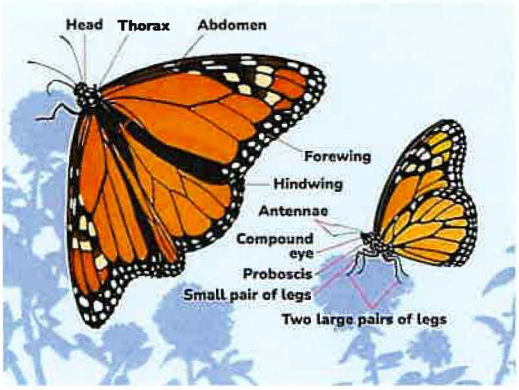
PACIFIC GROVE MUSEUM of NATURAL HISTORY



Pollinator Science Activities

PG Museum Pollinator Workshop for Teachers
24 September 2022

Shrub Shake

- From K-2 Project 4: Investigations with Insects
- Association of Zoos and Aquariums – Our Ecological Footprint Activity
- Put a cloth or tarp under a shrub. Shake it until leaves and insects are falling out onto the cloth. Have studetns carfully capture some of the insects in bug boxes.
- Make observations of insects and scientific illustrations
- Record: I notice, I wonder, It reminds me of, I hope
- Complete a structure – function table

Camouflage

- Read How to hide a butterfly, Ruth Heller
- Take a hike with paint chips. Each student has their own paint chip and they try to match it during the hike.
- Give each student a black-line butterfly and have them color the butterfly to best camouflage it in the schoolyard.
- Have students hide their butterflies in plan sight and take a hike to see if you can find all of them. Note which ones are really hard to find. How does camouflage help the butterflies? Why are some butterflies, like monarchs brightly colored?

Schoolyard Interpretive Trail

- From 3-5 Project 3: Schoolyard Ecology & K-2: Schoolyard Interpretive Trail
- Explore a natural area with a trail that has interpretive signs or an interpretive guide
- Lead a narrated micro hike – Lay our brightly colored pieces of yarn 1m long over parts of the landscape that look interesting. In pairs, students hike with their eyes along the yarn trail and take turns interpreting the natural history of the trail.
- Make a "trail" in your schoolyard. It doesn't have to be a super "natural" space. Anything that is outdoors and has living things in it will do.
- Make interpretive signs or an interpretive guide for your trail

Shake a Shrub

Audience/Group Setting
This activity is designed for children five years and older. It should be completed outdoors.

Goal
Participants will discover insects living on and around plants.

Objectives
Participants will gain an appreciation for insects by exploring nature.

Big Idea/Main Message
Shrubs provide habitats for a variety of insects and can easily be overlooked.

Environmentally Responsible Behavior Addressed
Go outside! Enjoy nature and animals!

Background Information
Shrubs and other plants often contain entire insect communities comprised of a variety of species. Insects may be so well adapted as to go unnoticed by passers-by. Upon closer examination an entire ecosystem may be revealed.

Climate Change Connection: Warming temperatures have changed the emergence time for some insects and allowed others to expand their range. As temperatures become warmer insect populations will expand; tropical insects moving to temperate zones and temperate to polar. If climate change occurs more quickly than native plants and insects can adapt, entire ecosystems may change. In addition to changing ecosystems, some of the insects expanding their range include mosquitoes carrying deadly viruses, such as West Nile. In Britain, vegetation and insects emerge earlier in spring than they have historically. By the time returning birds hatch their young, there is not enough food to raise them.

Materials Needed
A light-colored bandana or sheet, magnifying glasses, collection jars, insect field guides, insect repellent, sun screen.

Staff
A ratio of 1 staff for every 10 participants is suggested.

Length of Activity
Minimum 30 min.; maximum – as long as you like!

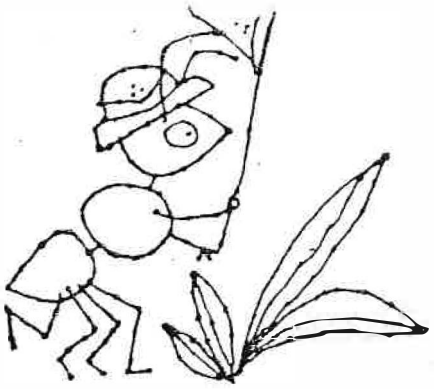
Set Up
Scope an outdoor area for shrubs or field plants. Clear the area of poison ivy or other noxious plants. Prepare participants to wear closed-toe shoes, pants, insect repellent and sun screen if necessary. Gather materials.

Procedures
Find a small bush, shrub, or field plant and spread a bandana or sheet underneath. Gently shake the shrub and let insects fall onto the bandana or sheet. How many can be identified? How many flew away? Are any of the insects the same color as the shrub? Can beneficial characteristics for the insect be identified? Gently put an insect in the observation jar. Look at its mouth parts. What might it eat? What might eat it? How does it move? How many wings does it have, if any? What do its eyes look like? When observations are completed gently return insects to the host plant.

Extensions
Research one or more of the insects and identify its predators and prey. Examine historic and current ranges for insects observed.

National Science Education Standards
Populations and Ecosystems
Diversity and Adaptations
Nature of Science
Form and Function

Resources
Adapted from "Shake a Shrub" with permission from the North Carolina State Parks.
http://www.ncparks.gov/Visit/main.php
Insect collection kits can be purchased from Acorn Naturalists: www.acornnaturalists.com
An excellent on-line resource for bug identification is: www.whatsthatbug.com



insect safari

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WRITE THE NAME OF THE INSECT HERE IF YOU KNOW IT ▼

CAN YOU FIND AN INSECT THAT IS:

LIVING
- ☐ UNDER A ROCK? ____
- ☐ ON A PLANT? ____
- ☐ IN WATER? ____

EATING
- ☐ PLANT MATTER? ____
- ☐ ANIMAL MATTER? ____

GOING
- ☐ WALKING? ____
- ☐ CLIMBING? ____
- ☐ SWIMMING? ____
- ☐ FLYING? ____

ABOUT
- ☐ _ THIS LONG? ____
- ☐ __ THIS LONG? ____
- ☐ ___ THIS LONG? ____
- ☐ ____ THIS LONG? ____

COLORED MOSTLY
- ☐ GREEN? ____
- ☐ RED? ____
- ☐ BLACK? ____
- ☐ WHITE? ____

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Name:_____ Date:_____

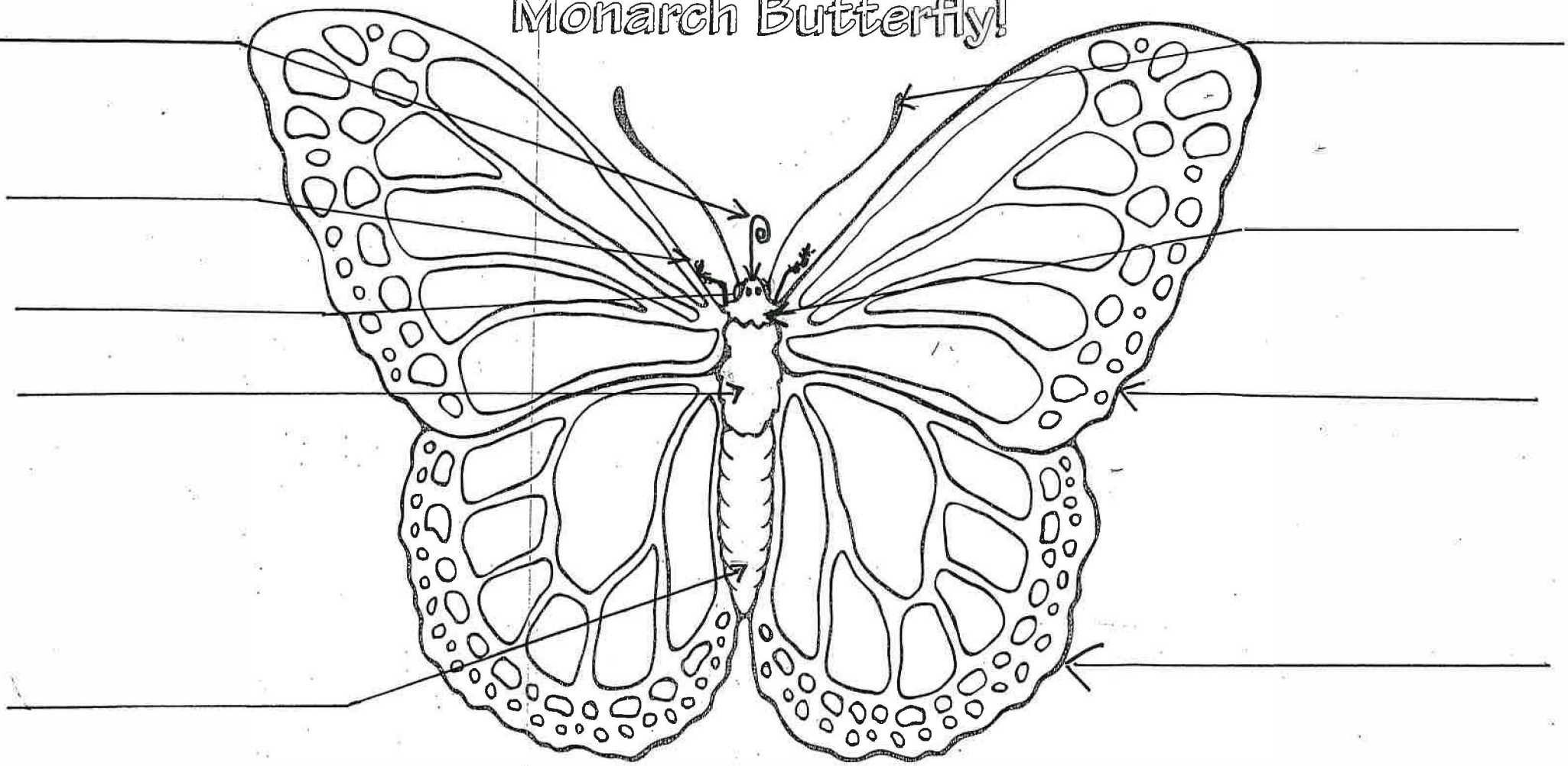
Location: Monarch Butterfly Habitat 250 Ridge Road, Pacific Grove, California

Use the environment for the following activity.

Draw and label a *living* thing that is useful to the monarchs.	Draw and label a *non-living* thing that is useful to the monarchs.
Draw an activity you observed the monarchs doing while visiting.	Write four adjectives that describe the monarch's habitat.

What do you think is one thing that could be improved in the monarch habitat to help them?

Anatomy of the Monarch Butterfly!



your name

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monarch's name

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Monarch Anatomy (parts)

Instructions: Label or draw these parts on your monarch. Not all the parts are visible. (ex. Six legs)
Make sure to label it correctly for male or female!

antenna

head

thorax

abdomen

forewing

hindwing

leg

compound eye

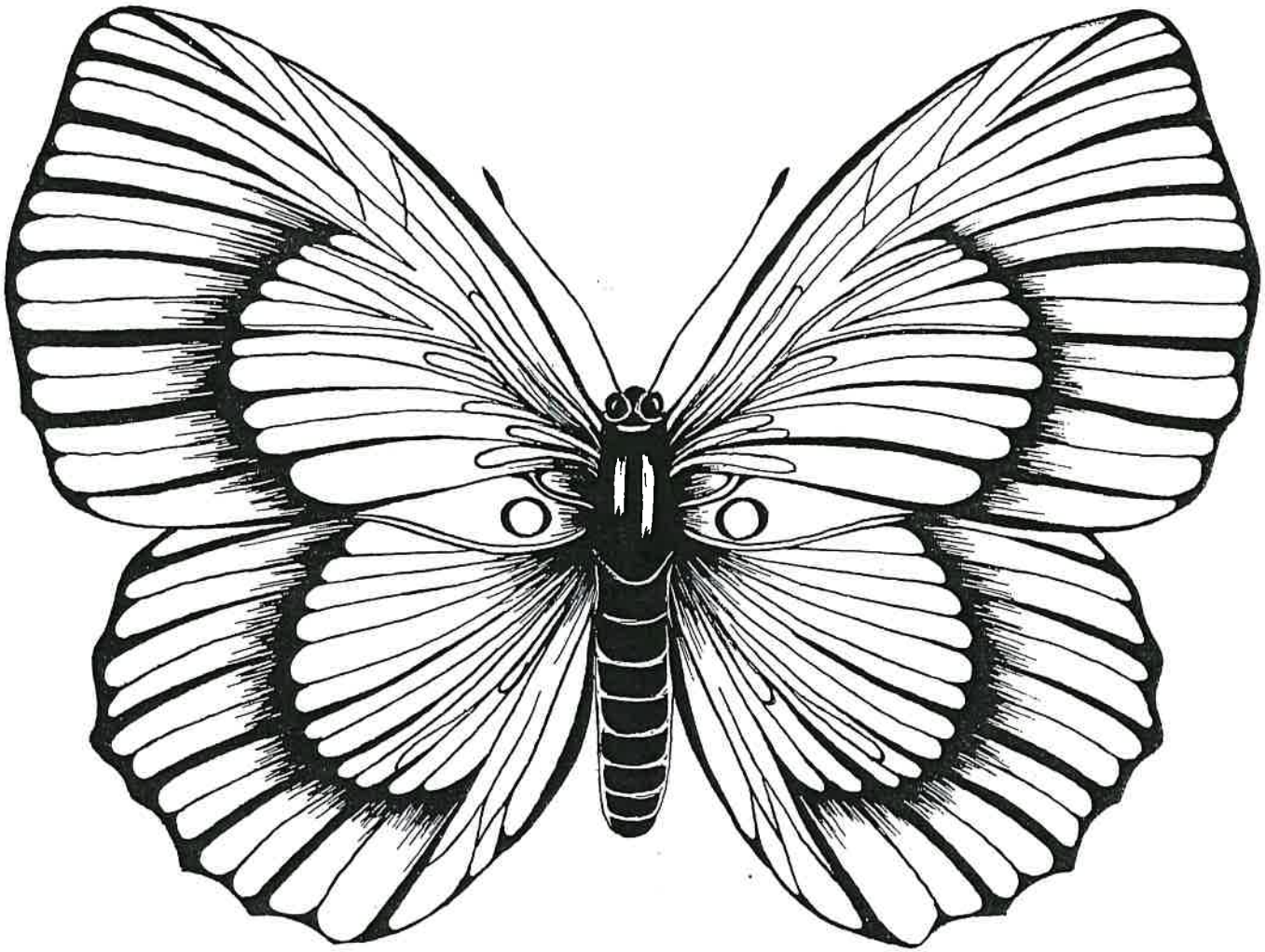
proboscis

claspers (at the end of the abdomen) -male

black dots (one on each lower wing) -male

thin veins (black lines on wings) - male

thick veins (black lines on wings) -female



Lyropteryx apollonia

WINGSPAN 1½ INCHES

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Pollinator Conservation

P ollinators have a purpose! Perpetuate that paradigm.

O ur behavior/practices in and around the school inform/influence what the students take back to their homes and their community.

L ive and engage with nature as a daily practice.

L earn about what natural habitats support pollinators and replicate that at your school.

I nvest time and energy into protecting healthy pollinator habitats to help prevent/mitigate critical habitat loss and/or destruction.

N atural and native is best. No harmful pesticides like Neonicitinoids. Pollinators need pollinator friendly choices.

A ttention! Attention! Our climate is changing, which in turn changes our world and how we live in it. Adapt! Adjust our behavior to help not hurt.

T each your students how and what to notice is happening in the environment around school AND at home! It is a Team effort!

O ffer options to your students and their families that make sense for them to extend the learning at home. (apartments… urban… suburban… .rural)

R each out for help/resources and support

S pread the word/learning and help ensure diversity & survival of pollinators!