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**LEARNING PATH OF THE BEES**

- 1 The Bee Colony
- 2 Keeping Bees
- 3 Pollination
- 4 The Swarm
- 5 The Language of the Bees
- 6 Sweet Medicine
- 7 Honey
- 8 Wild Bees - Solitary Bees
- 9 Wild Bees - Bumble Bees
- 10 Our Honey Bees

Information about bees and their homes on the trace of nature



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### Bee Colony

The three types of bees of the family Apis mellifera physically differ in significant ways. The queen has unique glands which are necessary for the social structure of the swarm. The queen's abdomen is noticeably longer. During the main breeding time she lays up to 2000 eggs a day. The hundreds of lazy drones in the beehive are bigger, stouter and have more hair than the working bees. Their main aim in life is to mate with the virgin queen. They have strong flying muscles and large eyes to find the queen while she is in flight. Worker bees begin their varied life in the hive immediately after hatching. Their working lives commence in the interior of the hive: cleaning the cells, regulating the temperature of the hive, guarding the colony and producing the wax comb. After about three weeks they also work outside the hive: collecting nectar, honey dew, pollen and later towards the end of their lives, water.

### Keeping Bees

Bees were fully developed in their present form long before modern mammals had evolved. Even 6.000 years ago the Egyptians were trying to rationalise the production of honey. Kings were given presents of honey and wax. But also today we can say that the bee is one of the most utilised animals around and the fate of the bee is closely linked to the fate of mankind.

### Pollination

More than 80% of all existing flowering plants rely on the pollination services of the bees (honey bees and also wild bees) to produce seeds, fruits and vegetables which in turn provide all living creatures with nourishment and living space. At the moment the ability of the bees to pollinate far exceeds the production of honey in Europe. Realising this potential would be worth 250 to 360 million euros per year in Austria.

### The Swarm

Like all living creatures, bees are constantly trying to keep their species thriving, thus the behaviour of the swarm has developed to achieve this aim. Swarming keeps the hive lively and protects it from extinction. Moving swarms and intervals in breeding are the best remedies against illness. In Spring, when the population quickly increases and the hive becomes too small, the bees get an inner desire to swarm. The worker bees construct wax queen cells into each of which the queen lays one egg. Before the young queen hatches, a large swarm of bees leaves the hive with the residing queen. They build the typical swarm bundle on a suitable branch of a tree. Searching bees look for a suitable home. When they have found one, the bees move in and immediately begin to form a new comb.

### Language of the Bees

Bees have various forms of communication to tell their hive mates where to find food. For instance a worker bee can give other workers precise information by senses of smell and touch in complete darkness. Their dance language is a sophisticated way of passing on messages and is considered to be one of the most complex and abstract languages existing in the animal world. Homecoming bees can inform others in the hive of newly discovered feeding places by performing a small abstract dance figure. Distances up to 100 m are exactly described in a round dance, up to 5.000 m in a tail dance. Bees do not inform each other in distance but indicate how much energy is needed for the trip. The departing bees recognise the direction in which to fly even if the skies are cloudy. In addition, they have an excellent feeling for time relying on the sun for orientation.

### Sweet Medicine

The use of bee products is world wide and as old as man himself. Hippocrates, "the father of medicines" (approx. 460 - 377 BC) and the doctor of philosophy Paracelsus (1493 - 1541) both recommended honey to produce healing ointments. Pollen from blooms is not only a power package for bees but also an almost ideal supplement to our diet. It encourages resistance to illnesses which occur due to lack of vitamins in our nourishment. Royal Jelly - a

meal for a queen - is high in protein and rich in vitamins and is known to improve human health: \* helps mental alertness  
\* used in skincare \* gives your mood a lift  
\* heightens vitality and wellfeeling  
Propolis is a natural antibiotic and protects bees and human beings from viruses. The substance keeps the hive free from germs.

### Honey

Tyrolean honey - captured sunshine - 187 different ingredients have been scientifically proved to be contained in natural honey. Furthermore it has up to 100 aroma and antibacterial substances. To produce 500 grams of bloom honey the worker bees from one hive have to fly 50.000 kilometres and collect nectar from 10.000.000 flowers. The raw material for the honey is gathered from a great variety of plants. Nectar comes from the blooms and honey dew from the trees and bushes. Some of the main kinds of honey are blossom honey, dandelion honey, conifer honey, acacia honey and forest honey.

