

Parental care is one of the most successful strategies for providing offspring survival. There are differences in type of care between taxa. There are biparental care, maternal care, paternal care and alloparental care.

Bees of the genus *Ceratina* are suitable model taxon for study of parental care evolution. There is a long time known maternal care and eusociality, in this genus. A species of the genus *Ceratina*, which has biparental care, is introduced in this thesis.

Field experiments were performed from 2011 to 2013 in Podyjí National Park, especially in locality Havraníky heath. Four model species, which are occurring in the Czech Republic, were selected: *C. chalybea*, *C. cucurbitina*, *C. cyanea* and *C. nigrolabiata*. Artificial nesting opportunities were installed to the field site. Relationship between individuals in nests of *C. nigrolabiata* was examined by newly developed microsatellite loci.

All studied species are solitary in nesting behavior. Their nest structure and nesting phenology is described.

Guarding of full brood nest to adulthood of offspring is characteristic behavioral trait for *Ceratina* bees. This guarding is essential for offspring survival. Experimental nests with removed mother often failed by ant predation, parasitism by chalcid wasp and nest usurpation by other individuals of the genus *Ceratina*. Strategy of facultative abandonment of full brood nest was discovered in species *C. chalybea*, *C. cyanea* and *C. nigrolabiata*. This nesting strategy has never been reported for bees of the genus *Ceratina*.

Female abandonment of nest had strong negative effect to offspring survival in *C. chalybea*. On the other hand, benefit of abandonment can be opportunity of founding a new nest immediately after provisioning of the first one. Biparental care was discovered in *C. nigrolabiata* species. Its male guards entrance to nest to drive away natural enemies. Benefit for male is probably possibility of mating with female. A nest has not been guarded by one male for the whole season – males are changing within the nesting season. Fidelity of males is beneficial for nest productivity.

Genetic analyses show that female mates with multiple males. In one nest there are offspring from 3.85 fathers on average. Guarding male is usually not a father of the offspring, but long-term guarding (more than 15 days) usually provides paternity of some of the offspring in guarded nest.

Biparental care probably originated due to multiple mating of females, because it selected to prolonged male life span and motivates males to female guarding. On the contrary, origin of eusociality is known to arise on opposite mating system, i.e. single mating of female.