

## Wasp Nest Dissection

- a. Your name and affiliation: Robert Matthews, Professor of Entomology, *Emeritus*, University of Georgia, Athens, GA 30602. [rmatthew@uga.edu](mailto:rmatthew@uga.edu)
- b. A catchy name for the activity: **What's in a Mud Dauber's Nest?**
- c. Targeted age-group: k-12
- d. A 1-2 page detailed description/instructions/supply list for the activity.

**Introduction** Most children have encountered the mud nests of mud dauber wasps in sheltered areas such as porches, garages, or under decks. These harmless nests contain fascinating micro communities of up to 10 kinds of arthropods. Discovering the identity of nest contents and researching their biologies introduces big concepts in biology/ecology such as food chains, food webs, parasitism, and predation. Identifying nest contents reinforces science skills such as using a dichotomous key. East of the Great Plains the organ pipe mud dauber is commonly found, while the black and yellow mud dauber occurs throughout the US.

### **Published Resource with more detailed information:**

**American Biology Teacher 59(3), 1997**, pp. 152-158. Teaching ecological interactions with mud dauber nests. R. W. Matthews.

More information on mud daubers and another version of this activity is available in the 318 page resource book, **WOWBugs: New Life for Life Science**, by R. W. Matthews, et al., available from the author (\$12) – see pp. 215-223, 240-244, 249-253, 269-273, and 288-298

**Procedure for dissecting organ pipe mud nest.** Working on a paper plate, examine the nest exterior. Carefully measure, describe and sketch what you see. Draw an outline of your nest on the plate, consecutively numbering the compartments visible on the underside. Note the surface texture and any holes. How do the two sides of the nest differ?

Next, beginning at one end of a tube, carefully break open the first cell compartment and use forceps

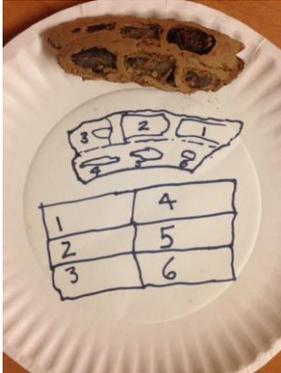
contents to a numbered vial. Repeat for each cell. Use the dichotomous key from the resource material to identify the organism(s) found in each cell and record the number of each kind.

Finally, carefully open each of the black mud dauber cocoons, using care not to damage them. Use the other dichotomous key to identify cocoon contents.

Tabulate results from all nest cell compartments dissected. What portion of the total failed to produce mud daubers? What were the main mortality causes for those cells that did not produce mud daubers?

Research the biology each of the nest organisms on the internet to determine their role in a food web/food chain. Prepare a diagram illustrating the food web to which the mud dauber

belongs; use arrows to depict the flow of nutrients or energy through the web. List specific examples of producers, consumers, predators, parasites, and decomposers.



**Materials:** Mud dauber nests are not available commercially and must be collected locally. Students often are aware of places where nests occur and may be enlisted to help. Mud dauber wasps are not aggressive. However, it is best to collect nests during the colder months when the nests have been abandoned and contents are in dormant stages.

Removing nests from substrates is best done with a putty knife, carefully prying and lifting the nest, taking care to not break it apart. (Nests on wood surfaces are easier to remove intact than nests attached to stone or concrete). Good places to look for nests are barns, garages, and out buildings, picnic shelters, bridges, decks. Avoid collecting nests having several large holes as they are previous year nests (which can persist for several years) and will not contain much of interest for this activity

Place nests individually in zip-locked bags labeled with the date and collection location. Nests can be stored temporarily in the vegetable bin of a refrigerator.

Other materials needed are obtained locally. These include paper plates to serve as dissection trays, plastic 'zip-lock' style sandwich bags, tweezers, magnifying lenses, plastic ruler, small vials or similar containers, and cotton balls.