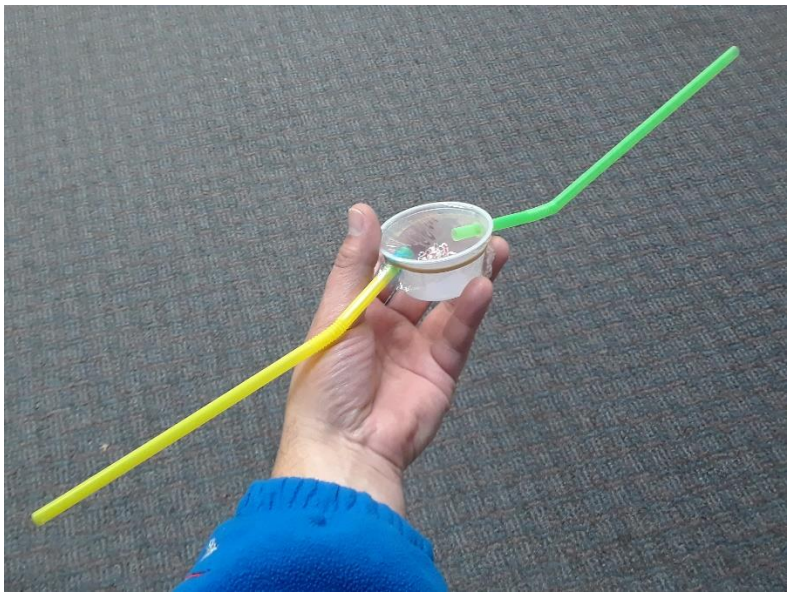
THE BUG VAC

A safe, humane way to collect and observe small creatures

This project provides a simple way to collect and observe small insects at home in the yard or other natural places, thereby providing an opportunity to learn about the insect **biodiversity** (variety of life) in an area.



Curriculum topics

- Biodiversity
- External Animal Structures
- Growth and Development
- Engineering/Design

Subjects

- Life Science
- Engineering

Grade range: K – 2

Who we are: Resource Area for Teaching (RAFT) helps transform the learning experience by inspiring joy through hands-on learning.

Share Your feedback!
http://bit.ly/RAFTkitsurvey

Materials

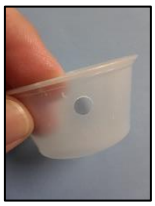
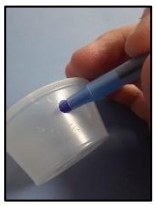
Materials in the kit may vary but generally, this kit contains the following:

- Portion cups, 2-4 oz. (2)
- Flex straws (4)
- Cheese cloth, gauze, or fabric (filter material) (1)
- Rubber bands (2)
- Optional: Magnifier, grain-sized "practice object" (rice or similar)
- Not included: Plastic wrap, hole punch, scissors, tape, pen/pencil

WARNING: CHOKING HAZARD
Activity uses small parts. Not for children under 3 yrs.

To Do and Notice

1 Use a single hole punch to make 2 holes in the portion cup on opposite sides about ⅜" from the edge (see below left).


2 Insert the mouth end of a flex straw into one hole. If the straw does not fit tightly in the hole, wrap tape around the straw and reinsert again. If the hole is too small for the straw, carefully widen it with a pencil/pen (see above middle and right).

3 Cover the mouth end of another flex straw with one or more layers of filter material to create a filter that will allow air to pass through but nothing else (below left). Wedge the covered end of the straw into the other hole, widening the hole as needed with pen or pencil (below middle).



4 Stretch a 4" square of clear plastic wrap over the open portion cup. Secure the plastic wrap to the portion cup by wrapping the outer rim of the cup with a rubber band (above right).

5 Locate a suitable specimen to collect and study. Position the straw without a filter so the end is very near the selected specimen. Breathe in suddenly through the open end of the **filtered** straw. Repeat as needed until the specimen is transferred into the portion cup.

6 Observe the specimen through the clear plastic wrap. Look at the external features such as color, number of appendages (legs, wings, antennae, etc.). Remove the rubber band and plastic wrap and gently release the specimen into a suitable habitat. Repeat this process for other specimens.

7 **Share** your experience with RAFT! Submit photos/video via email at education@raft.net or on social media (Facebook, Twitter, Instagram).

Core Content Skills:

Science & Engineering (NGSS)

Developing and Using Models, Planning and Conducting Investigations, Analyzing and Interpreting Data, Structure and Function, Information Processing, Growth and Development of Organisms

Social Emotional Learning

- Self-awareness
- Self-management
- Responsible decision-making

The Content Behind the Activity

Biodiversity is a collective term referring to the variety of all plant and animal life on planet Earth. While it may not be practical to directly observe all forms of life living in every habitat, one can still appreciate the biodiversity that exists on our planet by observing a few readily available specimens in local habitats such as a backyard, city parks, or other places where familiar organisms are known to thrive.

The term "bugs" is commonly used to describe small **arthropods**, **invertebrate** animals (those without true backbones) having external skeletons called **exoskeletons**, segmented bodies, and paired jointed appendages. Examples of familiar arthropods include insects, spiders, and sow bugs, also known as "roly-polies". Of the known animal species, more than 80% are arthropods!

The Bug Vac is a vacuum-based device used to collect small objects and creatures. This type of device is called a "pooter" by **entomologists** (scientists who study insects) and is traditionally made using a modified glass jar. Breathing in through the straw/filter creates a low-pressure area in the portion cup and the other straw. The outside air is at a higher pressure and moves toward the area of lower pressure, moving the selected specimen through the other straw and into the portion cup.

Reuse

This kit uses 100% reusable materials designed for other uses. To continue making a positive impact in reducing waste, reuse these materials in other projects. Additionally, any unused materials can be collected and delivered back to RAFT.

Feedback

Please comment on this kit by taking this short survey: http://bit.ly/RAFTkitsurvey. Let us know of any material concerns (missing, broken, or poorly fitting parts) as well as any suggestions for improvement.

Visit https://raft.net to view related activities!

Ample Samples
Salmon You Can Count On
Understanding Biodiversity

Resources

- Biodiversity and its importance - https://bit.ly/3x16xiX
- Demonstration of bug pooter usage - https://bit.ly/30AE348
- Insect-related articles - https://bit.ly/3FsU0rQ