The Pollination Game

Objective:

- Explore how bees collect pollen from flowers

Materials:

- Strips of cloth with velcro
- Ping Pong balls with velcro
- Hula hoops or chalk drawing of flowers (if working on blacktop)
- Honey pot
- Bee posters

Set up:

- Attach strips of loop side of Velcro onto center of cloth strip.
- Attach hook sides of Velcro discs/pieces to ping-pong balls.
- Place ping-pong balls in center of hula hoop "flowers."
- Set honey pot about 20 yards from "flowers"

Do:

- Who likes to eat fruits and vegetables, honey, or enjoy looking at flowers? What are some of your favorites? Explain that almost all fruits and vegetables need bees in order to grow!
- Explain that many flowers have something called "pollen." As bees fly from flower to flower they drink nectar, a sugary drink - like the campers might drink juice or eat a piece of juicy fruit—and balls of pollen stick to their bodies. Explain that bees make honey from the nectar they collect as part of this process.This activity goes well before or after pointing out pollen sacs on bees knees. :)
- Tie bandanas around campers knees and/or elbows velcro side out.
- Explain to campers that they need to pick up the balls by bending their knees, and not using their hands, because bees don't have hands to pick up pollen!
- Send campers out to "flowers" to pick up ping-pong balls in a way similar to how bees collect pollen.
- Campers take turns individually or in teams.
    - A relay can be arranged with teams competing against one another and each team having one player going at a time to attempt to get 1, 2, or 3 pollen grains.

Extensions:

- Add the waggle dance.
- Try tying bands just below the elbows or around their foreheads. Reference the posters or images showing bees covered in pollen.

Reflect:

- How do you feel about how you did? As an individual? As a team?
- How does pollen get on bees? Where do they collect the pollen?
- Why are bees and pollen important to us?

Apply:

- What is your favorite fruit? Would it be available if the pollinators were not here to pollinate?

Background

- Many plants need to be pollinated in order to produce fruit and seeds.
- The male part where pollen is produced is called the anther.
- Pollination is the transfer of pollen grains from the male part of one flower to the stigma (female part) of another flower.
- Bees are especially helpful in agriculture.
    - Some farms have their own beehives to pollinate their crops or they have beehives brought in to aid in pollination.
    - How might traveling bee hives cause problems for both bees and crops?
- Bees visit flowers to collect nectar, which they turn into honey, and pollen, which they eat and use to make 'bee bread' for their young.
    - When a bee lands on a flower to do this, extra pollen sticks to the tiny hairs on its body (see pictures below).
    - The bee then flies to another flower and some of this extra pollen falls off sticks to the sticky stigma of the new flower, and the plant is pollinated!
- When bees collect pollen to bring back to the hive and eat, they collect pollen into “baskets” by their knees (See pictures).

The Beauty of Pollination video

http://www.neok12.com/video/Pollination/zX4a705d4406575c55575c06.htm


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Waggle Dance

Objective:

- Campers will learn bee patterns of communication.
- Campers will role play worker bees in a hive.

Materials:

- Strips of cloth with velcro
- Ping Pong balls with velcro
- Hula hoops or chalk drawing of flowers (if working on blacktop)
- Honey pot
- Bee posters

Set up:

- If using as an extension of the Pollination Game, have Stewards hide pollen ping-pong balls in new locations.
- Have a designated hive area.

Do:

- Split campers into groups. Group 1 is made of three worker bees. All the other groups are made of 2 worker bees. Depending on group dynamics, try sending one group while the rest remain in the hive waiting for news about the source of nectar.
- Group one: Two students will remain in the hive. Send one camper out to go foraging for a nectar source.
- When he/she finds this source, have him/her return to the "hive" to tell the other bees by performing a "Waggle Dance." The other two "bees" must do their part in the dance as well.
    - Camper/bee 1 should stand facing the direction of the flower.
    - He/She should then shake his/her whole body and move in a straight line toward the flower.
    - After moving a few feet he/she should stop, turn to the right and walk in a half circle back to where he/she started.
    - As he/she passes the worker bees, bee 2 sniffs at the dancing bee to identify the scent of the nectar source.
    - When the dancing bee reaches the place where he/she started, he/she should "waggle" in the direction of the flower again. This time the dancing bee should turn to the left, and the remaining worker bee should perform the sniffing.
    - Now all three bees are ready to leave the hive and locate the nectar source.

- When all three workers have located the nectar source, have each bee choose two more worker bees to perform the "Waggle Dance" for.
- Then instruct each of these bees to select two more bees to "tell" about their finding. Continue this pattern until all bees have located the nectar and brought pollen back to the hive.

Reflect:

- What is similar about the ways bees communicate to the way people communicate? How is it different?
- Why might it be important that bees have patterns to communicate a message? Might it mean something different if a bee turned in opposite circles (turned to the left first instead of to the right)?
- What other things might bees need to communicate?

Apply:

- How do you think the other animals on the farm communicate? In a similar way? What have you observed?
- Have the group build a set of their own non verbal messages.

Let’s keep an eye out for bees in our activities here at Tollgate! We might be able to identify other “secret messages.”