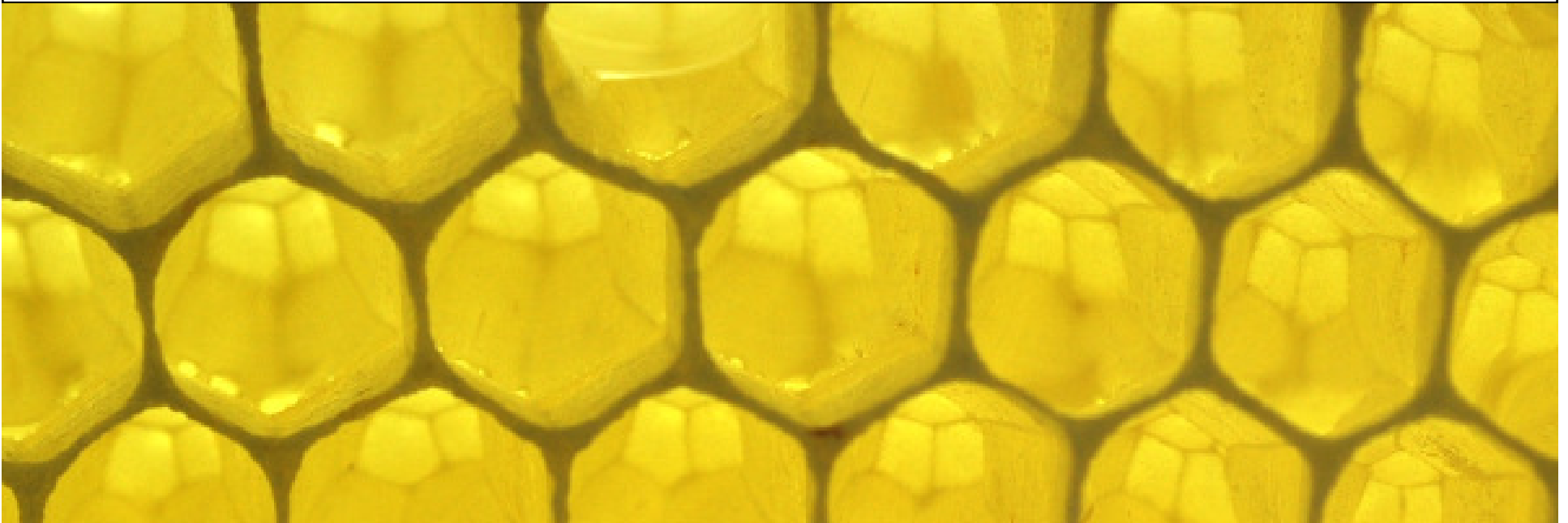


Conservation of native European honey bees

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Honey bee subspecies in Europe



image by Karl Udo Gerth

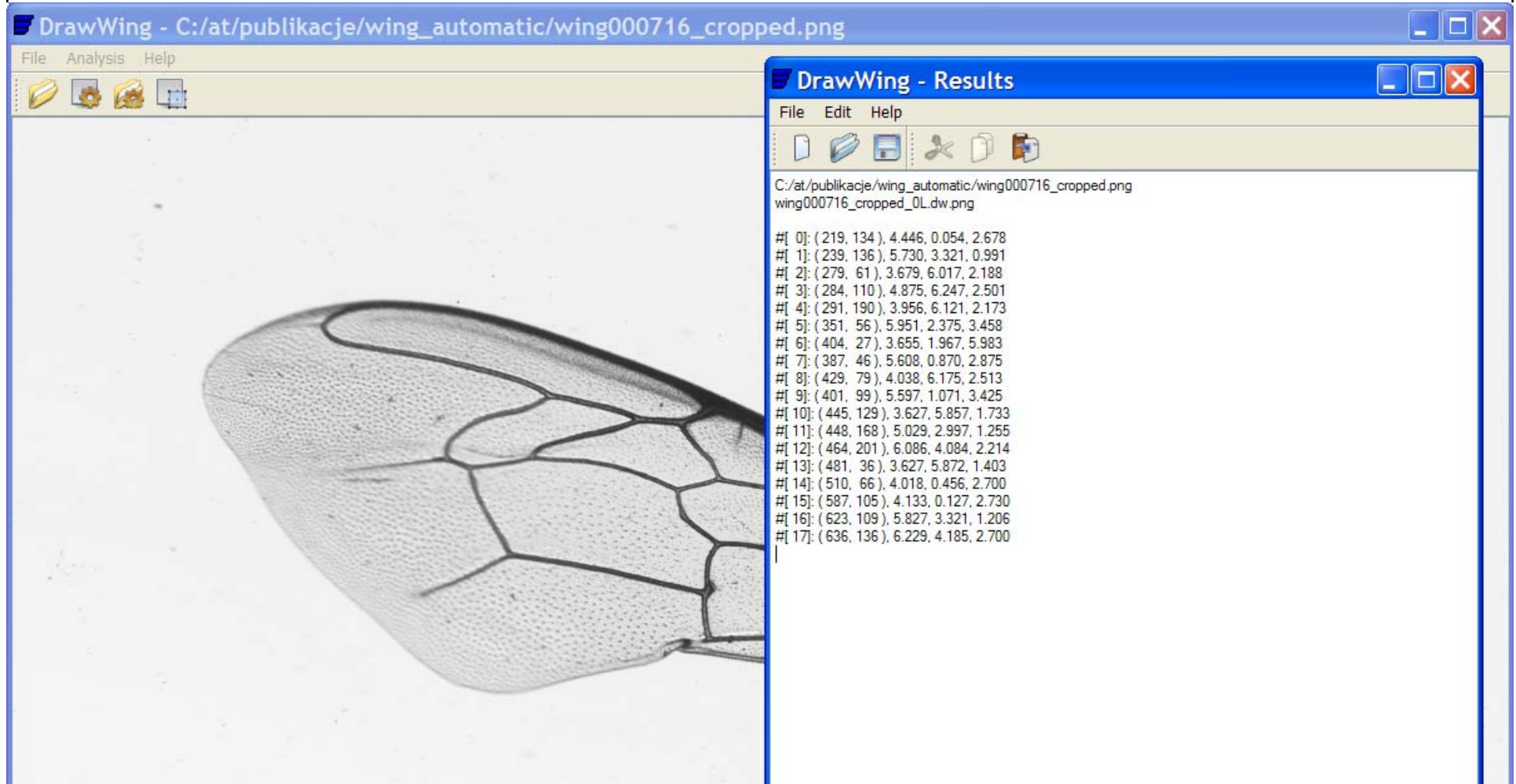
Identification of honey bee subspecies

- Identification based on DNA is expensive
- Morphological differences between subspecies are small
- Identification requires multiple measurements
- The measurements are time consuming



from Ruttner 1988

Computer software can be used for automatic wing measurements



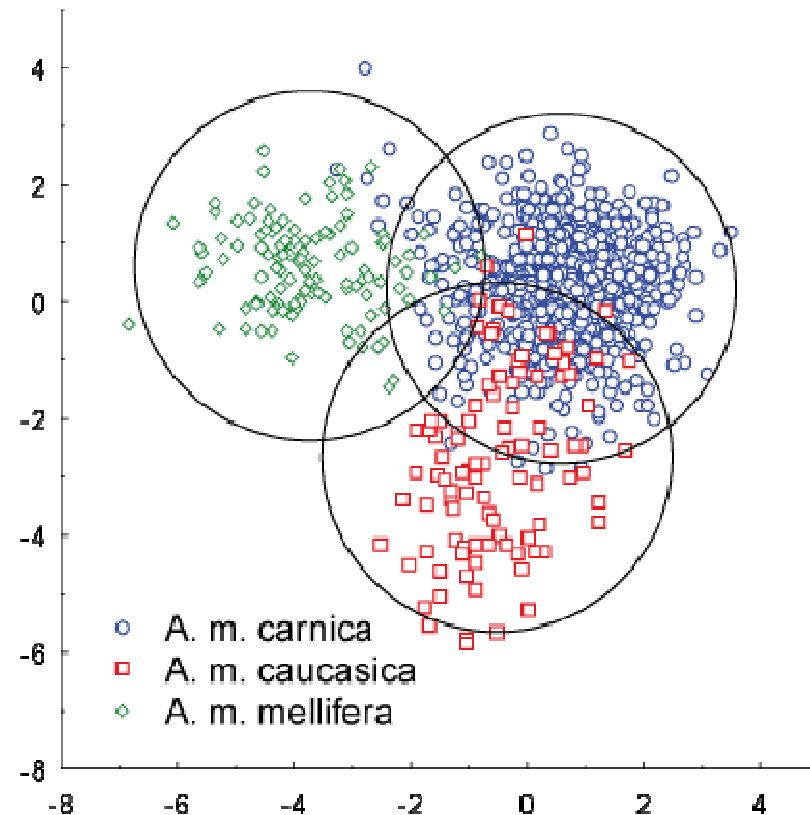
Tofilski A. (2008) Apidologie

Tofilski A. (2007) CRC Press

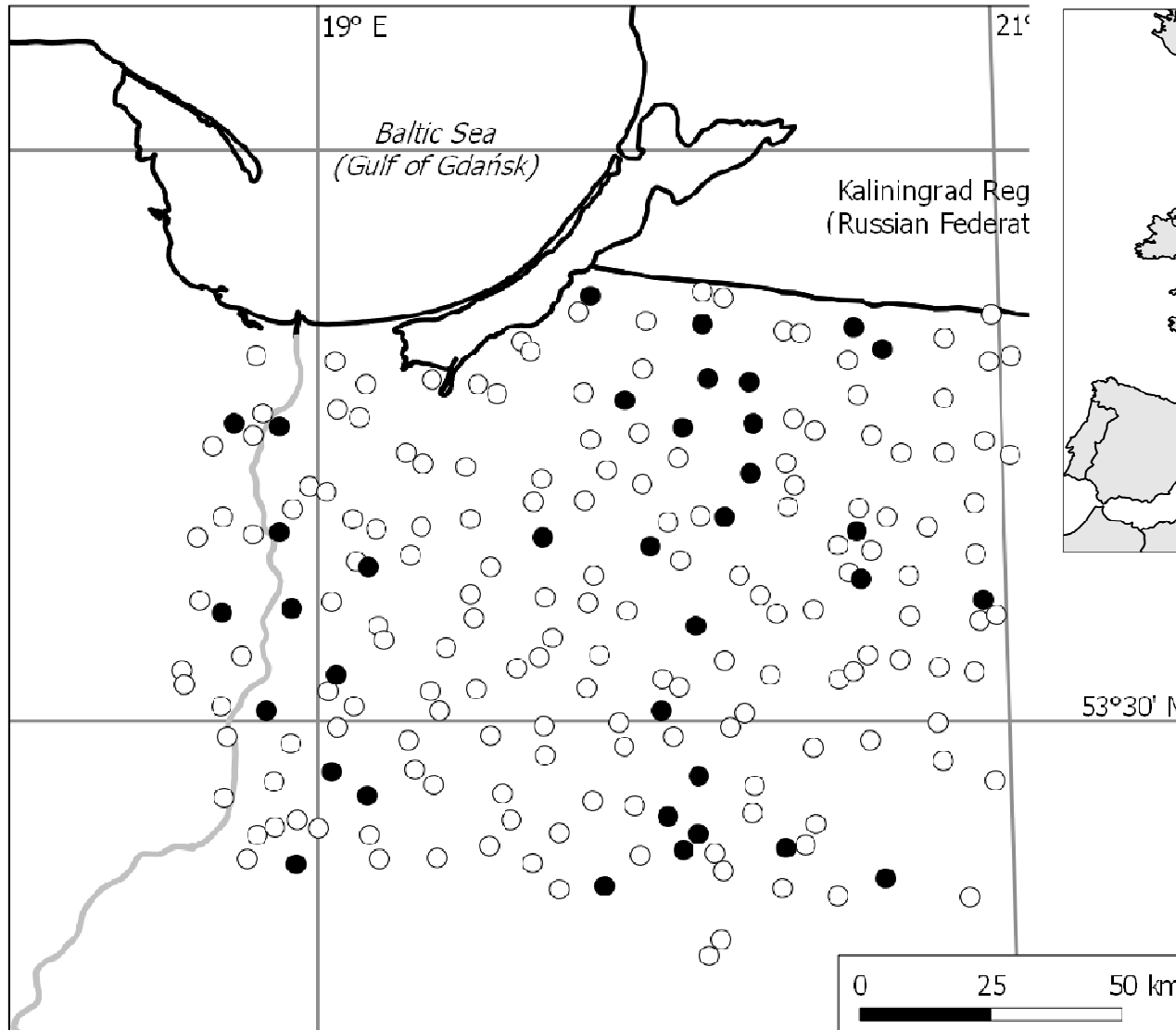
Tofilski A. (2004) Journal of Insect Science

Honey bee queen breeding in Poland

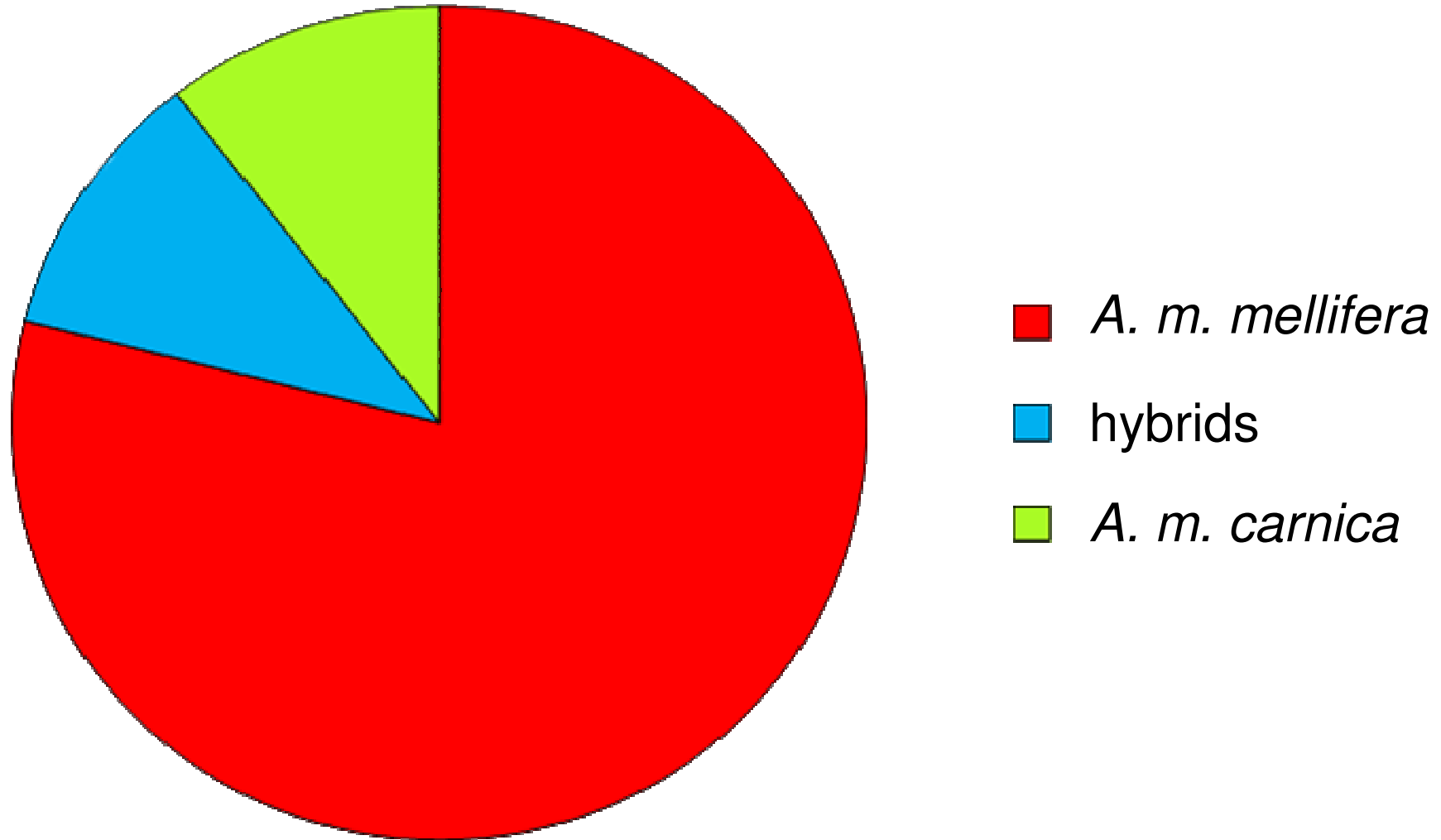
- The automatic wing measurements are used by Polish queen breeders
- The new method is faster and more precise



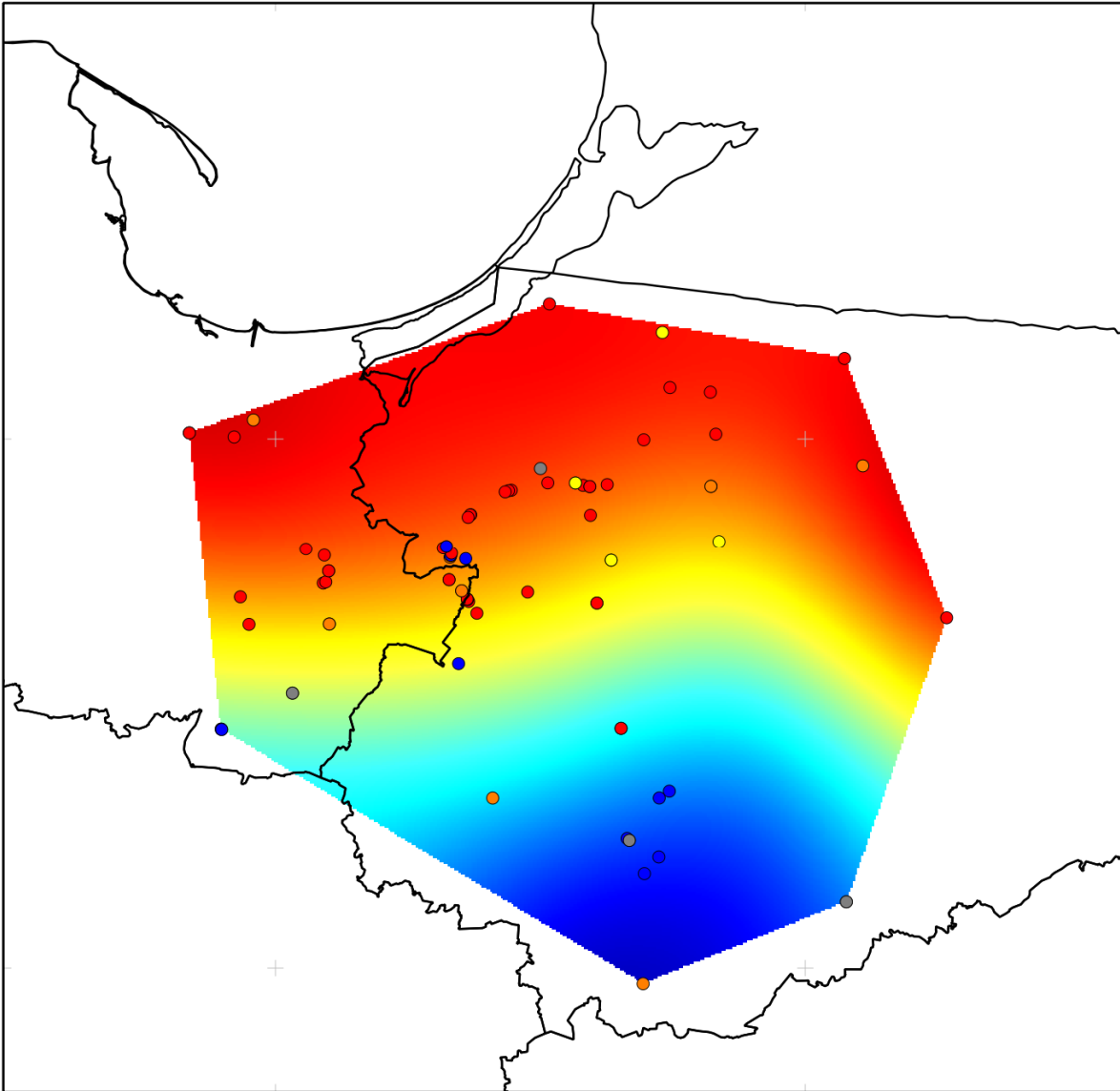
Conservation of *A. m. mellifera* in Poland



Most honey bees in northern Poland are native *A. m. mellifera*



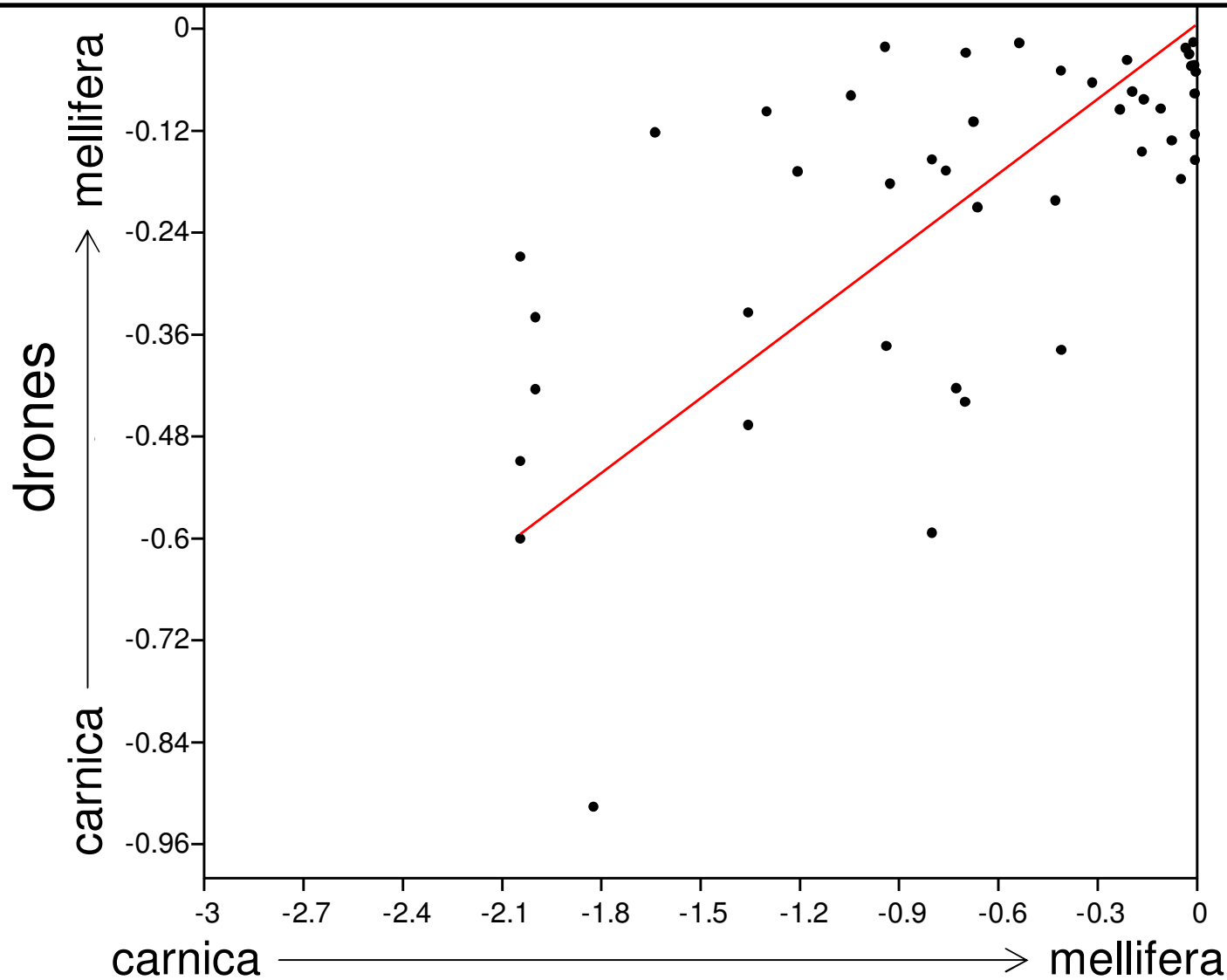
Spatial distribution of subspecies



Further north
there is more
A. m. mellifera
(marked red) than
A. m. carnica
(marked blue)

Oleksa & Tofilski
unpublished

A. m. mellifera queens prefer to mate with *A. m. mellifera* drones



Oleksa & Tofilski unpublished

Feral (unmanaged) colonies were found in avenues of trees



- 45 nests
- 0.3% of all trees
- 1.3% of hollow trees
- density of feral nests
 0.10 nests/km^2

Oleksa & Tofilski (2012) Journal of Insect Conservation

Rural avenues should be protected



- habitat for bees and other organisms
- provide pollinators for surrounding crops
- landscape protection

before



after



Conclusions

- Identification of honey bee subspecies is essential for their conservation
- Measurements of wing venation is fast accurate identification method
- Feral colonies of native *A. m. mellifera* are still present in Europe
- Avenues of trees should be protected as a potential nesting site for bees

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Apicultural Division in Pulawy

