

# SCIENCE SPAZA

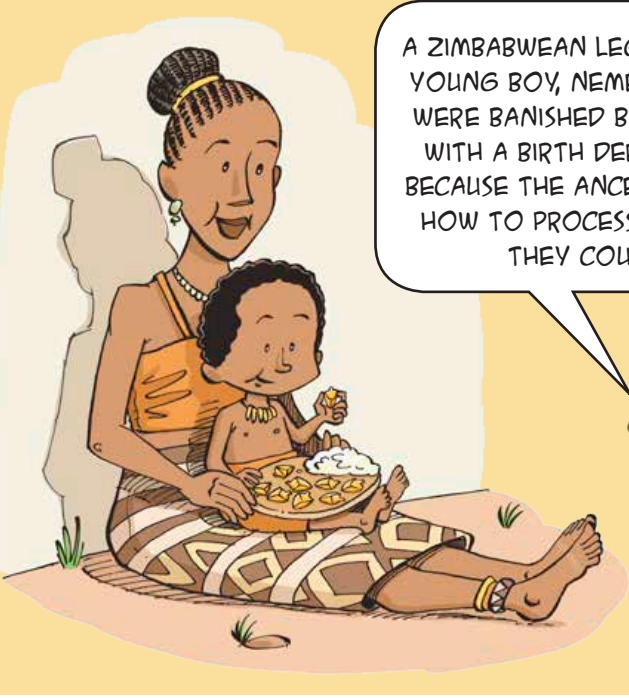
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## EDIBLE INSECTS



### STINKBUGS SAVED A LIFE!



A ZIMBABWEAN LEGEND TELLS OF HOW A YOUNG BOY, NEMESO, AND HIS MOTHER WERE BANISHED BECAUSE HE WAS BORN WITH A BIRTH DEFECT. THEY SURVIVED BECAUSE THE ANCESTORS SHOWED THEM HOW TO PROCESS STINKBUGS SO THAT THEY COULD EAT THEM.



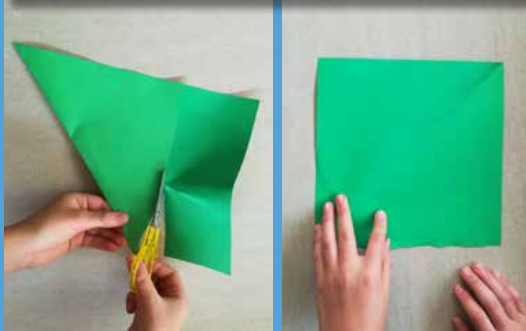
Photo © Cathy Dzerefos



## MAKE A STINKBUG...

In this activity you will make a stinkbug by folding a piece of paper. This is known as "Origami". In 6th century Japan, because paper was expensive, it was only used for religious ceremonies. Origami butterflies were used during Shinto weddings and Samurai warriors gave them as gifts to wish one another well.

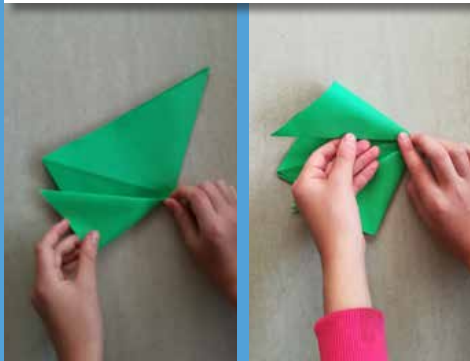
- 1 FOLD AND CUT A PIECE OF A4 PAPER TO MAKE A SQUARE.



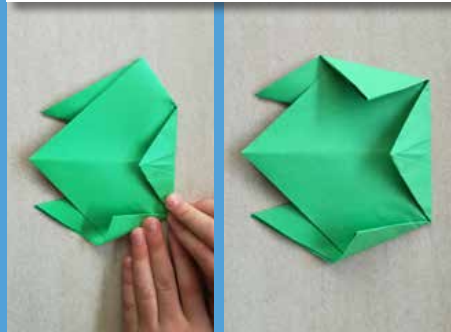
- 2 UNFOLD THE PAPER AND FOLD IT IN HALF ALONG THE OTHER DIAGONAL.



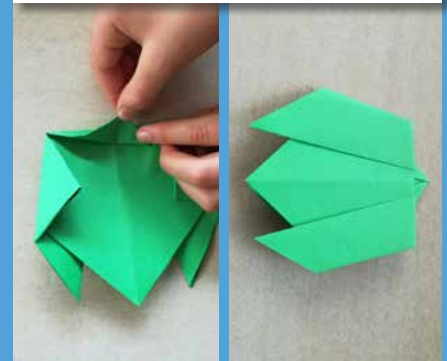
- 3 FOLD THE TWO CORNERS OF THE TRIANGLE INWARDS TO MAKE THE WINGS.



- 4 FLIP IT OVER AND FOLD THE TOP POINT IN TOWARDS THE BODY. THEN FOLD THE TWO SIDE PARTS IN TOWARDS THE BODY.



- 5 FOLD THE HEAD OUT. FLIP IT OVER AGAIN ... SAY "HI" TO YOUR STINKBUG!



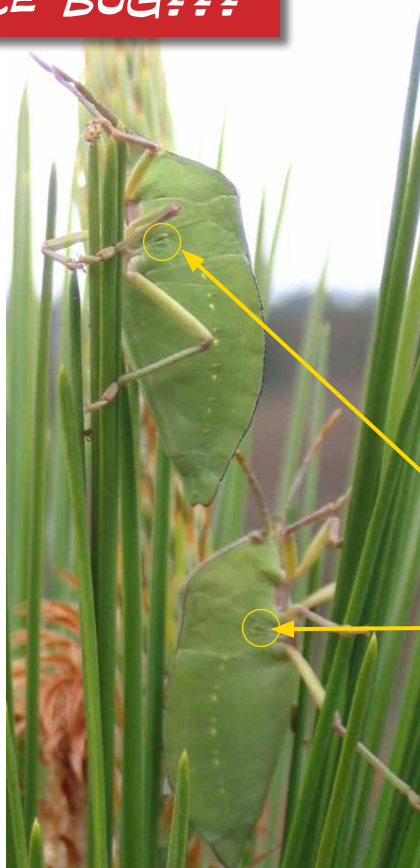
## A CHEMISTRY/SCIENCE BUG???

In the activity, you folded paper in the shape of a stinkbug. If you turn a stinkbug over there are **glands** from where it sprays 2 chemicals called **trans-2-decenal** and **trans-2-octenal** - which really smell bad!

But here is the crazy thing - the two chemicals by themselves are used to add **flavour** and **aroma** (nice smell) to food!

Trans-2-decenal makes food smell like orange.

Trans-2-octenal gives food a nutty flavour and smells like a cucumber.



This is where the stinkbug sprays the smelly chemical from

CRAZY HOW CHEMISTRY WORKS, HEY!?!



Photo © Cathy Dzereliós



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## SO GOOD TO EAT...

STINKBUGS ARE HARVESTED, PREPARED AND SOLD BY THE **BOLOBEDU TRIBE** OF GA-MODJADJI, LIMPOPO PROVINCE OF SOUTH AFRICA.


STINKBUGS ARE **HIGHLY NUTRITIOUS** AND TASTY. THEY ARE ALSO SOLD TO MAKE MONEY.



Photos © Cathy Dzerefos

**1** The wriggling, green stinkbugs are rinsed under running water while being stirred. This makes them panic, which makes them release the smelly chemical they use for defense.

**2** The stinkbugs are moved into a pot of water heated to about 50°C for eight minutes.

**3** The now golden-brown stinkbugs are strained and laid out to air dry. 



## CAREERS:

**Entomologists** study insects. This is a fascinating field investigating beneficial insects that pollinate food crops, enrich the soil, prey on other insects that are pests and produce unique substances such as chemical sprays, dyes, honey, propolis, paper and wax.

**Ecotourism guides** link visitors to the community through real-life experiences like collecting insects for food. This type of tourism ensures that people with traditional knowledge benefit from that knowledge.

**Environmental Educators** teach people (both children and adults) about wildlife, plants and the environment. Environmental educators have an in-depth understanding of the environment and how we as human beings should look after it and live in harmony with other organisms.



**Bianca Mkhize** has a Masters degree in Tourism and Hospitality. Through the North-West University Bianca is doing a PhD on insect harvesting and opportunities in tourism. Her aim is to increase tourist interest in insects in the North West, Limpopo and Mpumalanga provinces of South Africa by showing traditional ways of knowing. She hopes that her research and recommendations can increase revenue in rural, poverty-stricken areas and give communities reasons to conserve nature.

## CURRICULUM LINKS

- **Grade 9: Social Science - Food Security:** Let's be mini-livestock farmers of mealworms or silkmoths in the classroom. What can be done to process insects into high protein food?
- **Grade 10: Life Sciences - Biosphere and ecosystems:** insects in the food web, aquatic and terrestrial ecosystems and the insects that are found there. Insects as pollinators and soil engineers in different biomes.

Knowledge is NCAW!



# PUZZLE YOUR MIND!!!



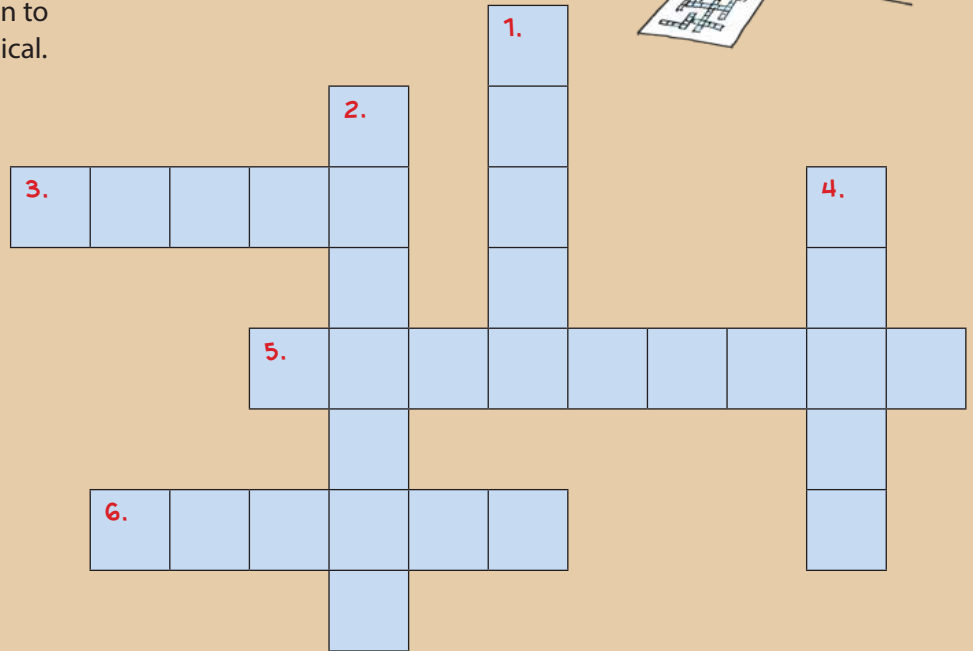
USE THE CLUES TO FILL IN THE CROSSWORD:

### Across

- What the harvested stinkbugs are put in to make them release their defense chemical.
- Insects that are eaten by the Venda tribe of the Limpopo province in South Africa.
- The word some people use to describe stinkbugs that means "it is rotten".

### Down

- What colour the stinkbugs are when they are harvested.
- Stinkbugs are good to eat because they are high in \_\_\_\_\_.
- How many minutes are the stinkbugs put into water to remove their smelly chemical?



Answers: Across: 3. water; 5. Stinkbugs; 6. podile  
Down: 1. green; 2. protein; 4. eight

## START YOUR OWN SCIENCE SPAZA

Do you want to start a science club at your school? Send us the following information, and Science Spaza will contact you.

School: \_\_\_\_\_

Name: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Email address: \_\_\_\_\_

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Visit [www.sciencespaza.org](http://www.sciencespaza.org), email [info@sciencespaza.org](mailto:info@sciencespaza.org), sms or WhatsApp us on 076 173 7130 or write to us at PO Box 22106, Mayor's Walk, 3208.

## WE WANT YOUR FEEDBACK!

ARE THERE ANY OTHER INSECTS THAT YOU OR YOUR FAMILY EAT? SEND US A PHOTO! SEE THE BOTTOM OF THE START YOUR OWN SCIENCE SPAZA BLOCK FOR THE WHATSAPP NUMBER AND EMAIL ADDRESS.



This resource is part of a broader project between Japan and South Africa on beneficial insects and science education. The National Research Foundation is acknowledged for financial support. Opinions, findings and conclusions or recommendations expressed are those of the author(s), and the NRF accepts no liability whatsoever in this regard.

