



WESTONBOOKS

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## BUMBLEBEES HAVE SMELLY FEET - TEACHERS NOTES

*Bumblebees Have Smelly Feet* is a non-fiction book about bumblebees and their remarkable lives. Every aspect of bumble life is introduced in this book, plus plenty of interesting facts and ideas, such as replicating the bumblebee's 'buzz pollination' with the vibrations of an electric toothbrush on a tomato flower. Through the lively information, charming illustrations and colourful photos of bees in action, children will marvel at nature's super pollinators, bumblebees, and learn about the synergy between flowers, bees and the food we eat.

### AUTHOR

Rachel Weston has written five books for children, teachers and families. She was inspired to write about bumblebees when her husband asked her, "do you know where bumblebees live?" She didn't. When he told her they nest underground, she didn't believe him. This started her incredible discovery about the delightful bumblebee, their relevance to our eco-system, food and crop production and their amazing abilities. Rachel also discovered, like her, not many people knew about them. The more she learnt about bumblebees, the more she fell in love with them, and the more she wanted to share with children how incredibly cool they were! "Bumblebees - they're so much more than fuzzy bottoms and smelly feet!" - Rachel Weston"



### NEW ZEALAND BUMBLEBEE CONSERVATION TRUST

The NZBCT was formed to educate and promote bumblebee conservation and the long-term future of bumblebees in New Zealand. Bumblebees are under threat. The NZBCT wants to encourage and inform people about the critical role bumblebees play in the food we eat. A huge majority of crops and flowers depend on insect pollination. Without bumblebees and other pollinators, food production and countryside flora as we know it will simply cease to exist.

### DISCUSSION

Before reading *Bumblebees Have Smelly Feet* ask,

- What does the title and picture on the front cover tell you about what's inside the book?
- What do you already know about bumblebees?
- Are bumblebees the same as other bees?
- What do you think bumblebees do all day?

### POLLINATION

- **What is pollination and why is it so important?**

Flowers need to be pollinated so they can produce seeds to grow more flowers, fruits and vegetables.

Pollination happens by moving pollen from the flower's anther (male part of the plant) to the stigma (female part) of a flower.

Most flowers need the help of pollinators (bees, birds, wind, water and other insects) to move pollen between flowers.

**No pollination means no flowers and no food!**

Bumblebees pollinate the flowers and the flowers feed the bees (nectar and pollen). They need each other. And we need them both!

- Bumblebees are super pollinators; they not only spread pollen from flower to flower (like bees do) but also dislodge pollen simply through their amazing wing vibrations. This is called buzz pollination.
- Tomatoes are perfect flowers to be buzz-pollinated by bumblebees; their visits literally cause the flower pollen to explode in a cloud and fall onto the flower's stigma (female parts) and onto the bee's body too.
- You can mimic this action with an electric toothbrush, buzzing the tomato flowers; you can see it happen!

- **Solve the Buzz Fact:**

Nectar for 1.4.1.8.2.3. and pollen for 2.8.6.9.5.25. Bumblebees need 10.6.5.25!

1=e 2=g 3=y 4=n 5=t 6=o 7=m 8=r 9=w 10=b 11=l 12=q 13=u 14=p 15=a

16=d 17=x 18=j 19=i 20=f 21=z 22=s 23=c 24=v 25=h 26=k

Make up your own alphabetical number puzzle using one of the buzz facts from inside the book.

- **Can you name some other pollinating insects/animals who help flowers, trees, and food crops grow?**

Pollen grains are very small and light. As such, some pollen grains float in the air and get transferred from the anther to the stigma within the same flower or even other flowers of the same species. This is wind pollination.

- **Did you know?**

One spoonful in every three we put in our mouths is solely the result of bee pollination. Without bumblebees and other pollinators, food and the countryside as we know it will cease to exist! Bumblebees are one of nature's top pollinators.

## DISCOVER

New Zealand has four types (species) of bumblebee, which are not native to New Zealand, which means they have been introduced to New Zealand from somewhere else.

- **Which country did New Zealand's four types of bumblebees come from?**
- **Did they fly here, or did they arrive by other means?**  
Bumblebees were brought to New Zealand in 1885 to help pollinate red clover because their long tongues (proboscis) are able to reach the nectar inside the flowers.
- **Bumblebees have different scientific names (Latin names) and also different common names:**
  - Buff tailed, garden, ruderal, and short-haired.
  - Think about why bumblebees might have those names?
- Research to discover how many types of bumblebees there are in the United Kingdom.
- **Does New Zealand have any native bees?**
- **What are some native animals we have in New Zealand?**

## WRITE

- **Write a mihi**  
In old-English bumblebees were known as Dumbledore or Humblebee.  
Use bumblebees as subjects for historical study - where did they come from? Who are they related to? What is their "home habitat" now? Then write a mihi.
- **How important are pollinators, like bumblebees?**  
Brainstorm some words that describe what our planet earth might look like if there were no pollinating animals and insects, like bumblebees, to help grow flowers, trees and food crops.
- **Write a letter to a family member or friend telling them what you have learnt about the super duper, power-packed, awesome-ability bumblebee!**
- **Write a Haiku about bumblebees.**  
Traditionally, a haiku meets the following requirements:
  1. It has three lines.
  2. It has five syllables in the first and third lines.
  3. It has seven syllables in the second line.
  4. Its lines don't have to rhyme.

### Example:

Bumblebees are cool.  
They make their own body heat.  
And have smelly feet.

- **How many new words can you make up from the letters in the title:**

## BUMBLEBEES HAVE SMELLY FEET?

## ART

- **Design a poster to inform people how they can "Help the Bumblebee!"**  
See the 'You Can Help' section on page 23.
- **Bumblebees live under the ground. Design and draw an underground home.**  
If you lived in an underground hidey-hole home, how would you get in and out? What would the inside look like? How big or small would it be? How would you get water and have power?
- **Draw or paint some flowers adding colours and patterns that direct pollinating insects, like the bumblebee, to the flower's pollen for pollination.**

Bumblebees can see within the Ultra-Violet spectrum range. Try the ultra-violet light experiment on page 15.

Draw a picture of a pollinating insect or animal that's not a bee.

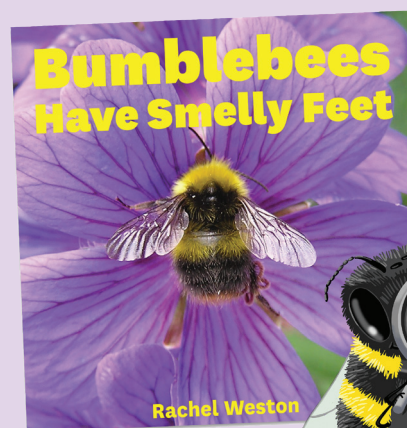


## OUTDOORS

- Observe and record: Plant a patch of wildflower seeds, flowers (lavender) or herbs (basil, celery, dill, fennel, chives) or find an established flower garden. When the flowers are in bloom, watch and record what type of pollinating insects visit the flowers and how many of each insect.
- Do you think the bumblebee is an important insect? Why or why not?
- The future of bees in New Zealand is under threat. Bees are dealing with disease, battling changing environments, reduced green space and increasing use of toxic pesticide sprays. What are some things we can do to help bumblebees and other pollinators survive?

Fill in the correct numbers:            50        5        6        240

1. Bumblebees have \_\_\_\_ eyes.
2. Bumblebees can flap their wings \_\_\_\_\_ times per second.
3. Bumblebees have \_\_\_\_\_ legs.
4. One bumblebee can pollinate \_\_\_\_\_ times more than one honeybee because of Buzz Pollination.
5. Only males (drones) / females (circle one) have a stinger.
6. Bumblebees carry pollen on their \_\_\_\_\_ legs to take back to their hive to feed young bees.
7. Bumblebees use their antennae for hearing, smelling and feeling. True or False?
8. Which bumblebee hibernates like a bear in the ground over the winter?  
a) drone    b) worker        c) queen d) daughter queen        e) all of the bumblebees
9. A bumblebee is a cold-blooded insect. Can it warm up its own body temperature? Yes or No



The New Zealand Bumblebee Conservation Trust is delighted to be associated with the publication and message of this book by Rachel Weston. Welcome all to the wonderful world of bumblebees! We look forward to your help in growing the sounds of summer - NZBCT.

**NZ Bumblebee** [www.nzbct.org.nz](http://www.nzbct.org.nz)  
Conservation Trust

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