**Rearing Tips for Activity 3**

**Larvae Containers**

There are many kinds of containers that are suitable for larvae. The only requirements are that the container has good airflow and is big enough for the caterpillar(s) and host plant leaves or clippings. A washable container is also preferable as well as one that allows for easy observation. Good rearing containers include:

- Mason jar covered with panty hose
- Plastic deli container (1 quart) with 1” holes cut in the lid and covered with netting
- Shoebox with screening/netting attached to lid
- Ice cream pail covered with netting
- Aquarium with screen top

For a more permanent container, you can cut windows in plastic containers like ice cream pails and attach screening with a glue gun or duct tape.

The larva container needs to be at least four inches deep so that the emerging adult has room to hang from its chrysalis casing and allow its wings to expand and harden.

**Raising Larvae**

As you raise monarchs for Activity 3, adult butterflies and caterpillars should not be kept in the same rearing container, as this may promote the spread of the OE parasite. Instead, each monarch should be kept in a separate container out of direct sunlight and hot places. **Cages must be cleaned, and larvae provided with fresh, washed milkweed DAILY.** Do not leave your monarchs unattended over the weekend.

Monarchs remain in the larval stage for about 2 weeks after hatching from eggs. During this time, they go through five instars, which means that they molt (shed their skin) five times. While they are molting, they often crawl up the side of their container, and should not be handled during this time. **You will probably have some mortality during the larval stage.** This may be caused by a virus or bacterial infection, or by contaminated milkweed. You should record this on your Activity 3 data sheet, then remove the dead larvae from the containers, or you can place the container into the freezer until it can be discarded. Before using the container again sterilize it with a weak (20%) bleach solution.

When ready to pupate, larvae will crawl to the top of their cage, attach themselves with silken thread, and form a prepupal "J" before shedding their skin for the last time. The pupa stage lasts 9-14 days. Pupae turn darker the day before the butterflies emerge and look black on the day they emerge. At this point, the wings are visible. If a pupa has been very dark for more than a few days, it is dead. This should also be recorded on the Activity 3 data sheet.
Butterflies shouldn't be handled for the first 4 or 5 hours after they emerge and can be kept in the cage until the next day, when they should be released.

**Collecting Milkweed**

When collecting milkweed foliage to feed to caterpillars, it is best to pick the entire plant (check for other invertebrates first to ensure that you don't take any unexpected critters home with you). You can pick several days worth of milkweed and keep it in a plastic bag in the refrigerator. Wash it in water before using it. Milkweed stays fresher if you keep the end moist by wrapping it in a wet paper towel and then covering it with aluminum foil or use florist water tubes or soda bottles. Potted plants can also be purchased from your local nursery, but make sure that they have not been treated with systemic insecticides before feeding them to your monarchs (ask the grower if you aren't sure).

**Growing Milkweed**

Most seeds of temperate plants should be vernalized (cold treated); this ensures a higher germination rate than if seeds are sowed without this pre-treatment. Many of the southern species, such as tropical milkweed, will grow without cold-treatment. The most successful means of milkweed vernalization is through stratification. By stratifying, or subjecting seeds to a cold/moist environment for a short period of time, you simulate the conditions of a seed's natural break of dormancy that occurs when the seeds spend the winter in the ground.

**To Stratify**

1. Obtain a substrate such as peat
2. Moisten the substrate with water and place the seeds in the cold soil
3. Store the seeds in a dark place (a refrigerator crisper works well) with a temperature of approximately 5°C for a minimum of 3 weeks up to 3 months.

To allow for natural stratification, sow collected seeds directly into a mulched bed in the fall and the seed will germinate the following spring.

For indoor use, plant the seeds just beneath the soil surface using a rather deep pot, as they have a long taproot. Once the plants are in the seedling stage, fertilize once a week. To encourage fullness and more leaves, you can pinch off the top set of leaves (when there are at least two sets of leaves) to promote branching. It takes at least a month for the plant to be ready for the larvae to eat. Once the plant is big enough, you can simply place the entire plant, pot and all, into the cage. After the larvae have eaten the leaves, simply cut the plant off about two inches above the soil and new shoots will grow in 3-4 weeks.