Resource for Teachers

The Trees and Me
by Bianca Begovich

Curriculum Levels 1 - 3 in:

Each curriculum area has several suggested activities for teachers to choose from, depending on the time available.
All are independent of each other to allow for flexibility.

CURRICULUM LINKS

'The Bugs and Me' is aimed at level 1-3 and can be used to support a number of curriculum areas.

ENGLISH

Processing and interpreting new information, asking questions, learning new vocabulary. Emphasis on critical listening and reading to encourage inquiry-based learning about sustainability.

1. Write a poem describing an insect in a garden near you – What does it look like? What colour(s) is it? Does it make a sound? Does it have a special job to do? How does the bug make you feel?

2. Give a speech about what insects do in the garden – What would happen if those bugs weren't there? Would this affect the rest of the garden? What can people do to help bugs in the garden?

3. Create a Poster or Web Page about 'The Bugs and Me' – How does the world need bugs? What effects do human actions have on bugs, plants and animals in our world? What could we do better?

4. Use the final line "The earth, bugs and you make a wonderful team" as the title for a poem, short story, play or a speech. What is the relationship between each of these? How does the cycle work together? What consequences are there to our actions? What happens when something goes wrong, or when we don't do our part? What if there were no bugs? What can we do differently?

5. Write a blurb or review for 'The Bugs and Me' – What is the story about? What is the point of the story? What ideas are given to resolve some of the issues in the story? How did it make you feel?

6. Rewrite the ending of 'The Bugs and Me' – What if nobody cared about bugs? What would our world be like without them? Make your own suggestions to resolve some of the issues in the story.

7. Find three words in the story that you did not know before and write their meanings. Find simple meanings for other related words (e.g. Natural, Sustainable, Life Cycle, Biological, Botanical, Recycle)

8. Create a Storyboard to show what you learned from 'The Bugs and Me' – What happened? Who did what in the story? What impacts do our actions have? How could things be done differently?

9. Write a Learning Log to track your learning from 'The Bugs and Me'. Reflective prompts for the log could include 'What I like about the story was... What surprised me was… What I remember most from the story is… What I want to learn more about is…. The story made me feel… because…

SCIENCE

Encouraging inquiry-based learning about the Living World and the Planet so students are better able to understand environmental sustainability and their relationship to the environment.

1. Draw a diagram of the Compost Cycle which involves worms eating our food scraps, turning them into compost to put onto our garden to make healthy soil to grow new food. What happens if there are no worms? What other organisms are involved? What happens when the compost bin is too dry or too wet? What happens if sprays or non-biodegradable rubbish is added? How do we fit in?

2. Discuss and document bugs as 'Nature's Recyclers' – Bugs create compost, pollinate plants, provide food like honey and make products like silk. Document some of these processes. What would the world be like without bugs? What would happen to other plants and animals, and to us, without bugs? What affect do human actions have on these processes? What can we do to help?

3. Conduct an Enviro-Survey of a nearby garden. Rate each statement with a smiley face, unhappy face or neutral face to indicate the health of the garden. Statements in the survey could include – The garden is full of life; The plants are growing well; There are lots of beneficial insects; There is no litter; It feels happy/calm/alive; We take care of the area; We eat food crops from the garden.

4. Make a poster about honey bee pollination – Why are they important? How does honey bee pollination work? What plant parts do honeybees collect and deliver pollen to? What foods in your lunch box are pollinated by honeybees? What threats are there to honeybees? How can we help?

5. Research how the weather affects insects. Study a beehive, worm farm or garden in different weather to see what happens to the insects when it is cold/sunny/damp/windy. What conditions do the bugs like best? Why do you think that is? Look in the library or on the internet to find out more.

6. Make a Timeline – Document how food has been produced over the years. Did people grow more of their own food in the past? Did they use chemicals and sprays? Where do most of us get our food from now? Have farming practises changed? What effect has this had on insect populations, other plants and animals and the environment in general? Do other countries do things differently?

7. Survey the insects in your school or home – Are there many beneficial insects and pollinators? What types of insects are they? How many were there of each type? What plants do they like? What is the soil like in different areas? Does this affect the number of bugs. Repeat the survey at different times of the year and compare the numbers to see what's happening to your bugs.

8. Research how palm oil is labelled on your grocery items – What are the different names it could be under? What would you do if you didn't know that a product had palm oil in it? How would you find out? What alternatives are there? What is the difference with 'sustainable' palm oil?

9. Dissect and draw a flower using a magnifying glass. Draw the petals, sepals, female parts (pistil and ovaries) and male parts (stamens and pollen). Discuss how each part works in relation its pollination method . Compare different plants which have different pollinators.

10. 'Web of Life' Game to illustrate interdependence in the food chain in ocean life – Divide the class up into the following groups: Humans, Birds, Bugs, Flowers, Soil, Sun, Water. Discuss how each group relies on the others. What happens when one group is greedy or unhealthy or missing? How does this impact on the other groups? What can we do to make sure all the groups remain healthy?

HEALTH AND PHYSICAL EDUCATION

Opportunities for students to explore their own relationships to the environment and contribute to healthy environments by taking responsible and critical actions.

1. Examine different soil types – Fill three pots with sand, peat and compost and slowly pour water into them. Which one absorbs more water? What effect does this have on plants? In what ways do we strip the soil of its nutrients? How do we create healthier soils? Which insects help?

2. 'The Last Seeds' Sharing Game – Take a handful of seeds and pass them around a group. Each person takes as many as they like. Now imagine they represent the last seeds for that plant in the world. Discuss questions such as: Did everybody get seeds? How many people had none? What can you do to make sure they are shared fairly? How can we make the sharing sustainable (ongoing)?

3. Growing tomatoes – buy some organic tomatoes or get some from someone you know. Slice the tomatoes in half and scoop the seeds into a bowl. Try to remove the jelly-like substance (gel sac) by wiping on a paper towel. Once clean, leave the seeds to dry. In spring, sow them into seed pots and transplant into a sunny spot once they are about 5 inches tall. Water well and eat when bright red.

4. Make a worm farm - Can be store-bought or home-made. They shouldn't be too damp or too dry. Keep vermin out and add a little lime every month. Use food scraps from your garden. Make sure your scraps are chopped up because worms have small mouths! Use the worm farm to learn about healthy food choices. Make a class cookbook of recipes using crops from your garden.

5. Waste-free lunch boxes – Examine the contents of your lunch box. What foods needed insects to pollinate them? What foods cannot break down easily into compost? Which foods contain palm oil? Which packaging can be recycled/reused or composted? What other choices can be made?

About the author:

Bianca Begovich's two greatest passions are children and the environment. After studying science at university, she worked as an environmental educator for 12 years. She has three children, who all knew whether rubbish goes in the compost, recycling or waste bin by the time they were four years old. 'The Sea and Me' and other books in the series were inspired by a desire to have children (and adults) feel that they are a part of the natural world, to have a sense of awe about how nature works sustainably and to understand that even the smallest of our actions can have far-reaching effects on the planet where we live.

THE ARTS

Providing themes and ideas to explore and communicate sustainability concepts through music, visual arts, dance and drama.

1. Bug's Eye View - Lie down on the forest floor or in a garden, quietly listening and imagining you are a bug going about your day. Draw a picture of the insect you were and write words about your experience around the outside. How did you feel? What were you doing? Were there a lot of other bugs like you? What dangers were there? Did your garden/forest floor feel healthy? Why/Why not?

2. Write a play based on 'The Bugs and Me' – What happened? Who were the main characters? What effects did our actions have on other species? How could things be done differently?

3. Perform a dance based on the honeybee – Research the different 'dances' that honeybees do to let the others know about danger or where food is. Students could be divided into bees and parts of the flower to show how bees take pollen from the anthers to the stigma, or they could be divided into different types of bee within the hive (nurses, Queen, workers) to show the way the hive works.

4. Make a collage of a rainforest showing how the trees, animals, birds, bugs, soil and weather work together to make the rainforest so rich with life. Present the collage to another class and talk about what happens when the rainforests are cut down to make way for palm tree plantations. Discuss what products and foods contain palm oil. Research alternatives and explain why they are better.

About the illustrator:

Scott Pearson was born in Guisborough, England and moved to New Zealand at the age of seven. From an early age, Scott showed an interest in art, drawing doodles and comic art. His family, peers and teachers always encouraged him. After school, Scott completed a Bachelor of Media Arts in illustration and computer based graphic design.
Scott's style is very adaptable, as he experiments with a lot of new styles, techniques and does a lot of research to keep up to date with the latest trends. Most of Scott's work is done on his computer now. He uses paper and pencil to refine ideas and then scans them into the computer to render and finish the work. He also uses a Wacom drawing tablet and Cintiq, and uses the programs Photoshop, Painter, and Illustrator to bring it all together.

MATHEMATICS AND STATISTICS

Exploring patterns and relationships in environmental situations to evaluate data, investigate and solve problems, predict outcomes and improve sustainability.

1. Count the number of bugs in a specified area, say $5m^2$ for 30 minutes. If each bug you see represents 100 more you can't see, how many bugs would there be in the total garden area? How many different types of bugs are there? How many would there be in the whole area of your house?

2. Plant 50 bean seeds and see how many germinate. Work out the percentage of beans that didn't grow. Discuss why some didn't germinate. If you get 100% success, continue to grow the seeds and count the number of flowers and/or beans produced. Which plants did best? Why?

3. Add new plants to your garden and examine the effects on your bug populations. What were the numbers before and after you added the new plants? Was there an increase or decrease? Why? Perform this experiment in the spring, summer, or early autumn when the bugs are active so you can see them. Examine if different seasons have an effect on the numbers? If so, why?

4. Make a simple beneficial insect apartment out of bamboo, timber, straw or branches cut into lengths. An ideal apartment should be at least 15 cm in diameter and 50cm high off the ground. Drill random entrance holes around 8cm deep with a slight incline to avoid them filling with rainwater. Twigs or fibrous material can be lightly packed into spaces.

5. Use set squares to measure different regions of a park or garden – Using set squares of 1m x 1m, record the different plants and bugs as well as the amount of litter in the square. Does the number of plants have an effect on the number of bug species? Do different areas have more litter? If so, what could be some reasons why? Does clearing the litter make a difference to the number of bugs?

6. Conscientious Shoppers – On a trip to the supermarket, record how many of your purchases contain palm oil. What percentage of all your purchases is this? Do you have more purchases with or without palm oil? What choices could you make to reduce the number with palm oil?

7. Planting Measurements –Start a garden project. Measure the area you are going to plant. How much distance do you need to leave between plants (you will need to find out how big they grow). How many individual plants can you fit into your area? How many different plant types can you fit in? What happens if you plant too close together? Would a mix of different species work better?

8. Weed your garden and count the number of weeds there are. Which weeds grew the most? Were there more weeds than other plants? What happens if you don't weed regularly? What could you do to reduce the number of weeds? If you mulch your garden with hay, leaves or straw, does this reduce the number of weeds over time?

9. Investigate a Garden - How many different bug species are there? How many of each type? Do gardens in different areas have differing numbers? If so, what could be some reasons why? What environmental factors could cause some areas to have more species than others? Can we help?

10. Measure flower petals in a garden – How many different types are there? Do some flowers have larger petals than others? What types of insects pollinate the flowers? Does the petal size correlate to the pollinator? Do all plants have flowers and petals? If not, how are they pollinated?

SOCIAL SCIENCE

Encouraging students to think about their interactions with the environment and how they can take action as critical, informed and responsible citizens.

1. Start an insect garden – You could have special areas for butterflies, bees, a worm farm and food crops. Start with a plan for what you need including a good position, good soil and the right weather conditions. Who could help you with getting materials? How can you let the rest of school know?

2. Special Places –Find a comfortable spot in your garden and think about: Why is it special? Who and what else shares this special place? How can we protect it and deal with any problems? In groups, write a 'Take Care' plan about how you can start to do this, including; Who? What? When?

3. 'Take Care' Plan – Continue work on your plan by researching: What actions will bring about the changes we want? What jobs, resources and timelines are needed? Who else needs to be involved?

4. Create a youtube clip describing how you created your 'bug-friendly' garden. Explain the issues and why and how you created your project. Explain any problems and how you overcame them. Offer ideas on how others can do a similar project. Offer ideas on where they could go for help.

5. Research why honeybees are in decline and write down the reasons (habitat loss, chemicals, decrease in wildflowers etc). Design a pamphlet to send out to the community outlining a plan to deal with one of these issues. What can people do? Why is it important? What support is available?

6. Serious Shoppers – Using a range of products from the supermarket, discuss which ones cause the most damage to the environment. Do we have to use a harsh chemical product or will a milder soap, eco-product or even hot water and elbow grease work just as well? Could you make your own products? What did people use in the olden days?

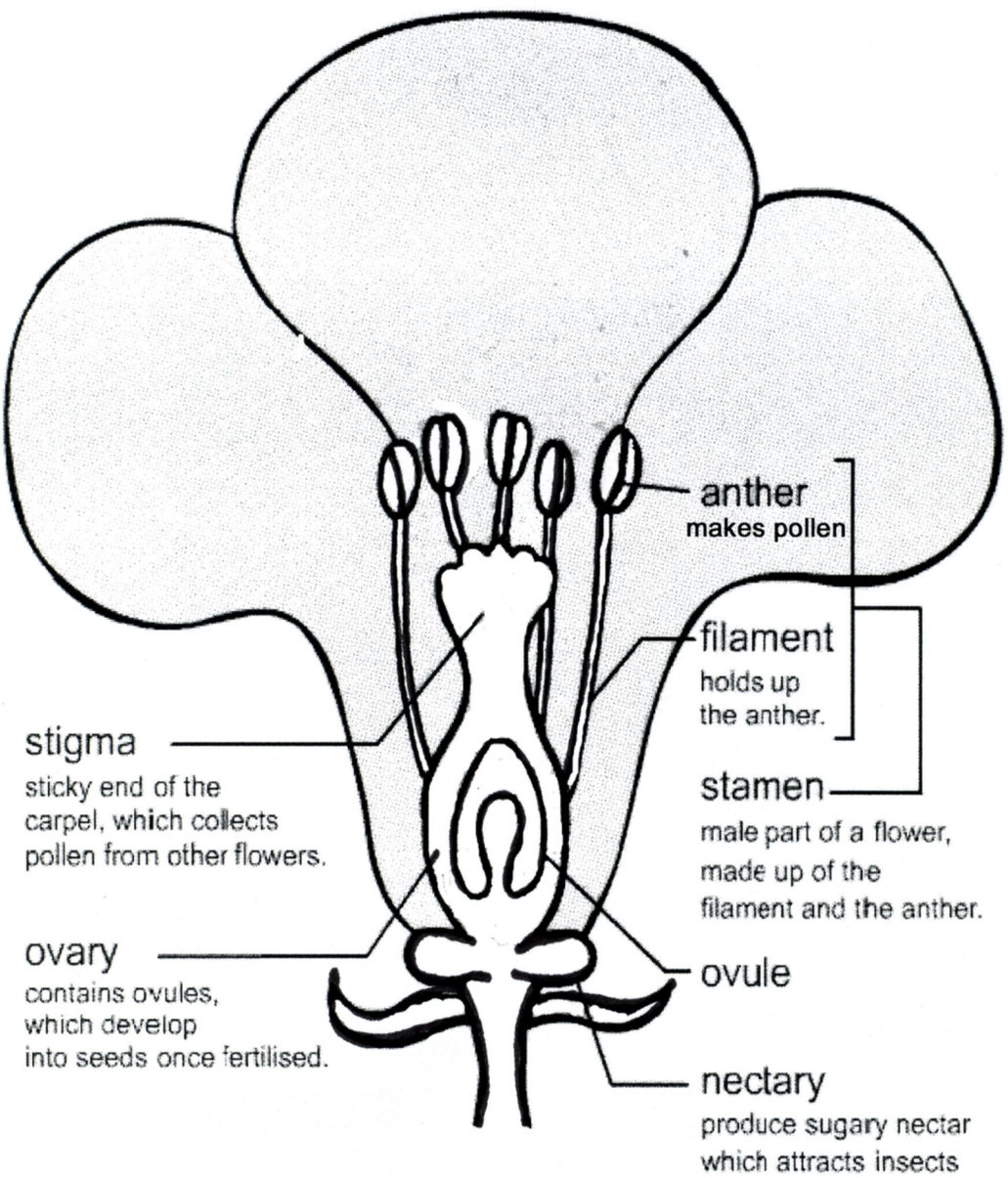
7. Join a Community Group – Find people in your community who are already involved in restoring an environment. How can you help? Is fund-raising, access to resources or labour an issue? How can you recognise and celebrate people's achievements? How can we make the project sustainable?

8. Write a Letter to your local Minister and/or your Mayor asking for more protection for the 'bug-friendly' areas in your district. Is there a field of wildflowers threatened with development? Is there a waterway that needs restoring? Do the town centres have bug-friendly plantings? Perhaps there is an unused area which could be converted to gardens for bees or butterflies? You could ask for special status for a particular area. Could it be a reserve or a part of the conservation estate?

8. Write to a manufacturer who uses palm oil -Research a product containing unsustainable palm oil. Write to the manufacturer and explain why using palm oil is so harmful. Ask them to look at alternatives. Make a presentation to your local supermarket about palm oil and make suggestions on how they could do things differently. Is there a local business that could supply the product instead? Are there eco-alternatives? Can you help?

10. Write a Play or Song or Short Story based on the ideas in 'The Bugs and Me'. Why are bugs important? What would a perfect human/bug/garden relationship look like? What would the world be like if there were no bugs in our gardens, parks or homes? How can we all share the world's food resources more fairly? What will happen if we reduce all bugs to the point of extinction?

Flower Parts
Coloring Page



• • • Mouth Parts • • •

__grasshopper or beetle

__fly

__mosquito

__butterfly

Feeding Types:
A) piercing and sucking, B) biting and chewing, C) siphoning, D) sponging

Match the feeding type with the insect.

Spider Word Search

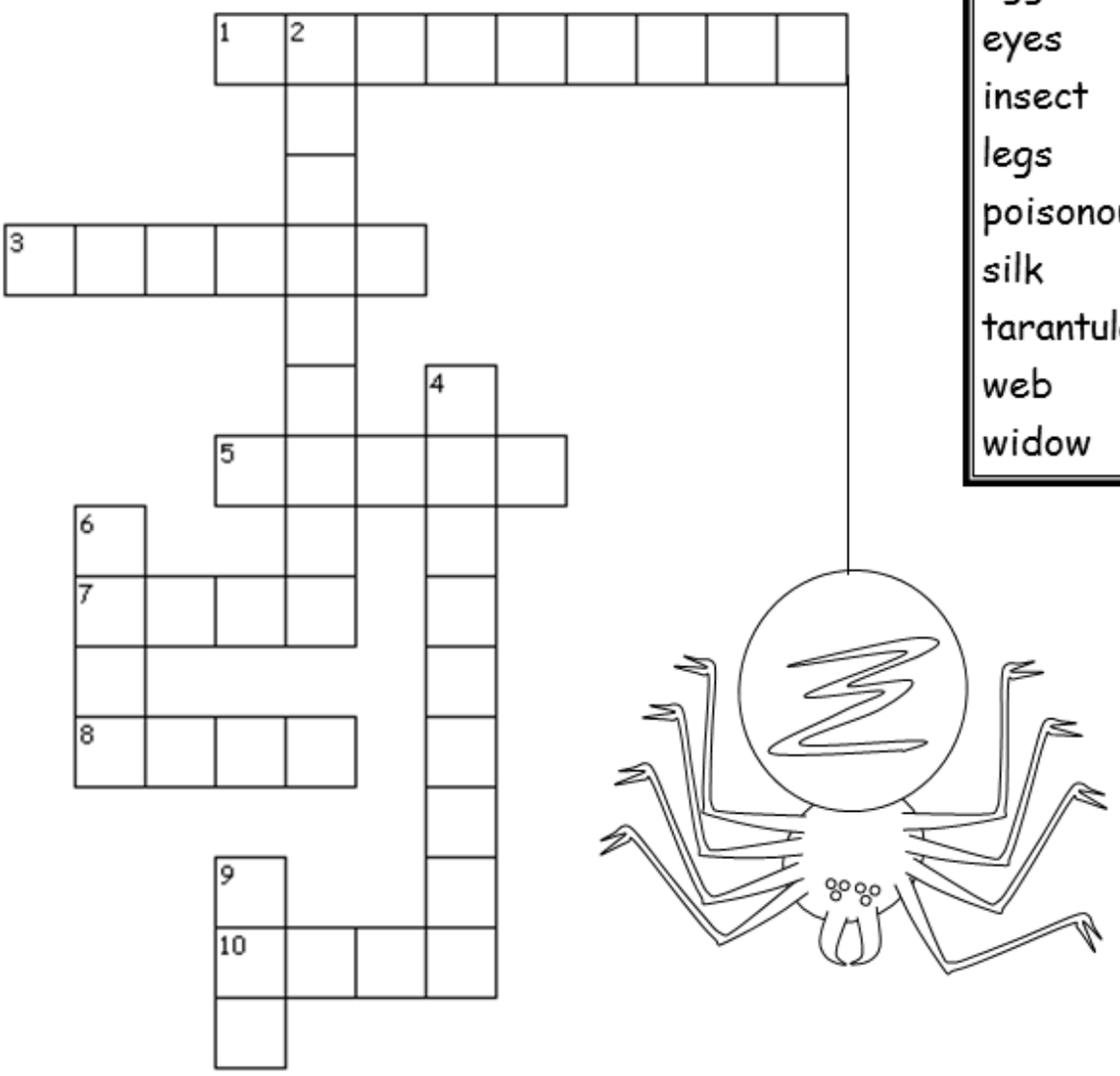
G	V	Y	F	S	R	Z	J	T	O	X	S	T	H	E
P	O	I	S	O	N	O	U	S	V	T	D	A	F	G
T	R	E	S	E	D	K	Y	I	R	S	I	R	B	G
F	A	N	G	S	B	E	L	E	P	U	N	A	T	S
S	G	N	I	L	R	E	D	I	P	S	H	N	C	O
W	A	N	J	Y	Y	I	N	P	S	U	C	T	E	B
G	I	J	H	E	P	N	S	G	E	L	A	U	S	E
A	X	D	S	S	I	T	M	Q	T	I	R	L	N	W
W	N	A	O	N	W	G	N	A	E	S	A	A	I	H
O	H	L	G	W	J	V	F	N	N	I	C	D	I	E

arachnids
desert
eggs
eyes
fangs
Insect
legs
poisonous
silk
spider
spiderlings
spinning
tarantula
web
widow

Spider Crossword

Word List

arachnids
eggs
eyes
insect
legs
poisonous
silk
tarantula
web
widow



Across

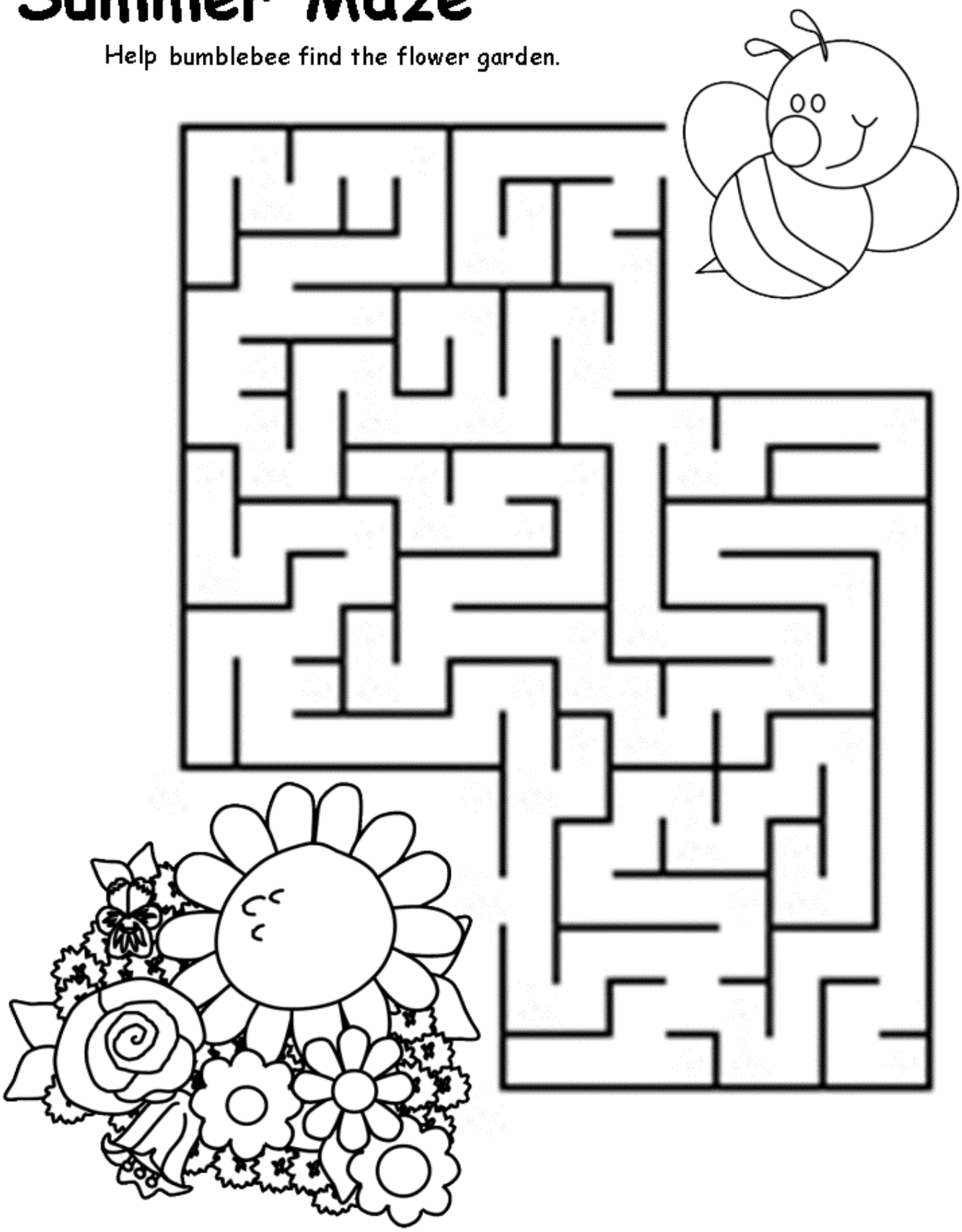
1. Big, black, spider.
3. Favorite food.
5. The Black _____ spider.
7. Humans see with their two ____ but spiders have as many as eight of these.
8. What spider webs are made of.
10. Spiders lay hundreds.

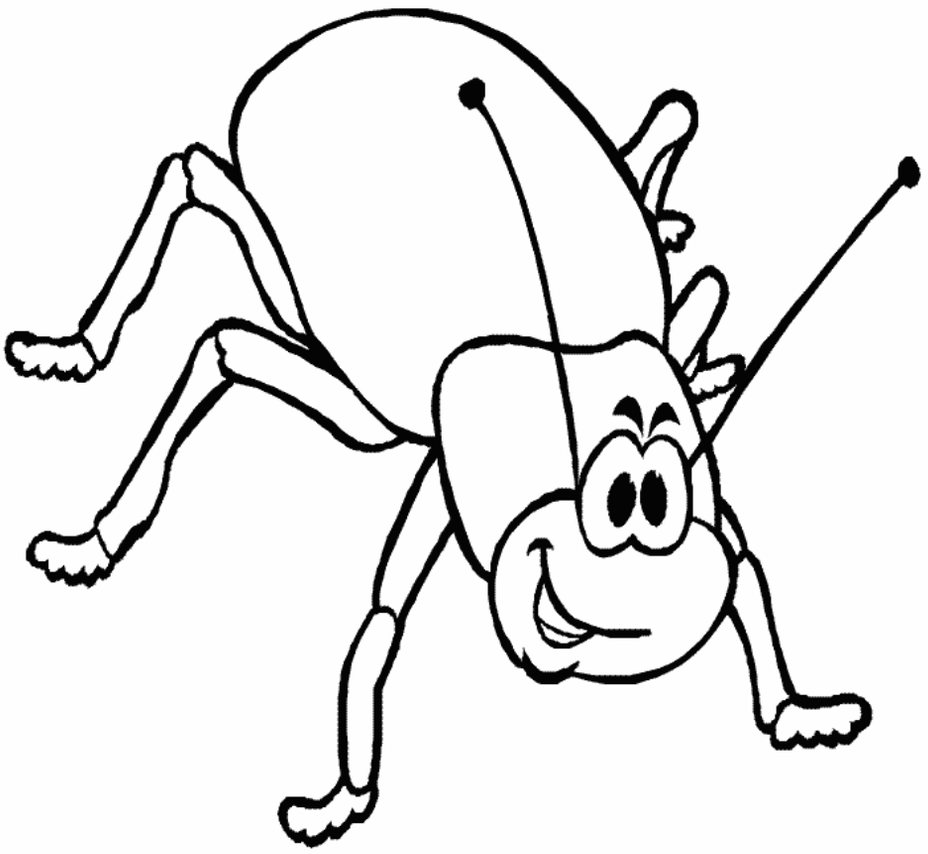
Down

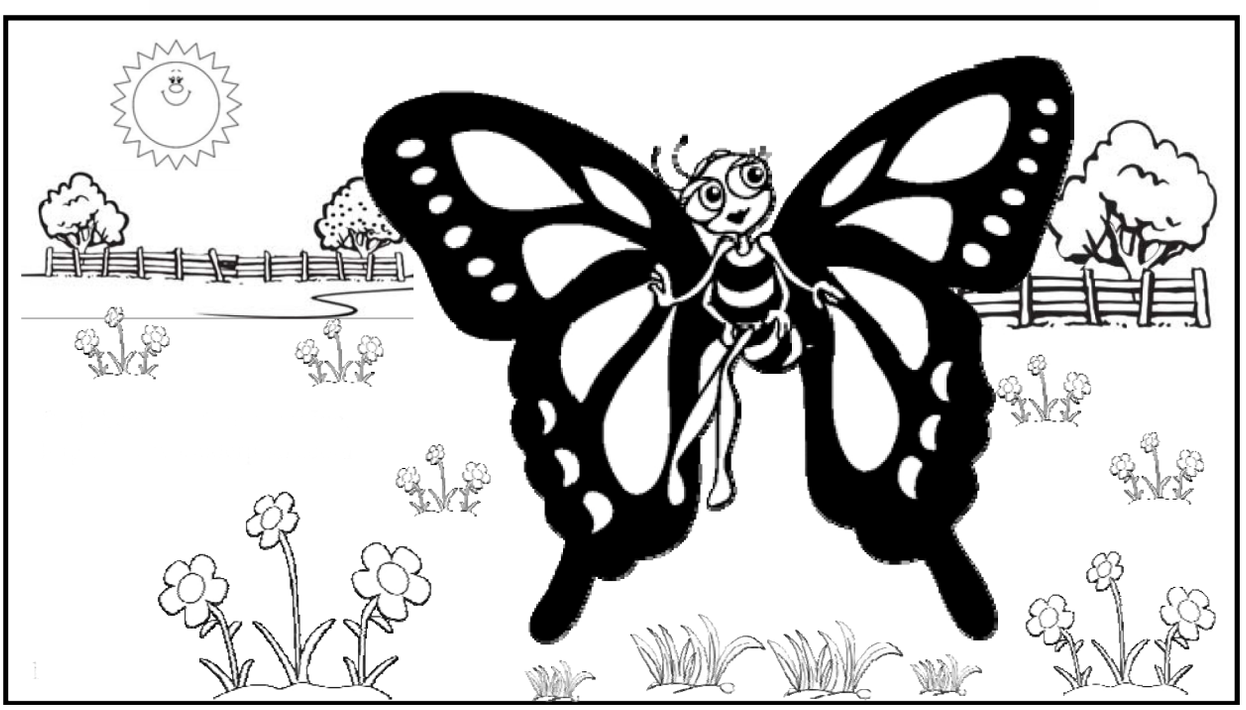
2. The Animal Class that spiders belong to.
4. All spiders are _____, but few are dangerous.
6. All spiders have eight of these.
9. How a spider catches its food.

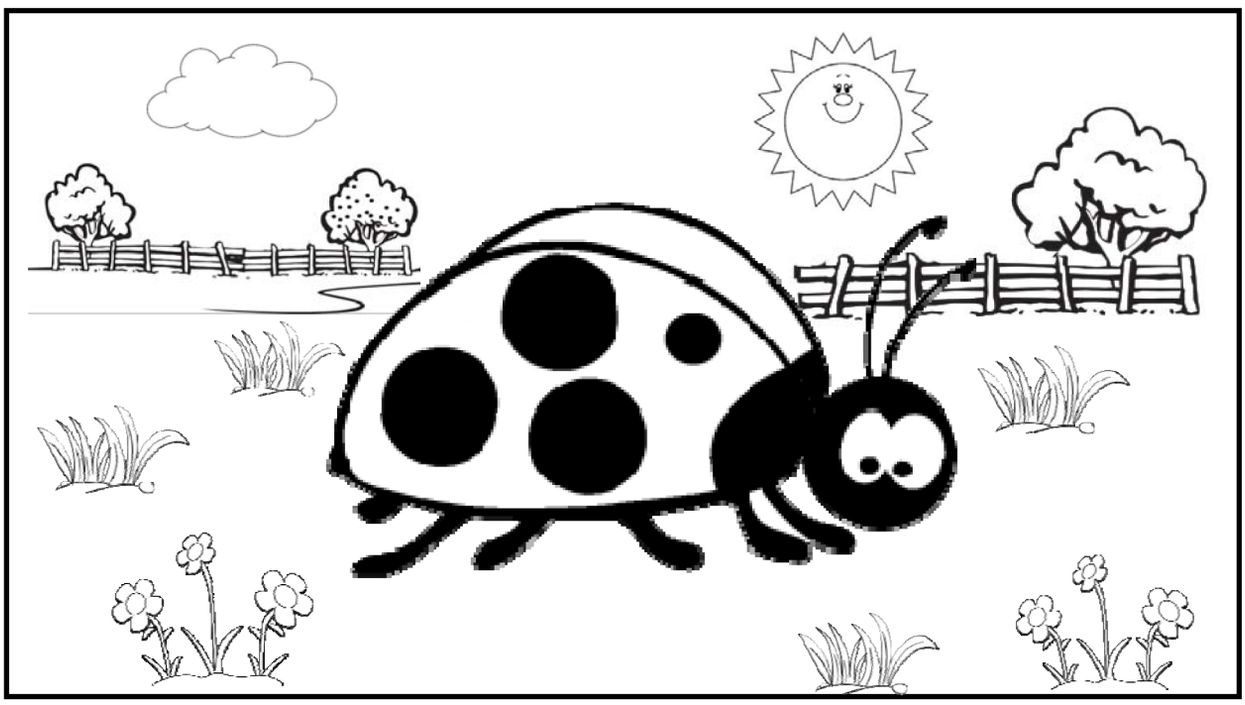
Summer Maze

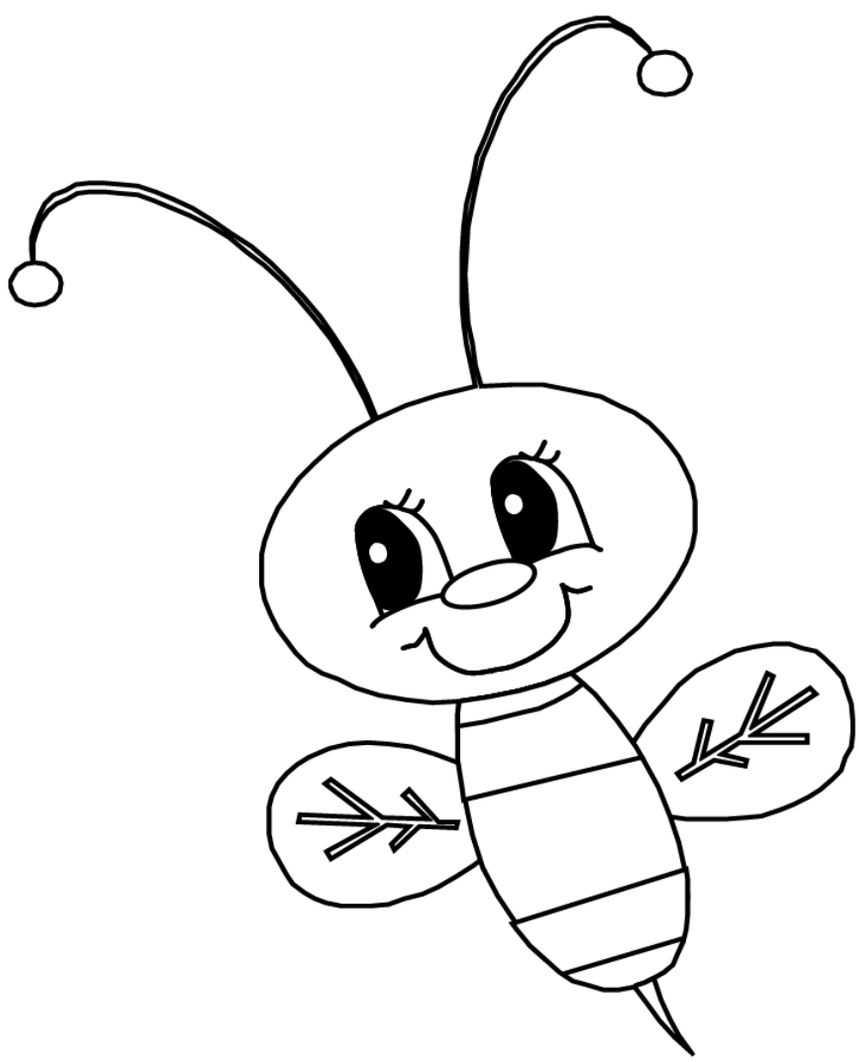
Help bumblebee find the flower garden.











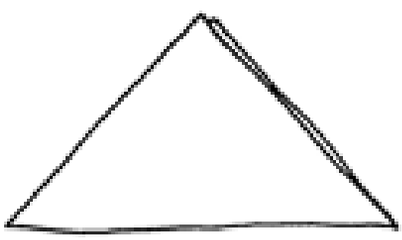
CICADA

The loudest of all insects is the male cicada. It can be heard more than 400 metres away.

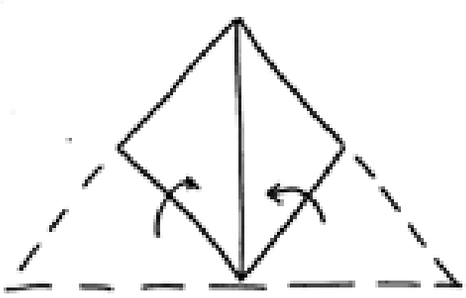
This origami cicada promises to stay quiet! All you need is a square of paper.

What to do

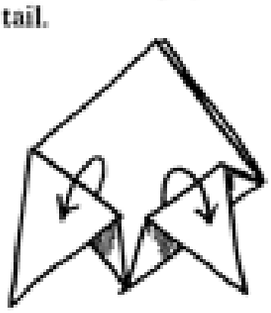
1 Fold the square along one diagonal. You should now have a triangle.



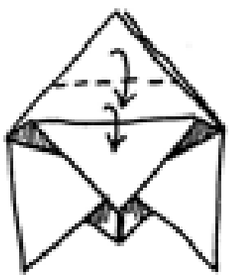
2 Fold the two bottom corners up to make a diamond.



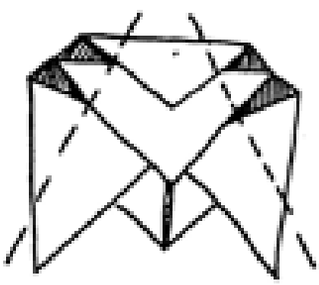
3 Fold the two top corners down at a slight angle so that the wingtips are below the cicada's tail.



4 Fold the next layer down.

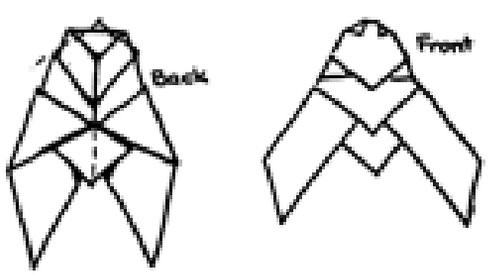


5 Fold the last layer down.



6 Fold the two sides under. The edges should meet at the back.

7 Fold the two top corners down to make the eyes.



You could stand a twig in a pot and cover it with a plague of cicadas!