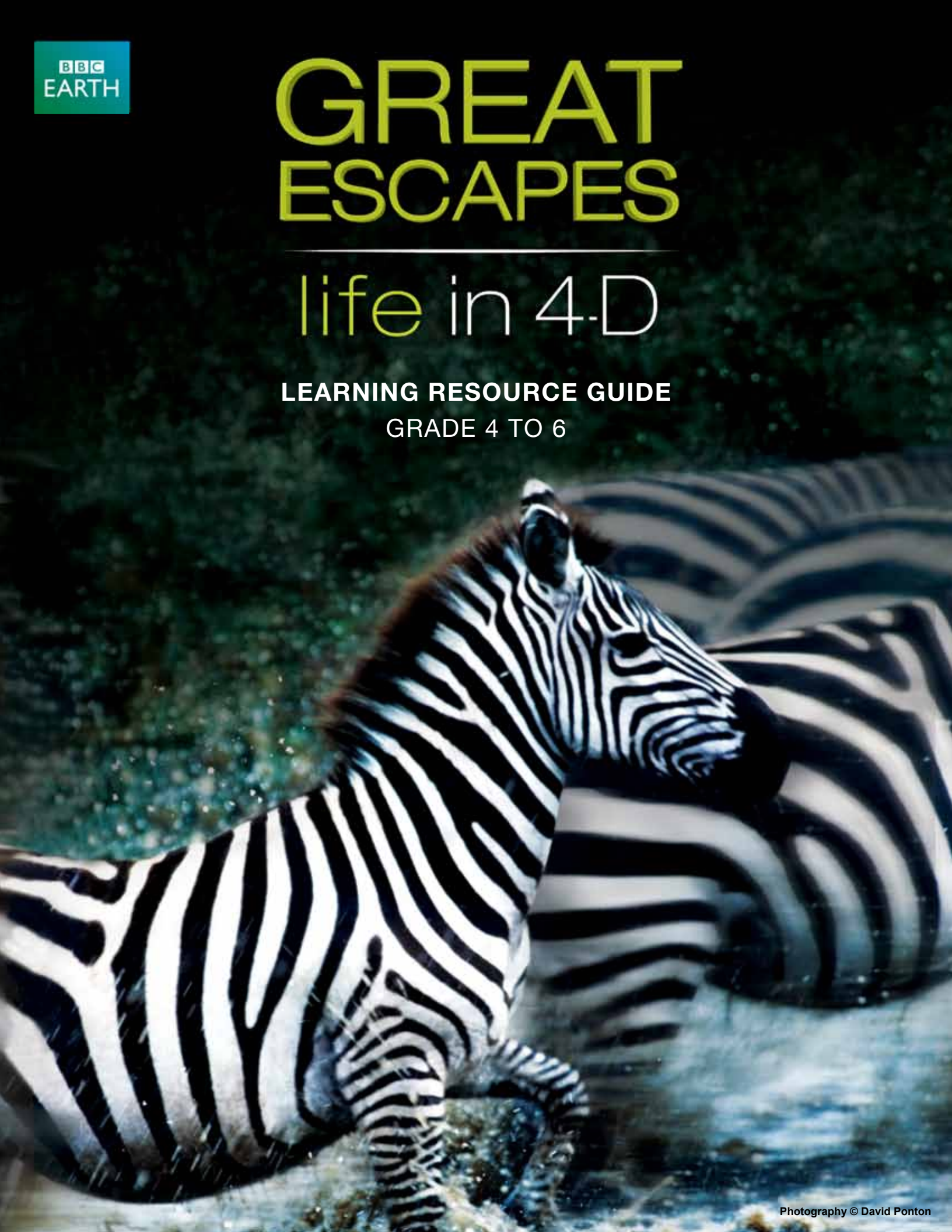
BBC EARTH

GREAT ESCAPES

life in 4-D

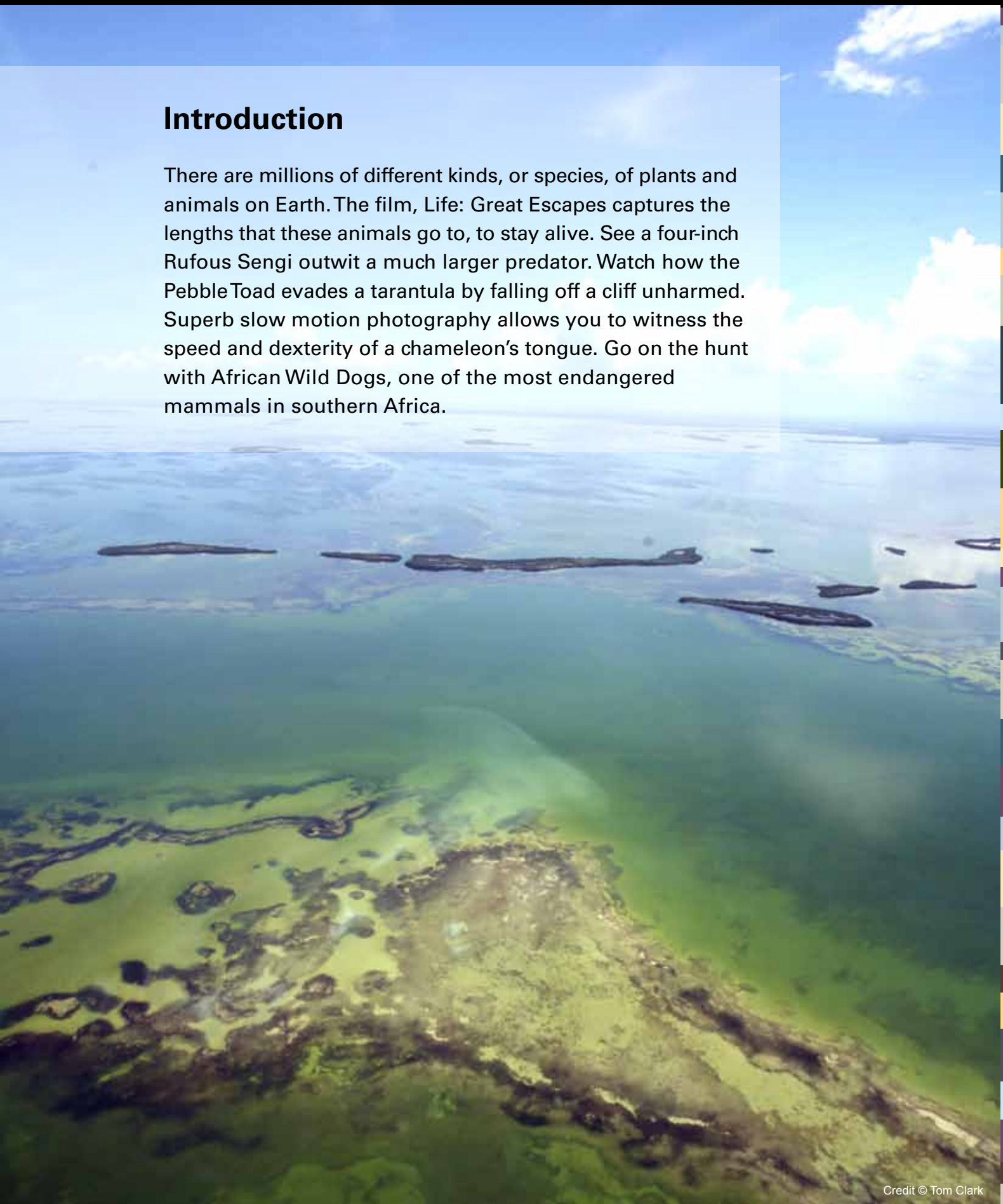
LEARNING RESOURCE GUIDE

GRADE 4 TO 6



Introduction

There are millions of different kinds, or species, of plants and animals on Earth. The film, Life: Great Escapes captures the lengths that these animals go to, to stay alive. See a four-inch Rufous Sengi outwit a much larger predator. Watch how the Pebble Toad evades a tarantula by falling off a cliff unharmed. Superb slow motion photography allows you to witness the speed and dexterity of a chameleon's tongue. Go on the hunt with African Wild Dogs, one of the most endangered mammals in southern Africa.

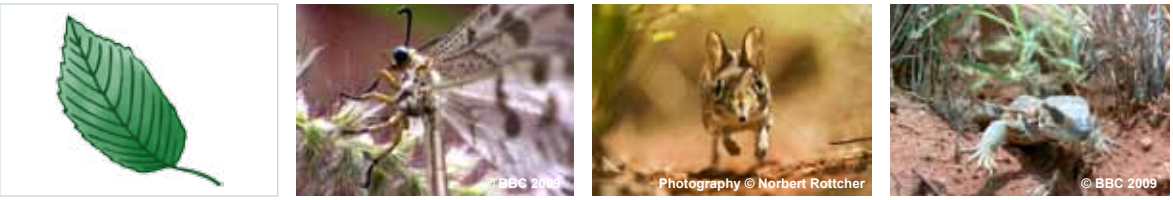


Credit © Tom Clark

Teacher Background

Food Chain and Food Web

Our sun is the primary source of energy for all living things on our planet. Green plants have the unique ability to capture energy from sunlight. The energy stored in the plants' roots, stems and leaves nourishes the animal. Predators prey on the herbivores. Predators are carnivores. Small predators in turn can be prey for larger carnivores. The link that passes energy from the sun, to plants, to herbivores and to finally carnivores or predators is called a food chain.



Food → **Insect** → **Sengi** → **Lizard**

A food web is a combination of many food chains overlapping and interrelated. Food webs illustrate the way that energy is passed from the sun to all plants and animals on the planet.

Habitat

A habitat is a place where organisms live, it provides food and shelter. Habitats can be large such as the territory patrolled by African Wild Dogs. Or it can be just the grassland under a single tree were the Rufus Sengi spends its entire life. In addition, organisms may develop special adaptations that help it survive in that habitat.

Adaptations

Adaptations help organisms survive in their habitat; they can be behavioural or physical. Adaptations can be passed on to progeny when species reproduce. Some adaptations you will see in the film include:

- Camouflage – the ability of the organism to blend into its environment. Some organisms have the ability to change their skin color or texture to blend in to changing backgrounds.
- Senses – heightened sense of sight, hearing, taste or smell helps an organism find food or avoid predators.
- Specialized body parts – Chameleons, for example, have several body parts that help them survive. A long sticky tongue shoots out to catch prey. Their eyes move independently to find prey and avoid predators.
- The ability to learn new behaviors; many animals are able to learn new behaviors and then teach them to their offspring.
- "Freezing" or remaining motionless to hide from a predator.


Credit © Adam Chapman


Credit © Jason Isley


Credit © High Miller

Cast of the Show

Rufous Sengi

Description: Mammal
Found: Tanzania, Somalia, Uganda, Sudan and other East African nations, as well as parts of Botswana and South Africa.
(Source: http://animal.discovery.com/animals/life/rufous-sengi.html)
Habitat: Plains, savanna and lowland forests
(Source: http://animal.discovery.com/animals/life/rufous-sengi.html
Food: Ants, worms and termites
(Source: http://animal.discovery.com/animals/life/rufous-sengi.html)
Special Adaptation: They build a maze of trails to escape predators.

Pebble Toad

Description: Amphibian
Found: Venezuela
Food: Small insects
Habitat: Small mountains
Special adaption: When threatened by a predator, the toad folds itself up in a tight ball and rolls away. Even if it ever falls down the mountainside, it remains unharmed.
(Source: http://amphibiaweb.org andhttp://www.bbc.co.uk/nature/life/Oreophrynella_nigra)

Panther Chameleon

Description: Reptile
Found: Madagascar
Habitat: Dry deciduous forests
Food: Insects
Special adaptation: Long, powerful tongue can shoot out at 15 meters per second to grasp insects.

Source: http://animal.discovery.com/animals/life/panther-chameleon.html and http://www.bbc.co.uk/nature/life/Chameleon)

African Wild Dog

Description: Mammal
Found: Mainly eastern and southern Africa
Habitat: Semi-desert, savanna, woodlands
Food: Antelope and wildbeest
Special adaption: They hunt in packs. During the chase, some of the dogs move in close, while others stay behind. As the leaders tire during the chase, they drop back and dogs with more energy take their place.

(Image source: http://www.bbc.co.uk/nature/life/African_Wild_Dog and http://en.wikipedia.org/wiki/African_Wild_Dog)

Education Standards

National Science Education Standards

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

Credit © Chadden Hunter

Pre-Film Activities

Create a Food Web

DIRECTIONS FOR TEACHERS

In this activity, students will learn about a food web. Before the activity, discuss with students that all living things need food to survive. Ask students what some well-known animals eat in the wild (i.e. birds, raccoon etc.).

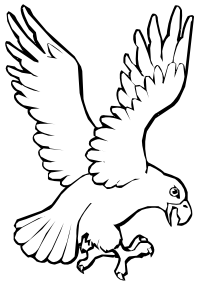
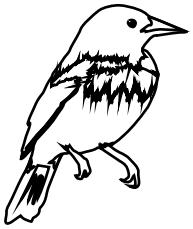
Pass out the worksheets to the students.

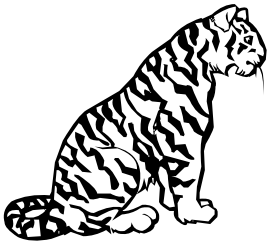
In step 1, students will connect the pictures to makea food web.

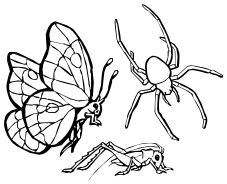
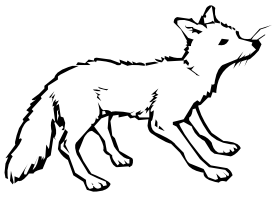
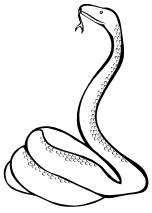
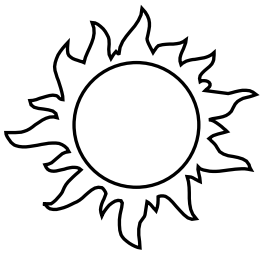
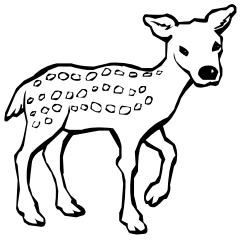
In step 2, students will answer questions about the food web. If students are not sure of the answers, encourage them to do research to find out.

DIRECTIONS FOR STUDENTS

STEP 1: All living things need food to survive. Plants make their food using energy captured from sunlight. Some animal seat plants while others eat other animals. Connect the pictures to create a food chain.

STEP 2:

Primary producers are organisms that make their own food using sunlight. Which of the above is a producer?

_____

_____

_____

Herbivores are animals that eat only plants. Which animals in the food web are herbivores?

_____

_____

_____

Top carnivores are animals that only eat other animals. What are top carnivores in this food web?

_____

_____

_____

Omnivores are animals that eat both plants and animals. What animals in the food web are omnivores?

_____

_____

_____

Top predators are animals that eat smaller animals and nothing eats them. What are the top predators in this food web?

_____

_____

_____

What would happen to our food web if one of the animals disappeared?

_____

_____

_____

Get to Know the Habitat

DIRECTIONS FOR TEACHERS

Habitats are places where organisms can find everything they need to survive. There are four main parts of a habitat These parts are food, water, shelter and space. In this activity, students will be given pictures and shown a brief description of each habitat as shown in the film. Students will match the descriptions to the pictures, and answer questions about each habitat.

DIRECTIONS FOR STUDENTS

In the film, you saw three habitats. In this activity you will match the pictures of the habitats with description of the habitats.

STEP 1: Look at the pictures of each of the habitats below.

Picture A:

Picture B:

Picture C:

STEP 2: Read the descriptions of each of the habitats and answer the questions.

African Savanna

The African savanna is an area that is predominately made up of different species of grass. The savanna also has trees, but these trees are spaced out and do not form a canopy.

The savanna has a wet season and a dry season. Often during the dry season there are wild fires. The African savanna is home to the Rufous Sengi as well as other animals such as lions, snakes, insects and zebras.

Picture letter: _____

What do you think animals would eat in the savanna?

_____

Where do you think animals would get their water?

_____

What are some of the challenges that animals might have to face in the savanna?

_____

_____

_____

v

Madagascar is a large island off the east coast of Africa. The rainforest of Madagascar is hot and humid and has over 100 mm of rain per year. The area contains many different species of trees, some found nowhere else on earth. The rainforest is home to the Panther Chameleon as well as other animals such as lemurs and Tomato Frogs.

Picture letter: _____

What do you think animals would eat in the rainforest?

_____

Where do you think animals would get their water?

_____

What are some of the challenges that animals might have to face in the rainforest?

_____

_____

_____

South American Tepuis

A tepuis is a tabletop shaped mountain. Although the tops of the mountains are rocky, they have a flat top with sheer sides. The mountains rise out of the rainforest. The sheer sides of the mountaintop often make large, dramatic waterfalls. These mountains contain animals that are only found in this region such as the Pebble Toad.

Picture letter: _____

What do you think animals would eat in the tepui?

_____

Where do you think animals would get their water?

_____

What are some of the challenges that animals might have to face in the tepui?

_____

_____

_____

Post Film Activities

Habitat Crossword Puzzle

DIRECTIONS FOR TEACHERS

In this activity, students will complete a crossword puzzle, answers related to terms from the film as well as other terms about habitats and food webs

DIRECTIONS FOR STUDENTS

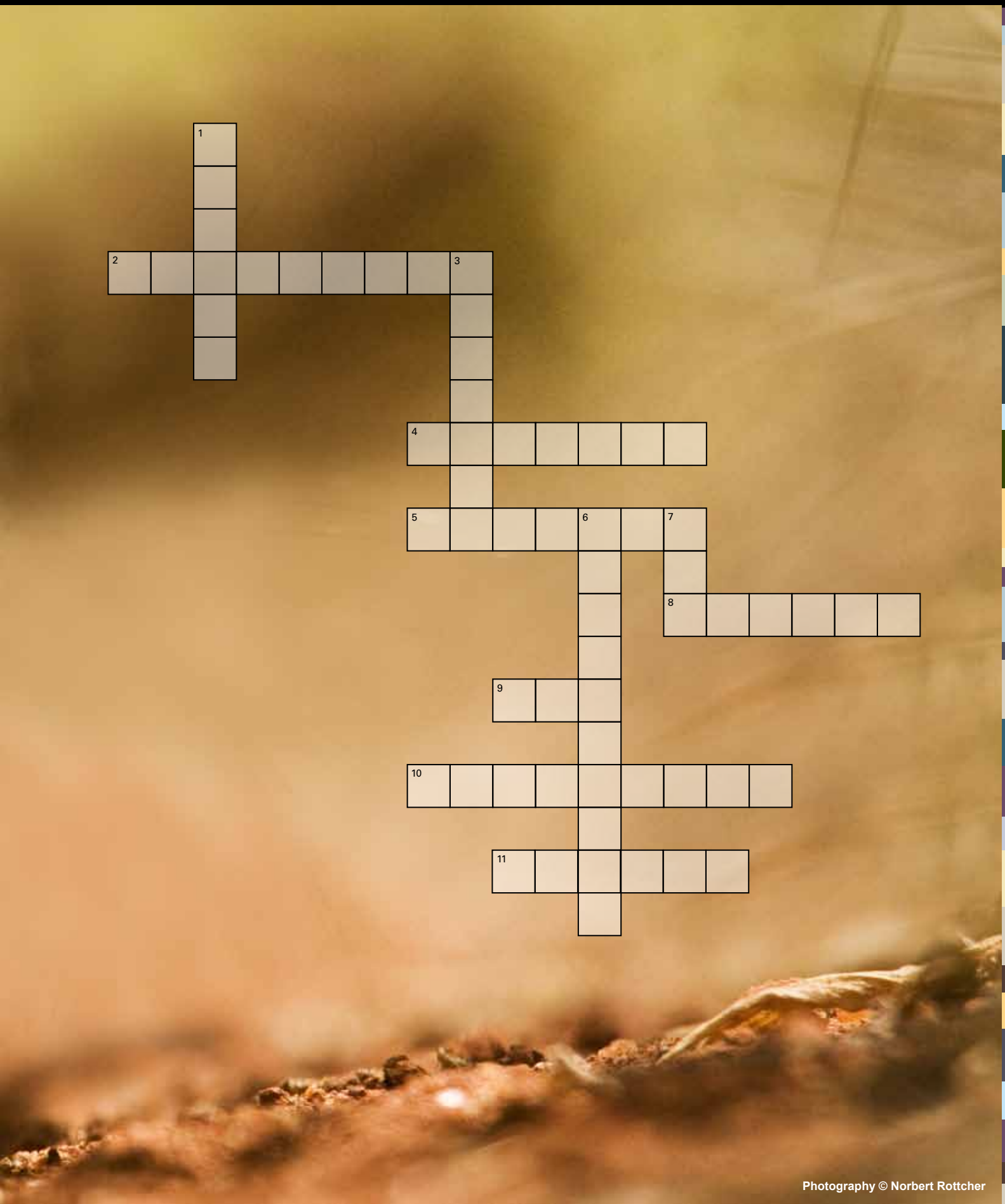
Complete the crossword puzzle on the following page.

Across

2. Animals that eat plants and animals are known as _____.
4. Chameleons use their tongues to catch _____.
5. A place where an animal gets everything it needs to survive is called a _____.
8. _____ toads bounce down mountains to escape being eaten.
9. Plants get their sunlight from the _____.
10. Organisms that make their own food are called primary _____.
11. Rufous Sengi use _____ to escape predators.

Down

1. Herbivores only eat _____.
3. Rufous Sengi live in the _____.
6. _____ are large spiders in Venezuelan mountains.
7. A _____ predator is an animal that eats other animals but nothing eats it.



Photography © Norbert Rottcher

Design an Animal

DIRECTIONS FOR TEACHERS

In this activity, students will read a paragraph about the Madagascan rainforest. They will then create an animal to live in this habitat. Students will draw the animal keeping in mind how the animal eats, hides and finds water. They will then answer questions about their animal.

As an extension, students can write a story about their animals.

DIRECTIONS FOR STUDENTS

As seen in the film, Panther Chameleons live in the rainforest of Madagascar. The rainforests of Madagascar get over 100 inches of rain a year. The rainforest is hot and humid. The rainforest is dense with vegetation including many trees, flowers and vine that are not found anywhere else in the world. In the rainforest there are many lemurs, frogs, reptiles and birds.

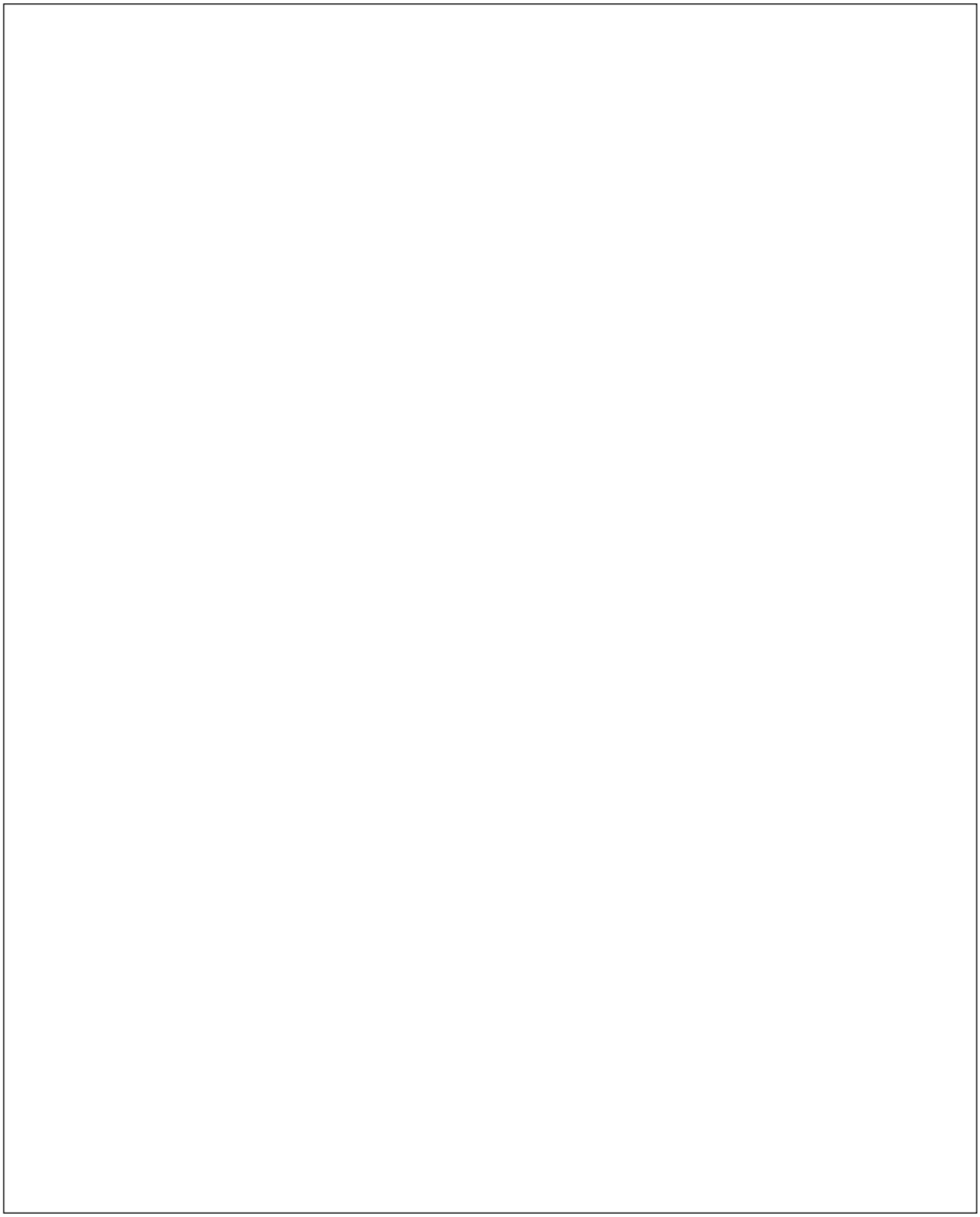
In this activity, you will create a new type of animal that can live in this habitat. When you are creating your animal keep in mind what they eat, how they move, where they might find water, and how they will hide.


Credit © Kevin Flay


Credit © Stephen Belcher


Credit © Adam Chapman

STEP 1: Draw your animal



Step 2:

What is the name of your animal?

_____

_____

_____

What type of animal is your animal? (i.e. bird, reptile, mammal, fish etc.)

_____

_____

_____

What does your animal eat?

_____

_____

_____

Where does your animal find water?

_____

_____

_____

Where does your animal hide?

_____

_____

_____

How does your animal move?

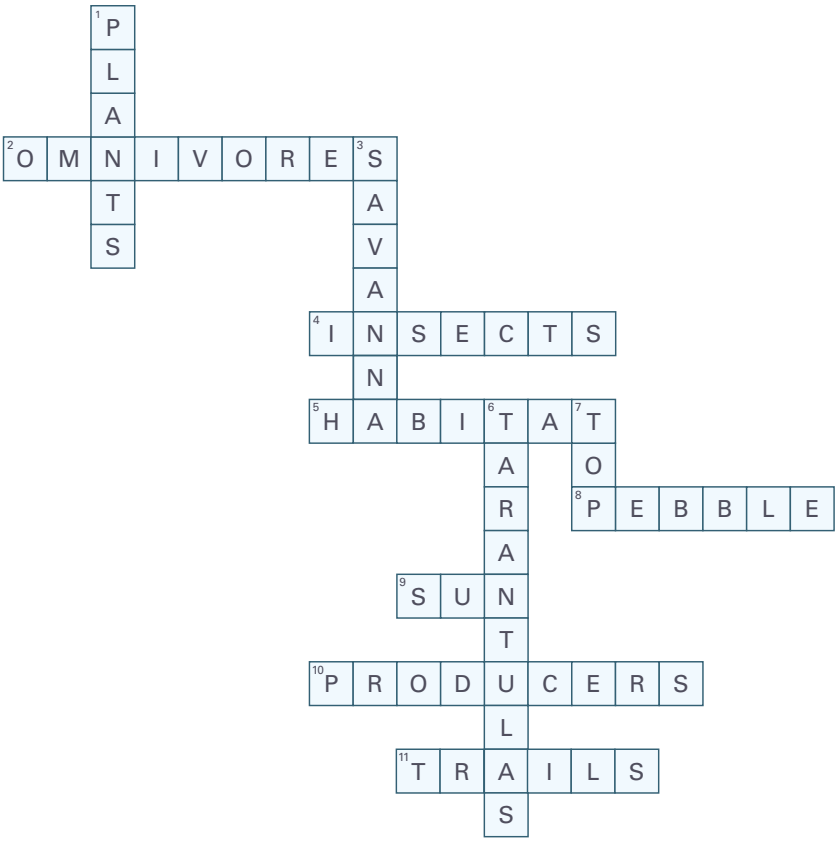
_____

_____

_____

NOTES:

Answer Sheet



Resources

The following resources were used to develope this guide.

ON THE WEB

Amphibiaweb
An excellent resource from the University of California, Berkeley that includes an online database of amphibians from around the world, including their conservation status.
http://amphibiaweb.org

Animal Planet
Learn more about the panther chameleon, rufus sengi and other animals from the TV series not featured in Great Escapes
http://animal.discovery.com/tv/life/

Nature
Access some of the best natural history content in the world through the BBC's archive, current TV and radio shows, and up-to-the-minute information from the field.
http://www.bbc.co.uk/nature/

IN PRINT

Life: Extraordinary Animals, Extreme Behaviour by Martha Holmes, Michæl Gunton, Rupert Barrington, Adam Chapman and Patrick Morris. Publisher: University of California Press (2010). ISBN-10: 0520265378. ISBN-13: 978-0520265370.

The Mixed-Up Chameleon by Eric Carle. Publisher: HarperCollins (1988). ISBN-10: 0064431622. ISBN-13: 978-0064431620.

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ENTERTAINMENT