heat.
- An insects body temperature is controlled by the surrounding environment (ie ectothermic or cold blooded).
- Some insects, such as bumble bees, can generate heat using their muscles.



A White Admiral Butterfly basking in the sun



Water Boatman basking in the spring sun before returning to frigid pond water.

# Some Common Alberta Insects

- Beetles
  - Ladybugs
  - Other Beetles
- Wasps
- Bees
- Grasshoppers
- True Bugs
- Dragonflies
- Ants
- Caterpillars
- Butterflies
- Moths
- Flies
- Other Insects

# Beetles - Ladybugs



Ladybug Larva



Convergent Ladybug  
(*Hippodamia convergens*)



Seven-spot Ladybug  
(*Coccinella septempunctata*)



Two-spotted Ladybug  
(*Adalia bipunctata*)

# Other Beetles



Spruce Sawyer  
(*Monochamus scutellatus*)



Bronzed Tiger Beetle  
(*Cicindela repanda*)



Sidewalk Carabid  
(*Pterostichus sp.*)



Rose Curculio  
(*Merhynchites bicolor*)

# Wasps



Bald-faced Hornet  
(*Dolichovespula maculata*)



Common Aerial Yellowjacket  
(*Dolichovespula arenaria*)



Square-headed Wasp  
(*Lestica* sp.)



Western Yellowjacket  
(*Vespula pensylvanica*)

# Bees



Honey Bee  
(*Apis mellifera*)



Leafcutting Bee  
(Megachilidae)



Hunt's Bumble Bee  
(*Bombus huntii*)

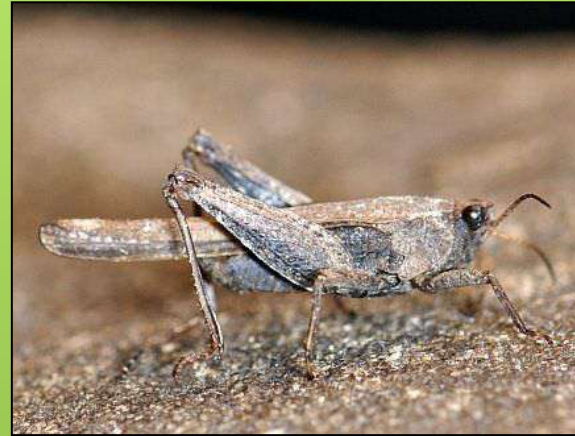


White-tailed Bumble Bee  
(*Bombus lucorum*)

# Grasshoppers



Two-striped Grasshopper  
(*Melanoplus bivittatus*)



Pygmy Grasshopper  
(Tetrigidae)



Carolina Locust  
(*Dissosteira carolina*)



Mormon Cricket  
(*Anabrus simplex*)

# True Bugs



Meadow Plant Bug  
(*Leptopterna dolabrata*)



Two-spotted Stink Bug  
(*Perillus bioculatus*)



Meadow Spittlebug Nymph  
(*Philaenus spumarius*)



Box Elder Bug  
(*Boisea trivittatus*)

# Dragonflies



Variable Darner  
(*Aeshna interrupta*)



Four-spotted Skimmer  
(*Libellula quadrimaculata*)



Boreal Bluet  
(*Enallagma boreale*)



Black Meadowhawk  
(*Sympetrum danae*)

# Ants



Western Thatching Ant  
(*Formica obscuripes*)



Ant  
(*Formica ulkei*)



Ant  
(*Formica podzolica*)



Boreal Carpenter Ant  
(*Camponotus herculeanus*)

# Caterpillars



Mourning Cloak Caterpillar  
(*Nymphalis antiopa*)



Red Admiral Caterpillar  
(*Vanessa atalanta*)



Bagworm Moth Caterpillar  
(*Dahlica triquetrella*)



Forest Tent Caterpillar  
(*Malacosoma disstria*)

# Butterflies



Fire-rim Tortoise Shell  
(*Aglais milberti*)



Greenish Blue  
(*Plebejus saepiolus*)



European Skipper  
(*Thymelicus lineola*)



Canadian Tiger Swallowtail  
(*Papilio canadensis*)

# Moths



Cranberry Girdler  
(*Chrysoteucha topiaria*)



Lappet Moth  
(*Phyllodesma americana*)



Polyphemus Moth  
(*Antheraea polyphemus*)



Rusty Tussock Moth  
(*Orgyia antiqua*)

# Flies



Green Bottle Fly  
(*Lucilia* sp.)



Mosquito  
(Culicidae)



Syrphid Fly (Flower or Hover Fly)  
(*Lapposyrphus lapponicus*)



Horse Fly  
(*Hybomitra* sp.)

# Other Insects



Mayfly  
(Ephemeroptera)



Green Lacewing  
(Chrysopidae)



Caddisfly  
(Trichoptera)

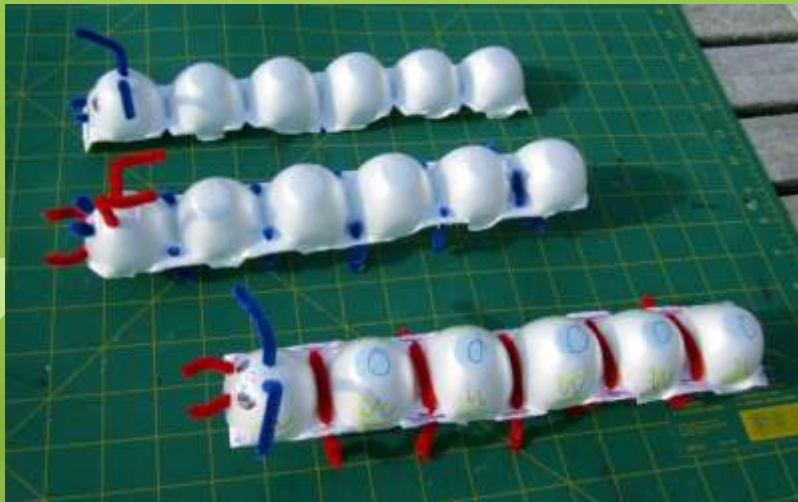


Stonefly Larva  
(Plecoptera)

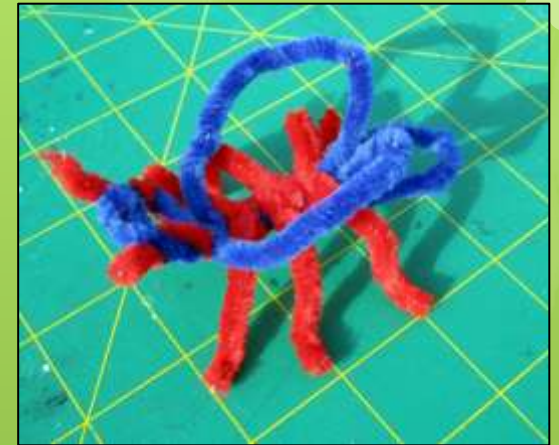
# Project #2: Pipe Cleaner Insects and Egg Carton Caterpillars

- Materials

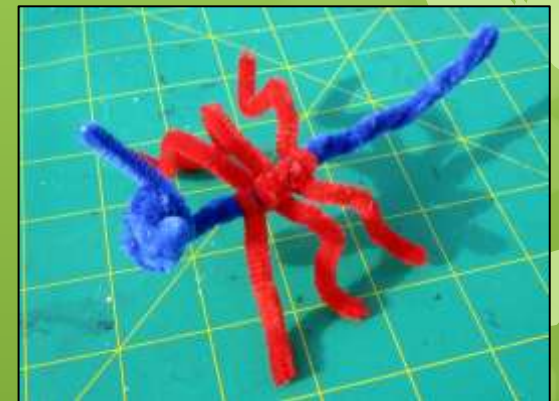
- Pipe cleaners
- Cardboard or Styrofoam egg cartons
- Plastic eyes and glue
- Or a black pen



Egg Carton Caterpillars



Pipe Cleaner Fly



Pipe Cleaner Walking Stick

# The End



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# Selected References

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