



CONSERVATION OF *APIS MELLIFERA MELLIFERA* IN POLAND

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ABSTRACT

For over 40 years *A. mellifera mellifera* L. has been a protected species in Poland. All the present time, we are running protection programmes, with small changes, naturally. The programmes encompass 4 lines of *A. m. mellifera* L.: Augustowska, Kampinowska, Północna (North), Asta. All lines are covered by similar protection programmes (based on the leading apiary and co-operating apiaries), however only the Augustowska and Kampinowska lines are kept in a system of preservation regions where there are bans on introducing any other colonies.

All projects connected with funding for the Black Bee Protection Programmes were completed in 2013. Their implementation in an unchanged form was prolonged for the year 2014. For the years 2015-2020, conservation of black bees is anticipated within the scientific project: "Fundamental research for biological development in animal production".

Keywords: black bees, conservation, protected area.

INTRODUCTION

For over 40 years *Apis. mellifera mellifera* L. has been a protected species in Poland. All the present time, there are running protection programmes. In Poland *Apis mellifera mellifera* occurs in 4 lines: Augustowska, Kampinowska, Północna (North), and Asta

all of which are covered by similar protection programmes (based on the leading apiaries and co-operating apiaries), however only the Augustowska and Kampinowska lines are kept in a system of preservation regions where there are bans on introducing any other colonies (figure 1).

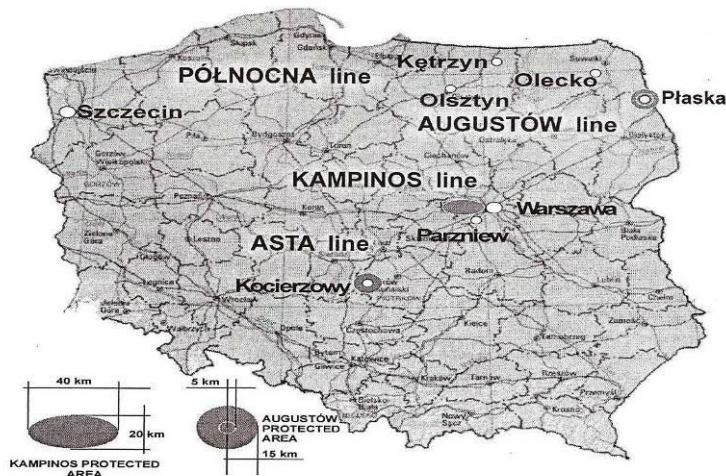


Figure 1. Protection populations in Poland [Troszkiewicz, 2008].

Augustowska *Apis mellifera mellifera* is kept in Augustów Old Virgin Forest, which covers approximately 11.000 km² of territory bounded by a lake in the north and rivers in the south and the north-east. The area of the forest is circular with a radius of 20 km.

The northern part is predominantly covered with mixed forests: spruce pine and oaks. The middle southern parts of the forest are mostly pine forests. There

are also numerous lakes.

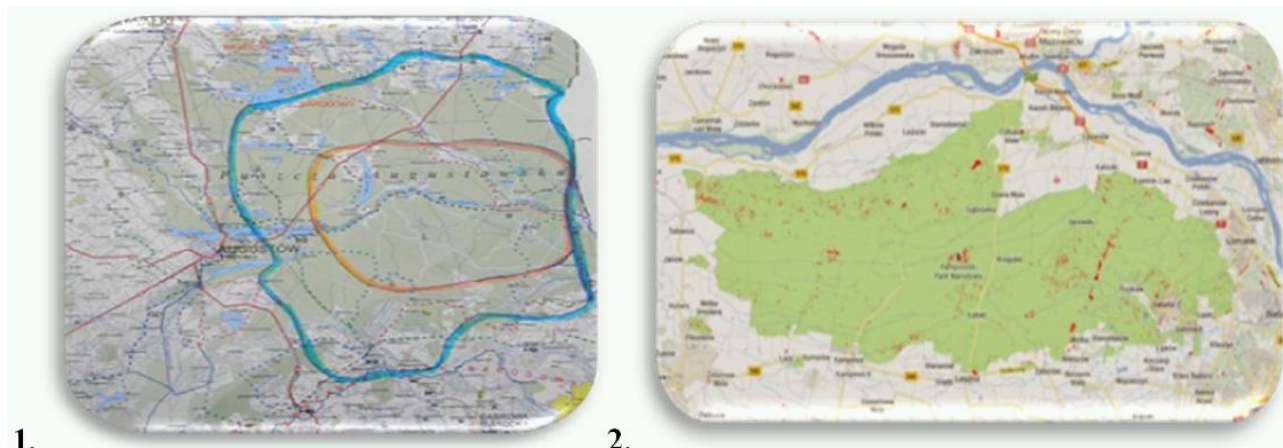
Due to the forest location there is a possibility of introducing a central and isolation zones for protected bees.

Kampinowska *Apis. mellifera mellifera* is kept in Kampinos forest, which is a complex of forests, swamps and dunes on the north-west of Warsaw.

It is limited by the Vistula and Bzura rivers on

the north and west sides. The preservation region is located in the territory of the Kampinos National Park; and has the shape of an extended ellipse spanning 40 km in the east-west line and 20 km in the north-south line.

Two elements of the landscape prevail: dunes (pine forests) and swamps (alder and birch forest and meadows). Augustowska Bee is considered to be *Apis mellifera mellifera* silvarum - forest bee (figure 2).



1. 2.
Figure 2. Two regions in Poland where had saved *A. m. mellifera*. 1. Region Augustów [https://www.youtube.com/watch?v=fAfbYZh5qdo]. 2. Kampinos National Park [http://puszczakampinowska.blogspot.com/2013/11/12-lat-w-puszczy-kampinoskiej-ile-lasow.html].

Due to some differences in the land formation and forestation the organizational aspects of the implementation of the programmes differ.

A central zone of a 10 km diameter was created in the Augustów Forest (Figure2), which, as was mentioned before, has a circular shape. The zone is naturally isolated from a further 10-km isolation strip with a forest area. Due to the existence of the isolation strip, (natural) mating is allowed.

Lack of any natural features that could possibly be isolating factors in the Kampinos area (Figure3) means that the main method of choosing parents is insemination of queen bees in laboratories. There is a possibility of obtaining natural genetic material in both regions, but only after a very strict morphometrical and biological features assessment. The Main method of choosing parents in all programmes is insemination according to a scheme to guarantee the biggest genetic variation.

Polnocna (North Bee) is kept in region not far from Augustowska Bee.

Asta is the oldest line in Poland, selected from 1937. It is kept today in Animals Breeding and Reproduction Centre Ltd. In Łowicz (Central Poland).

The bees show a number of features common for all the protected populations. They winter well and utilise all available flows. They show similar behaviour on combs - they slide down the frames and form clusters. They also dry-cover honey.

What should be noted is the fact that, as an adaptive strategy, they develop later than other breeds due to the specific Polish weather conditions. The population of each colony increases rapidly after periods of recurring cold. They also have a tendency to swarm especially at the end of a honey flow.

However, some differences can be found between the lines. For instance, the Kampinowska bee line is usually slightly smaller, and have a longer tongue than the Augustowska bee line. The latter form smaller colonies which is closely related to lower food consumption especially in the winter.

It should be noted fact that, as opposed to other breeds, the "forest bees" make use of a flow from plants on the forest floor.

The chart presents the structure of the management of the Protection Programmes.

The Ministry of Agriculture supervises the management of the programmes by using the National Animal Breeding Centre (NABC) and National Research Institute of Animal Production (NRIAP).

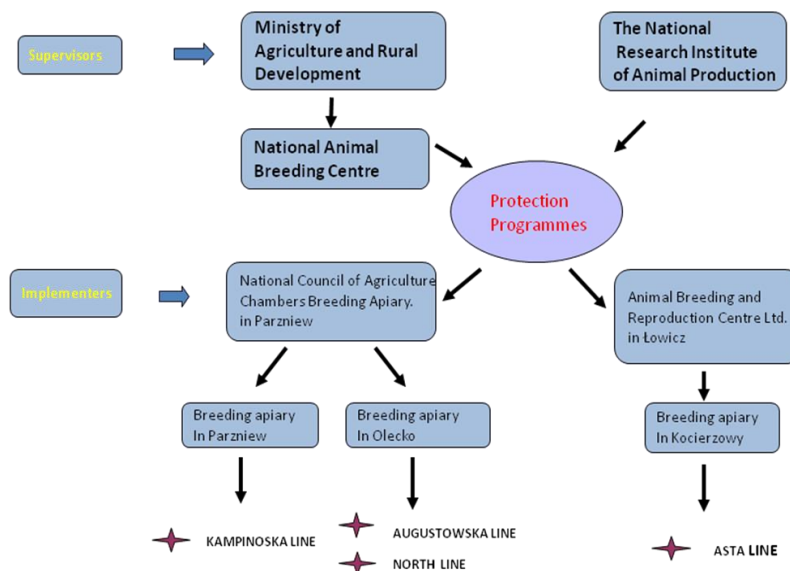
The breeding part of the programmes is supervised by the NABC. Among their tasks is estimating the number of queen bees and registering them in the herd books.

The NRIAP is responsible for the verification of the tasks realization included in the annual schedules, and is involved in introducing any necessary changes suggested by the executors of the programmes.

At the bottom there are the implementers of the programmes namely apiaries directly responsible for the management of the Protection Programmes, as well as the black beelines protected by individual items

The goals of each programme are achieved by a leading apiary assisted by a number of co-operating apiaries. The leading apiaries are responsible for and co-ordinate the implementation of the programmes for the co-operating apiaries.

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Structure of the management of the Protection Programmes.

The number of colonies included in the programmes is shown in Figure 3, however it does not include population in the regions which have not subsidized, and colonies which are included in the programmes but are over the assigned quota.

The estimate number of colonies in the Kampinos region is approximately 600 colonies and over 650 colonies in the Augustów region.

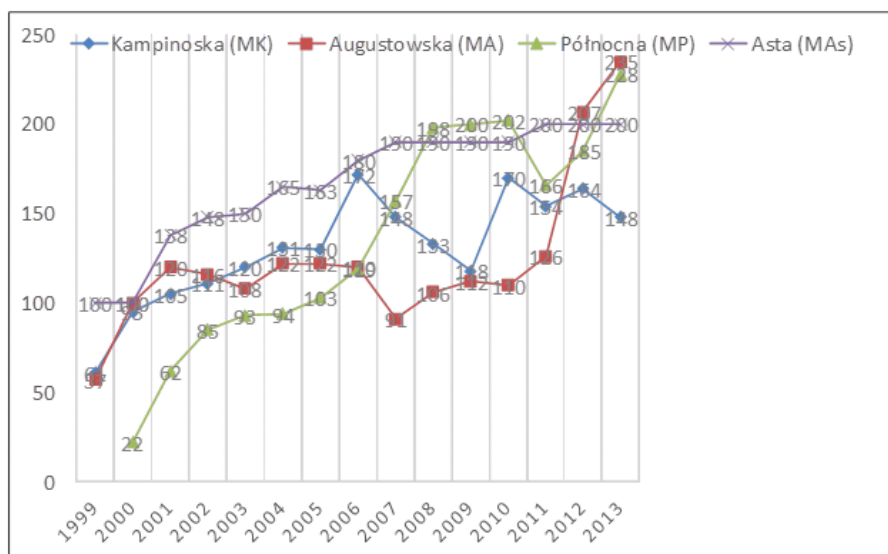


Figure 3. The number of colonies *Apis mellifera mellifera* included in the protected programmes for years 1999-2013 [Polak, Bieñkowska 2013].

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For bees, they comprise four tasks (21-24), two of which concern biodiversity and variability analysis within bee populations (based on phenotypic and behavioural features, and utility traits). The remaining two concern the analysis of particular black bee lines developmental and adaptative abilities to environmental conditions.

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СОХРАНЕНИЕ *APIS MELLIFERA MELLIFERA* В ПОЛЬШЕ

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АННОТАЦИЯ

На протяжении более 40 лет *A. mellifera mellifera* L. являлся охраняемым подвидом в Польше. В настоящее время мы работаем в программе защиты пчелы. Программа включает 4 линии *A. m. mellifera* L.: Августовска, Кампиноска, Полносна (Северная), Аста. Все линии пчел находятся под сходной защитой программ (основаны на ведущих пасеках и их сотрудничестве), однако только линии Августовска и Кампиноска входят в региональную систему сохранения, где действуют запрет на ввоз каких-либо других пчелиных семей.

Все проекты, связанные с финансированием программ защиты темной лесной пчелы были завершены в 2013 году. Однако их реализация в неизменном виде была продлена на 2014 год. В 2015-2020 годы сохранение темной лесной пчелы предполагается в рамках научного проекта: «Фундаментальные биологические исследования для развития животноводства».

Ключевые слова: темная лесная пчела, сохранение, охраняемые территории.