

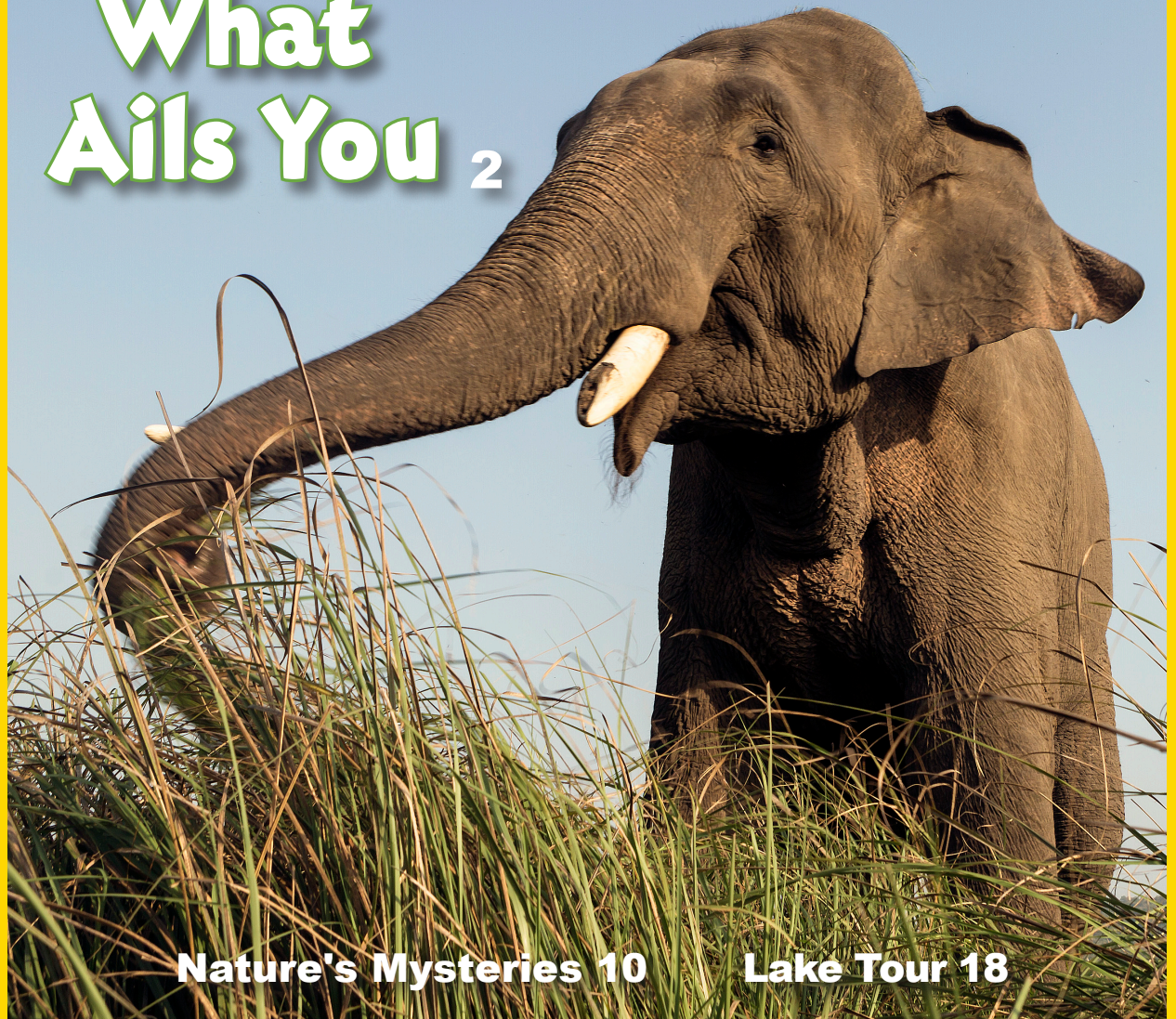
NATIONAL
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Explorer

PIONEER

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Curing What Ails You

What can elephants teach us
about medicinal plants?



By Alex Greene, ethnobotanist
and National Geographic Explorer

Wildlife and Wild Places

INTERDEPENDENT RELATIONSHIPS/ECOSYSTEMS

As you read, think about what people have learned from observing elephants.



Elephants stand in the shade under the trees. A truck pulls up. A team of **mahouts**, elephant caretakers, begin to unload the truck. Inside is a pile of spiky vines. We are at a conservation center in Thailand. These vines will be used to make a medicine for the elephants.

I am here to study how elephants are taken care of. I am an **ethnobotanist**. That's a person who studies the ways people use plants.

Working With Elephants

I will learn from a group of people called the Karen. The Karen have lived and worked with elephants for hundreds of years. Elephants helped people travel long distances. They helped move heavy objects like logs. Today, many elephants live in camps. Tourists come and visit them.

One of the first things I notice at the center is that elephants like to eat sweet foods. They eat sweet corn and sugar cane. They don't like bitter foods. When the spiky vines arrive, the elephants want to eat them. The vines are bitter. Yet, the elephants don't seem to mind. Do they know it is medicine? Do they eat it to stay healthy? I want to find out.



Elephants use their trunks to lift grasses to their mouths.



I work in the field with a guide and a master healer.

Research Begins

First, I meet with the Karen in their villages. I want to make a list of which plants are used to treat sick elephants. I would like to know how the plants are used. What did they cure?

To make my plant list, I have to ask a lot of questions. The Karen and I do not speak the same language. So, an interpreter helps me. It is hard work, but I learn a lot.

Next, we go into the forest. We collect samples of key plants. I dry them in a plant press. I label each one. They are kept in a library for plant samples. It's called an **herbarium**.

Analyzing Data

The Karen and I work together for months. We find 34 plants used in elephant medicine. The most common treatment is used to keep elephants healthy. The mahouts mix the plants with rice and fruits to make a tasty pellet.

Other plants are used to treat wounds, eye problems, or broken bones. Some plants are ground up. Others are boiled in water for elephants to drink.



Recording Data

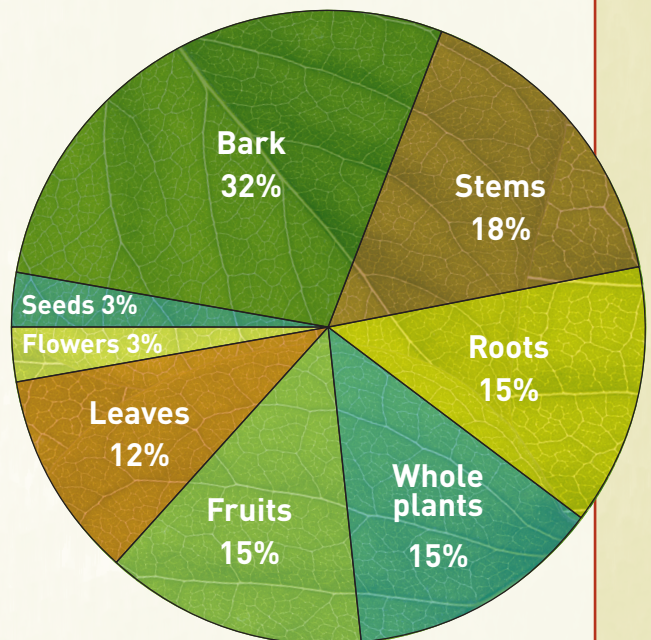
Number of plants used for medical treatments of elephants:



Here is some of the data I collected.



These plant parts are the most used for elephant medicine:



Asking More Questions

After recording my data, I had a new question. I wondered where this knowledge came from. How did we discover that these plants could be medicine? Did people teach the elephants? Or did elephants teach the people?

People use many of the plants for medicine. But not all. Some plants are used only for elephants. People watched elephants in the forest. The elephants looked for these plants when they didn't feel well. People gave these same plants to other elephants when they were sick. That helped.

We talk about our work.



Learning From Others

Many of the plants used to treat elephants came first from people. Some plants were used by elephants first, then people. For some, it was hard to tell who used them first.

We forget sometimes that other **species** have their own knowledge. If we pay attention, we can learn from them. For example, we learned from beavers how to build dams. We copied the shape of airplanes from birds. In the same way, the Karen have borrowed from elephant knowledge. Now, they know the best plants to treat everyone.

I'm excited about what we are learning.



WORDWISE

ethnobotanist: a person who studies how communities traditionally use plants

herbarium: a library of dried plants

mahout: a person who works with, rides, or takes care of an elephant

species: a group of similar organisms that are able to reproduce

Our Changing Planet

EARTH SCIENCE

As you read, think about which of these mysteries happen quickly and which ones happen slowly.

**This stone moved on its own. How?
Come along as scientists try to solve
this and more of**

NATURE'S MYSTERIES

By Lynn Brunelle



CIRCLES IN THE SAND



A dragon lives under the sand in a desert.
It breathes out a poisonous gas. The gas bubbles up.
It burns circles of bare dirt in the grass.

No one has seen this dragon. Yet, some people in southern Africa say it's there. It's how they explain the strange circles that they see.

Searching for a Cause

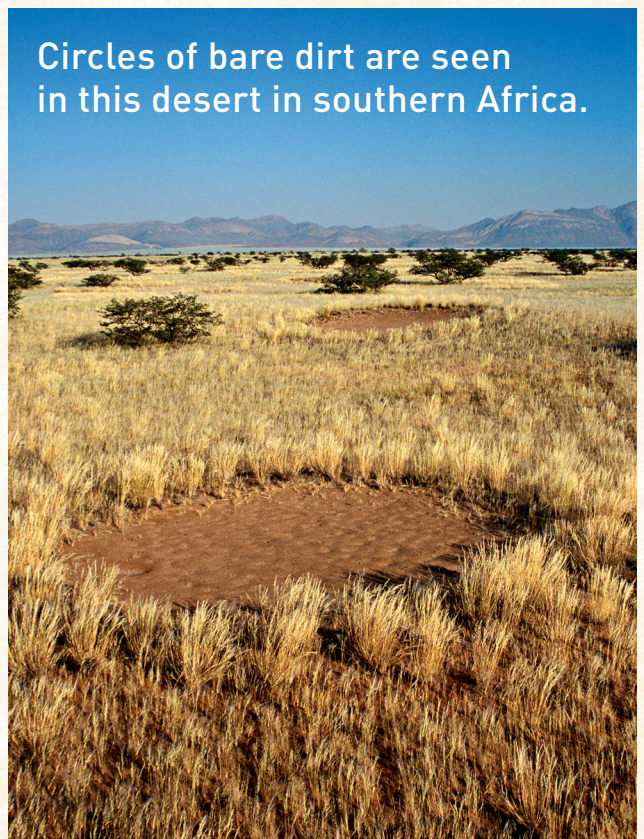
Scientists don't believe in dragons. What else might cause the circles? Norbert Juergens wants to solve this mystery. He's a biologist. He has studied 1,200 circles. He asks questions. What makes the circles the same? What makes them different from each other?

Common Clues

He tested the dirt. He measured the amount of water in the dirt. He made a list of plants and animals in the circles. He charted the weather.

Then he studied his data. He was looking for the things that made the circles the same.

Circles of bare dirt are seen in this desert in southern Africa.



Mystery Solved

Juergens found something surprising. In dry weather, the grass around the circles seemed healthy. He wondered why. Then he found wet sand under each circle. The water in the sand kept the grass alive.

He also found termites under each circle. He thinks the termites eat the grass roots. That kills the grass. It leaves behind a circle of dirt.

When rain soaks into the dirt, the termites drink the water. The grass soaks up the water. That's how the grass stays alive. Mystery solved!



SOMETHING FISHY



Yoji Okato is an underwater photographer. One day, he dove into the sea off southern Japan.

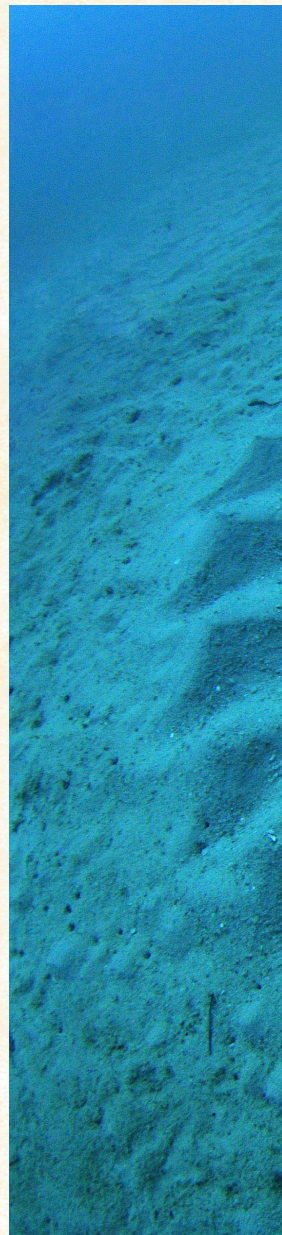
He saw something odd on the seafloor. It was a circle in the sand. The center looked smooth. A pattern of ridges was piled up around the edge of the circle. He wondered what made this circle.

Searching for a Cause

People came up with ideas about these sea circles. Some said they were made by ocean currents. Some thought that aliens from space made the circles. The aliens had landed their UFOs on the seafloor!

Okato didn't think aliens were behind the circle. He wanted to solve the mystery. He teamed up with some scientists. The team returned to the place where he had seen the circle. Nothing had changed.

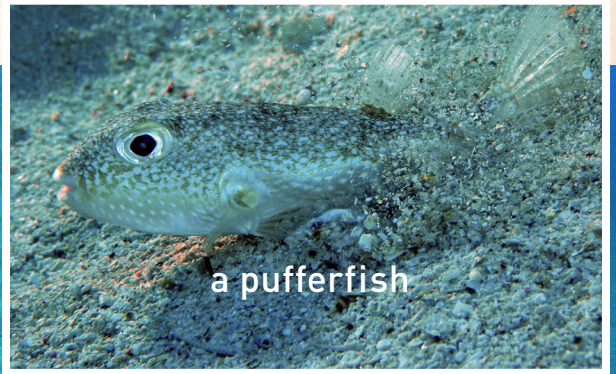
The team went to the same place many times. They watched. They didn't get any clues. The mystery was still a mystery.



Mystery Solved

One day, the team saw who was making the circle. It was a small fish. It's called a pufferfish. The fish made tiny waves by swimming back and forth. The waves made a circle. He used his fins to make ridges. When he was done, a female fish swam by. She liked the circle so much, she laid her eggs there. The circle was a nest! Mystery solved!

A pufferfish swims back and forth to make a sand circle.



SAILING STONES



A big rock sticks up out of the mud. It's too heavy to pick up. Yet, it has mysteriously moved. A trail shows where it moved across the dirt.

Many of the big rocks in this part of Death Valley in North America have moved. How? No one has ever seen it. It's a mystery.

Searching for a Cause

People have wondered about the big rocks. Some people think the rocks are magical. Others think the rocks were moved by people playing a prank. Scientists wanted a better answer.

Maybe the rocks were sliding downhill? No. These rocks actually moved uphill. Maybe the rocks were pushed by winds? No wind seemed strong enough.

Cold Clue

One scientist realized an important fact. The rocks only moved in winter. During winter, this place floods. The water freezes. It forms ice. A small wind might be enough to push the rocks across ice.

No one has seen the rocks move. So, no one can be sure how they do it. This mystery is unsolved!

Boulders mysteriously zig and zag
in Death Valley, California, U.S.A.



LAKE TOUR



Our Changing Planet

EARTH SCIENCE

As you read, think about the different types of lakes on Earth's surface. How are they different?



**Pink, poisonous,
or ... polka dot?
Take a tour of
some of the
planet's most
peculiar lakes.**

By Beth Geiger

Have you ever seen a pink lake? Or heard about a lake that disappears? A lake is a landform. It's a body of water surrounded by land. But not all lakes are the same. Take a look at some of Earth's stranger examples.

Seeing Spots

Take a peek at Spotted Lake. It's in Canada. It looks like it has polka dots!

This lake fills a low spot in one of Canada's deserts. The lake is a dead end. Water rich in **minerals** flows in, but very little flows out. The water dries up. In summer, the minerals stay behind in shallow pools. They create a rainbow of colors. Some people believe that the lake has healing powers.



Spotted Lake,
British Columbia,
Canada



Lake Baikal,
Russia

Lake Natron, Tanzania, Africa



Extreme Lakes

No swimming in Lake Natron! It's in Africa. The water is hotter than bathwater. It's red from **bacteria**. It's very salty. The salt can burn your skin. But the water doesn't bother flamingos. They build their nests there.



nerpa

Lake Baikal is extreme, too. It's in Russia. It's big and cold. It's Earth's oldest and deepest lake. Lots of animals live in this **freshwater** lake. They don't mind the cold water—especially seals called nerpas.

Jellies and Boiling Lakes

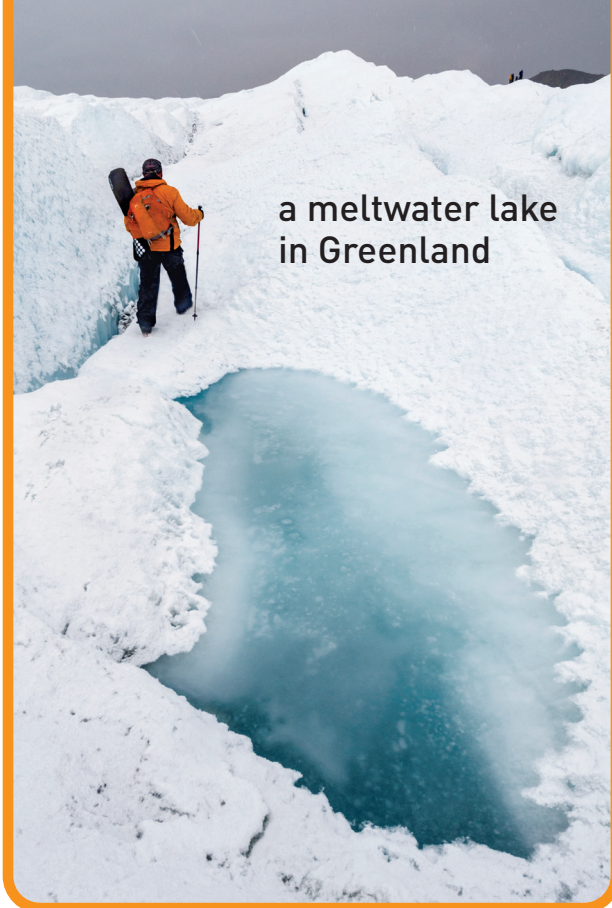
Gliding globes of golden jellies. Gobs of them! That's what you'll find in a lake on an island in the Pacific Ocean. Most people call it "Jellyfish Central." The jellies here have lost their sting. So, it's safe to swim with them.

Boiling Lake is *not* fun to swim in. It's on the island of Dominica. It boils, just like a pot of soup on a stove. The island is built from a volcano. Melted rock under the ground heats the lake water and makes it boil.





Boiling Lake,
Dominica



a meltwater lake
in Greenland

Down the Drain

It's summer on Greenland's ice sheet. Lakes of melted water dot the frozen surface. They sparkle like blue jewels. The darker the blue, the deeper the lake.

Some of the lakes in Greenland can disappear. What happens? As the air warms in summer, the ice melts and cracks. Water leaks through the cracks. It's just like bathwater going down a drain!

WORDWISE

bacteria: tiny, one-celled organisms

freshwater: of or living in water that is fresh or not salty

minerals: a natural substance that is not of plant or animal origin

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Cover: an Asian elephant

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