

## Bird Beak in a Box

The Bird Beak in a Box is meant for use at a den meeting where scouts are learning various concepts about nature. It can also be used by Scouts working on the Bird Study merit badge. The best Cub Scout adventures to use the box with include:

- Webelos: Champions for Nature
  - investigate animal adaptations
  - understand habitat
- Webelos: Earth Rocks
  - understand animal behavior
  - investigate ecology
- Bear: Fur, Feathers and Ferns
  - relate concepts of animal adaptations to the broader scientific investigation methods used in geology
- STEM Nova Award: Science Everywhere
  - using the scientific method
  - conducting a hands-on experiment

A bird beak activity is a hands-on experiment that teaches Scouts about natural selection and adaptation by having them use different tools (representing beaks) to collect various types of "food". Scouts BSA can complete this activity as part of the Bird Study merit badge or as a fun, educational outdoor exercise.

### Materials

"Beaks" (tools for Scouts to use)

- Pliers and Nutcracker (or binder clips, not in box), for cracking seeds like a cardinal
- Wooden tongs and Metal salad tongs, for tearing meat like a raptor
- Hammer
- Kitchen scoop/strainer, for straining food from water like a duck
- scissors
- 2 close pins
- 2 Tweezers, for plucking insects like a warbler
- 4 Eyedroppers, for sipping nectar like a hummingbird
- Chopsticks (not in box), for spearing fish like a heron

## “Food”

- Rubber bands, to represent worms
- Craft foam fish
- Craft beads
- Wooden Craft beads, to represent nuts - please do not smash/break them, as would some birds

## Other supplies

- Book: “Beaks!”
- Ziplock bag including:
  - Instructions: “Bird Beak Game”
  - Beak types with pictures (laminated)
  - Information/question sheet: “The shape of a bird’s beak is adapted to...” (laminated)
  - “Adaptive radiation” card (laminated)
  - ”Different Types of Bird Beaks” card (laminated)
  - 3 pages of pictures in sheet protectors
  - 8 laminated pictures of birds
- Worksheets for recording data, originals in sheet protector. Make enough copies for your scouts.
  - Match the Bird’s Beaks...
  - Bird Beak Investigations chart
- Toothpicks
- Easter Eggs with wooden bead (possibly to represent the stomach or gizzard of birds)

## Optional supplies not in the box:

- Small paper cups to represent the "stomach" of each scout.
- Cardboard boxes or plates to contain the food at different stations.
- Timers.

## Other “Food” ideas not in the box (placed in different stations):

- Forage/worms: Gummy worms, soft macaroni, rubber bands placed in a bowl of water.
- Seeds/insects: Rice, lentils, or sunflower seeds scattered on a plate or buried in sand.
- Cracking nuts: Sunflower seeds with shells or pistachios in a tray.
- Sipping nectar: Colored water in a small, tall container like a film canister or small cup.
- Meat: Small pieces of sponge or soaked ramen noodles.
- Straining food: Small objects like small marshmallows or pasta floating in a bowl of water.

### Instructions for a possible game:

1. Set up stations: Arrange the "food" stations in a line or circle, with each station having a different type of food. Place a different "beak" tool at each station or give each Scout a specific tool to start with.
2. Explain the challenge: Explain that the Scouts are birds and must use their assigned "beak" to collect as much food as possible. Each scout will use their "beak" to transfer food from the station into their "stomach" cup.
3. Run the experiment:
  - Set a timer for 20–60 seconds for each round.
  - Have the Scouts rotate through the stations, trying to collect food with their beak.
  - After each round, they count and record how much food they collected from that station.
  - Repeat the process until every Scout has tried every type of beak on every food source.
4. Analyze the results:
  - Discuss which beaks were most successful at collecting each type of food.
  - Review the data and have Scouts graph their results, noting the best beak for each food source.
  - Connect the activity to real-life bird adaptations, showing pictures of actual birds that match each beak type.

### Discussion topics for Scouts

- Survival of the fittest: Ask which type of bird might thrive or struggle if the habitat or food sources changed.
- Competition: Discuss what happens when multiple birds with the same beak compete for the same food source.
- Ecological niches: Explain that different beak adaptations allow multiple bird species to live in the same area without directly competing for the same food.
- Conservation: Connect the importance of habitat preservation and how changes to an environment can affect a bird's food source and ability to survive. Also, lessons can be extended to broader conservation discussions, such as what happens to animals when their food source disappears.
- Adaptation: how a living organism's physical traits help it survive in its environment.
- Natural selection: it provides a simple model for how competition for limited resources can lead to the "survival of the fittest"
- Data collection and analysis: scouts can practice recording data and interpreting results to see which "beaks" were most effective.