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Silkworms:

Silkworms, *Bombyx mori*, have been cultivated for centuries to produce the beautiful lustrous thread, silk. In the classroom they offer the opportunity to observe the life cycle, learn about metamorphosis, and investigate the properties of silk.

Catalogue Code: L5.10

**Supporting
Products for L5.10**

Life Cycle

- Egg: Hatch 3-6 weeks from receipt or removal from the fridge.
Larva: Grow over 4 weeks before spinning a cocoon
Pupa: Spend 2 weeks in the cocoon
Moth: Live for 1 week as a moth

BPM7.47RB : Silkworm
Life Cycle in a resin block.

G10.60 Brushes, fine, pack
of 12.

Looking after silkworms:

Egg:

Eggs can be maintained in a dormant phase by storing them in a sealed container, such as the vial we supplied, in the fridge. This is sometimes necessary if Mulberry leaf is not available. When you are ready to start the hatching process, take the eggs out of the fridge, open the container and place the egg card into a plastic container that has been thoroughly washed. A plastic lunchbox will work well. Leave the lid off and maintain it at room temperature on a benchtop. You can expect the eggs to hatch within three to six weeks, so monitor them frequently to be sure you find the hatchlings as soon as possible after they appear.

Immediately after hatching, the worms are black and measure 2-3mm in length. Provide fresh mulberry leaves as soon as the worms hatch. In an emergency, lettuce leaves can be used as an alternative during the early growth stages, but a mulberry leaf diet is essential during the last two weeks of the larval phase in order for silk to be formed.

Be careful to keep the eggs and worms away from direct sunlight, intense heat, and avoid contact with cleaning sprays or chemicals of any kind.

Larva:

Silkworm larvae require a constant supply of fresh mulberry

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leaves for nourishment. No extra water or dietary supplements are necessary, but the worms' appetites increase as they grow, so sufficient fresh leaves should be provided at least once per day, or more often if required. Large worms can eat up to six leaves per day!

Clean the worms' container each day by removing old leaves and droppings, then add fresh leaves. Wet leaves should be patted dry with paper toweling to ensure new hatchlings are not drowned. While the worms are small, we suggest using a fine soft paint brush to transfer them to fresh leaves. When they are larger, they can be moved by hand, but ensure your fingers are clean and free of soap residue.

Toward the end of the larval stage, transfer the worms to a larger container such as a small carton so they have room to spin their cocoons. This box should have high sides (30-40cm) to allow the worms to climb to a spinning position. Placing a loose sheet of rigid paper or thin cardboard in the bottom of the box can make the task of daily cleaning easier.

To accommodate their rapid increase in size, silkworms moult several times during the larval stage. As a prelude to moulting, worms stop eating, and you will often see them raise their heads and become still just before they shed their old skin.

The larva will be about 5cm long when it is ready to spin its cocoon. You will also see a change in skin colour and a glossiness as the silk fills the spinning glands. At this point, we recommend placing sections of the base of an egg carton in the worms' box to provide a suitable haven for the worms to spin their cocoons. Stand the carton sections on end against the walls of the box. The larvae instinctively climb upwards when they are ready to spin, so the egg cartons provide the right stimulus to enable this to happen. When the worm finds a "nook" that suits, it begins to spin its cocoon around itself by twisting in a "figure 8" motion, gradually shrinking in size as it loses the considerable mass of extruded silk, and becomes completely enveloped and enclosed.

Pupa:

The pupa is surrounded and protected in its white or yellow cocoon for approximately two weeks while metamorphosis occurs. At the end of this time, the moth will emerge by eating a small hole at the end of the cocoon.

Moth:

As the moths emerge from the cocoon, they take a moment to allow their wings to expand and strengthen. However, many years of selective breeding has reduced the effectiveness of the wings. Although they flutter, the moths are not able to fly properly. There will be a mixture of male and female moths in the group. The females will lay eggs regardless of whether fertilization has occurred but only those eggs that have been fertilized will hatch in the following cycle. Fertilized eggs become grey in colour and infertile ones remain white.

Moths do not eat or drink. They emerge, mate, lay eggs and then die.

8 to 11 Week Life Cycle

