

Kendra's Quest

National Park Service
U.S. Department of the Interior

Urban Ecology Research Learning
Alliance
Washington DC



Kendra's Quest



Destinations

- 1** Flower Meadow and Milkweed Plants Near Visitor's Center
- 2** Walk Through the Ponds to See Lilies and Lotuses (These Bloom in Summer Months)
- 3** Boardwalk to Tidal Marsh
- 4** Citizen science picture post on the boardwalk

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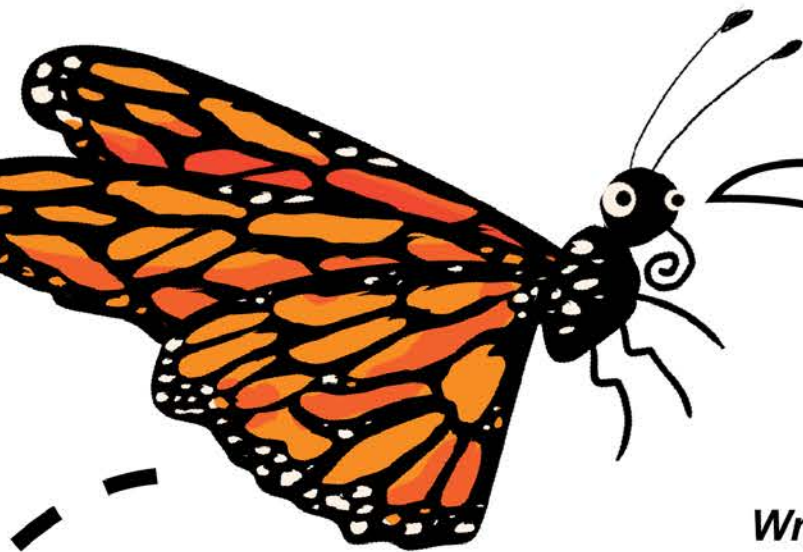


National Park Service
U.S. Department of the Interior

Kenilworth Park & Aquatic Gardens
Washington DC



GEORGE MASON UNIVERSITY
CENTER for CLIMATE CHANGE
COMMUNICATION



Hey there! I'm (Kendra), the Kenilworth monarch. What's your name?

Write your name here

It's nice to meet you. Welcome to Kenilworth Park and Aquatic Gardens! Living in this beautiful park makes me curious about how humans think about nature. Could you answer a few questions for me?

When you think about nature, what types of places and things do you see? Draw them below:

How does earth help you and all the people that live on it? How can you help the earth?

Write your answer here

3

How often do you see butterflies?

Why is it important for you to take care of our planet?

What resources do you think we need to survive?

Thank you! As for my story, I have flown a long way from the south to lay my eggs here. My baby butterflies, called offspring, will one day fly north to continue the great monarch migration.

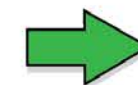
Monarchs are the only butterflies that make a two-way migration like this—we fly all the way from Mexico to Canada and then back down again every year. Some monarchs travel up to 3,000 miles in their lifetimes!

Can you tell I love to travel?

Speaking of travel, let's go for a little adventure of our own. Come with me and let's explore the park!



1

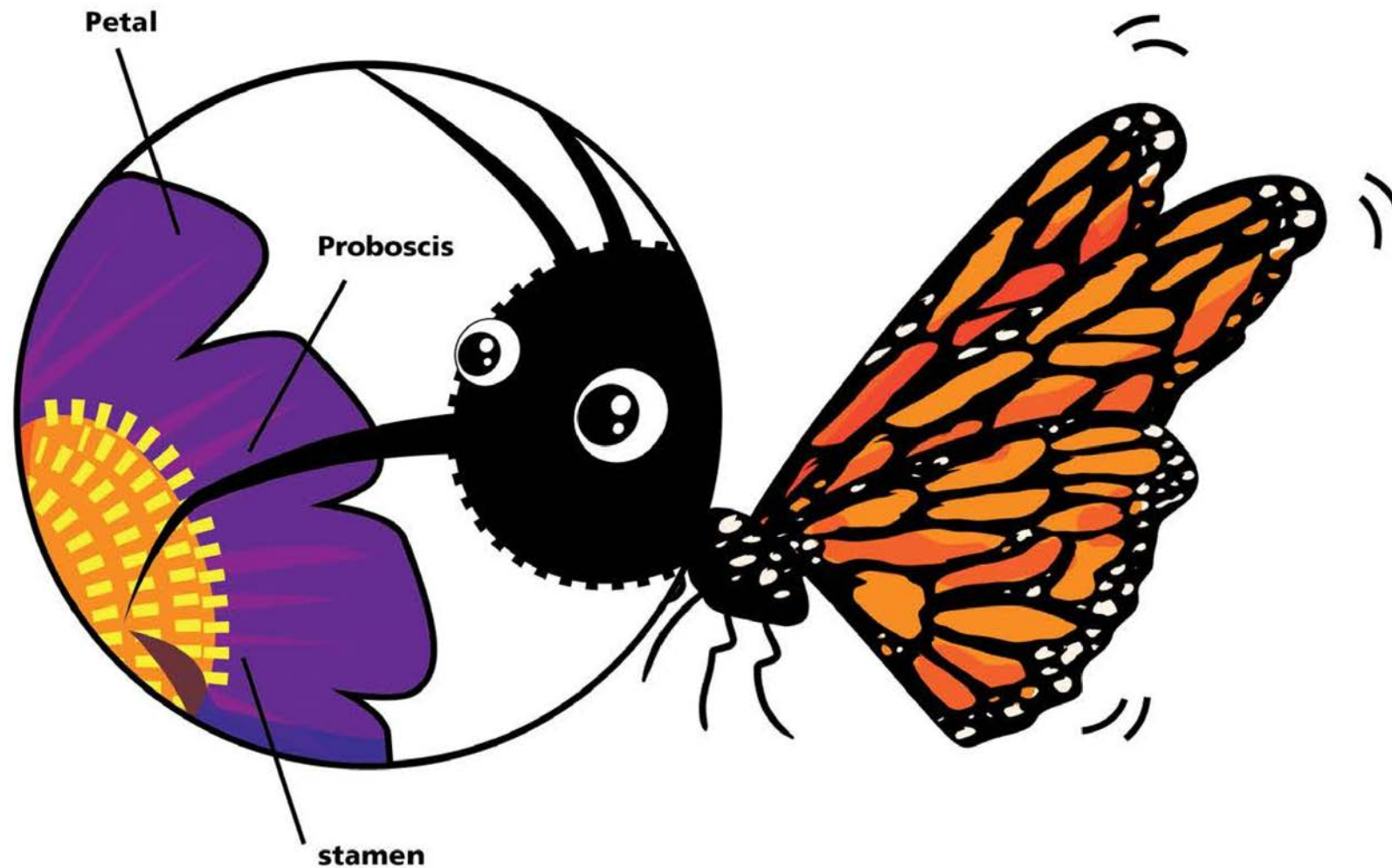


Go to destination  on the map where you can see flowers blooming to find nectar

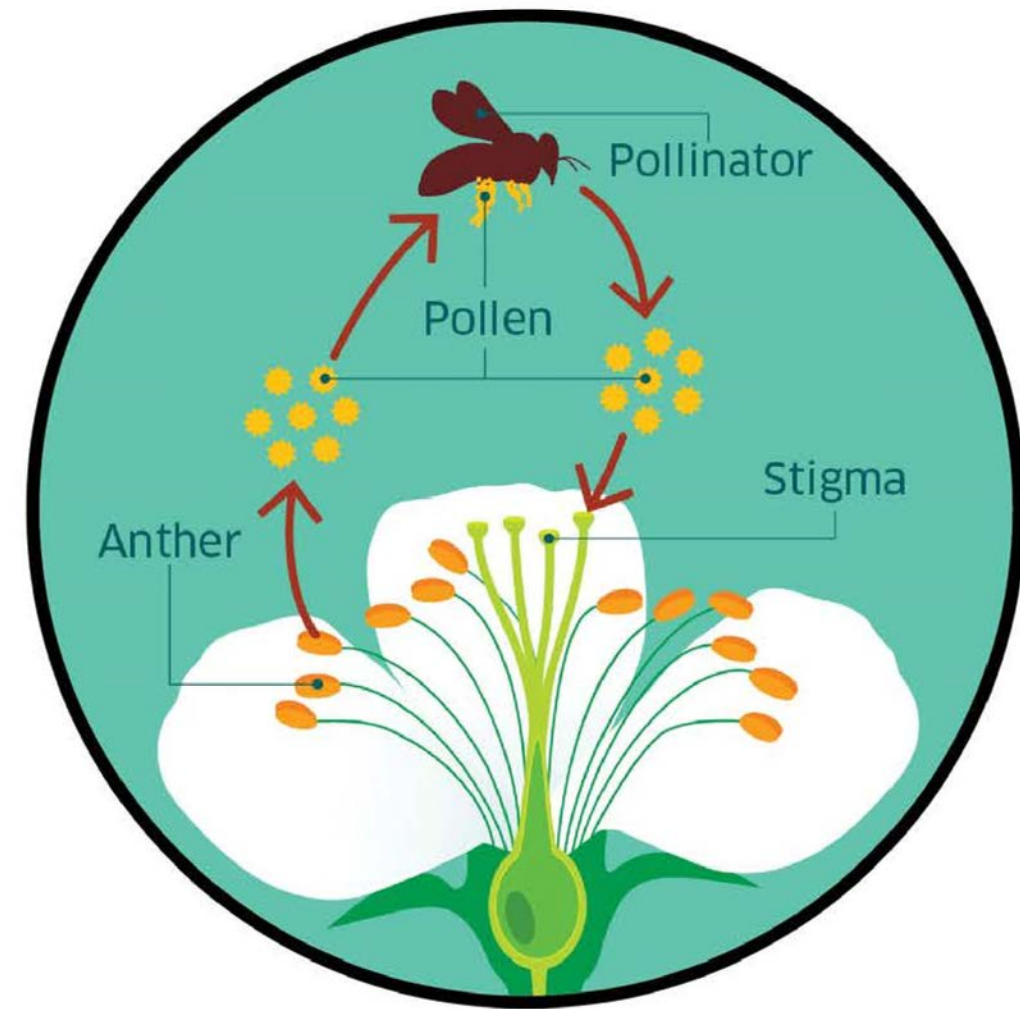
4

“ There are so many beautiful flowers here, so many snacks to choose from! Oh, did you know I drink flower juice?

I sip the nectar of flowers through my proboscis...



....like this!”



Don't worry, it doesn't hurt the flower. In fact, butterflies like me help plants reproduce by pollinating them.

We're good friends because we help each other; I spread around their pollen as I fly from flower to flower, and the plants let me drink their delicious nectar.

It's a win-win! I win nectar and the plant wins seeds! Scientists call this 'mutualism'.

Flower

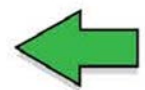
A



Flower

B

“ All this talk about nectar
is making me hungry.
Which flower looks like a
good place to eat today? ”

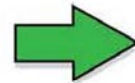


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"Oh no, my head is feeling fuzzy."

I think that flower was sprayed with unhealthy chemicals called pesticides. Humans spray pesticides to keep bugs away, but I think they forget that butterflies and bees are bugs too.

Pesticides can make me very sick so I'm going to rest for a moment in the shade.

Don't worry, it's not your fault.

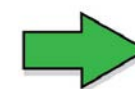
But, there **is** something you can do to help.

Keep in mind that harsh chemicals can harm butterflies like me. Instead of using harmful sprays to kill bugs, spread the word about protecting pollinators.



Flower A

I'm feeling a lot better, let's go back and snack on that other flower



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Flower B

"Yum! This nectar hit the spot. Now I have the energy to continue our journey! **"**

It's a good thing you chose this flower, because the other flower looks like it was sprayed with chemicals that could make me sick. Keep in mind that harsh chemicals can harm butterflies like me. Instead of using harmful sprays to kill bugs, spread the word about protecting pollinators.

There's something else I have to do today, remember? I need to find a milkweed plant to lay my eggs on because I'm going to be a mom! Although they are poisonous to other creatures, milkweed leaves are a young monarch's favorite food. In fact, they can't eat anything else!

My offspring will start their lives as caterpillars and the milkweed leaves they eat will give them superpowers. It will make them unappetizing to organisms that might eat them. Most predators would think twice about having a monarch butterfly for lunch.

I don't see any milkweed nearby, so I'm going to fly overhead to see if I can spot some, can you help?

Have a Park Ranger help you find where milkweed plants are growing!

Flower

C



Flower

D

“ Which plant should I
lay my eggs on? ”

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It's a trap!

Flower C

Purple Loosestrife

Bulb

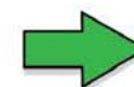
Petal

Leaf

Thankfully, I checked before I laid my eggs on this invasive purple loosestrife.

We have to be careful to avoid them because these leaves are not good for my baby caterpillars to eat.

Let's go back and look to see if there is a milkweed plant around.



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Oh no, this plant tastes nothing like milkweed. I tasted it with the tips of my antennae. Did you know my antennae are covered with chemoreceptors that I use just like tastebuds?

Flower D



This one looks perfect, you're a great milkweed-spotter! I'll lay my egg under one of these leaves, and in four days it will hatch into a caterpillar!

Thank goodness we avoided the other plant, that one turned out to be an invasive species called purple loosestrife. I really wish these invasive species would go away, but it seems like a bigger problem than can be faced by a little butterfly like me.

The other day I heard a park ranger say that the earth is getting hotter. She also said that this warming can help invasive species like the Eur-Asian plant, purple loosestrife, survive.

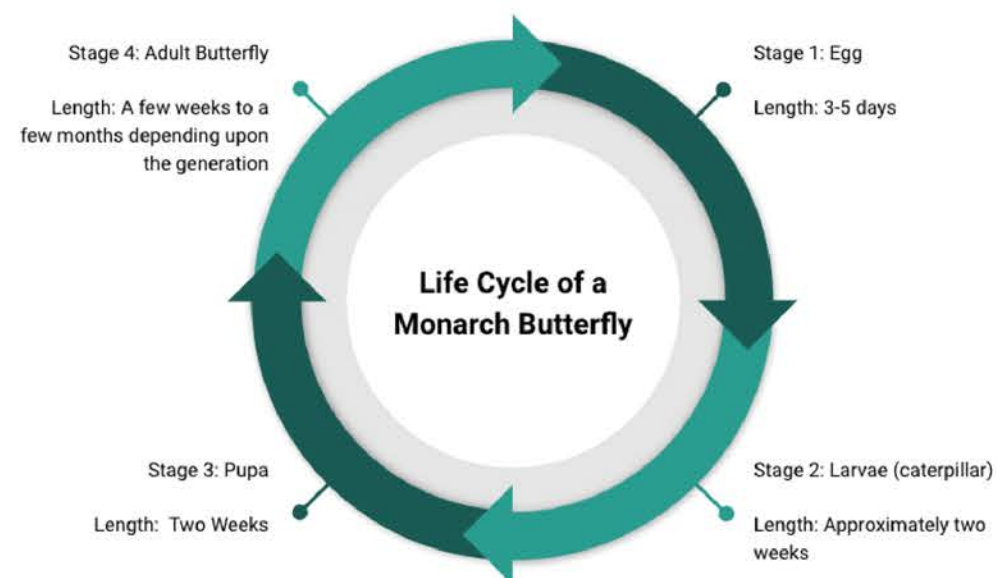
Milkweed

Petal

Leaf

They are not supposed to grow in this part of the world, and when they do, they can disturb the whole ecosystem. That's bad news for my offspring and me. It doesn't help that some humans think milkweed is a weed and cut it down! If you happen to see these invasive plants at the park, make sure to let a park ranger know.

Eastern Monarch Life Cycle

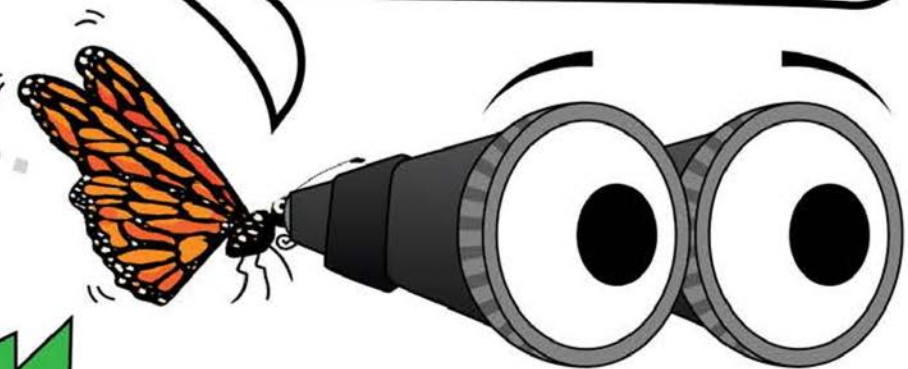


Sometimes I have to work hard to find milkweed and nectar, but I don't give up. I may be small but I am mighty. You can be mighty too! Something you can do to help butterflies and other pollinators is to plant a pollinator garden. You can do this in your yard or even in a window box!

Some beautiful native plants to grow around here are: milkweed, black-eyed susans, button bush, spotted bee balm, and dense blazing star. You can choose plants with different blooming times so you and the monarchs have lovely flowers to enjoy season-long. With your help, monarchs like me will have plenty of food to fuel us on our long migrations.

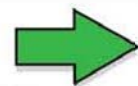
Well, there's still a lot to see in the park. Follow me around to the ponds to see if the lotuses are blooming.

From here I can see a beautiful flower across the pond...



" It's a lotus!

They only bloom for 5 days of the year. But, wait... "



Go to destination  where the lotuses bloom in the ponds during the summer months.

19



...is that a storm I see coming?

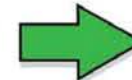
What do you think I should do?

Go see the lotus, or look for a place to hide until the storm passes?

Go see the lotus

Go to Page

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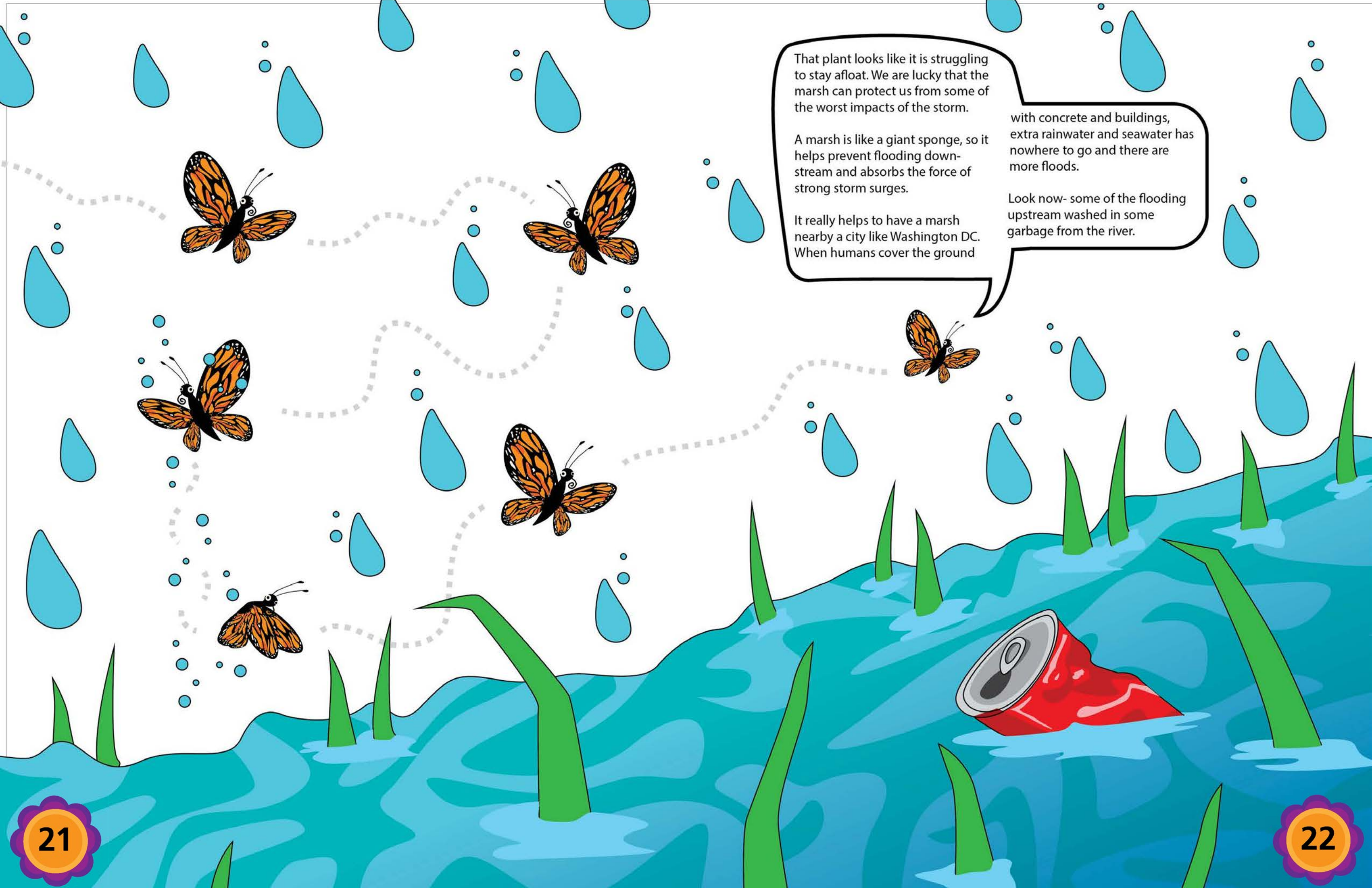
Look for a place to hide until the storm passes

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20



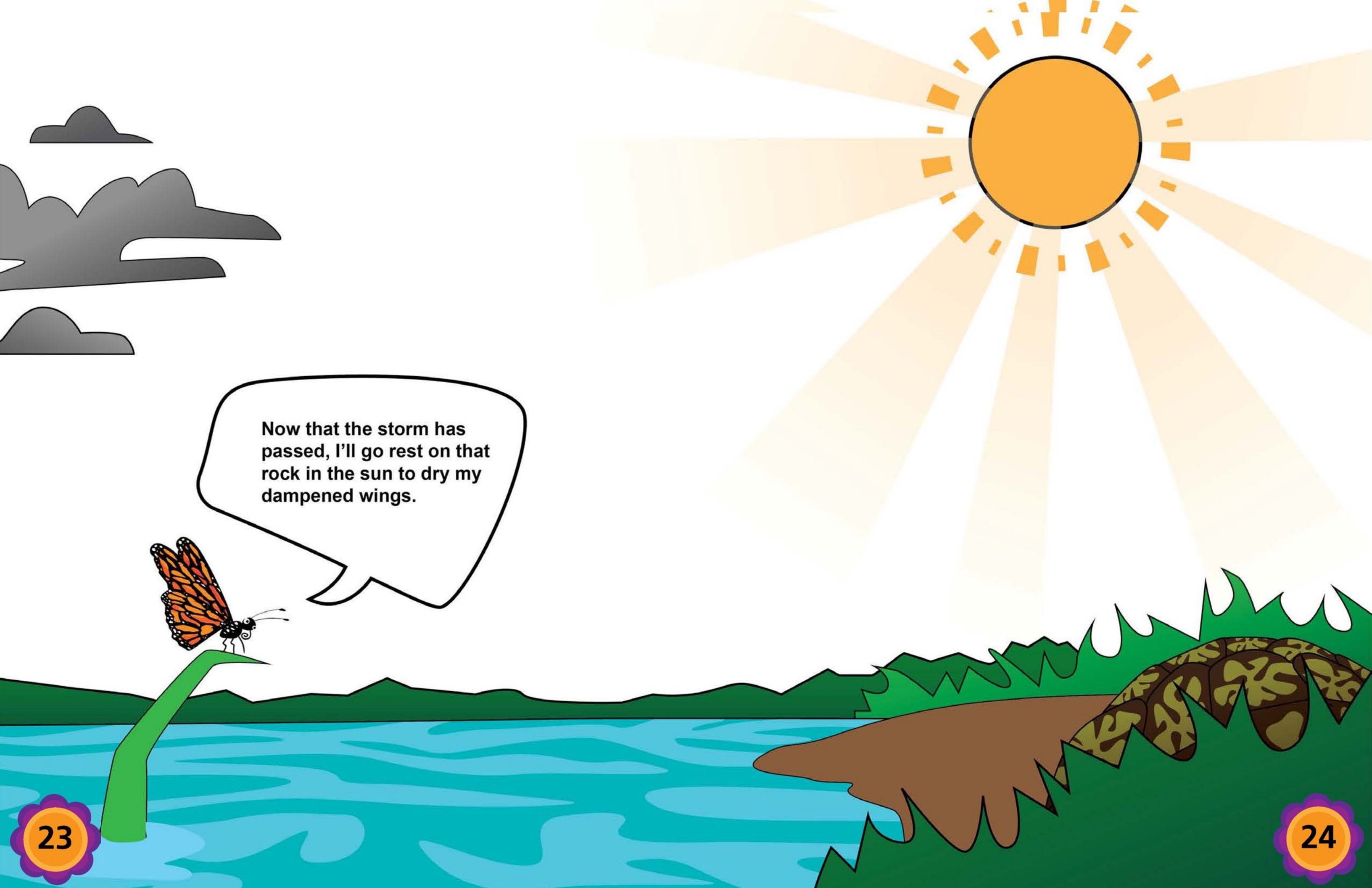
That plant looks like it is struggling to stay afloat. We are lucky that the marsh can protect us from some of the worst impacts of the storm.

A marsh is like a giant sponge, so it helps prevent flooding downstream and absorbs the force of strong storm surges.

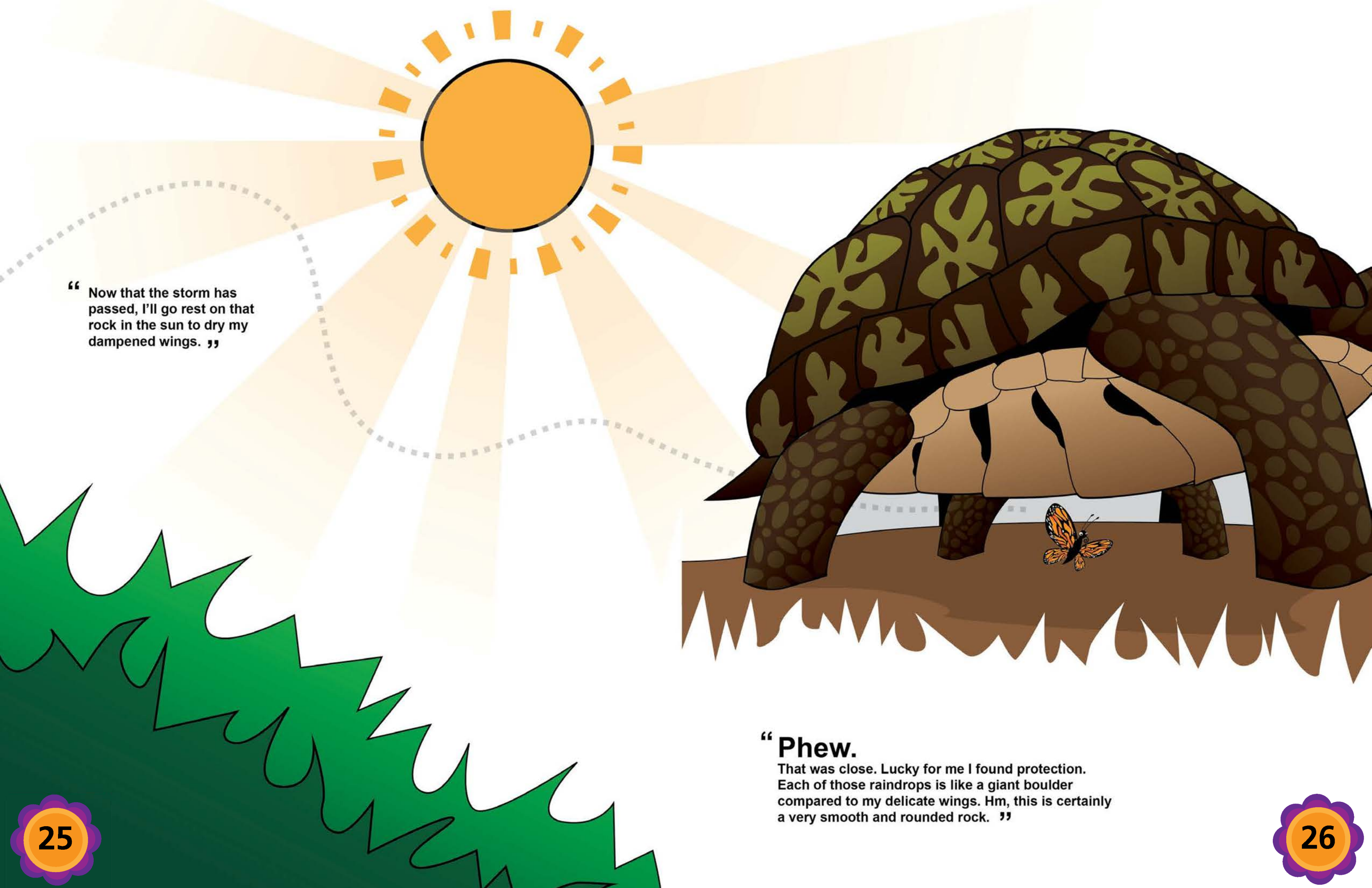
It really helps to have a marsh nearby a city like Washington DC. When humans cover the ground

with concrete and buildings, extra rainwater and seawater has nowhere to go and there are more floods.

Look now- some of the flooding upstream washed in some garbage from the river.



Now that the storm has passed, I'll go rest on that rock in the sun to dry my dampened wings.



“ Now that the storm has passed, I’ll go rest on that rock in the sun to dry my dampened wings. ”

“ **Phew.**
That was close. Lucky for me I found protection. Each of those raindrops is like a giant boulder compared to my delicate wings. Hm, this is certainly a very smooth and rounded rock. ”



**Who are you calling
a rock?**

AHHHHHHHH

You're alive? Rocks can
talk? Wait. Am I talking? I'm
a butterfly, I don't even have
a mouth...



I'm a turtle, a common slider in fact. My name is Rocky.

You're not the first to think I was a rock. That's how I got my nickname.

Oh, well nice to meet you Rocky. In my defense, you were staying very still...

Well, I'm almost half a century old. That's pretty old in turtle years. Indeed, I've seen a lot in my days. Storms like this one are more and more common, and it's getting hotter.

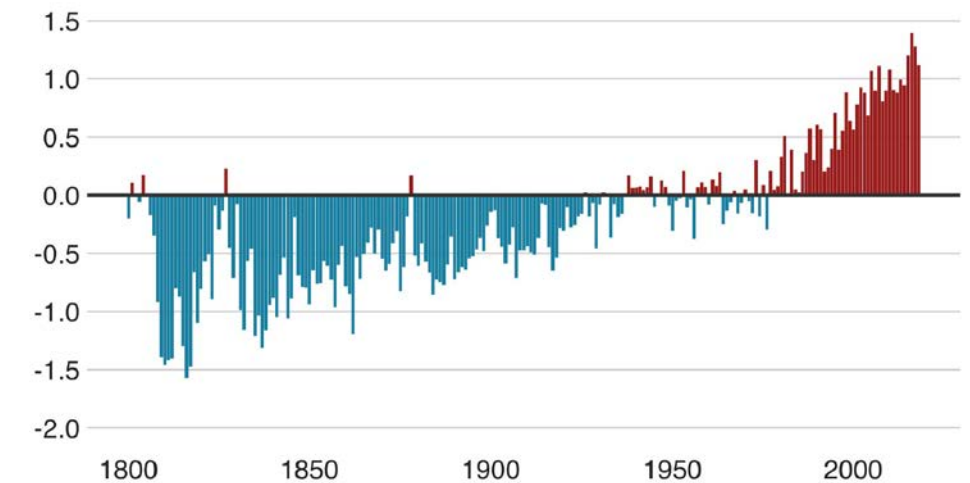
Now that I mention it, there have been less and less monarchs coming to Kenilworth for the last 20 years. I'm glad to see you made it here safely.

Why has it been getting hotter over time? Is the sun getting hotter? Could it be just naturally warming?



The world has been getting warmer

Annual mean land temperature above or below average (°C)



Note: Average is calculated from 1951-1980 land surface temperature data

Source: University of California Berkeley

BBC

Not quite.

Some very smart scientists figured out that humans are changing the climate by releasing greenhouse gases, like carbon dioxide, into the atmosphere.

These gases act like a warm blanket on the earth, trapping heat and causing the earth to warm.

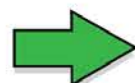
This causes what is known as climate change to occur and it's a BIG problem..

Humans have also dumped trash into our river, polluting the water we drink and live in.

Sometimes they just don't realize that nature is as delicate as a butterfly's wing.

But humans also take care of this national park, and they help protect plants and animals. Without my friend here, I wouldn't have found a milkweed plant and laid my egg.

You're right. Let's walk over to the boardwalk to the tidal marsh while we talk.



Go to destination  to walk along the boardwalk to the tidal marsh.

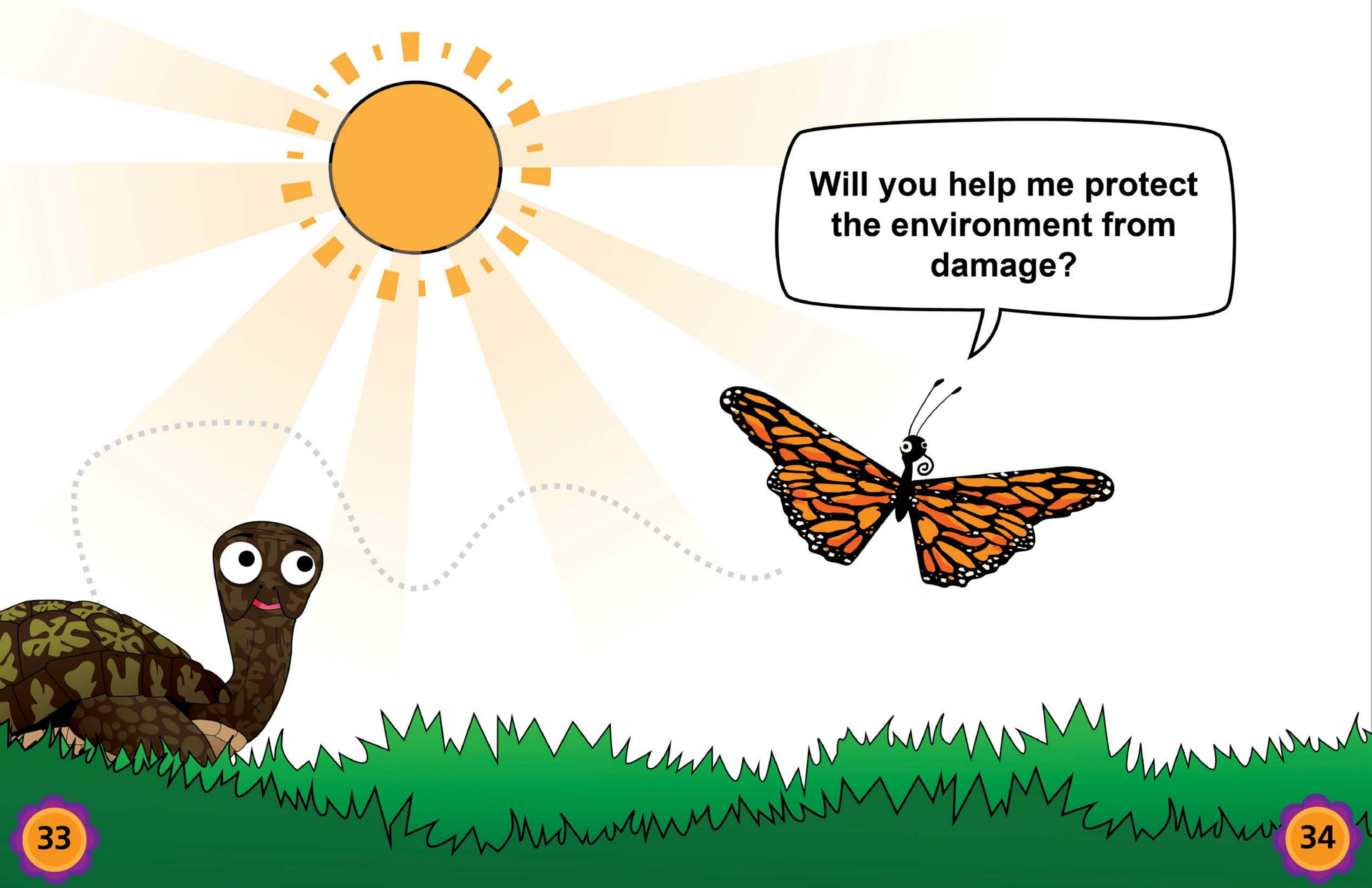


There are many people trying to care for our planet.

Just like how you want your baby monarch to have clean air to breathe and milkweed to eat, the humans want their children and their children's children to grow up in a safe, healthy environment.

For example, a group called the Anacostia Watershed Society is cleaning up the river we rely on here at Kenilworth.

There is so much more that can be done to protect the environment and stop climate change.



**Will you help me protect
the environment from
damage?**

What YOU Can Do

1 Be a friend of monarchs and all animals and remember you can make an impact on the environment!

2 Lower your screen time: turn off the TV, save some energy, and read a book instead!

3 Volunteer with your local environmental organization to pick up trash or plant trees.

Some organizations in DC include Friends of Kenilworth Aquatic Gardens and Anacostia Watershed Society

4 Go for bike rides instead of car rides.

5 Spread the word about harmful sprays! Avoid fertilizers and pesticides that will harm pollinators.

6 Flip off the light switch when you leave the room.

7 Plant some native flowers and grow a pollinator garden.

8 Compost and recycle your trash.

9 Bug someone: Tell your friends and family about what you learned today.

10 Become a citizen scientist!

→ **4** Go to destination to find a picture post that visitors use to document changing conditions at the park

Take the pollinator pledge and promise to make the world a better place for us to grow.



Be a friend of monarchs and all animals and remember you can make an impact on the environment!

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Volunteer with your local environmental organization to pick up trash or plant trees

Plant some native flowers and grow a pollinator garden

Bug someone: Tell your friends and family about what you learned today

Flip off the lightswitch when you leave the room

Become a citizen scientist! At destination **4** you can find a picture post where visitors help document changing conditions in the park.

Spread the word about harmful sprays! Avoid fertilizers and pesticides that will harm pollinators.

Go for bike rides instead of car rides

Compost and recycle your trash

You can sign the pledge here:

How to Start a Pollinator Garden

Gardens are like mini parks. Native plant gardening is a fantastic way to enjoy some national park-style nature observation without ever leaving your yard, and a great way to partner with the National Park Service in preserving biodiversity.

People go to national parks for adventure, beauty, relaxation, and the sense of wonder of visiting a pristine natural area. Planting a tiny "national park" in your yard can bring those benefits home for you and

your family to enjoy year-round. If Americans were to replace only half their lawns with native plants, we could build a 20-million-acre network of habitat!

Gardening can be fun, good exercise, and many people find it gratifying to build something and see (and maybe taste) the results of their labors.

1

Choose the location of your garden wisely- some plants prefer more shade than others, while some need more sunlight than others.

2

Choose plants that are native to your area. Choosing a variety of native plants will create a favorable site for pollinators to visit!

3

Check which species of milkweed and wildflowers are native to your area, and which type of soil and sunlight level they prefer.

4

Seasons matter! Plants bloom at different times of the year, so make sure to have a variety of different blooming plants so that pollinators can get nectar when they need it

5

When setting up your garden, decide if you want to use seeds (which take time to germinate over many seasons), while small plants can be planted into the ground at the appropriate time of year.

6

Wait, watch, water, and weed. Your garden will take a lot of time and care, but you are making a difference to help pollinators and plants thrive!

Remember to get your family's permission before planting a garden!



Why do pollinators prefer certain plants?



It takes millennia for specialized insect-plant relationships to develop. A well-known example is the monarch butterfly (*Danaus plexippus*) and milkweed (*Asclepias* spp.). Monarch mothers only lay eggs on milkweed species because monarch caterpillars have evolved the ability over tens of thousands of years to digest poisonous milkweed leaves other insects cannot eat.

Replacing milkweed with day lilies for example, or another introduced plant, and expecting monarchs to evolve the ability to eat that instead is like expecting your cat or dog to suddenly evolve wings and fly. Adaptation in nature takes time.

Location

Choose the location of your garden wisely- some plants prefer more shade than others, while some need more sunlight than others. Make sure to note the type of soil you have- certain plants require certain soil types!

Plant Type

Choose plants that are native to your area. Choosing a variety of native plants will create a favorable site for pollinators to visit! Check which species of milkweed and wildflowers are native to your area, and which type of soil and sunlight level they prefer

Seasons

Seasons matter! Plants bloom at different times of the year, so make sure to have a variety of different blooming plants so that pollinators can get nectar when they need it.

Seeds

When setting up your garden, decide if you want to use seeds (which take time to germinate over many seasons), while small plants can be planted into the ground at the appropriate time of year.

The 4 Ws

Wait, watch, water, and weed. Your garden will take a lot of time and care, but you are making a difference to help pollinators and plants thrive!