

Teachers' Notes

The Life Cycle of Wasps and Bees

Chapters

Mud Wasps
Paper Nest Wasps
Bumblebees

Activities

1. Fill in the blanks / circle correct statements:

A. Mud Wasps

1. In early _____ a mud wasp wakes from hibernation. Its _____ gnaw through the cocoon where it has been for the last _____ months.
2. You can tell the wasps are male because their _____ are rolled up.
3. After cleaning herself the female wasp seeks _____ from nearby flowers.
4. The male dies shortly after _____. Caring for the _____ is the sole responsibility of the female.
5. Mud wasps like to build _____ in muddy soil on _____ slopes.
6. The female wasp collects water which is used to _____ the soil to help her dig a shaft. The shaft is probably designed to keep out _____ and _____. Later on the shaft is closed with _____.
7. If brood sites spring up near each other, it is only due to _____ living conditions at that site. Wasps do/do not have social contact.
8. When the breeding chamber is ready the wasp crawls backwards into it. When she emerges, a tiny oval _____ is hanging from a thread at the end of the chamber.
9. The mud wasps hunt _____ to feed to their offspring. The wasp stings and _____ the larva before carrying it back to the breeding shaft. About 10-20 _____ will fit into the chamber. After about a week the food supply runs out and the wasp larva starts to _____.
10. There are _____ breeding chambers on each shaft. Because they are built and supplied with food one after another, some larvae have not even _____ while others are spinning their _____.
11. As soon as the chambers are all supplied with an _____ and live _____, the wasp fills the shaft with dirt and _____ soon after.
12. The grown up larvae spend the _____ in their cocoon. When _____ arrives the following year, they undergo _____ from _____ to _____ begins inside the cocoon. The life cycle is complete when the first _____ wasp emerges from his/her cocoon.

B. Paper Nest Wasps

1. In early spring a _____ paper nest wasp emerges from hibernation.
2. She starts collecting materials to establish a _____. She mixes bits of _____ and plant fibres to make a _____ that looks like _____ when it dries. This material is formed into a multi _____ nest ending on a short stem.
3. The queen builds the nest on _____ of grass, or on twigs or _____. The nest is aligned towards the morning _____.
4. The queen works on her own. As soon as possible she will deposit an _____ in each cell in the nest.

5. But an approaching _____ is stopping the construction work. As soon as the _____ is over, the queen must _____ the nest. She does this by _____ up the water into her _____. Then she turns her head over the edge and _____ the water. It is important that the eggs inside the cells stay _____.
6. Once the eggs have hatched it is important that the _____ are kept cool. The wasp does this with her _____.
7. As well as cooling the larvae, the queen has to protect the _____, find _____ and _____ the larvae. Again and again she has to _____ the nest. In between times she builds _____ and lays one egg in each.
8. The larvae in their _____ will emerge soon and need to be fed. The queen can't do this all on her own. She gets help from _____ wasps that have left their cocoon after _____. They are _____ females whose only task is to extend and fan the _____ and nurse the _____.
9. To find the right food for the larvae, the female workers have to _____. This one has caught a _____. At the next the catch is _____ into smaller pieces and passed on.
10. The _____ rich diet is only for the brood. The wasps themselves feed on _____.
11. _____ wasps have black and yellow banded and spotted _____. The _____ and abdomen are connected by a narrow _____ which gives the abdomen mobility for _____ laying and _____.
12. Autumn has arrived. In this nest the queen has laid unfertilised eggs that develop into _____ wasps. We can tell they are male because they have rolled up _____ and _____ faces.
13. At the same time some young _____ emerge. Sometimes they _____ with male wasps of their own nest.
14. As autumn comes to an end, the wasps time starts to run out. All the female and male workers _____. Only the young _____ hibernate in a safe place to be ready to start a new nest next _____.

C. Bumblebees

1. In early _____, a queen bumblebee awakes from hibernation and searches for a _____ site.
2. Hollow cups in the nesting site are filled with _____ and pollen. Breeding cells next to these contain the first eggs and _____.
3. Unlike other insects that are paralysed by the _____ weather, bumblebees are almost unaffected and can generate enough body _____ to enable them to fly.
4. The first female _____ hatch about _____ weeks after they have been laid. Their body size is _____ because the queen alone had to _____ all the larvae. The next generation of _____ will be much bigger and _____ because they will be fed by these female worker bees.
5. The _____ or house bumblebees each have jobs to do. Some nurture the brood and _____ new cells while others gather _____. The bumblebees feed from the cells stored with _____ and pollen.
6. _____ bumblebees must _____ feed the larvae by first biting open a _____ cell. Once fed the cell is closed again.
7. About a _____ eggs are laid by the _____ in each of the pollen-filled cups. The _____ hatch after _____ days and feed on the stored _____.
8. The larvae then spin their _____ to pupate. Metamorphosis from larvae to _____ takes place inside their cocoon. After about one _____ the bumblebee emerges from its cocoon with help from another bumblebee.
9. The young bumblebee develops her _____ and _____ stripes after a few _____. It is then that she begins to _____ for the first time.
10. To help her remember where her _____ is, she _____ around the entrance. By gradually explores further by making bigger _____ around the hive.
11. The bumblebee collects pollen from a field of _____ corn poppies and carries it back to the _____ hive. During summer the _____ bees beat their _____ to keep the hives inside _____ constant.

12. _____ bumblebees hatch from _____ eggs at the end of summer, while _____ hatch from _____ eggs. The females are given the best _____ so they will grow into well-sized queens.
13. Queen bees are attracted to the special _____ left by the male bees on grass or _____. After mating takes place, the _____ bee dies.
14. With _____ approaching the bumblebees die and the queen bee finds a safe place to _____. In the following _____ each queen will establish its own bumblebee _____.

2. Questions for Discussion:

1. Discuss the differences in social contact and level of cooperation among mud wasps, paper nest wasps and bumblebees.
2. What are the advantages and disadvantages of being social or solitary?
3. Describe the differences in daily life for wasps and bumblebees (eg between male and female mud wasps, between queen and worker paper nest wasps, between queen, worker and hive or house bumblebees, between the queen paper nest wasp and the queen bumblebee).