

Kateřina Wagnerová Hikade



The Bug is my BUDDY!



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b4u publishing

Hi, I am a *stick insect*!

Stick insects are a type of tropical insect with a very unusual look. The most amazing thing about them is their camouflage—called **mimicry**. They look like plants, which helps protect them from predators. But it's not just how they look! Stick insects also move and act like plants. Their slow walk is like leaves swaying on a branch. Many species also hold their front legs along their head to look even more like a dry twig.

DEFENSE

When their camouflage doesn't work, *Tropidoderus childrenii* flashes its bright blue wings. The Australian stick insect might fall to the ground and pretend to be dead. Some stick insects can even drop a leg to escape if they're caught by a predator.



4

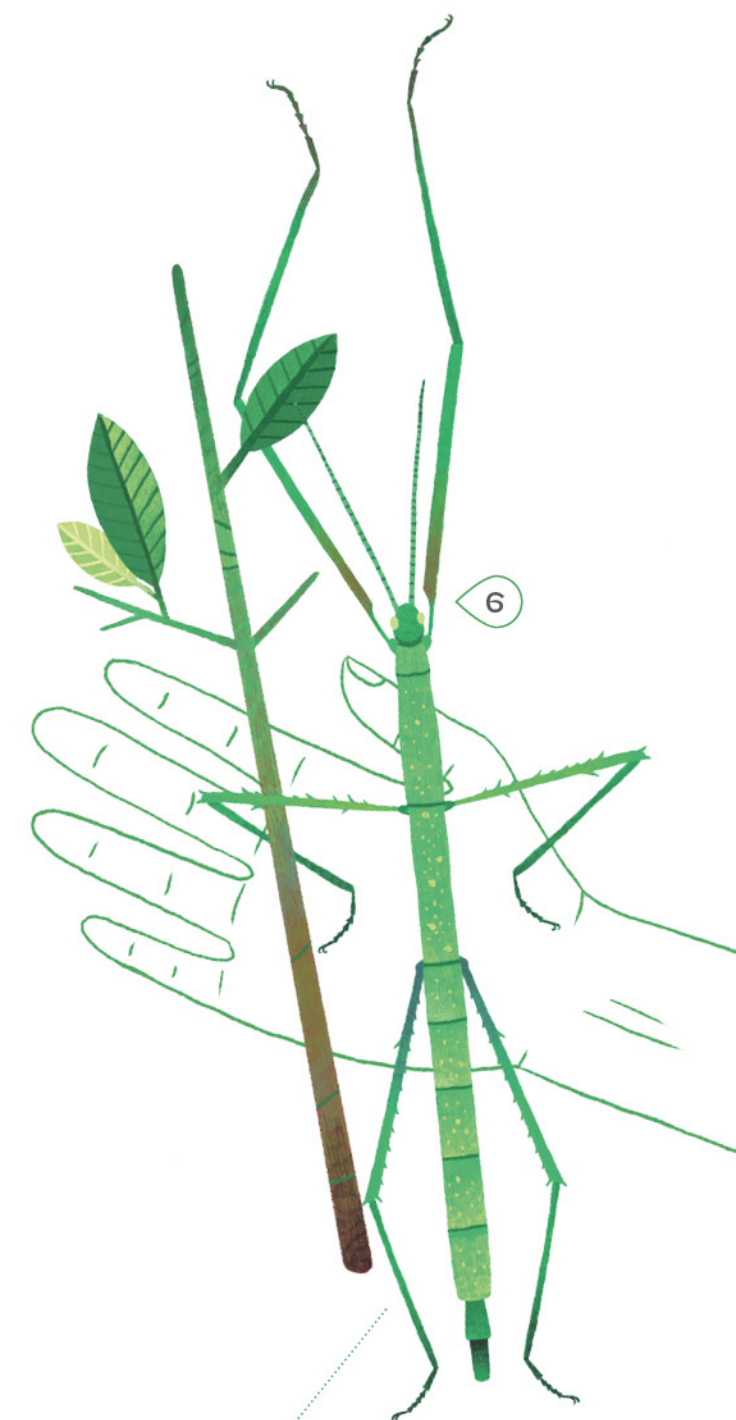
Stick insects



Leaf insects are true masters at looking like leaves. You can often see leaf-like veins and dry edges on their wings. If a stick insect's wings get bitten, the dried edges look just like a damaged leaf.

1. Australian stick insect
2. Two-spotted leaf insect
3. *Eurycnema goliath*
4. *Tropidoderus childrenii* looks just like a leaf when it's resting
5. *Tropidoderus childrenii*—when trying to scare off a predator
6. *Phobaeticus chani*

Stick insects can be divided into three main groups: **leaf insects**, **stick insects**, and **walking sticks**. Simply put: leaf insects look like leaves, walking sticks look like twigs, and many stick insects have sharp spines.

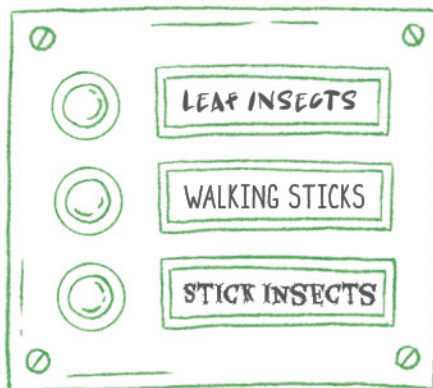


Phobaeticus chani is part of the walking stick group and is the longest insect in the world. The longest one ever measured was 35.7 cm (14.1 inches)!

5

2. Housing for stick insects

Did you get nymphs or adult insects? Then this chapter is for you! If you have eggs, skip ahead to page 14.



TIP: SHARING A TERRARIUM

Want to keep more than one species in the same terrarium? No problem—if you follow a few rules! Make sure there's enough space, and that the species have the same needs for humidity and food. You can also keep just one stick insect alone—it won't mind the solitude.

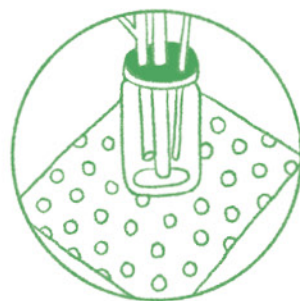
WHAT TO PUT ON THE BOTTOM OF THE TERRARIUM?



Nothing—you can vacuum everything out!



Some species lay eggs in soil. A handy trick is to place a dish with **lignocel**.



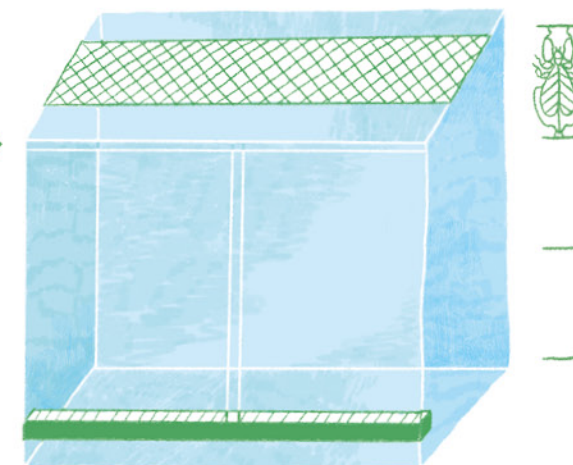
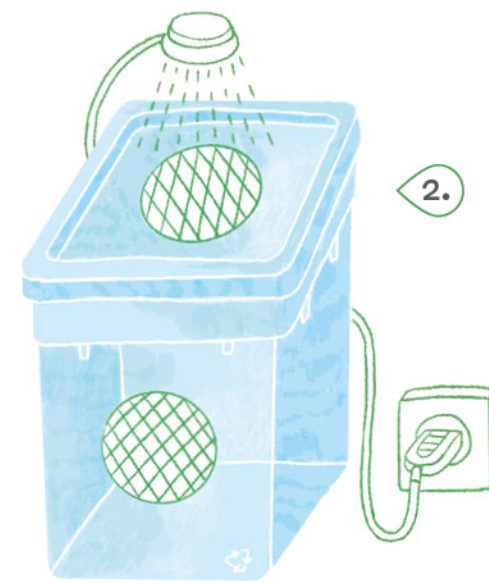
Paper: is also very practical! You can slide out the paper or napkin along with the droppings and eggs.

THE TERRARIUM AND ITS FEATURES

1. Low-Cost Option: A large canning jar with a mesh-covered opening.

2. Standard Option: A tall plastic box with lots of holes in the lid.

3. Business-Class Option: A glass terrarium with sliding doors.



WARNING! The terrarium should be three to four times taller than the insect's body length. That way, they have enough space to molt properly.

Stick insects also like **light**. Some species (especially those that live high up in trees) use light to control their metabolism. Leaf insects are one example.

VENTILATION



Small holes in plastic



Lid covered with mesh

TIP: Metal mesh is better, because some stick insects can chew through plastic!



TIP: Free as a bird

Some stick insects can be kept “free-range”—for example, on a plant in a vase! If you try this, only use adult females. Nymphs are surprisingly fast, and males tend to wander off looking for a mate.

5. Stick insect troubles

Just like people, insects can suffer from all kinds of sickness and injury. Let's take a look at the most common problems and how to prevent or treat them.



1. POISONOUS FOOD

Problem: Leaves might be dirty—and that can make them dangerous or poisonous to stick insects.

Solution: Wash the food carefully with water. For raspberry leaves, remove all young shoots, as they can also be “too rich” and harmful.



2. UNSUCCESSFUL MOLTING

Problem: Stick insects have a limited time to molt. If they don't finish in time, their new skin hardens and they can't get out.

This often happens when the humidity is wrong or they don't have enough space and peace to molt.

Solution: Create the best possible molting conditions:

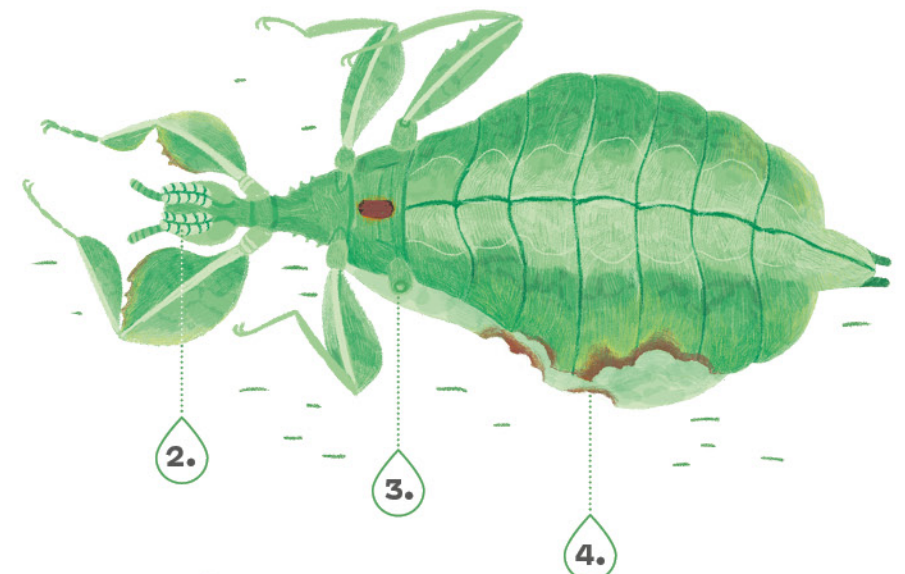
- Give them plenty of space
 - Keep the humidity just right
 - Avoid overcrowding the terrarium
- And most importantly—don't touch them while they're molting!



3. LOST LIMB

Problem: This often happens because of a bad molt, but there can be other reasons too. If a young nymph loses a leg, it can grow back. Older nymphs may only regrow it partially, and adults won't regrow it at all. A stick insect can live just fine with one missing leg. The real trouble comes if it loses more than two.

Solution: Provide plenty of space for molting, avoid overcrowding, and always handle gently and calmly.



4. BITTEN UP INSECTS

Problem: They usually keep living happily—but this is a sign that something's wrong with your setup!

Solution: The cause is usually too little space, keeping incompatible species together, or not enough food.

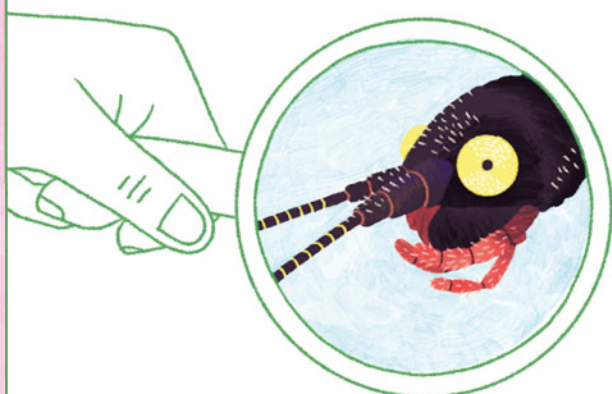


6. Stick Insect Species

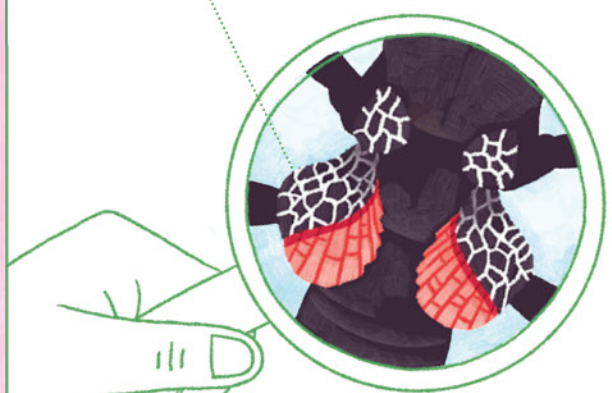
Peruphasma schultei Devil's Stick Insect Peru

This is an **endemic species**, which means it lives in only one place in the world—and nowhere else! A special nature reserve was even created to protect it.

SIZE: Up to 7 cm (2.8 inches)
DEVELOPMENT: Incubation 4–5 months, full growth in 6 months
LIGHT, HEAT, HUMIDITY: Normal room temperature; very low humidity (mist only occasionally)
TERRARIUM HEIGHT: At least 25 cm (9.8 inches)
FOOD: Privet, honeysuckle

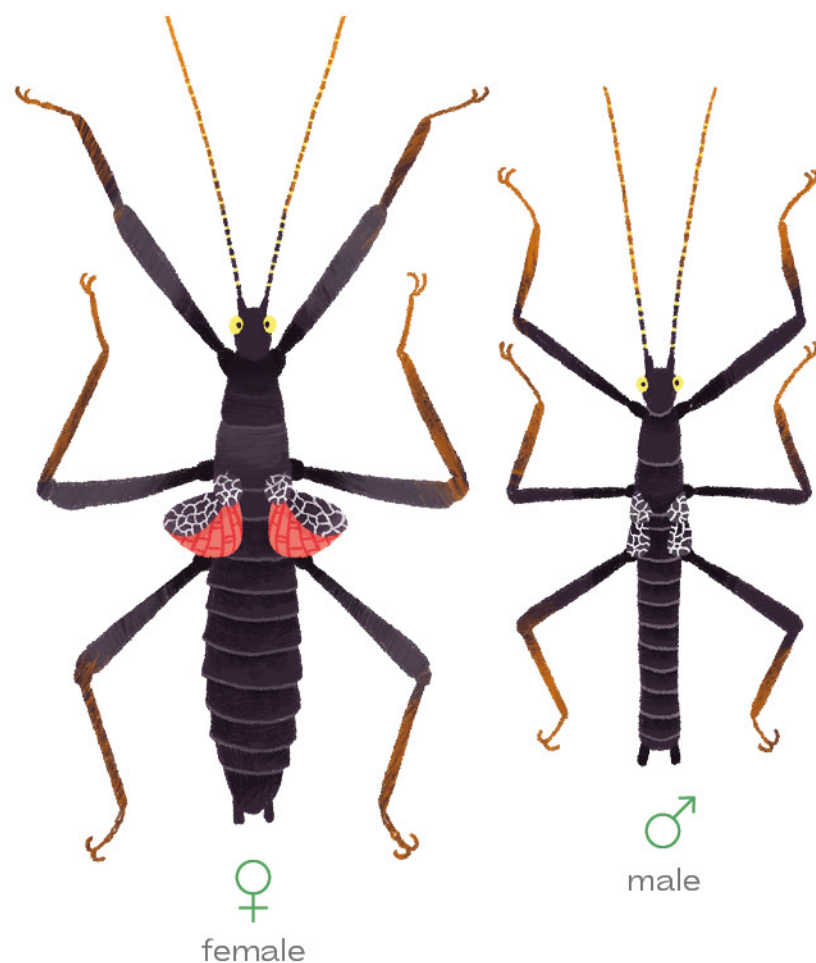


When threatened, it spreads its **wings** to scare off predators.



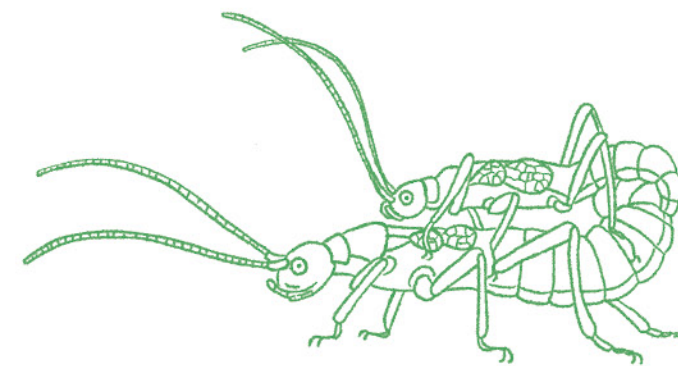
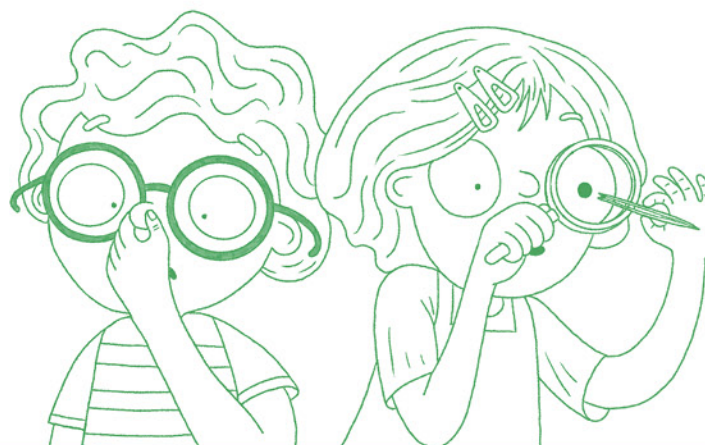
egg

If extremely disturbed, the devil stick insect can release a smelly liquid. **WARNING!** If it gets in your nose or eyes, it can sting!



female

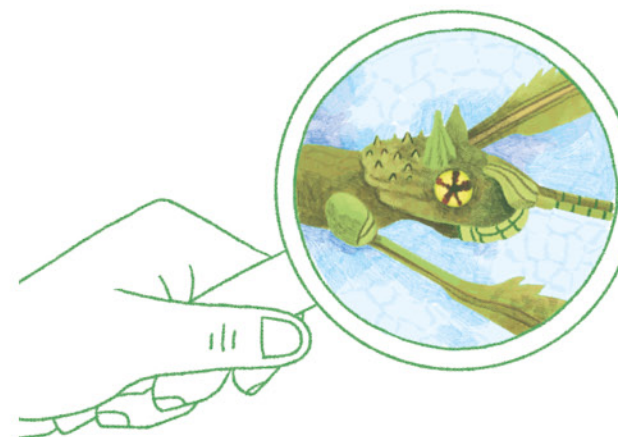
male



This species lives high in the mountains—1,200–1,800 meters above sea level in the Cordillera del Condor mountain range, in an area only 5 hectares (12.4 acres, or about 9 American football fields or 7 FIFA standard fields) wide. Here's something fun to imagine—it's about enough space for 1,000 elephants to lie down comfortably!

Male devil stick insects don't like to be far from their chosen partner. When they're not mating, they ride on the female's back.

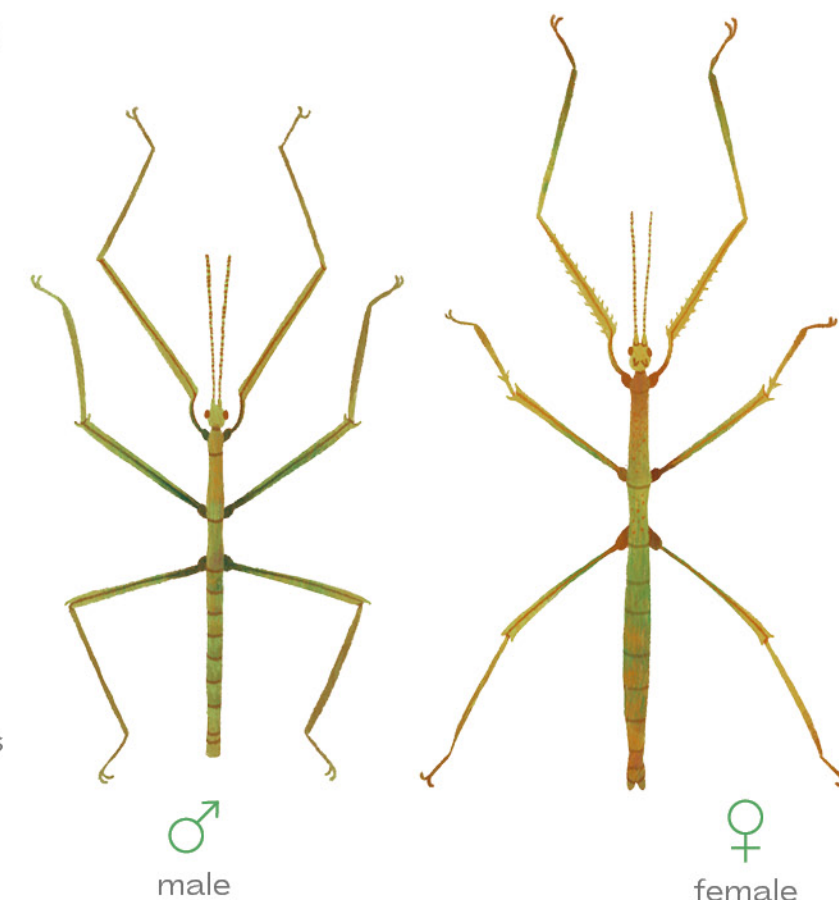
Medauroidea extradetata Horned Walking Stick India, Vietnam



SIZE: Up to 11 cm (4.3 inches)
DEVELOPMENT: Egg incubation 1–2 months, nymphs grow to adults in about 6 months
LIGHT, HEAT, HUMIDITY: Normal room temperature, lower humidity
TERRARIUM HEIGHT: At least 30 cm (11.8 inches)
FOOD: Bramble, dog rose

If it's too dry or too cold, egg incubation can stretch to half a year.

WARNING! The eggs of the spiny leaf insect are tiny and fragile, so they can easily break if you're not careful when handling them!

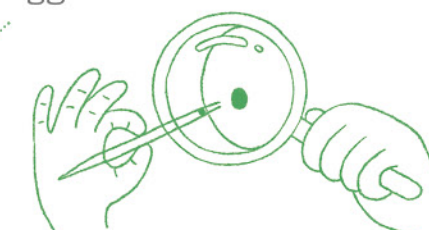


male

female



egg



6. Stick Insect Species

Phyllium bioculatum

Two-Spotted Leaf Insect

India, Java, Borneo, Sumatra, Sri Lanka

SIZE: Up to 9 cm (3.5 inches)

DEVELOPMENT: Grows to adulthood in 6 months

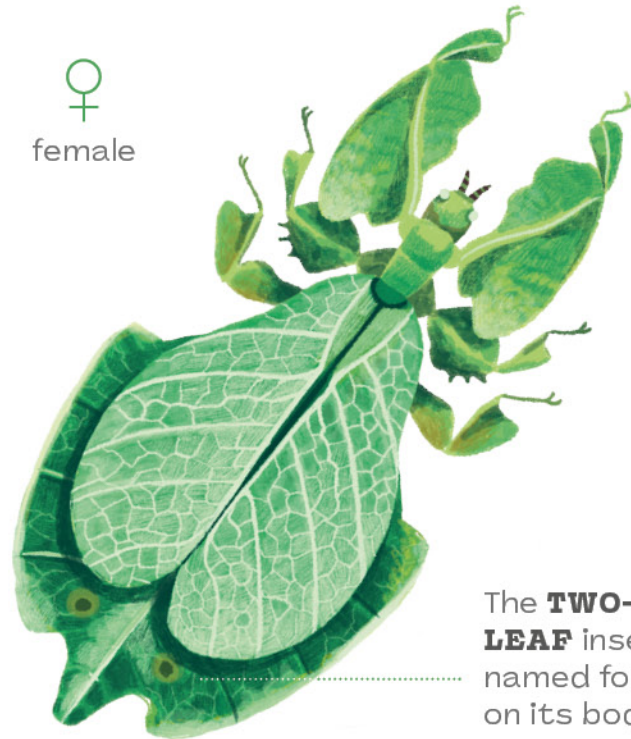
LIGHT, HEAT, HUMIDITY: Normal room temperature; humidity can be higher

TERRARIUM HEIGHT: At least 30 cm (11.8 inches)

FOOD: Bramble, oak



♀
female



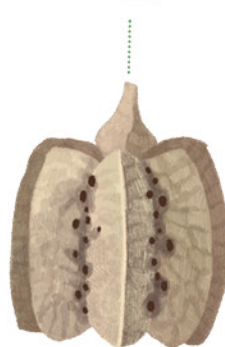
The **TWO-SPOTTED LEAF** insect is named for two dots on its body.



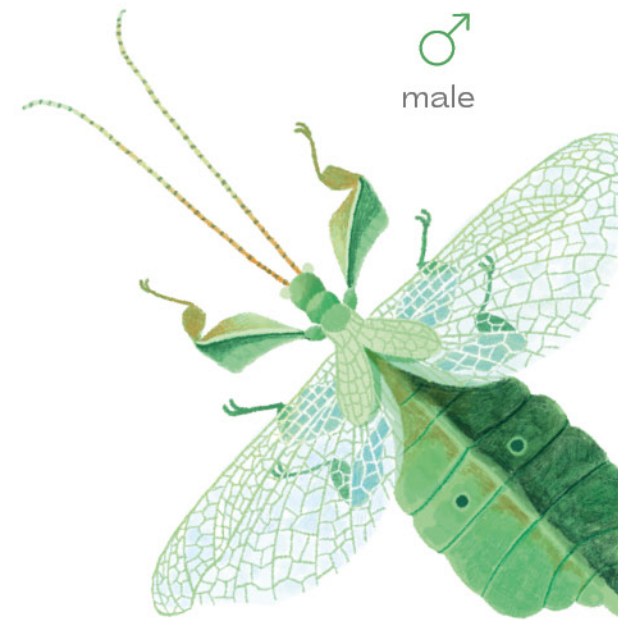
NYPHS OF THE TWO-SPOTTED LEAF INSECT

When they first hatch, they are bright red—a warning color to scare off predators. Then they turn brick red, blending in with soil and bark. Once the nymph reaches the leaves, it starts to turn green.

egg

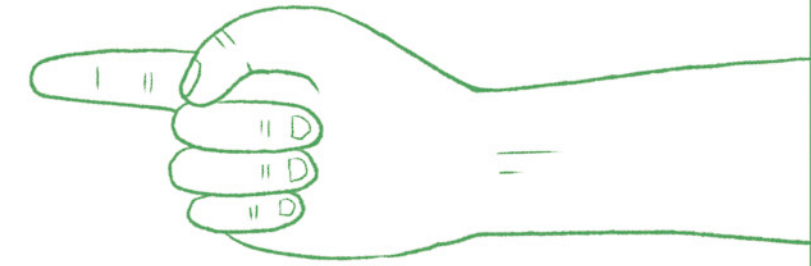


nymph



male

WARNING! Male leaf insects can fly!



LEAF INSECTS ARE AMONG THE MOST INVISIBLE OF THE INVISIBLE!

Their imitation of leaves is incredibly detailed. On their wings, you can see **leaf veins** and even **dried edges**. If their wings get chewed, the dry ends look just like a damaged leaf.

Sometimes visitors won't even spot your pets at first glance!

For many species of leaf insects, the care requirements are almost the same. So if you learn how to care for one, it's easy to try more!

Other species you might keep: *Phyllium philippinum* (**Philippine leaf insect**), *Phyllium giganteum* (**Giant leaf insect**)

"I've got new pets!"



"Where?!"

► *Hi, I am a flower beetle!* *Hi, I am a rhinoceros beetle!*

Flower beetles and rhinoceros beetles belong to the order of **beetles**. They are especially amazing because of their incredible appearance. **Flower beetles**, with their colorful shells, are like living jewels. **Rhinoceros beetles**, with their armored bodies, seem like prehistoric monsters! The species you can keep at home come from the tropics. They like our homes because we keep the temperature warm and steady.

BEETLE SIZES

Rhinoceros and flower beetles come in many different sizes. The largest flower beetle is the Goliath beetle, which grows up to 10 cm (3.9 inches). *Mecynorrhina* species can reach 8 cm (3.1 inches). One of the smallest is *Chlorocala*, only 2 cm (0.8 inches) long.

The **Hercules beetle** is the second longest beetle in the world, reaching up to 19 cm (7.5 inches).

RHINOCEROS BEETLES

1. Hercules beetle
2. *Dynastes grantii*
3. *Xylotrupes gideon*

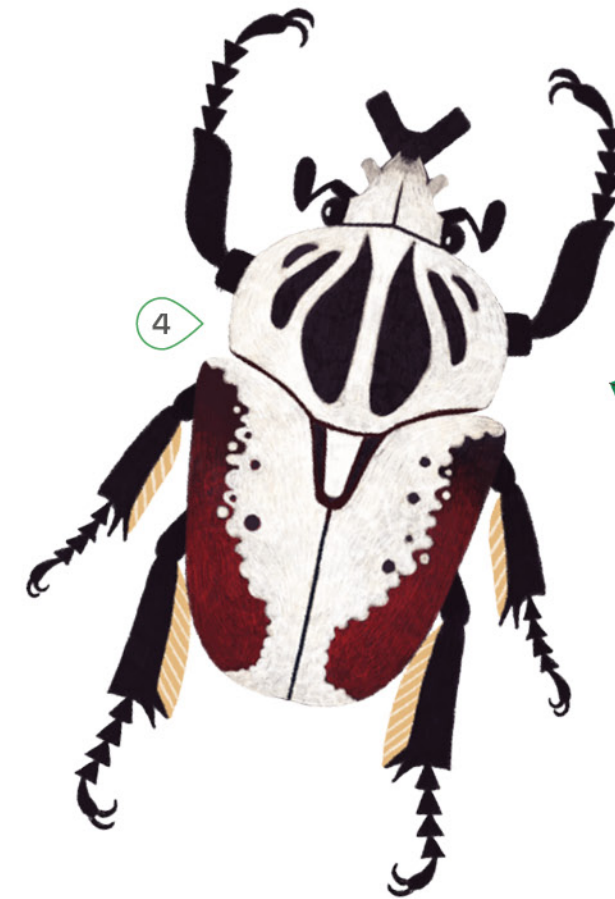
The development of some beetles takes a long time. For example, the stag beetle can take 4 to 6 years to grow up! But as an adult, it only lives a few months. Imagine how old you'd be before your beetle finally hatched! Luckily, flower beetles don't take nearly that long. You can have an adult beetle in just a few months.

BEFORE YOU GET BEETLES

Questions to ask the breeder when buying beetles:

- What kind of substrate is best for the larvae?
- What do you feed the adult beetles?
- Do you give extra food to the larvae?
- What temperature do the adult beetles need?
- How much light do the adult beetles need?
- Do adult males fight?
- Are the larvae cannibalistic?

(You'll find an explanation of cannibalism on page 38)



FLOWER BEETLES

4. *Goliathus goliathus*
5. *Mecynorrhina oberthuri*
6. *Eudicella morgani*
7. *Chelorrhina savagei*
8. *Mecynorrhina torquata ugandensis*
9. *Dicronorrhina derbyana conradsi*
10. *Dicronorrhina derbyana oberthuri*



2. Housing for beetles

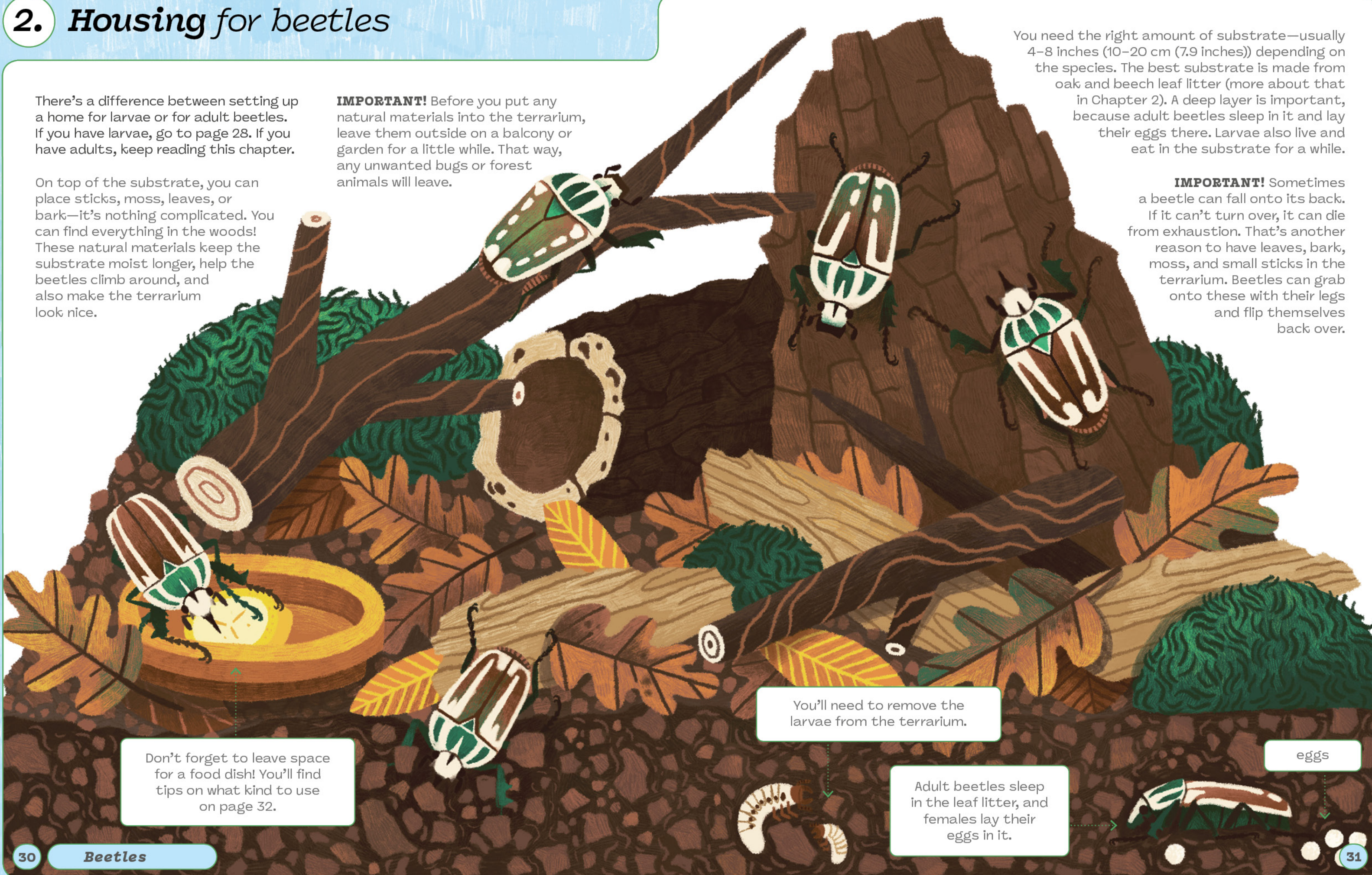
There's a difference between setting up a home for larvae or for adult beetles. If you have larvae, go to page 28. If you have adults, keep reading this chapter.

On top of the substrate, you can place sticks, moss, leaves, or bark—it's nothing complicated. You can find everything in the woods! These natural materials keep the substrate moist longer, help the beetles climb around, and also make the terrarium look nice.

IMPORTANT! Before you put any natural materials into the terrarium, leave them outside on a balcony or garden for a little while. That way, any unwanted bugs or forest animals will leave.

You need the right amount of substrate—usually 4–8 inches (10–20 cm (7.9 inches)) depending on the species. The best substrate is made from oak and beech leaf litter (more about that in Chapter 2). A deep layer is important, because adult beetles sleep in it and lay their eggs there. Larvae also live and eat in the substrate for a while.

IMPORTANT! Sometimes a beetle can fall onto its back. If it can't turn over, it can die from exhaustion. That's another reason to have leaves, bark, moss, and small sticks in the terrarium. Beetles can grab onto these with their legs and flip themselves back over.



Don't forget to leave space for a food dish! You'll find tips on what kind to use on page 32.

You'll need to remove the larvae from the terrarium.

Adult beetles sleep in the leaf litter, and females lay their eggs in it.

eggs

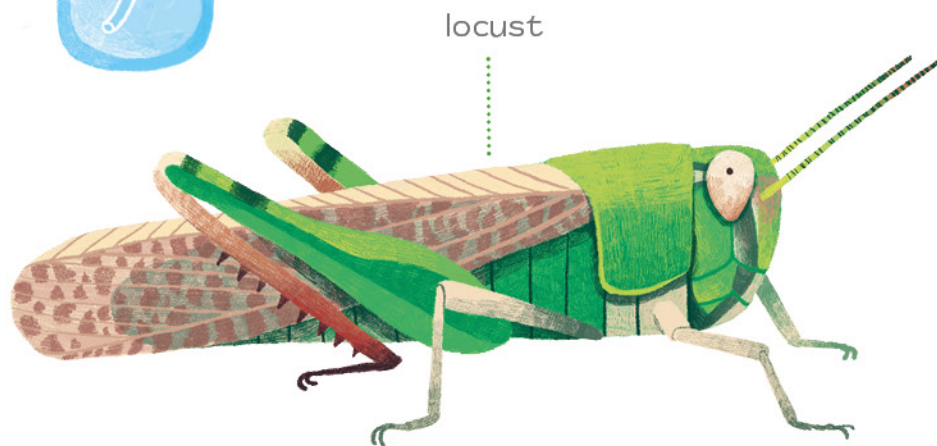
3. Food for mantises

Mantises are **predators**, so feed them live insects. Choose the size of prey—insects—based on the size of your mantis. In general, the size of the food should not exceed 1/4 of the mantis's size (for both adults and nymphs).

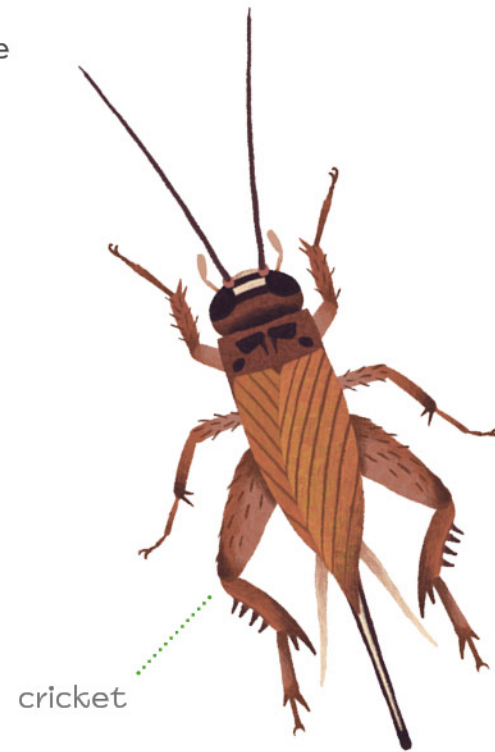
How often to feed? Mantises do well (just like in the wild) with irregular feeding. The interval is once every 7 to 10 days. You can tell a hungry mantis by a deflated abdomen. If the abdomen is "puffed up," there's no need to feed.



Even though mantises get water from their food, mist the terrarium regularly. They should have the opportunity to drink. Humidity is also very important for molting.



locust



cricket

IMPORTANT!

Most breeders do not recommend using crickets as food. They are a common source of infections. Only buy from trusted breeders.



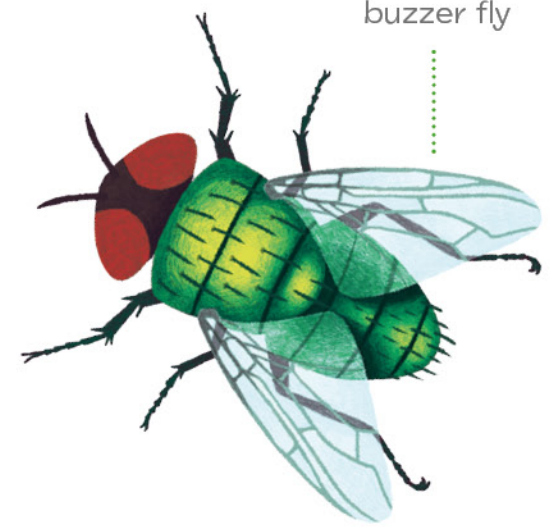
cockroach

TIP: There are specially bred types of feeder insects, like flightless fruit flies or crickets that don't chirp. So, you don't have to worry about your home being filled with flies or loud cricket noise.

TIP: A mantis's diet should be varied—it shouldn't be limited to just one kind of insect.



cockroach



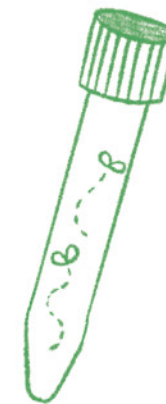
buzzer fly

fruit fly

IMPORTANT

MORE FOOD = LONGER LIFE? Definitely not! If you feed your mantis too often, you'll shorten its life. In other words, the mantis might enjoy it, but it'll die sooner.

CAUTION! Starving it, however, won't help it live longer either!



TIP: For smaller prey—like fruit flies—use a test tube to help you place the food more easily into the cup / enclosure / terrarium.

HOW TO FEED BUZZER FLIES

1. Buy green buzzer fly larvae (from a fishing store) and let them pupate in a dry and warm place in a well-ventilated box or mesh terrarium. **CAUTION!** The larvae can climb really well! The terrarium must be secure.

2. Once you see the pupae in the terrarium, move them to a ventilated container and place them in the fridge. Pupae stored like this can last about 2 months in the fridge.

3. Feeding: Take out the number of pupae you need and place them in the mantis's terrarium. After a few days, green flies will hatch—and the mantis will catch them herself.



4. New Generation of Mantises

Do you have a male and a female? Are they adults? And are you brave enough to try raising baby mantises? Then read on!

MATING

Females are ready to mate about 4 weeks after their final molt, males about 2 weeks after. To find out the exact timing for your species, check pages 60–61 or ask a breeder.



1. Feed both the female and the male. Feed the female especially well so she doesn't eat the male.



2. Place the female into the male's terrarium — ideally in the early evening, and position them so the male can see the female's rear (this lowers the risk that she'll mistake him for food).



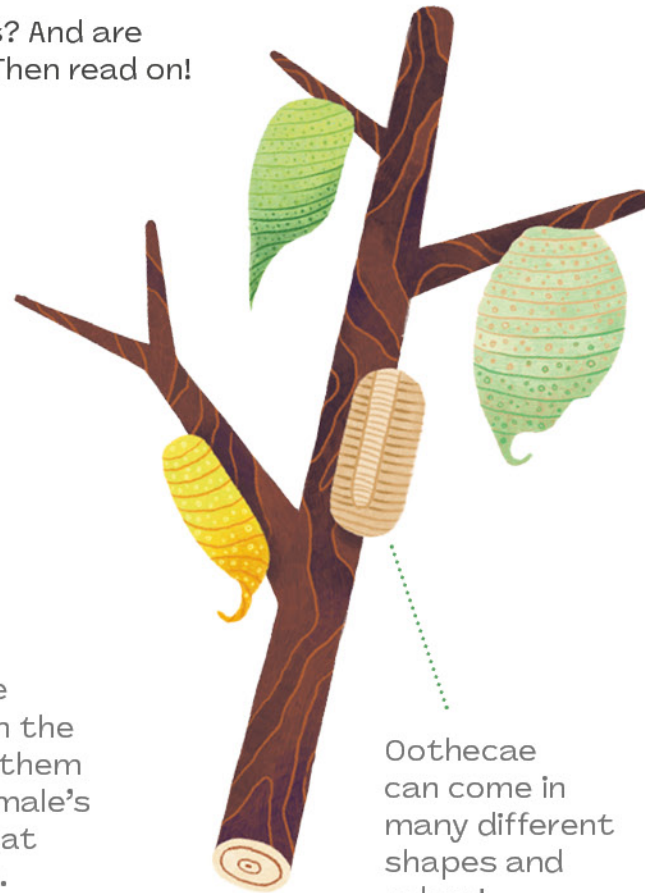
3. Now the mantises are mating. Don't disturb them. It can take several hours or even a few days.



4. Once it's done, it's better to move the female back to her own terrarium.



5. If the mating was successful, the female will soon create a foamy case with eggs inside. This is called an ootheca.



If it's fresh and still soft, don't touch the ootheca! To be safe, wait one week.



HOORAY, I HAVE AN OOTHECA!

Now it's the perfect time to prepare everything you'll need for incubating the ootheca and raising nymphs.



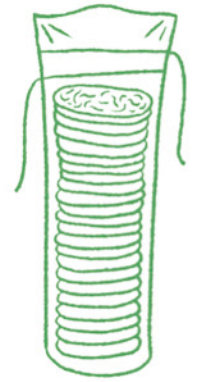
spray bottle



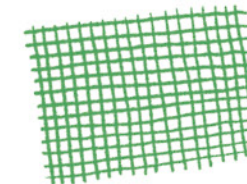
plastic container
(500 ml) with
a lid



small plastic
containers
(100 ml) with lids



cotton
or cotton
pads



mesh



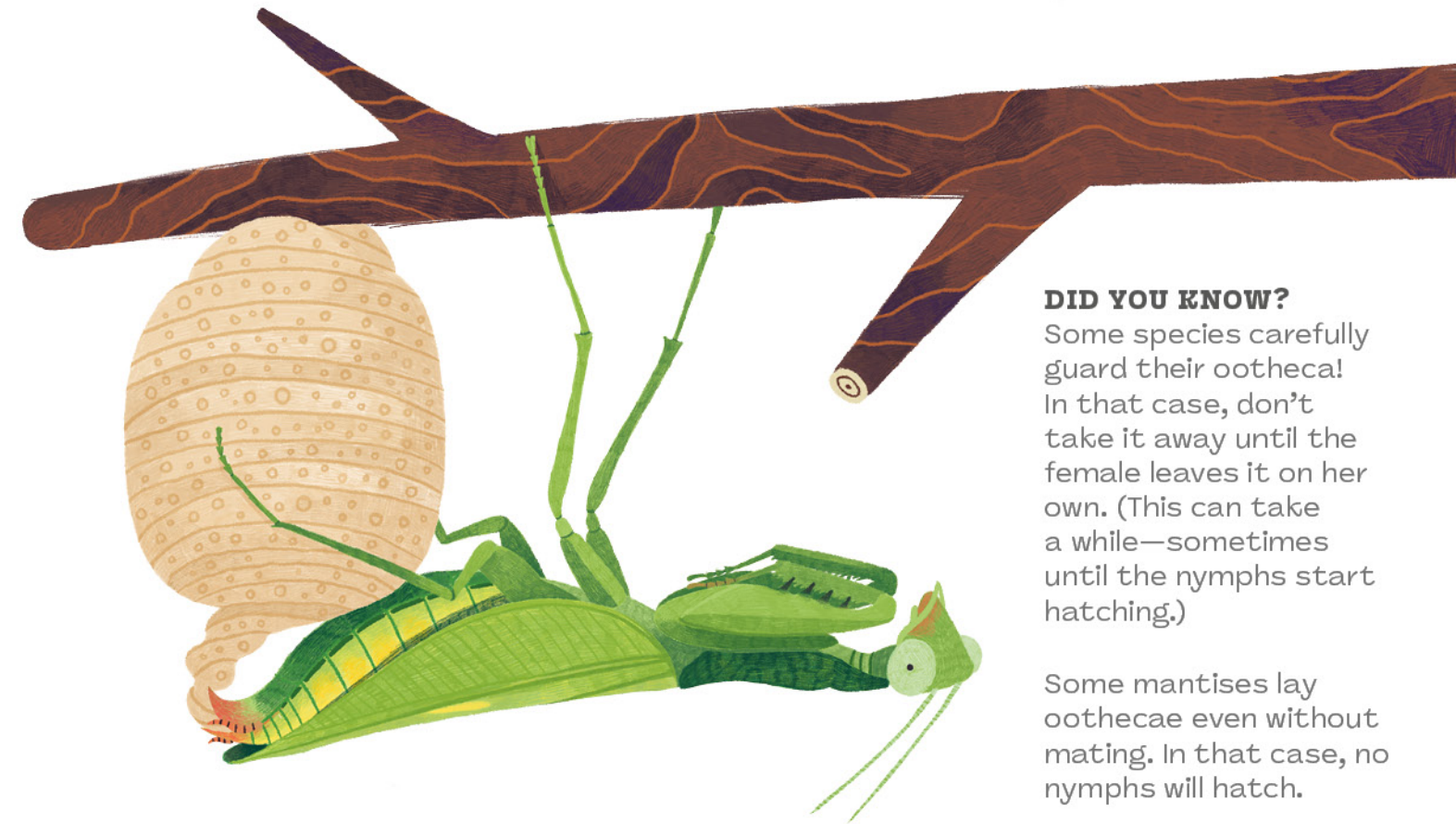
scissors



needle



stapler



DID YOU KNOW?

Some species carefully guard their ootheca! In that case, don't take it away until the female leaves it on her own. (This can take a while—sometimes until the nymphs start hatching.)

Some mantises lay oothecae even without mating. In that case, no nymphs will hatch.

The Bug is my BUDDY!

Kateřina Wagnerová Hikade

Discover the Fascinating World of Insects!

Have you ever seen a praying mantis catch its prey? Want to witness a stick insect shedding its skin? And what about flower beetles—those colorful, busy bugs that are more entertaining than TV? Did you know you can even keep the devil stick insect at home—a species that lives in just one spot in the world, high up in the mountains of Peru?



And did you know that some mantises can be tamed—and that you can even influence how they camouflage themselves? Yes, really! You can even create your own “special edition” of an Australian stick insect that looks just like lichen! And that’s not all! Beetles and bugs can take you on all kinds of amazing adventures. Want to start raising them yourself? First, read this book—it will open the door to the incredible world of these tiny creatures.



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