

Overview: An optional resource useful for structuring activities around learning about the Tansy Beetle. Associated activity sheets provide more information regarding each activity.

See also: Tansy Beetle Fact Sheet available to download from this page: https://www.buglife.org.uk/tansy-beetle-hub and https://www.buglife.org.uk/bugs-and-habitats/bug-month

Teacher notes:

Science, Maths, ICT

Initial question: What is an invertebrate? What is an insect?

[Activity sheets: Invertebrates and Insects work sheet, Tansy Beetle Life Cycle, Tansy Beetle Habitat Choice]

Animals with no backbones; true insects are arthropods – meaning "jointed leg and body". They all have six jointed legs; a head, thorax and abdomen; an exoskeleton; compound eyes; and antennae. Most have wings, though some are vestigial and some (like the Tansy beetle) fly only rarely. Insects are the only invertebrates to have developed the ability to fly.

Most insects hatch from eggs into larvae or nymphs. Some develop into pupae and then metamorphose into the adult form. It is estimated that there are somewhere between 2-8 million insect species on earth, though only around 1 million have been described. https://www.buglife.org.uk/bugs-and-habitats/terrestrial-invertebrates

Further guestions:

- How are invertebrates alike? How do they differ from vertebrates?
- Draw the life cycle of the Tansy beetle
- Discuss the need for proximity of Tansy plants for the Tansy beetle
- Discuss the impact flooding might have on the Tansy beetle
- Create a graph showing the difference between the numbers of Tansy beetles estimated to be
 on the banks of the River Ouse in the York area over the last three years.

[Activity: Insects Card Pack]

Looking at the cards in the pack, how might you group similar invertebrates together?



What are the four orders of "insects" shown in the cards?

Lepidoptera (butterflies and moths), Coleoptera (beetles), Hymenoptera (bees, wasps, ants), Diptera ("true flies": flies, hoverflies, mosquitoes)

Note that there are many other orders of insects such as Odonata (dragonflies and damselflies), Orthoptera (grasshoppers and crickets), Trichoptera (caddis flies) – around 28 in all.

More challenging activities

- Print the insect cards from Buglife website with fields left blank, except for the name. Divide cards into groups to research the information to fill them in
- Create a dichotomous key to differentiate an insect from a spider and to identify the four orders of insects on the cards
 - Students in groups come up with grouping features other than order: habitat, food, conservation status
 - Note that insects in different orders may eat the same things. Insects are extremely versatile and occupy most ecological niches.
 - O How many species of each order live in the UK? In the world?

Lepidoptera: 2400/120000 Coleoptera: 3900/300000 Hymenoptera: 7100/135700 Diptera: 6900/150000

https://www.buglife.org.uk/bugs-and-habitats/main-groups-insects

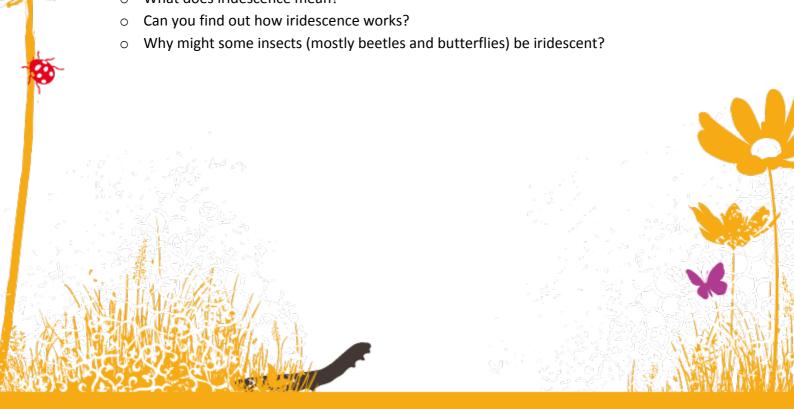
- Find some more examples from each order from around the world and create bar charts showing the range of sizes for each order you have found
 - o Which order has the largest range of sizes?
 - How many times larger is the largest insect you have found compared to the smallest?

Insect sizes range from 0.3 mm (Fairy 'Mymarid' wasps) that are parasites on insect eggs, to the the span of the American owlet moth (1000x difference)



[Activity sheet: Tansy Beetle Life Cycle, Tansy Beetle Habitat Choice]

- o How does a Tansy beetle reproduce?
- o How does the Tansy beetle find its food?
- O Why is the Tansy beetle called "The Jewel of York"?
- O Why is the Tansy beetle endangered?
- Write a letter to the Lord Mayor of York to explain why the Tansy beetle is special and how people in Yorkshire can help it survive.
- Design a poster explaining the habitat and food sources required by the Tansy beetle, explain why the Tansy beetle is endangered and what people can do to help.
- Iridescence:
 - O What does iridescence mean?





- Measure and calculate with metric measures
- Use bar charts, line graphs

Computing Outcomes

• Collect and present data appropriately

Science Outcomes

- Ask relevant questions and using different types of scientific enquiries to answer them
- Setting up simple practical enquiries, comparative and fair tests
- Making systematic and careful observations
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement
- Recognise that living things can be grouped in a variety of ways
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- Recognise that environments can change and that this can sometimes pose dangers to living things

English Outcomes

- Retrieve and record information from non-fiction books
- Articulating a need for Tansy beetle conservation
- Structuring a letter
- Read for a range of purposes
- Make inferences and justify predictions
- Identify and summarise ideas

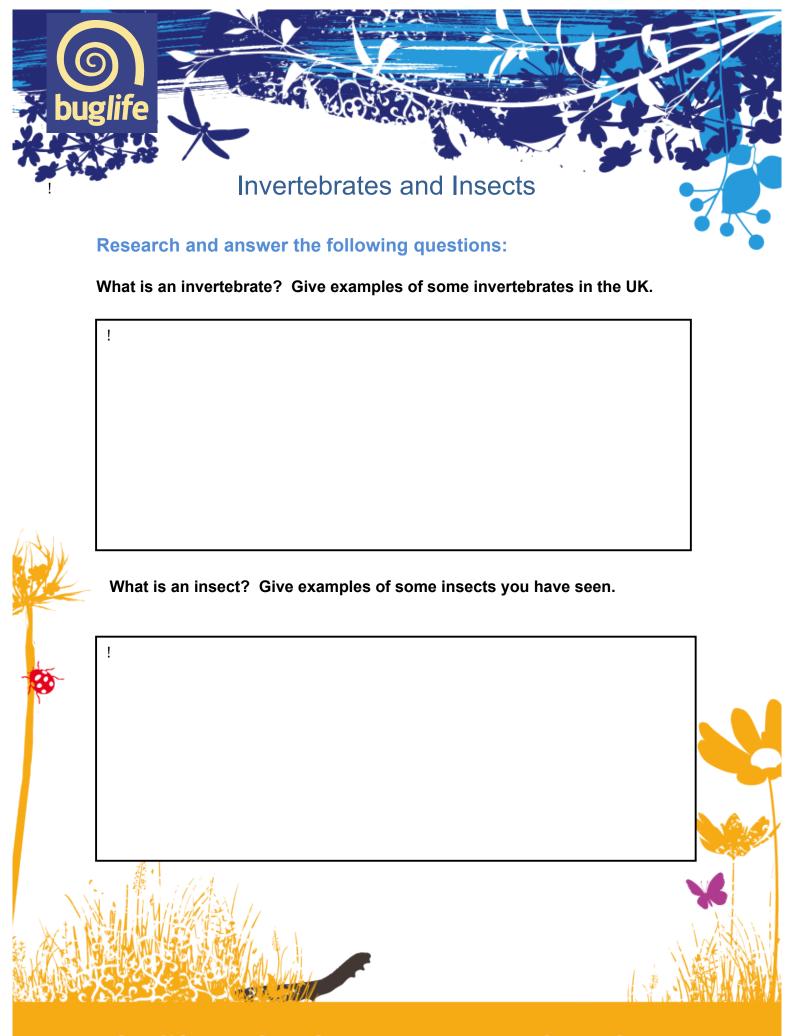
Geography

- Describe and understand climate, rivers
- Use fieldwork to observe, measure and record

Computing

- Write programs to achieve specific goals random walk
- Create graphs/present data
- Design a poster images and text

This pack was developed as part of the Tansy Beetle Champions project, funded by Heritage Lottery Fund and the Ernest Cook Trust.







4.



1.



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2.



Photographs © Steven Falk, Dr Geoff Oxford



Which of these pictures show good Tansy beetle habitat?
(Circle 3)



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Tansy "The Jewel of York"



Order: Coleoptera
Latin Name: Chrysolina graminis
Length: 10 mm
Type of wings: Shield
Habitat: Wetland
Food example: Tansy

Conservation status: Rare
Photo: ©Steven Falk

Sexton

"The Burying Beetle"



Order: Coleoptera
Latin Name: Nicrophorus vespillo

Length: 30 mm
Type of wings: Shield
Habitat: Widespread
Food example: Dead animals
Conservation status: Common

Photo: ©Roger Labbett

Stag



Order: Coleoptera
Latin Name: Lucanus cervus
Length: 90 mm
Type of wings: Shield
Habitat: Woodlands/gardens
Food example: Tree sap
Conservation status: Rare

 ${\tt Photo: @ Greg \ Hitchcock-www.grhphotography.co.uk}$

Five-spot Burnet



Order: Lepidoptera
Latin Name: Zygaena trifolii
Wingspan: 35 mm
Type of wings: Scaly
Habitat: Grassland

Food example: Common Bird's-foot

Trefoil

Conservation status: Common

Photo: © Claudia Watts

Puss Moth



Order: Lepidoptera
Latin Name: Cerura vinula
Wingspan: 45-70mm
Type of wings: Scaly
Habitat: Woodland, parkland
Food example: Poplar, sallow, willow
(as caterpillar), nectar (as adult)
Conservation status: Common

Photo: © Buglife

Small Tortoiseshell



Order: Lepidoptera
Latin Name: Aglais urticae
Wingspan: 55 mm
Type of wings: Scaly
Habitat: Fields/gardens
Food example: Nectar
Conservation status: Common

Photo: © Roger Key

Hornet Robber Fly



Order: Diptera **Latin Name**: *Asilus crabroniformis*

Length: 25 mm
Type of wings: Membranous
Habitat: Heathlands, grasslands,
Southern England, West Wales
Food example: other insects eg

beetles, grasshoppers

Conservation status: Rare

Photo: @ Darren Bradley

Tawny Mining Bee



Order: Hymenoptera
Latin Name: Andrena fulva
Length: 18 mm
Type of wings: Membranous
Habitat: Gardens
Food example:

Garden plants, Fruit trees

Conservation status: Common

Photo: © Nigel Jones

St Mark's Fly



Order: Diptera
Latin Name: Bibio marci
Max Length: 12mm (males)
Type of wings: Membranous
Habitat: Woodland, rough grassland,

wetland **Food example**: Nectar

Conservation status: Common

Photo: © Dean Morley

Flesh Fly



Order: Diptera
Latin Name: Sarcophaga sp.
Length: 12 mm
Type of wings: Membranous
Habitat: Widespread
Food example: Dead animals
Conservation status: Common

Photo: © Jaybee www.phocus-on.co.uk

Pine hoverfly



Order: Diptera
Latin Name: Blera fallax
Length: 12 mm
Type of wings: Membranous
Habitat: Woodland
Food example: Rotting wood
Conservation status: rare

Photo: © Bastiaan Wakkie

Tree Bumblebee



Order: Hymenoptera
Latin Name: Bombus hypnorum
Length: 10-16 mm
Type of wings: Membranous
Habitat: Gardens
Food example: Nectar from
raspberries and blackberries
Conservation status: Common

Photo: © Andre Karwath