



Faculty for Agricultural Science and Food - Skopje



Ministry for Agriculture, Forestry and Water economy of
the Republic of Macedonia



ESTABLISHMENT OF THE NATIONAL BEEKEEPING BREEDING PROGRAM IN REPUBLIC OF MACEDONIA

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Idea & Support

- APICENTAR Training and repro center for beekeeping
- Faculty for Agricultural Sciences and Food - Skopje

- German Technical Cooperation (GTZ) / Macedonia 

- Bee Institute Kirchhain, Germany 

Indications

- Literature

Rihar (1955);

Foti et al. (1965);

Шљахов (1973, 1979);

Ifantidis (1979);

Ruttner (1988).

✓ *Apis mellifera macedonica*

✓ *Apis mellifera carnica*

- Morphometric and DNA (microsatellite) analysis

Naumovski (1996, 2000);

Kiprijanovska, Kolev (2000);

Kiprijanovska, Uzunov (2002);

Uzunov, Kiprijanovska, Andonov (2007);

Uzunov, Kiprijanovska, Kryger (2008).

✓ *Apis mellifera macedonica*

✓ *Apis mellifera carnica*

✓ *Apis mellifera ligustica*

✓ ***Apis mellifera macedonica***

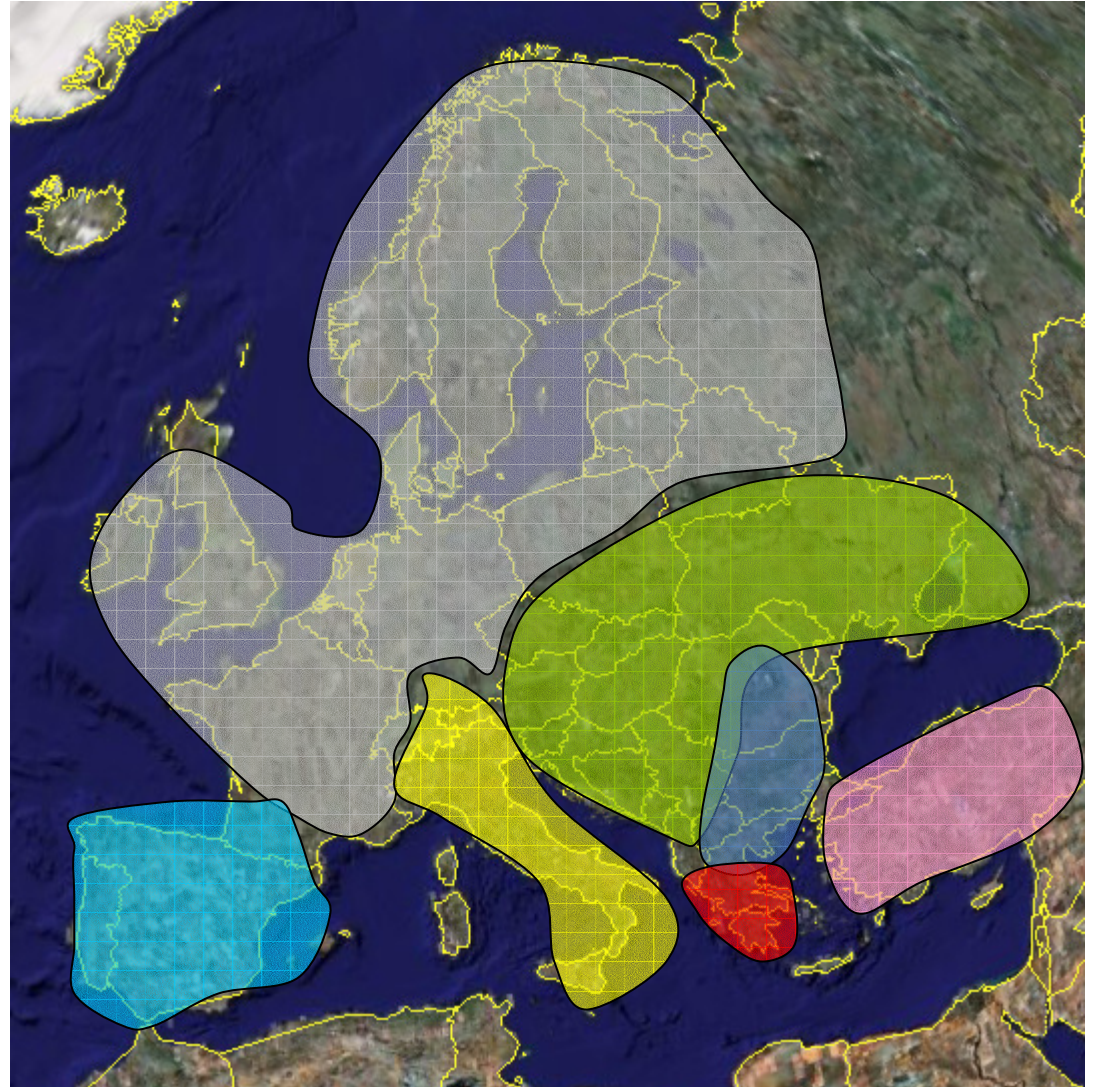
? *Apis mellifera carnica* (25 loci)

Requirements

- Conservation of biodiversity
 - ✓ Determination the native *Apis mellifera macedonica*
 - ✓ Conservation of the native *Apis mellifera macedonica*
 - ✓ Selection and improvement of the native *Apis mellifera macedonica*
- National and EU Legislative obligations
 - ✓ The Law on Animal Husbandry (Official Gazette of RM no. 7 / 15.01.2008)
 - ✓ Common Basic Program for Animal Husbandry (CBPAH)
 - ✓ Rio Convention 1992
 - ✓ Macedonian legislation approximation to EU
 - ✓ COST – COLOSS Action

Apis mellifera macedonica

- *Apis mellifera mellifera*
- *Apis mellifera iberica*
- *Apis mellifera ligustica*
- *Apis mellifera carnica*
- ***Apis mellifera macedonica***
- *Apis mellifera cecropia*
- *Apis mellifera anatolica*



Apis mellifera macedonica

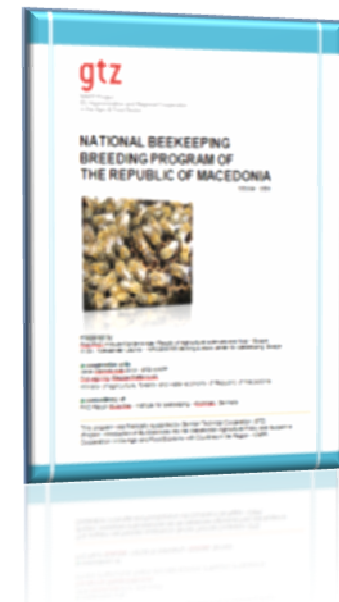
- Behavioral and Morphological characteristics
 - Fragile manifestation/ expression of defensive behavior
 - Feebly expressive swarming behavior;
 - Adaptability to climate conditions during the year
 - Diseases resistance (Low *Nosema* resistance) etc.
- Emersion of yellow pigmentation
- Smaller habitus &
- Longer legs

Characterization of the *A.m.macedonica* population for 17 behavioral, morphometric (+12) and molecular characteristics (52 testing colonies for period of 3 years). PhD thesis.



NBB Program

- Aim of the NBBP
 - ✓ **IMPROVEMENT OF THE BIOLOGICAL AND PRODUCTION CHARACTERISTICS OF THE AUTOCHTHONOUS HONEYBEE (*Apis mellifera macedonica*)**
- Biological and Productive characteristics
 - ✓ Defense behavior
 - ✓ Swarming behavior
 - ✓ Disease resistance
 - ✓ Honey production



NBB Program

- Organization of the Breeding Program

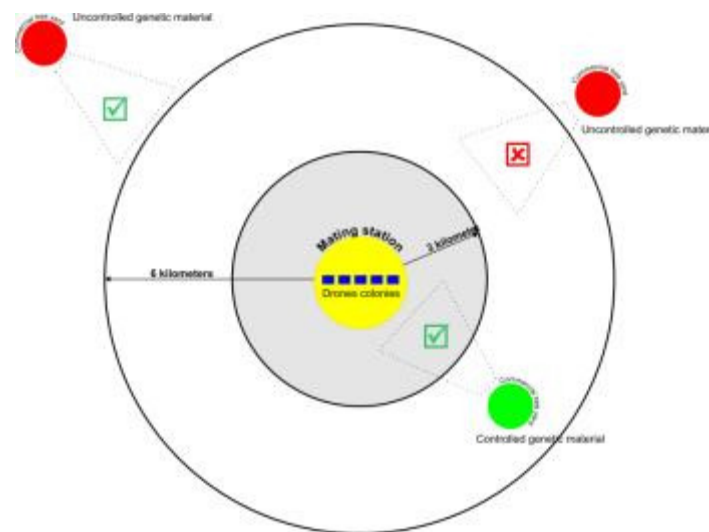
- ✓ MAFWE

- ✓ Genetic reserves (Genetic pools)

- 4 regions (20 km radius)

- without genetic exchange

- beekeepers cooperation (local associations)





NBB Program

- Organization of the Breeding Program
 - ✓ Active breeding population
 - ✓ Breeding station (3 breeding station)
 - ✓ min of 50 colonies
 - ✓ Agri-biotechnical experienced person
 - ✓ Trained staff
 - ✓ Testing station (5 testing stations = 70 colonies)
 - ✓ up to 10 testing apiaries
 - ✓ at list 50 colonies per testing apiary
 - ✓ total of 500 colonies, 250 in annual circle

NBB Program

- Organization of the Breeding Program
 - ✓ Public institution
 - ✓ Gene Bank (FASF & APICENTAR)



- ✓ Mating stations (4 in the genetic pools)
 - ✓ Breeding value (BLUP Animal model)
 - ✓ Other factors, structures and forms



NBB Program

- Monitoring and Evaluation
 - ✓ Zootechnical-veterinarian
 - ✓ Public vet service
 - ✓ Morphometry control
 - ✓ Laboratory under the FASF
 - ✓ Genotypic super control
 - ✓ Cooperation with Slagelse Institute, Denmark
 - ✓ Legal and financial support from the Government
 - ✓ Subsidies etc.

Further Information

- ✓ APICENTAR Training and repro center for beekeeping
www.apicentar.com.mk
- ✓ Faculty for Agricultural Sciences and Food - Skopje
www.fznh.ukim.edu.mk
- ✓ Ministry for Agriculture, Forestry and Water economy of the Republic of Macedonia
www.mawfe.gov.mk
- ✓ Uzunov et al., 2009. **Morphological diversity and racial determination of the honey bee (*Apis mellifera L.*) population in the Republic of Macedonia**
Journal of Apicultural Research (2009 Issue No.3)
www.ibra.org.uk