# Life Cycle of an Ant

Science Film Festival Knowledge Through Entertainment

## FILM

**Founding an Ant Colony**

## KEY OBJECTIVES

1. **Students will be familiar with the anatomy of an ant**
2. **Students will recognize the different stages of an ant's individual life cycle**
3. **Students will be able to explain the roles of different castes in a colony (males, female, workers, queen)**
4. **Students will understand the ant colony life cycle**

## INTRODUCTION

Ants are mainly found in tropical forests, especially during the warm seasons. They are divided into three groups, these are – queens, workers and males. The life cycle of ants varies depending upon the environmental conditions. Ants are social insects and have a social system where tasks are divided among the queen and worker ants. Queen ants are responsible for reproduction and dispersal. The worker ants search for food and accumulate the food, brood and maintain the nest. Reproduction in ants is not the same as reproduction in mammals. Ants cannot mate with each other like other insects. The female ants are sterile and only the queen ant can mate and reproduce. Drones, the male ants are fertile and ready to mate with the queen ant.

## GUIDING QUESTIONS

- Does the queen control the colony?
- How long do ants live?
- How many ants are there in the world?

TOPICS

Ant colonies | ecology | reproduction | evolution | natural selection | biodiversity | biology

KEYWORDS

Queen ant | colony | reproduction | life cycle | egg | larva | pupa | metamorphosis

LEVEL

Early Learners | Primary School

RESOURCE TYPE

Project

INTENDED AUDIENCE SIZE

Small Group

MODE OF DELIVERY

Live

TIME FOR ACTIVITY

45 min.

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## MATERIALS/PREPARATION

- Several Styrofoam balls for the eggs
- Two-2 ½ inch Styrofoam balls and Two 1 ½ inch Styrofoam ball
- Aluminum foil
- Glue
- Black string
- White string
- Newspaper (4 pages)
- Pipe cleaners(4)
- Tooth picks(1)
- Black paint/Acrylic paint (black or red)
- Wiggle eyes
- Manilla Paper(Optional)

## TASKS/PROCEDURE

1. Crumble one page of the newspaper to form a ball. Cover the ball with the aluminum foil.
2. Stick the Styrofoam balls on the aluminum foil.(At Least 15-20 Styrofoam ball of different sizes. This represents the eggs laid by the Queen ant.
3. For the larvae, crumble another piece of newspaper to an oval shape, wound(adj) the white string until the newspaper is wholly covered with the string.
4. Pupa/Nymph – Crumble the remaining two newspapers to an oval shape and wound the black string around to cover the newspaper.
5. To make the adult ant, connect the Styrofoam balls with the tooth picks such that the-1 ½ Styrofoam ball is in between the -2 ½ Styrofoam balls,(head, thorax and abdomen).
6. Paint the ant and let it dry.
7. Cut the pipe cleaner into halves to have 8 pieces.6pieces will represent the limbs while the remaining two will represent the pair of antennae.
8. Poke the middle Styrofoam (thorax) with the pointy part of the pipe cleaners, such that on the right you have three pipe cleaners as well as the left side.
9. Poke the antennas on the head (equidistant) and lastly glue the eyes.
10. Stick the stages of the ant life cycle on the manila in the right order (egg-larva-pupa-adult). Label the different stages of the cycle on the manila paper.

## FOSTERING DISCUSSIONS

**An egg -** This is how the life cycle of an ant begins as. The eggs are tiny, oval, and soft. Basically not all eggs survive to become adults. This is because some are eaten by nestmates for their extra nourishment.

**Larvae –** This is what an egg becomes after it hatches. It is a worm shaped figure with neither limbs or eyes. Larvae are eating machines that rely on adults to provide a constant supply of food. As a result, they grow rapidly, molting between sizes.

**Pupa -** When a larva is large enough, it metamorphoses into a pupa. They start out as whitish and gradually become darker. At this stage, rest and reorganization takes place. The legs and antennae are folded against their bodies.

**Adult -** The pupa becomes a Young adult ant. The process of development from egg to adult can take from several weeks to months, depending on the species and the environment. Did you know that ants, like all insects, are full-grown when they become adults? Their exoskeletons

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prevent them from getting any larger. Furthermore, adult ants belong to one of three castes: queen, worker, or male.

**Queens -** Are females that were fed more as larvae. They are larger than workers and lay all the eggs in a colony – up to millions in some species! Queens initially have wings and fly to find a mate(s), but they tear them off before starting a new colony. A queen can live for decades under the right conditions.

**Workers -** Are females that were fed less as larvae. They do not reproduce, but perform other jobs, such as taking care of the brood, building and cleaning the nest, and gathering food. Workers are wingless and typically survive for several months.

**Males -** Have wings and fly to mate with queens. They live for only a few weeks and never help with the chores of the colony.

## FOSTERING DISCUSSIONS

Although ants are known for their miniature size, it is interesting to note that ants are capable of lifting 20 times more than their own weight. Unlike other insects that die in weeks or months, queen ants can live up to 30 years. Ants also portray great cooperation as their gathering can be as large as 360 million ants.

## SAFETY INSTRUCTIONS

**Care should be observed while handling the toothpick as they have sharp edges that can pierce through flesh.**

## POSSIBLE EXTENSIONS

This lesson plan can be extended to include other insect life cycles to compare and contrast.

## AUTHORS AND SOURCES

Submitted by Discovery Centre Kenya


- www.antwiki.org/wiki/Life_in_an_Ant_Colony
- www.enchantedlearning.com/subjects/insects/ant/Antlifecycle.shtml
- www.domyown.com/all-about-ants-c-1_571.html
- www.familyhandyman.com/article/ant-life-cycle/