

Honey bees, in addition to producing honey, are important pollinators of wild and cultivated plants. Unfortunately, in some places, the population of honey bees is declining. One of the factors that affect their survival is adaptation to the local environment. Bees native to a particular area survive better than those imported from other parts of the world. Despite this fact, some beekeepers import non-native bees and use them in their apiaries. Imported bees produce hybrids with bees from surrounding colonies because beekeepers do not control their mating. In consequence, the whole population can change. In some places the native honey bee are endangered by extinction. In order to protect honey bee genetic resources it is important to be able to effectively discriminate subspecies (geographic races). This task is, however, difficult due to lack of reference material which can be used for comparisons of bees from different regions.

One of the methods which can be used for reliable identification of the honeybee subspecies (geographic races) is based on wing measurements. The reliability of this method is similar to identification based on DNA analysis. Moreover, wing measurements have several benefits: they are cheap, fast, do not require expensive equipment and, therefore, can be used by scientists from less developed countries or even by beekeepers or queen breeders.

The main goal of the project is to create a reference data representative for the whole native range of honey bees which includes Europe, West Asia and Africa. Furthermore, the role of various environmental variables on size and shape of honey bee wings will be studied on the large scale in order to determine local adaptations. The project goals will be achieved through aggregation of honey bee wing images from large number of earlier studies; the wings will be measured and the obtained data will be integrated into one freely available online database. This will be a very reliable and high-resolution reference for future studies allowing not only comparison between geographic regions but also changes in time related to hybridization between native and non-native bees. The free availability of wing images should also stimulate authors of future studies to make their data freely available as well, which should result in further growth of the database. One of the results of this project will be freely available and user-friendly software for reliable identification of wide range of honey bee subspecies.