

**BUMBLEBEES FROM THE CANARY ISLANDS: MATING EXPERIMENTS WITH *BOMBUS TERRESTRIS* L. FROM THE NETHERLANDS**

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**Summary**

J. Pérez (1895) described *Bombus terrestris* var. *canariensis*. Later Erlandsson (1979) concluded that the taxonomic status should be revalued and he described it as a separate species. Crossing experiments with *Bombus terrestris* L. from the Netherlands show that hybrids of *B. canariensis* queens and *B. terrestris* males produce fertile offspring, as well as the reciprocal combination (*B. terrestris* queens and *B. canariensis* males). Matings between *B. canariensis* and *B. terrestris* do occur, but with a low success rate compared with *B. terrestris* x *B. terrestris* matings.

Import of *B. terrestris* into the Canary Islands for pollination may lead to hybridisation with the local bumblebee *B. canariensis*.

In view of the biodiversity of bees, this interesting population of bumblebees on the Canary Islands ought to be protected and imports of *Bombus terrestris* should therefore be avoided.

**INTRODUCTION**

For almost a decade bumblebees (*Bombus terrestris* L.) are being used for the pollination of glasshouse tomatoes. (Ruijter A. de, 1997). Glasshouse tomatoes is an important horticultural crop on the Canary Islands.

Only one species of the genus *Bombus* s. str. is known from the Canary Islands (Erlandsson, 1979). Pérez (1895) concluded it was different from *Bombus terrestris terrestris* (L.) and named it var. *canariensis*. Erlandsson (1979), based on his taxonomic study of morphological characteristics, described it as a separate species. Estoup (1996) considered this species status as doubtful.

Import of *Bombus terrestris* L. into the Canary Islands for pollination purposes bears the risk of and hybridisation with *Bombus canariensis* and this may have serious implications for the Island population of this bumblebee.

No data have been published about the hybridisation between *B. terrestris* and *B. canariensis*.

From literature it is known that mating between different bumblebee species do occur but with a low percentage of success. De Jonghe did mating experiments within the genus *Bombus* Latreille s. str. and he reports matings between *B. lucorum*, *B. cryptarum* and *B. magnus*, but no offspring was produced. He did not succeed to get matings between these species and *B. terrestris* (Jonghe, R. De 1982).

In crossing experiments with *B. terrestris* L. from the Netherlands and bumblebees from the Canary Islands we wanted to find out if mating does occur between these bumblebees, if mated queens produce offspring and if the offspring is fertile.

## MATERIAL AND METHODS

Late 1996 we had 26 queens to our disposal, originating from the Canary Islands. We managed to rear 224 queens from this material. The queens were mated with males from *Bombus terrestris terrestris* or with *canariensis* males.

The hybrid queens were mated again with *canariensis* males, and *terrestris* males.

**Mating**

We used the following procedure for mating. Virgin queens are collected twice per week from the colonies and for seven days stored together, apart from the colony in a separate box at 29 °C. The virgin queens are then introduced in mating cages together with a double number of males. During one hour after introduction the mating couples are transferred to another cage.

## RESULTS AND DISCUSSION

The normal percentage of successful matings between *terrestris* queens and *terrestris* males within an hour, is more than 80%. Using the same method the mating success between *canariensis* queens and *canariensis* males was rather low (11%). The mating success between *canariensis* queens and *terrestris* males was somewhat higher but with nearly 25%, it is much lower than the *terrestris* x *terrestris* matings.

Twelve colonies raised from *canariensis* queens mated with *terrestris* males produced 213 hybrid queens. Eight colonies raised from *canariensis* queens x *canariensis* males produced 60 queens.

Hybrid-queens mated with *canariensis* males and hybrid-queens mated with *terrestris* males were again able to produce workers.

Matings between *canariensis* and *terrestris* do occur but the success is much lower than in *terrestris* x *terrestris* matings.

The low percentage of *canariensis* x *canariensis* matings indicates that the conditions during the mating probably differ from the natural conditions.

Hybrids of *B. canariensis* queens and *B. terrestris* males produced fertile offspring, as well as the reciprocal combination (*B. terrestris* queens and *B. canariensis* males).

Import of *B. terrestris* into the Canary Islands for pollination may lead to hybridisation with the local bumblebee *B. canariensis*.

In view of the biodiversity of bees, this interesting population of bumblebees on the Canary Islands ought to be protected and imports of *Bombus terrestris* should therefore be avoided.

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