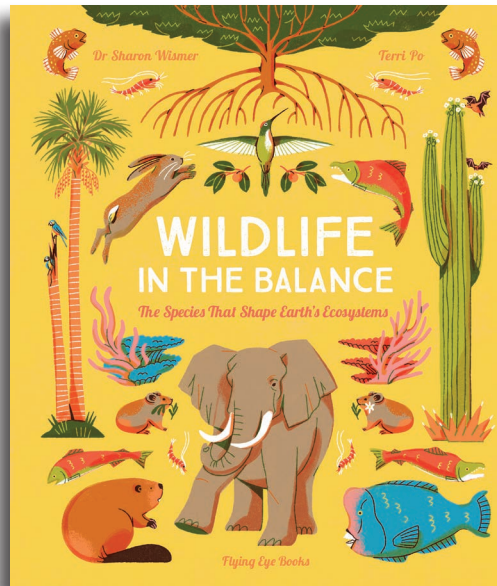


WILDLIFE IN THE BALANCE TEACHING PACK



DISCUSSION AND ACTIVITIES

About this book:

Learn about 12 keystone species around the world from elephants to wolves, honeybees to beavers. Keystone species are animals or plants that play a crucial role in different habitats and have a huge effect on the environment around them. Entire ecosystems can depend on a single species, and they act as a glue that holds the ecosystem together.

About the author:

Sharon Wismer is a scientist, children's book author and mother who enjoys sharing her passion for wildlife and science. She is currently funded by the Swiss National Science Foundation and leads a science communication project at the University of Neuchâtel, Switzerland. Sharon obtained her PhD in 2017. As a marine biologist, her research focused on the behavioural ecology of reef fishes and the impacts of mass coral bleaching events on the Great Barrier Reef.

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PROMPTS FOR DISCUSSION

PAGES 8-11

1. What is an ecosystem? (Page 8)

2. How many different types of ecosystems are there and what makes them different? (Pages 8-9)

3. What do the arrows on a food chain represent? (Page 10)

4. Describe what is similar and different between a food chain and a food web? (Pages 10-11)

5. Why do we call some organisms 'keystone species'? (Page 11)

PROMPTS FOR DISCUSSION

PAGES 12-17

1. Who is Professor Robert Paine? What did he discover and why is this important? (Page 12)

2. Who is James Estes? What did he discover? Why is this important? (Page 13)

3. What is a 'trophic cascade'? (Page 13)

4. What is an apex predator? What happens when an apex predator is removed from an area? (Pages 14-15)

5. List and describe other keystone species. (Pages 16-17)

NORTH AMERICA

PAGES 19-29

1. Why is the Pacific Northwest a special place? (Page 19)

2. Why is the Pacific salmon's life cycle unusual? (Pages 20-21)

3. Which type of ecosystem is the Sonoran desert and how would you describe it? (Page 25)

4. Which plant only grows in the Sonoran desert? How does it survive? (Pages 26-27)

5. What other species benefit from the Sonoran cactus? (Pages 28-29)

AUSTRALIA

PAGES 31-33

1. What animals live in the Great Barrier Reef? (Page 31)

2. Why does the Great Barrier Reef owe its survival to the parrotfish? (Pages 31-32)

3. How do parrotfish help maintain the coral reef? (Pages 32-33)

EUROPE

PAGES 35-41

1. Where is the Iberian Peninsula and what type of ecosystem is it? (Page 35)

2. Why are European rabbits an important part of the Iberian Peninsula ecosystem? (Pages 36-37)

3. How can humans help European rabbits? (Page 37)

4. Which habitats surround Germany's Elbe River landscape? (Page 39)

5. Why is the beaver a keystone species? (Pages 29-41)

ASIA

PAGES 45-51

1. Why is the Qinghai Tibetan Plateau called Asia's largest water tower? (Page 45)

2. Why is the plateau pika an important part to the grassland? (Page 46-47)

3. What different species can be found in the mangrove forest? (Page 49)

4. Why are the mangrove tree roots special? (Page 50)

5. Why are mangroves important ecosystems? (Page 51)

AFRICA

PAGES 53-59

1. Where is the serengeti and what animals can you find there? (Pages 53)

2. What makes the matriach elephant important? (Page 54)

3. How do elephants maintain the grasslands? (Page 54)

4. What is an upwelling? (Page 57)

5. How did the bearded goby help a broken ecosystem? (Pages 58-59)

SOUTH AMERICA

PAGES 63-69

1. Where can you find the Amazon rainforest? (Page 63)

2. Why was Alexander von Humboldt astonished when he came across the moriche palm? (Page 64)

3. What organisms can you find in the Valdivian temperate forest? (Page 67)

4. Why are hummingbirds an important part of the forest ecosystem? (Pages 68-69)

ANTARCTICA

PAGES 71-73

1. What animals can you find in Antarctica? (Page 71)

2. Why are krill important to Antarctica's ecosystem? (Page 72)

3. How are phytoplankton similar to plants? (Page 73)

ACTIVITY 1 ECOSYSTEM IN A BOTTLE OBSERVATIONS JOURNAL

Chosen ecosystem (Circle one): temperate, desert, rainforest.

Use this journal to write down and/or sketch your observations. What have you noticed about the plant growth? If you have a thermometer in the bottle, what do you notice about the temperature? To track humidity, can you see condensation or droplets of water in the bottle?

Days	Temperature	Plant Growth	Humidity
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Conclusion:

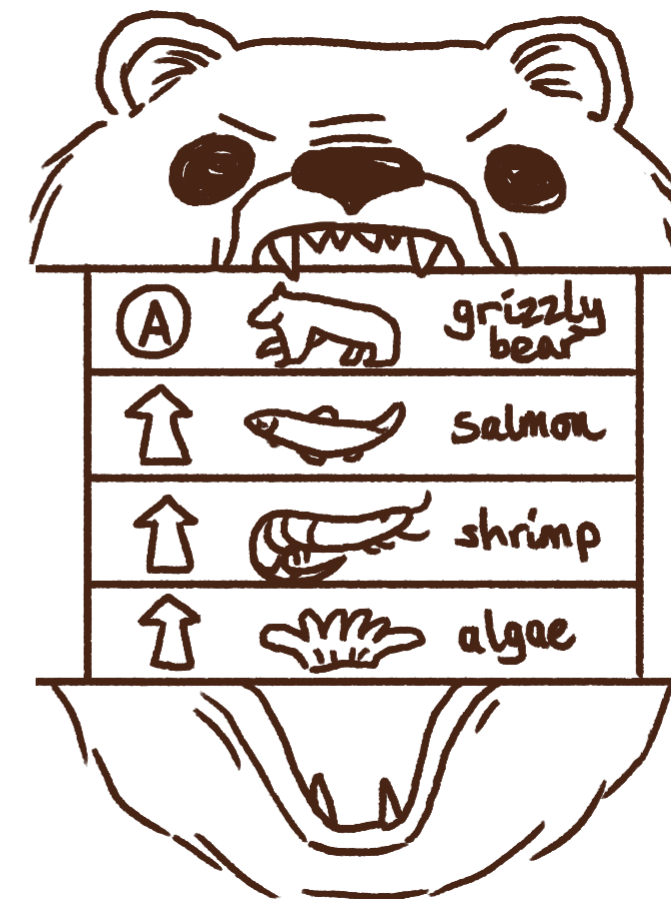
ACTIVITY 2 FOOD CHAINS AND FOOD WEBS

TASK 1

Within each ecosystem there are a range of living things playing their part in keeping that ecosystem alive! An ecologist, Charles Elton, pioneered the concept of food cycles and food chains in 1927. He organised species into functional groups.

Your first task is to create a food chain for an ecosystem of your choice (check out pages 10-11 for more information on this). Draw the apex predator, so it opens up to reveal a food chain inside. Remember the arrows show the flow of energy from one organism to another. Read about one of the ecosystems in this book. Then, research what organisms live there and draw a food chain.

EXAMPLE:



TASK 2

A food web demonstrates that animals can eat more than one type of food. This is like an amplified food chain. Remember the arrows still represent the energy flow from one organism to another.

For this task, you can research an ecosystem from this book and create a food web demonstrating the diversity of the organism that live there.

You could use string/rubber bands to show the connections. You could even use toy animals and plants! This can be completed as a class, in groups, pairs or individually.



ACTIVITY 3 KEYSTONE SPECIES TOP CARDS

Throughout this book, we are introduced to some keystone species. Your task is to research these species and others further, so you can create a top card game. Use the templates provided to draw the keystone species and write in their data. Once you've completed your cards, you can follow the rules of the game below.

RULES

How to play:

- Shuffle and deal the cards equally.
- Each player has a set of cards that they must keep to themselves.
- Decide which player goes first.
- First player reads the name of their keystone species and locates their highest data fact.
- All the other players read their value and places in the middle. The person with the highest value collects all the cards.
- The winner's turn is next.
- If you have matching data with someone else, choose the next card until someone wins.

The game ends once someone collects all of the cards!

EXAMPLE:



TIGER

Risk of danger:	98
Speed: 40mph	Size: 70
Max. Age: 60	Beauty: 60
Length (cm):	260

[Orange bar]	

[Orange bar]	

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ACTIVITY 4 HABITAT DIORAMAS

Each ecosystem is unique and has its own plants and animals that live there. Your task is to create a habitat diorama demonstrating what makes your chosen ecosystem unique. Choose an ecosystem from Pages 8-9. Then, plan it out by using the template sheet. After this, begin making your habitat diorama.

To create the diorama, you will need:

- Plan for your chosen diorama.
- A shoe box.
- Plastic figures/homemade figures of animals and plants.
- Various materials (cloth, tissue paper, poster paint, fallen leaves/sticks/rocks, popsicle sticks, toothpicks, construction paper, or any other craft materials).
- Index cards for information about your chosen habitat (Why did you choose this habitat? What types of plants and animals live in this habitat? What is the environment of this habitat like?)

EXAMPLE:



ACTIVITY 4 DIORAMA TEMPLATE

My chosen habitat:

My design:

What animals and plants live here:

What physical/human features are in this environment:

What I will need to create this habitat:

ACTIVITY 5

ENVIRONMENTALISTS

On pages 74-75, we are introduced to ways in which we can help keystone species. Your task is to collect all of the information you have learnt from this book and spread the message to your classmates.

There are many ways you can do this. For example:

- Create an acrostic poem about keystone species.
- Design a piece of art about protecting keystone species.
- Create a poster listing important information on how to help keystone species.
- Identify the keystone species in your local area and create a nature documentary.
- Produce a fact file of different keystone species around the world and how we can help.