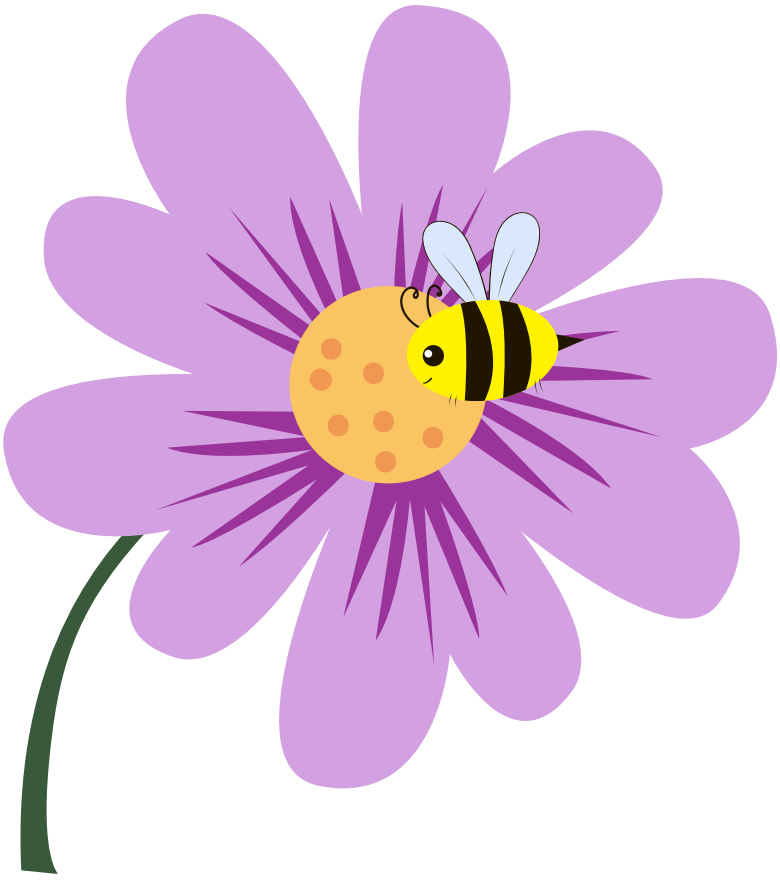
Betty The Bee

Activity Packet



Welcome!

Welcome to the "Betty The Bee" Story Walk! As you walk along the trail, you will come across a series of stops that are numbered 1-15. At some of these stops, you will have the opportunity to complete additional activities. Use this activity packet to complete the 5 activities along your journey. Have fun!

List of Activities

- Activity 1: Observation: Sharp Eyes (Stop 3)
- Activity 2: Native Plants Observation (Stop 6)
- Activity 3: Pollinator Garden Bingo (Stop 9)
- Activity 4: Pollinator Pledge (Stop 12)
- Activity 5: Take a Different Trail! (Stop 15)

These signs correspond to the Activity Number

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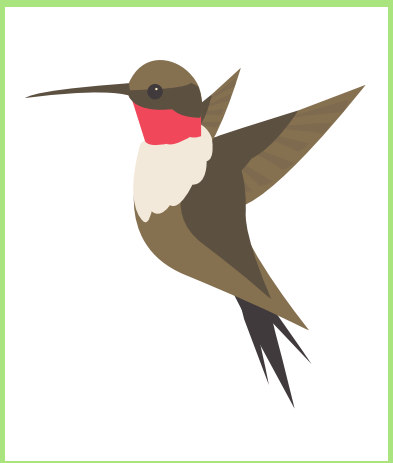
Usual Suspects

The Don Edwards SF Bay National Wildlife Refuge is home to many species of plants and animals. You'll learn more about the native plants that grow in the area in Activity 3. Below are some animals that can be found around the refuge. Perhaps you'll spot some on your journey! If you do, feel free to draw or write about them in the Nature Journal pages at the end of this packet.

American Avocet
Diet: Insects, small crustaceans, seeds, and small fish
Size: 17 to 18 inches tall, 28-inch wingspan
How big is that? I am about as tall as an adult rabbit.
Did you know? I swing my long, upturned bill through the shallow water to catch small invertebrates.

Western Fence Lizard
Diet: Spiders, beetles, mosquitoes, and grasshoppers
Size: 8 inches long
How big is that? I am about the length of a small guinea pig.
Did you know? My sharply pointed scales make me a part of the "spiny lizards" family, and I have sharp claws on my fingers and toes that help me to climb.

Anna's Hummingbird
Diet: Nectar from flowers, small insects, and sugar water from hummingbird feeders
Size: Approximately 4 inches long, 4.7-inch wingspan
How big is that? I am about as tall as a softball.
Did you know? My wings beat about 40-50 times per second when I am in flight, and I can fly as fast as a car - up to 60 miles per hour!



Usual Suspects

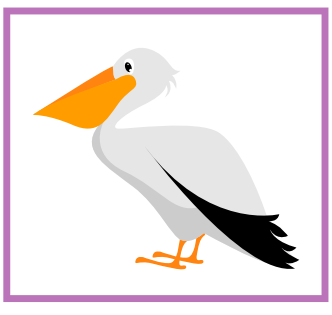
Barn Swallow
Diet: Insects
Size: 6 inches long
How big is that? I am about as wide as you can spread your hand.
Did you know? I catch insects in flight, often low to the ground, and I am the most abundant and widely distributed swallow species in the world.

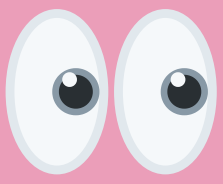
Brush Rabbit
Diet: Grasses, leaves, clover, and berries
Size: 10 to 14 inches long
How big is that? I am about the height of a small dog.
Did you know? I thump my feet when I am frightened.

Western Pygmy Blue Butterfly
Diet: Nectar from flowers
Size: 0.5 to 0.75-inch wingspan
How big is that? I am about the size of a penny.
Did you know? I am the smallest butterfly in North America - and one of the smallest in the entire world!

Black-Necked Stilt
Diet: Insects, crustaceans, small fish, and aquatic plants
Size: 14 to 15 inches tall, 28 to 29-inch wingspan
How big is that? I am about the size of a crow.
Did you know? I will sometimes engage in a "popcorn display" in which a group of Black-Necked Stilts gather around a ground predator and jump, hop, and flap to drive it away from our nests.

White Pelican
Diet: Fish, crayfish, and salamanders
Size: 4 feet, 9-foot wingspan
How big is that? I am about as tall as a child.
Did you know? I catch my food by dipping my bill into the water and scooping up fish into my pouch.





Sharp Eyes

By playing this game, you will realize that you must be very observant if you are to notice the world around you. In order to really get to know the world of nature, you must use all of your senses and be very observant, for much of nature is silent, shy, or hidden.

Activity Description

- Divide your family into two equal teams, and have the teams face each other about four our five feet apart. Choose one person to be the "signal-er" that will notify everyone to start various stages of the activity.
- At a signal, look at the person directly across from you and try to take in as much as possible about their appearance.
- At another signal, turn around so your two teams no longer face each other. While you all are facing the other way, change something about your appearance (untie a shoelace, fasten a button, take off a shoe, cuff your pant leg, etc.).
- At a third signal, turn back to face each other again. Try to spot the changes in the player opposite you.

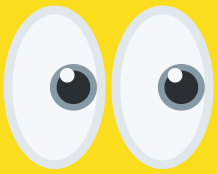
Did you notice the changes that your family made? List them below!

_____

_____

_____

_____



Sharp Eyes

It's fun and challenging to find subtle changes in appearance, just like it is when trying to observe all the details of nature! For the second part of this activity, use the same sharp observation skills to try to spot the things around the refuge that are outlined below. Check off the boxes as you find them!

- [ ] The town of Alviso
- [ ] A plane flying overhead
- [ ] A footprint in the mud
- [ ] Salt crystals glistening on plants
- [ ] White salt deposits on soil/mud

Using your "Sharp Eyes," can you find more interesting objects in nature? Add three of your own observations below.

1. _____
2. _____
3. _____

Native Plant Observations

California Bee Plant

Scrophularia californica

ID tips

- It grows in the upland areas in the high zone of the marsh.
- Its leaves are arrow-shaped and vary in size. The plant has small, dark red to maroon flowers that form in clusters up its tall stalks.

Did you know?
Hummingbirds, bees, and other insects collect nectar from its flowers. Its seeds are a food source for seed-eating birds and mammals.

Which butterfly?
The federally threatened Bay Checkerspot eats this plant as a defensive strategy - its larvae become poisonous and the adult butterflies are unpalatable to predators.

White Yarrow

Achillea millefolium

ID tips

- This is an upland plant and can be found in the high zone of the marsh.
- It has fine feathery leaves that grow in a clump low to the ground, and its flowers are small, white, and clustered together.

Did you know?
Yarrow can be used for medicine - you can make a tea by boiling the entire plant in water, and it can treat wounds, colds, and fevers.

Which butterfly?
The white flowers are a perfect landing pad for butterflies such as the Painted Lady. Yarrow also attracts ladybugs!

Native Plant Observations

California Buckwheat

Eriogonum fasciculatum

ID tips

- It grows in the high zone of the marsh.
- Its green leaves are small and narrow, with edges that are rolled under.
- Its flowers are small, pink and white, and grow in dense, round clusters at the top of the stems.

Did you know?
This plant is considered to be the most important native source of honey in California, and it also has many medicinal uses. It is drought-tolerant, meaning that it can survive for long periods of time without water.

Which butterfly?
The plant provides food and nectar for the Acmon Blue Butterfly.

Narrow-Leaf Milkweed

Asclepias fascicularis

ID tips

- It grows in the high zone of the marsh.
- Its narrow, pointed leaves branch out from a singular point on its long, thin stems.
- Its flowers bloom in clusters and are lavender, pale pink, and white.

Did you know?
This plant is native to California and can also be found in other areas of Western North America. By consuming Narrow-Leaf Milkweed, butterflies become unpalatable to their predators due to the plant's alkaloids.

Which butterfly?
In California, it is the most important host plant for the Monarch Butterfly.

Native Plant Observations

Activity Description

Now, it's time for you to look around and find these plants in the wild! Once you find each plant, write about the following in your journal:

- What does the plant look like?
- How do you know that this is the plant? Think about what clues helped you to identify the plant.

*Hint: These "clues" could be the plant's size or its unique features, such as flowers or bulbs.

Plant 1: _____

_____

_____

_____

_____

Plant 2: _____

_____

_____

_____

_____

Plant 3: _____

_____

_____

_____

_____

Native Plant Observations

Plant 4: _____

_____

_____

_____

_____

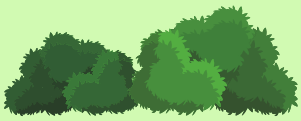
Choose one of the plants you identified, and draw it in the box below! Be sure to include and describe special features, such as flowers, leaves, or color, in your sketch. You can also add some pollinators that make use of this plant!

Pollinator Garden Bingo

3

Activity Description

Look at your surroundings in the Butterfly Garden to locate the objects that are named below. When you find an object, place an "X" in its square.

Dried Leaves 	**Mud** 	**Twigs** 
Plants of Different Heights 	**Bee Blocks** 	**Water** 
Different Colored Flowers 	**Exposed Soil** 	**Bushes and Shrubs** 

These items are important components of a pollinator's habitat; pollinators need them in order to survive. Based on how many items you were able to identify, how would you rate our butterfly garden's ability to support pollinators?

★ 7+ items: A great habitat for pollinators

★ 4-6 items: An okay habitat for pollinators - could be improved!

0-3 items: Not a supportive habitat for pollinators

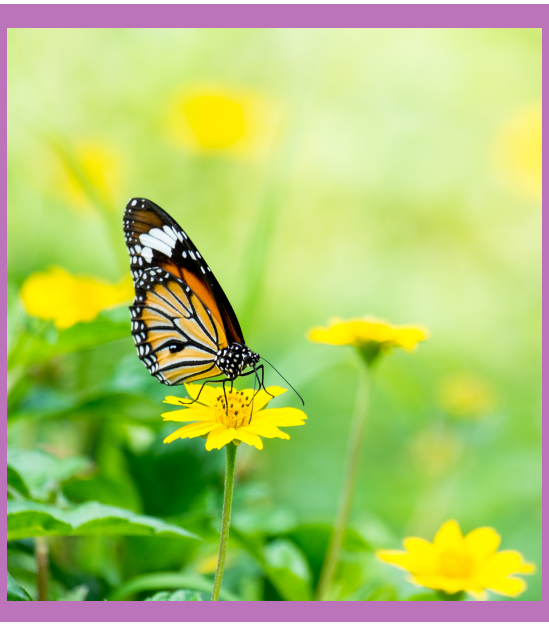
Based off of this scale, what is your rating?

Pollinator Pledge

4

Who are pollinators?

A pollinator is any animal that moves pollen between plants, helping plants reproduce. Pollinators visit flowers to drink nectar or eat pollen and transport pollen grains as they move from plant to plant. Bats, bees, beetles, birds, butterflies, moths, and wasps are all common pollinators that are found at the Don Edwards SF Bay National Wildlife Refuge and around your neighborhood.



Why should we help pollinators?

Most of the flowering plants on Earth need the help of pollinators. The world's pollinators are currently known to support 180,000 different plant species and more than 1,200 crops. About 1 out of every 3 bites of food you eat is brought to you by the help of pollinators! By helping plants make more plants, pollinators also play an important role in maintaining healthy natural ecosystems. The simple truth is the humans can not survive without pollinators.

Pollinator populations are declining due to a loss of feeding and nesting habitats. Pollution, human development, the misuse of chemicals, and climate change are all having negative impacts on pollinators.

Create Your Pollinator Pledge

4

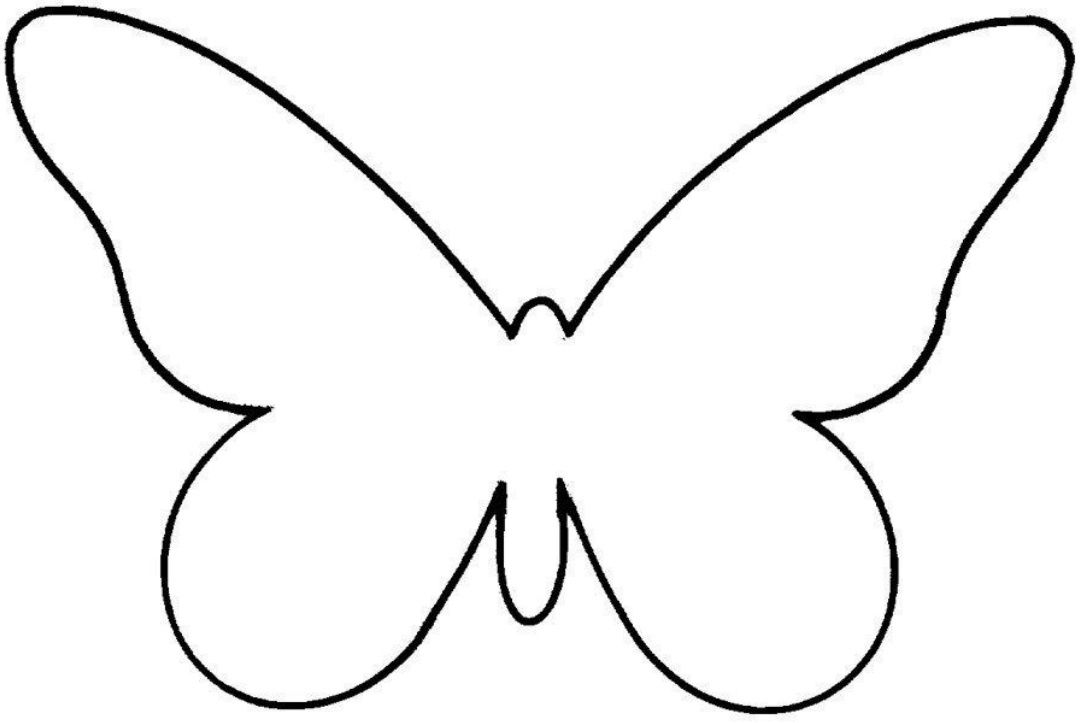
What can we do to support pollinators?

There are many ways you can support pollinators. Here is a list of some actions you can take to help:

1. Create a pollinator garden that provides food, water, shelter and space for pollinators
2. Get to know your local pollinators through observation
3. Keep local landscapes clean and provide space for pollinators to build their shelters
4. Avoid using pesticides, especially insecticides
5. Tell your family, friends, and neighbors about the importance of pollinators

Activity Description

To pledge to help pollinators, sign your name in the butterfly below. Then, using the action list above or using your own ideas, write down how you want to help pollinators. Feel free to decorate your pledge!



I pledge to help pollinators by...

_____

_____

_____

Take a different trail!

5

The best way to learn more about the refuge and see the many plants and animals that live here is to head out and explore another trail! You can check out the map at this stop to see some options. And finally, remember to leave no trace!

Which trail did you take?

_____

Draw or write about something you saw on the trail:

Nature Journal Page

Did you observe anything that you found particularly interesting during your time on the trails? If so, you can draw and write about it below!

Extra Notes Page

See you later!

You have now reached the conclusion of the Story Walk. We hope that you had fun learning about pollinators, local habitats, and ways that you can contribute to making the environment a safer and healthier place for all.

Let us know what you observed during your Story Walk, share your stories and photos by emailing us at summercamp@sfbayws.org

About the Wildlife Society and Refuge

The San Francisco Bay Wildlife Society seeks to nurture in the public a sense of understanding, appreciation, and stewardship of the San Francisco Bay National Wildlife Refuges. Through education, interpretation, and research activities, SFBWS works to conserve, preserve, and restore bay lands as essential wildlife habitat.

The Don Edwards San Francisco Bay National Wildlife Refuge is the nation's first urban national wildlife refuge. Located on the southern end of San Francisco Bay, it provides a home for millions of migratory birds and endangered species. It was established in 1972 as a result of grassroots efforts by the local community to protect the San Francisco Bay ecosystem and was renamed to honor former Congressman Don Edwards in 1995.

San Francisco Bay Wildlife Society

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NATIONAL WILDLIFE REFUGE SYSTEM

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