

# **PROJECT IMPLEMENTATION REPORT POIS.02.04.00-00-0143/16 “THE RETURN OF LYNX IN NORTH- WESTERN POLAND”**

## **I. Introduction**

The project prepared and implemented by the Western Pomeranian Natural Society in cooperation with entities authorized to incur expenses- the Mammal Research Institute of the Polish Academy of Sciences in Białowieża and the Culture Center in Mirosławiec, has received funding under the competition 2.4. in situ or ex situ protection of endangered species and natural habitats, and activities related to the protection of endangered species, priority axis II of the Infrastructure and Environment Operational Program.

Project duration: 01-04-2017 - 31-12-2020.

The project envisages obtaining animals for reintroduction from two main sources:

- from our own lynx breeding in Jabłonowo, based on genetically matched parent pairs
- bring genetically relevant individuals from other breeding centers and, if possible, catch and transport wild individuals to release them in project area

Reintroduction conditions have been specified in the decisions of the General Directorate for Environmental Protection No.DZP-WG.6401.08.10.2017.JR, of 19-09-2017 and DZP-WG.6401.08.20.2019.bp of 11-05-2019. (copies of decisions attached).

These decisions are formulated in a very practical way and allow for a wide range of activities to be carried out in the project.

The most important decision requirements:

1. use only individuals for reintroduction in terms of genetic diversity that do not differ significantly from wild lynx within the Baltic population, implemented using genetic testing of each individual released,
2. release lynx in places with the highest probability of survival for the juveniles, especially in places indicated in the analysis of habitat suitability as optimal for the species.

## **II. Condition of project implementation**

In this Project includes action such as: breeding, quarantine, and adaptation of animals. To implement these tasks we built enclosures for lynx:

- one for founding pairs at Dzika Zagroda in Jabłonowo (in total, there are 4 enclosure for lynx in Jabłonowo with an area of 0.15-0.20 ha),
- four adaptation pens in Dłusko, with a total area of 2 ha located within a 30 ha fence, adjacent to each other, this time semi-open, farm with an area of 60 ha. External fences prevent access of people from outside. In these enclosures in 2016 - 2018 there were lynxes selected by the

European coordinator EAZA (Jochen Lengger, Mag.med.vet., Head of animal care department, EAZA studbook keeper Eurasian lynx) for breeding as representatives of the Baltic population - 4 females and 3 males . For the next 3 breeding seasons, only one male - Orpan, was sexually mature, however it turned out to be infertile and no lynx was born during this period.

The first successful fertilization took place in March 2019, when more males were allowed to breed. Three females were pregnant:

- in Jablonowo, a female Paula gave birth to 3 kittens with cleft palates, and died after a few days,
- in Dlusko- the female Rózia gave birth but did not raise children
- in Dlusko- the female Greta raises her daughter, and both are being prepared for releasing.

In addition to our own breeding, lynxes for the project have been searched for in European breeding centers, not affiliated with EAZA. As it turned out, that small, mainly educational farms all over Europe, have surplus lynx that can be used for the project. We began to import DNA samples from these centers, where lynx were bred and we used the results of these tests to qualify animals for participating in our Project. All lynxes, whose genotype meets the conditions outlined in the decisions of the General Directorate for Environmental Protection, are imported to Poland. After quarantine, learning to take natural food, and training in adaptation pen, the lynxes are qualified for releasing. Each of the individuals who came to the project has differed. Some of the lynxes were very secretive, some careful, some more or less curious. Careful observation of these animals allows us to select lynx for breeding, and which should not be released due to their low level of anthropophobia. These animals who are suitable for reintroduction, have to be secretive, cautious, and avoid contact with humans.

### **III. Genetic qualification of lynx for reintroduction**

IBS PAN Białowieża following procedure conducted in the competition mode, we selected contractors to research genetic samples collected from lynx. Laboratory analysis and genetic calculations are performed by dr Maciej Matosiuk and prof. dr hab. Mirosław Ratkiewicz from the University of Białystok. Genotype analyzes are performed for all lynxes in order to determine their genetic makeup and control genetic variability. The analysis uses the sequences of the mitochondrial DNA control region (mtDNA) and carefully selects reliable 20 loci of microsatellite DNA together with a marker identifying the genetic gender of the animals. These markers have been used successfully, for many years, in the study of lynx from different populations within the range of this species. Scientific publications are available that can be used for genetic comparisons of tested individuals with lynxes from other European and Asian populations. A summary of research, to date, has been presented in the report: "Report on the implementation of the genetic part of the project entitled "Return of the lynx to north-west Poland". Agreement between UwB and IBS PAN in Białowieża no. ZP IBS PAN 08 / Z / 2018 (POiS)). As of 01/09/2019 "(attached). So far 39 individuals have been examined, of which 4 are kittens born in the project (3 dead daughters Paula and son Cleo). Of the 3 adults analyzed (including one dead female lynx; killed by her own brother), they were considered to be different from the Baltic population, and the remaining were qualified for reintroduction.

The authors of the report write:

*1. The genetic pool of lynxes used for the reintroduction program is diverse, which should protect against the effects of inbreeding and guarantee the evolutionary potential for this emerging population in northwestern Poland.*

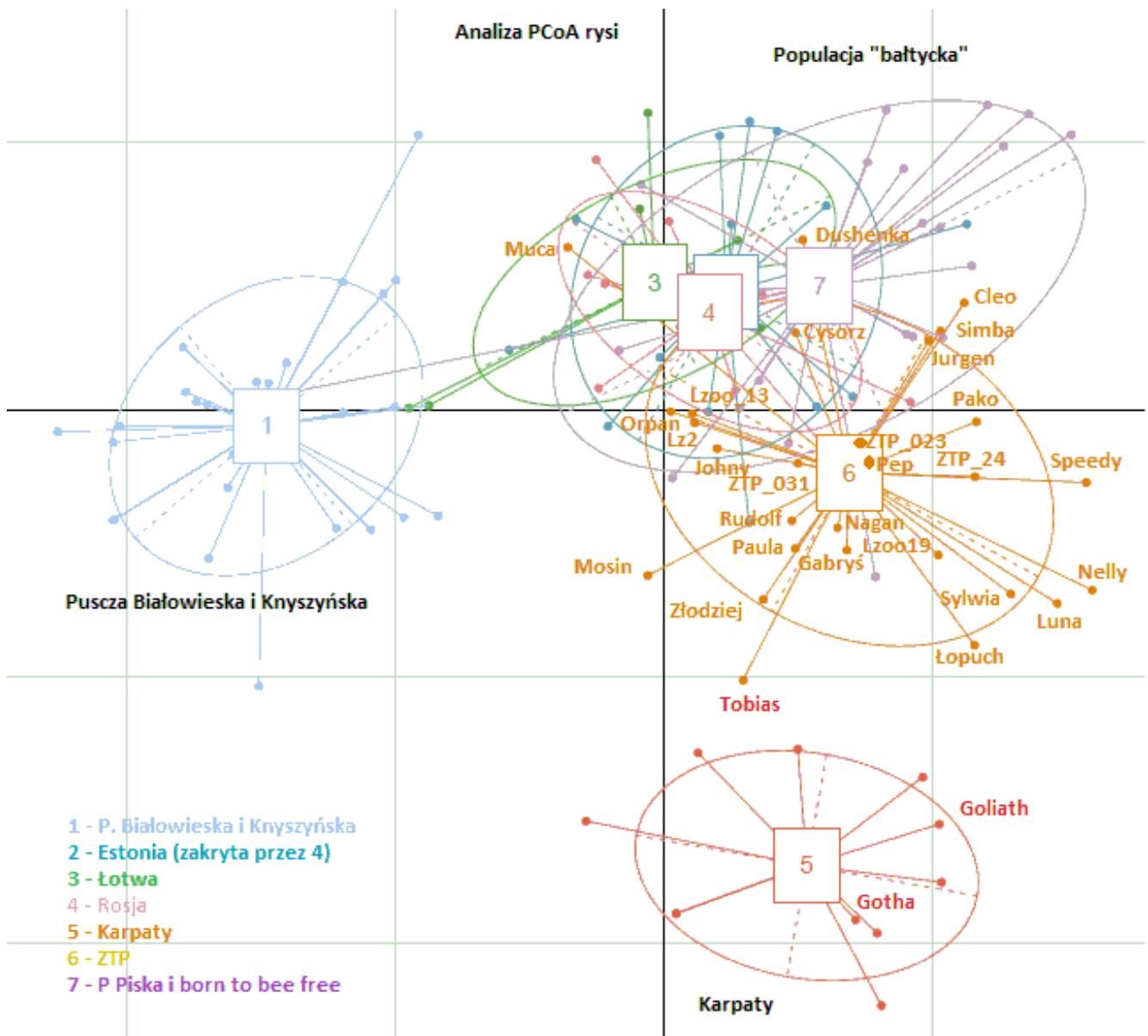
*2. All individuals except Goliath and Tobias are not significantly different from the "Baltic" population. The vast majority of individuals are therefore suitable for mating and releasing into the wild (which proves that they were carefully selected).*

*3. The General Directorate for Environmental Protection requirements are therefore met and the program does not mix genetically diverse populations.*

Figure 1. Results of the PCoA (Principal Coordinate Analysis) analysis performed on lynx genotypes from genetically different populations.

Legend of Fig. 1:

1. Bialowieza Forest and Knyszyn Forest
2. Estonia
3. Latvia
4. Russian
5. Carpathians
6. Western Pomeranian Nature Society
7. Piska Forest and "born to be free" method used



The conclusions are very encouraging. Due to bringing animals from breeding centers, we are able to release a large group of genetically diverse lynxes. This is very important for the later function of the population. The reintroduced lynxes in Western Europe, after a decade from being released, population has been experiencing regression caused by inbreeding. Building a sufficiently large genetic pool in the beginning of the project, will allow them to avoid this danger. The scenario of project implementation, where individuals imported from European breeding centers and not from own breeding, predominates in the group of reintroduced animals. This is a very positive method of operation, because it allows us to obtain a large pool of genes and high genetic diversity at the very beginning.

## IV. Lynxes released to the wild

Until September 2019, we imported 25 lynxes from European breeding centers (9 females, 16 males). After quarantine and adaptation to live in the wild, 18 animals were released. Others remain in the enclosures in Dłusko and Jablonowo, were observed and qualified for breeding or release.

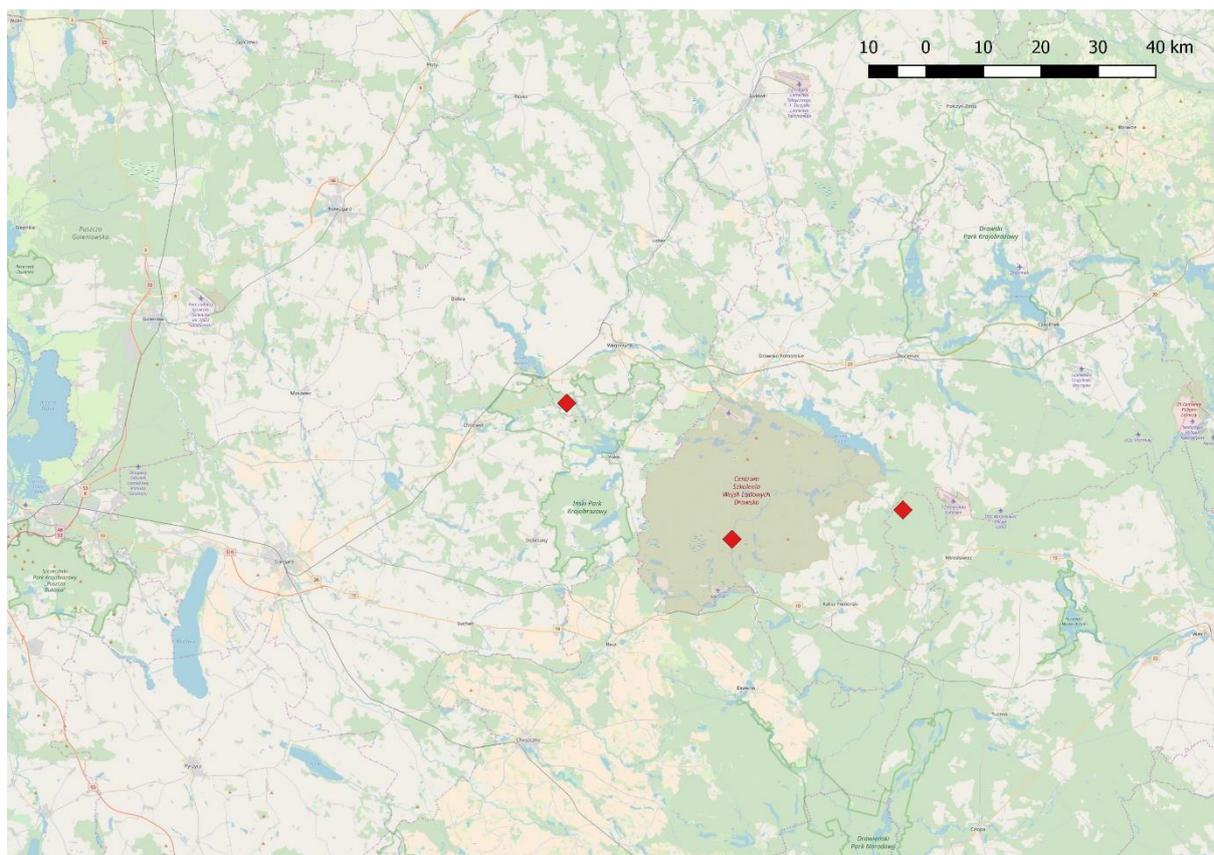
Table 1 presents the list of lynxes participating in the project. In the first part there are specimens remaining in captivity, in the second part there is a list of animals released into the wild.

LP	No.	Name	Sex	Date of birth	Date of arrive	Date of releasing	Place of releasing	No. GPS collar
1.	ZTP 029	Rózia	F	may 2014	15.12.2015			
2.	ZTP 028	Orpan	M	may 2013	08.01.2016			
3.	ZTP 030	Paula	F	may 2015	19.08.2016			
4.	ZTP 021	Sylwia	F	2014	25.06.2019			
5.	ZTP 020	Luna	F	2017	25.06.2019			
6.	ZTP 003	Muca	M	may 2013	24.01.2018			
7.	ZTP 001	Gretta	F	may 2016	13.10.2017			
8.	ZTP 032	Kredka	F	2019	2019-05-23 born in Dłusko			
1	ZTP 027	Cysorz	M	june 2015	19.01.2017	07.08.2019	Dłusko	194-019-010-015
2	ZTP 002	Duszenka	F	june 2013	13.10.2017	19.05.2019	Dłusko	194-018-040-002
3	ZTP 005	Rudolf/Rudy	M	may 2016	04.12.2018	23.01.2019	Dłusko	194-018-040-005
4	ZTP 004	Jurgen/Bies	M	may 2012	09.11.2018	29.03.2019	Dłusko	193-017-003-007
5	ZTP 006	Olza/Osa	M	may 2017	02.02.2019	09.02.2019	Dłusko	193-013-036-003
6	ZTP 007	Pako	M	2018	05.02.2019	16.04.2019	Dłusko	194-019-010-013
7	ZTP 008	Speedy	M	2018	05.02.2019	16.04.2019	Dłusko	193-017-003-003
8	ZTP 009	Cleo	F	2010	19.02.2019	28.02.2019	Dłusko	193-013-036-002
9	ZTP 019	Łopuch	M	2018	22.05.2019	04.06.2019	Mirosławiec	194-019-010-009
10	ZTP 010	Nelly	F	2017	19.02.2019	28.02.2019 / 04.06.2019	Dłusko, Mirosławiec	194-019-010-007
11	ZTP 012	Simba	M	2018	20.03.2019	02.04.2019	Dłusko	194-019-010-003
12	ZTP 011	Złodziej	M	2018	01.03.2019	28.04.2019	Dłusko	194-019-010-005

13	ZTP 022	Johnny	M	2018	28.05.2019	18.07.2019	Mirosławiec	194-019-010-011
14	ZTP 018	Nagan	M	2017	10.05.2019	21.05.2019	Mirosławiec	194-019-010-006
15	ZTP 017	Łapa	M	2017	10.05.2019	21.05.2019	Mirosławiec	194-019-010-004
16	ZTP 023	Dawid	M	2018	02.07.2019	30.07.2019	Mirosławiec	194-019-010-001
17	ZTP 024	Jurek	M	2018	02.07.2019	07.08.2019	Mirosławiec	194-019-010-017
18	ZTP 031	Mira	F	2018	13.08.2019	21.08.2019	Drawsko	194-019-010-018

In 2017, as part of the project POIS.02.04.00-0143 / 16 , there were analysis suitability of environment for reintroduction lynx in northwestern Poland and a forecast of population function. The contractor- IBS PAN Białowieża were selected in the processes of procedure conducted in the competition mode. The elaboration indicated 2 forest locations for lynxes release. It allowed reintroduction animals from adaptation pen in Dłusko, in the commune of Węgorzyno, in the Insko Lakeland. The location of places were released lynxes, showing on map no. 1.

1. From the left part: adaptation pen in Dłusko, Ińskie Lakeland; release pen near river Drawsko Forest District, release pen in Nadleśnictwo Forest District Mirosławiec)



Lynx, before being released to the wild, are quarantined and subjected to acclimatization in a special pen. During this process, they are closely observed by photo-traps, giving us an observation of them in nature. Collected information allows us to qualify them for another action. The adaptation period is varied and adjusted to the behavior of each animal. We are dealing with individuals that only require a short 1-2 week period before they were released to the wild. Other lynxes need longer stay in semi-naturally condition in adaptation pen. The feline hunting instinct is very strong. We supports behavior that lynxes is avoid to people and "feel fear" of humans. During whole process of adaptation, lynxes were feed by natural venison meat in particular from species which are their prey in nature.

Lynx qualified for release in Dlusko are release to external pen, where they are feed up.; then feeding is restricted, lynx leave the pen after 1-4 weeks. In the wild, the first prey obtained usually appears within 3-6 days.

Lynxes intended for release in the Mirosławiec Forest District or Drawsko Forest District are transport to release pen. For several days they are fed in closed, after this period the pen were opened. They were feeding until food is picked up (which is checked using photo traps). The animals start their independent hunt in the first week after left releasing pen.

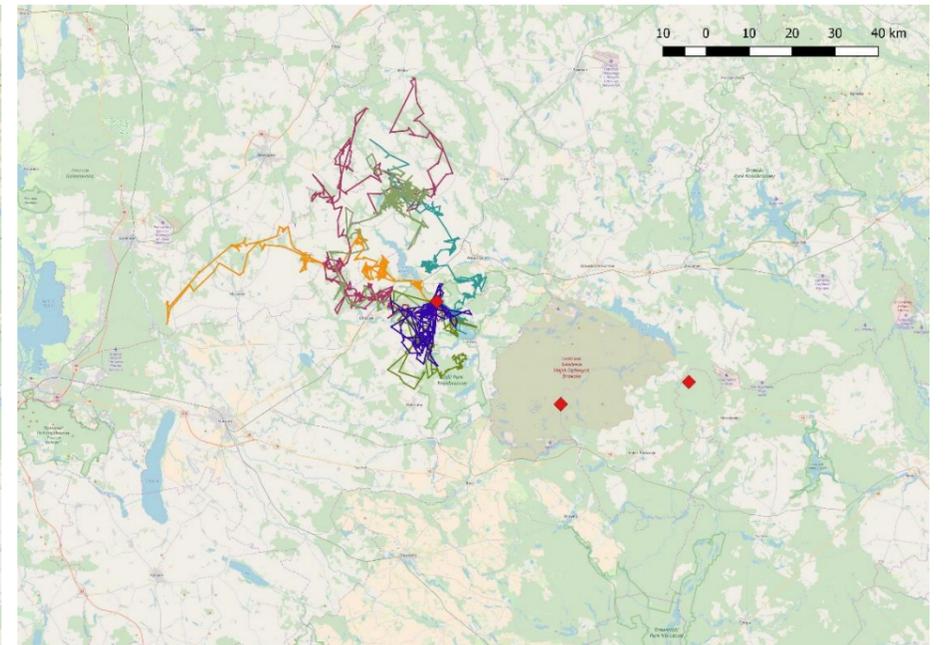
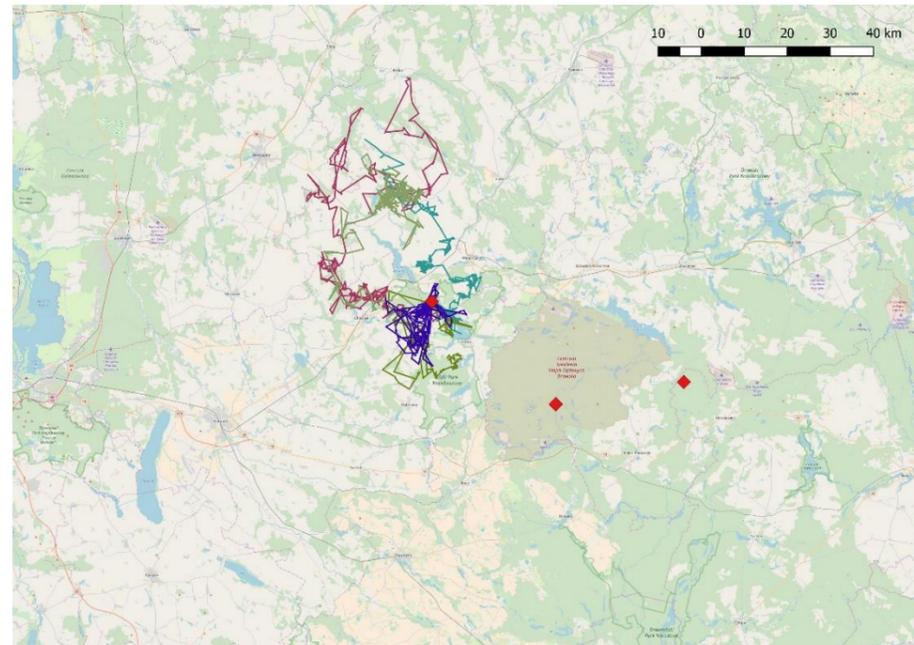
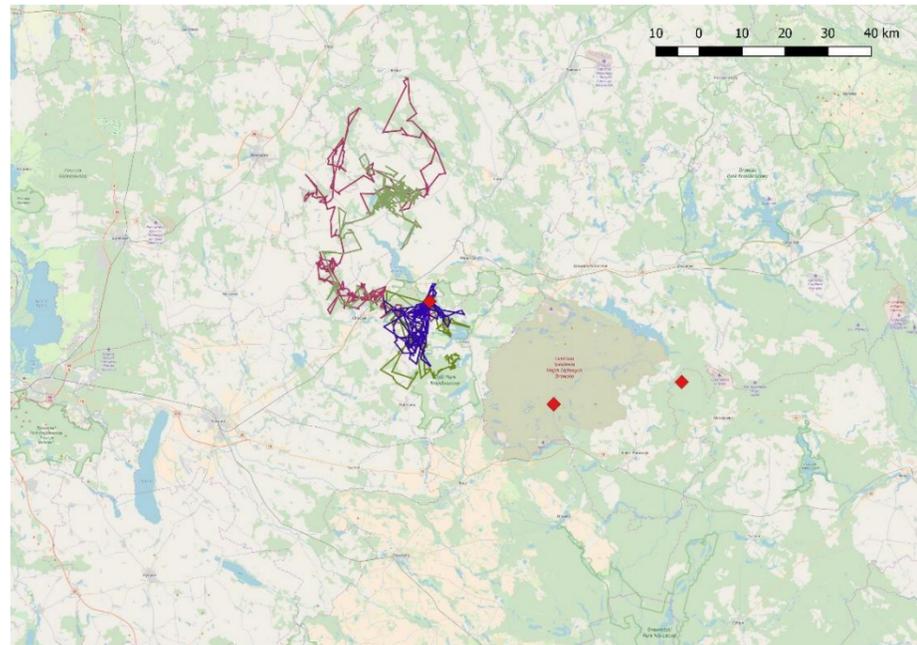
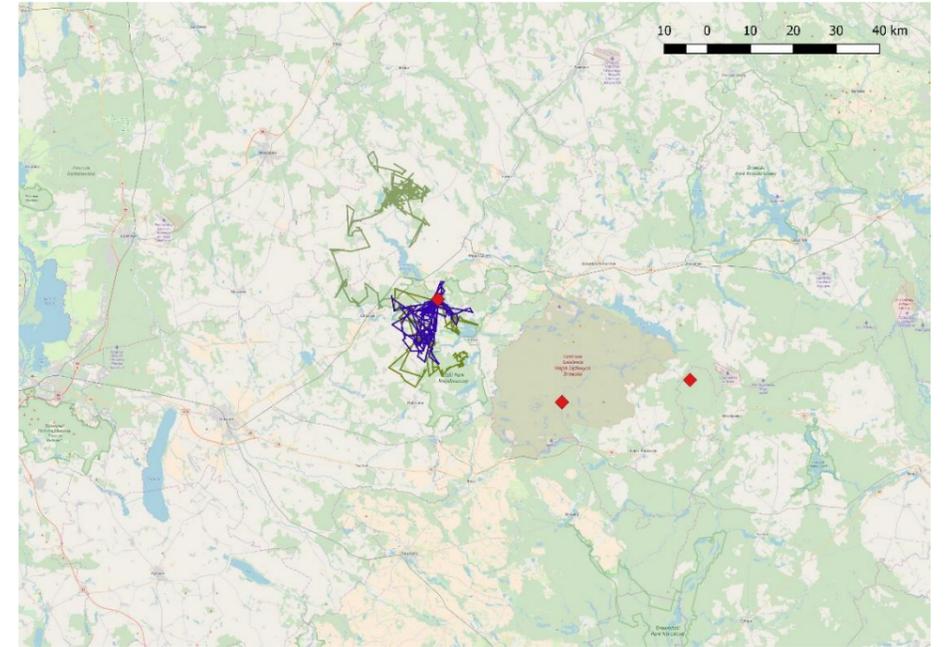
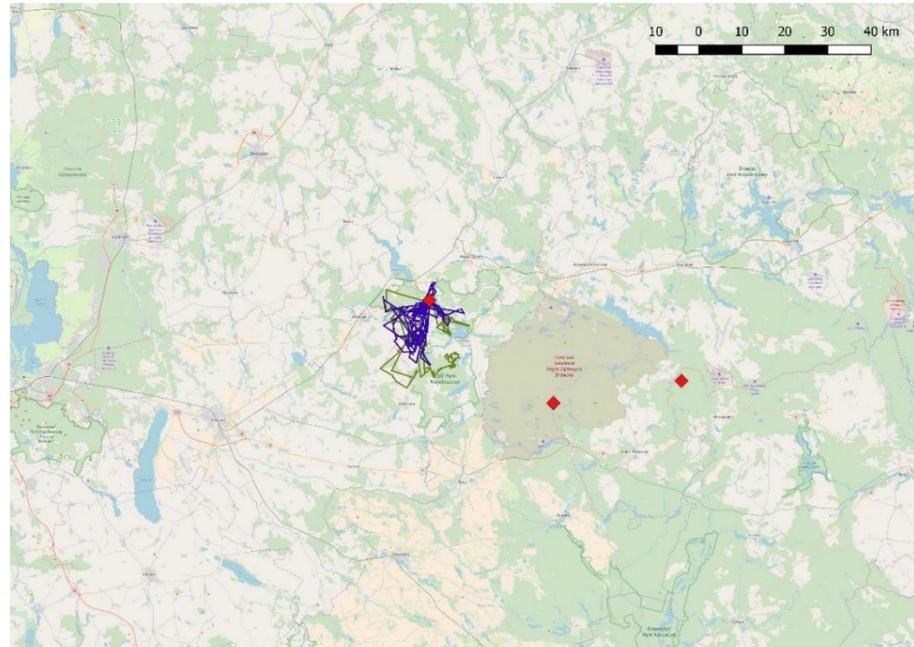
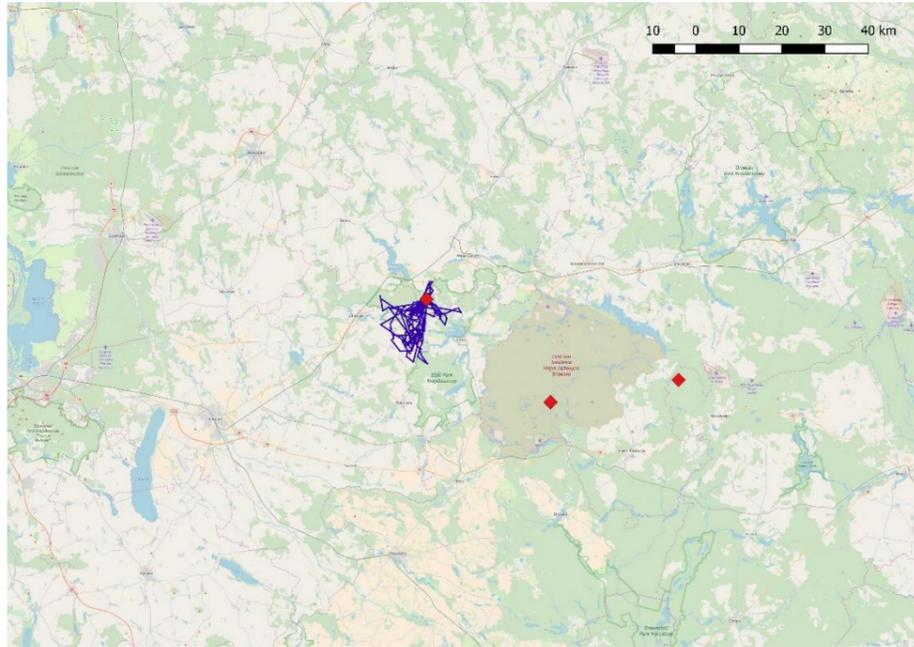
All released lynxes have put on GPS / GPRS / VHF telemetry collars. The devices weigh 280 g. The GPS module will transmit data about a year, while the VHF transmitter will working at least 4 years, we intend to replace the collars in which the batteries used .

Analysis of telemetry data allows with high probability to determine places of effective hunting prey. In the first period after release, we check all the places where preys were obtained to determine the degree of independence of the released animals. In the following months, we control animals basis of telemetry data. We check out every situation where in our opinion, the behavior of animals deviates from the expected standard.

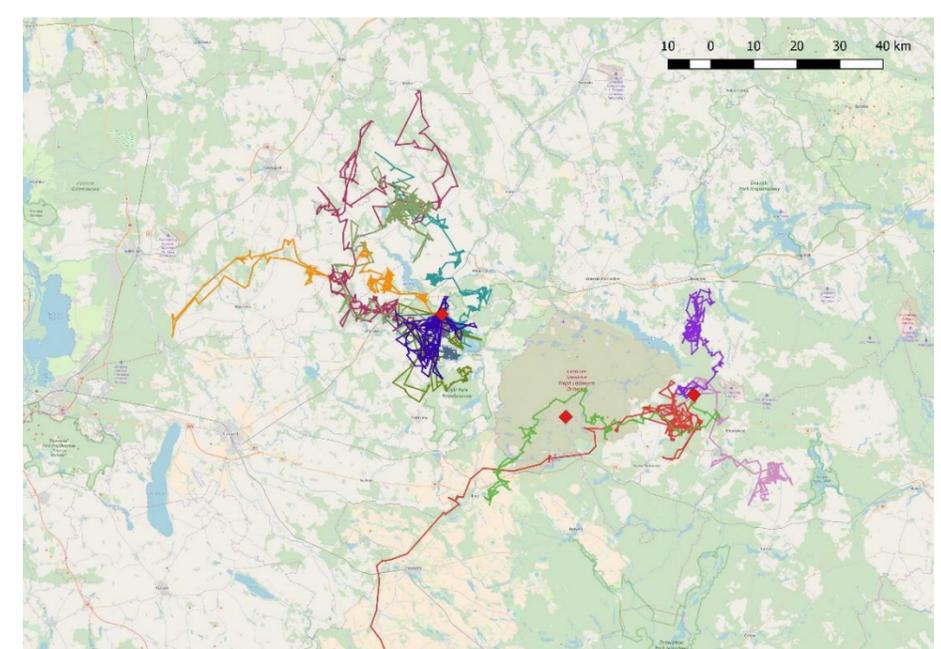
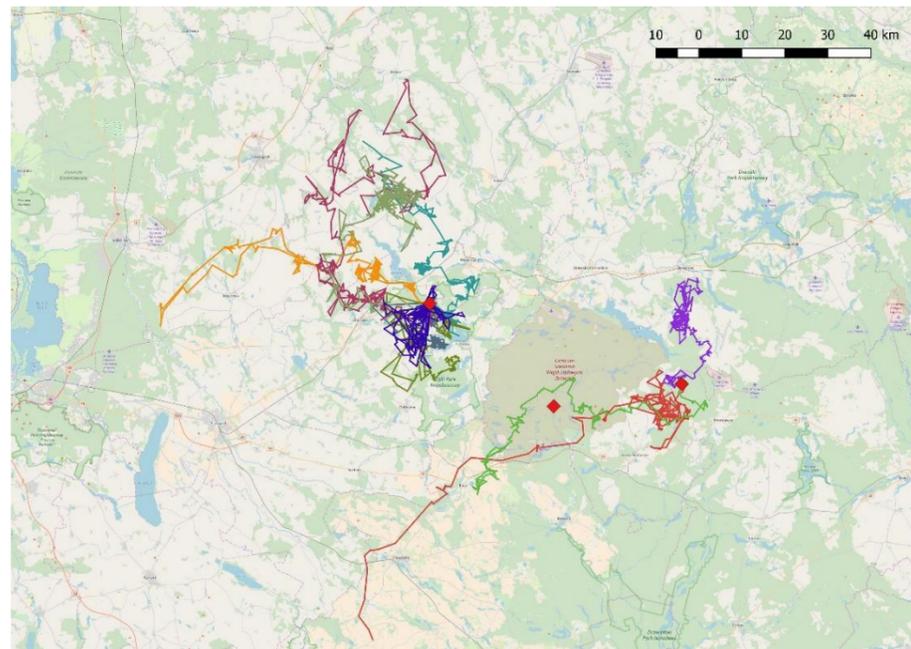
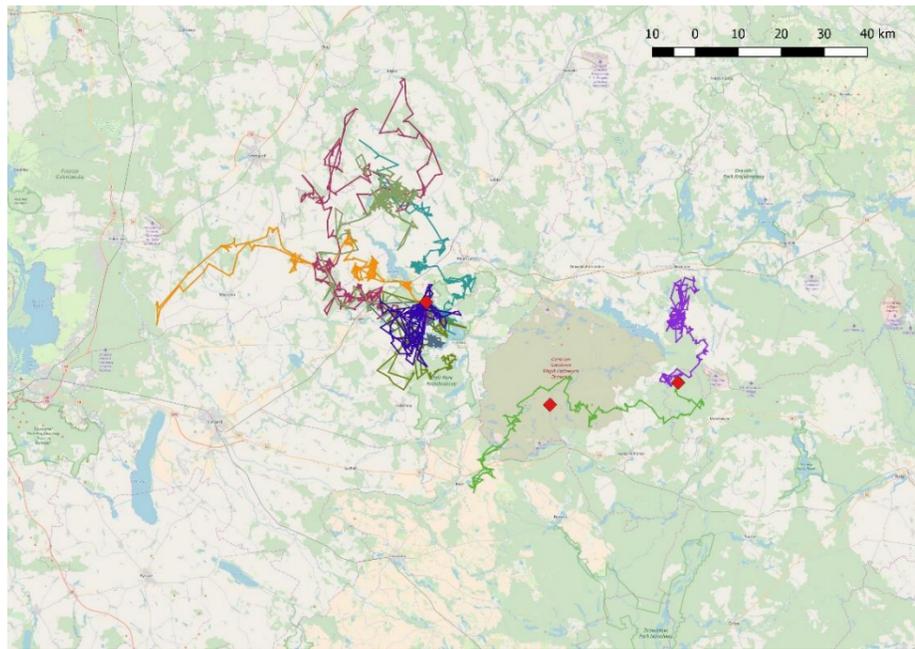
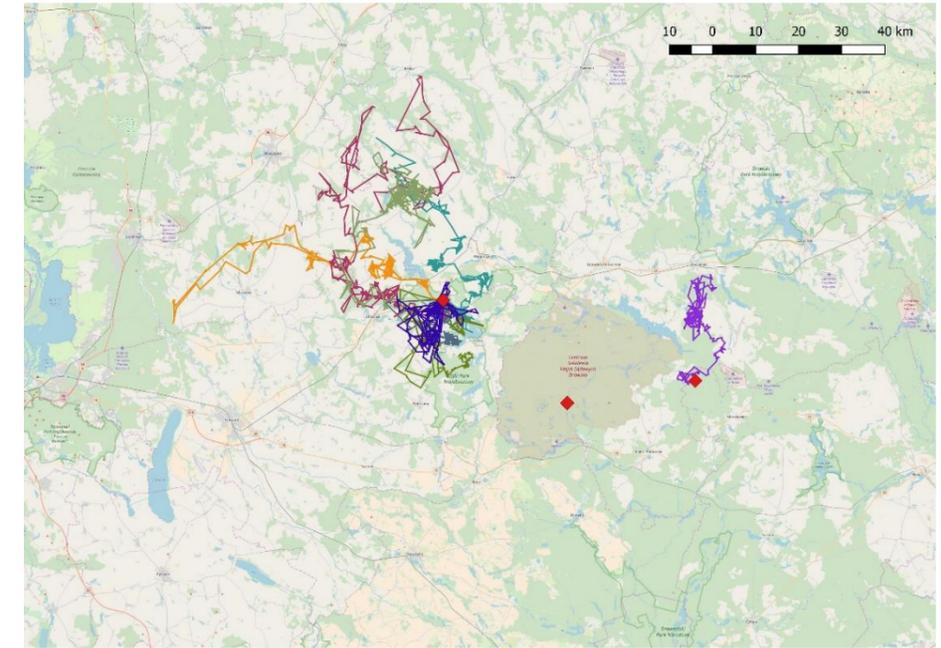
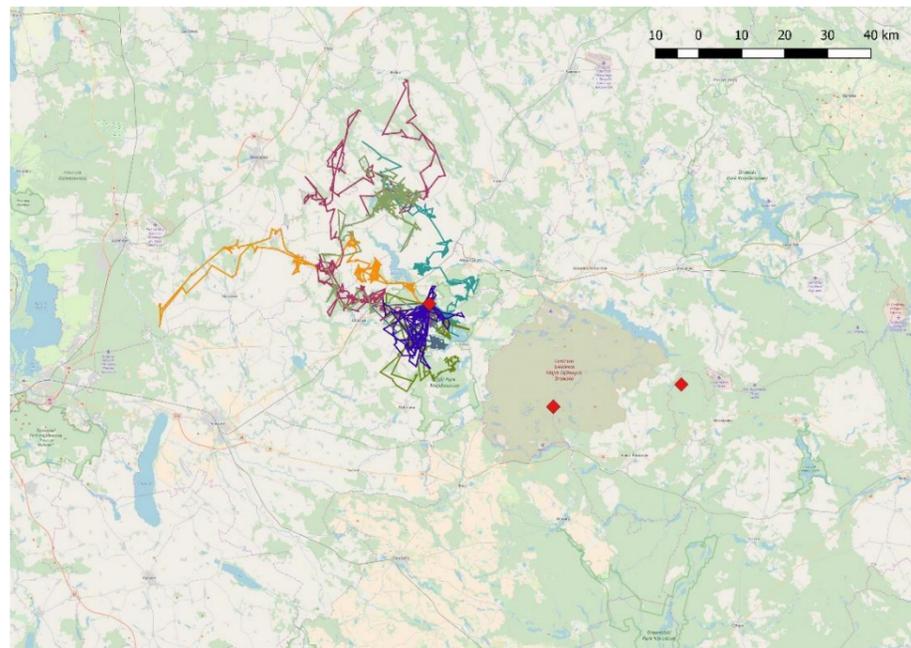
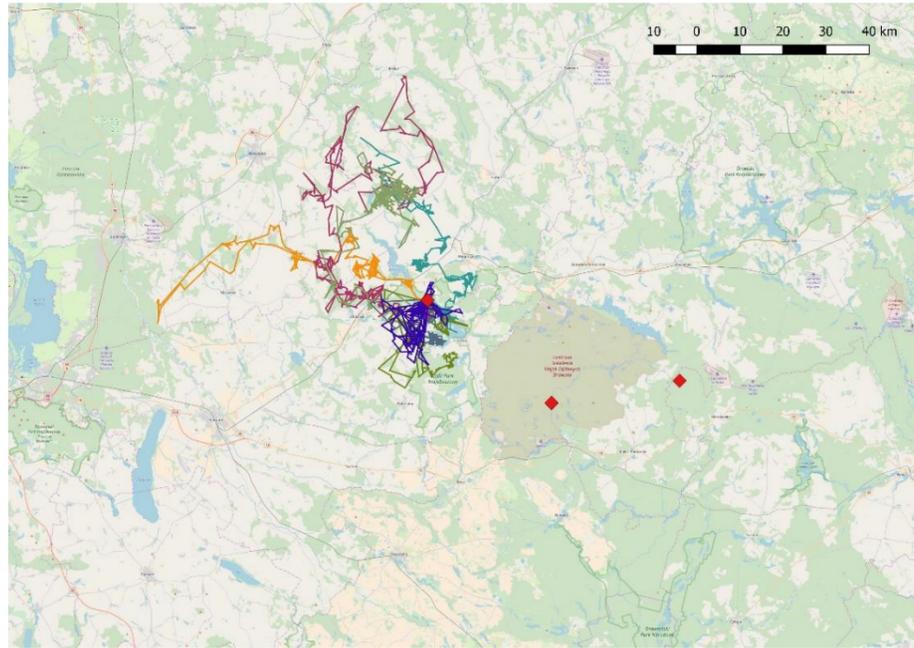
We try to release related lynxes in various locations.

On the maps no 2-19 showed all wandering of released lynxes

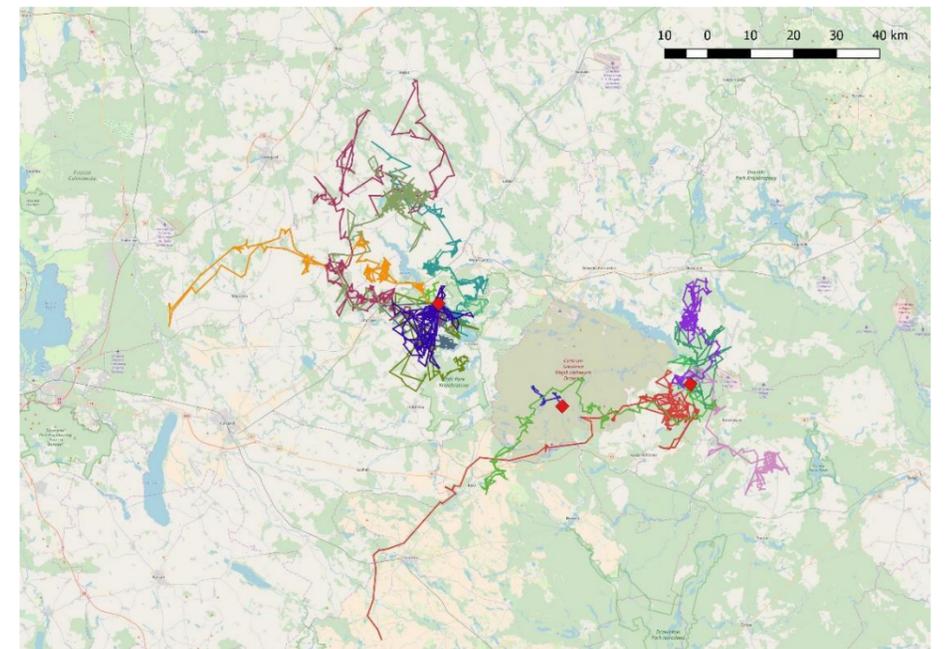
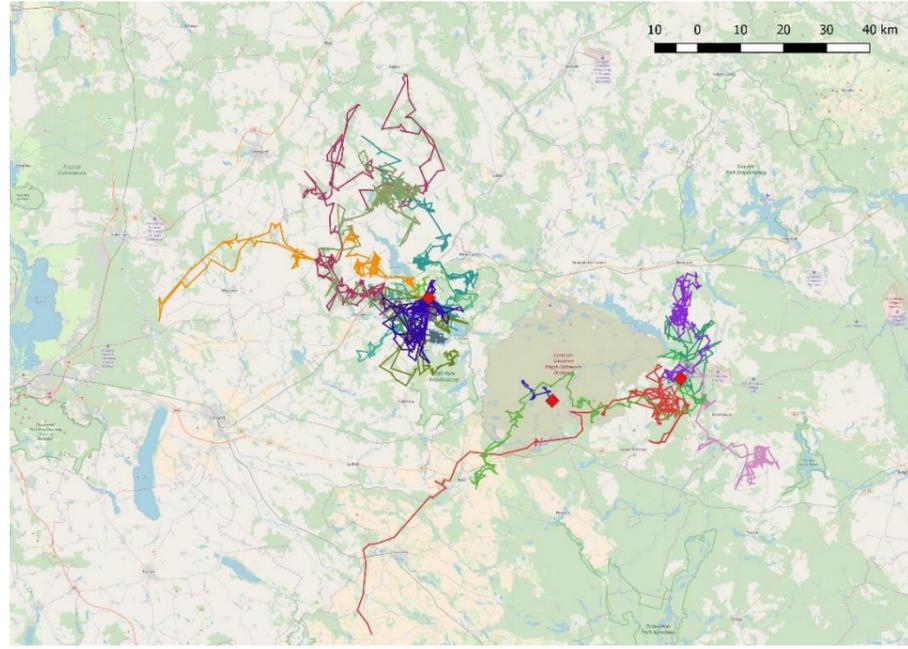
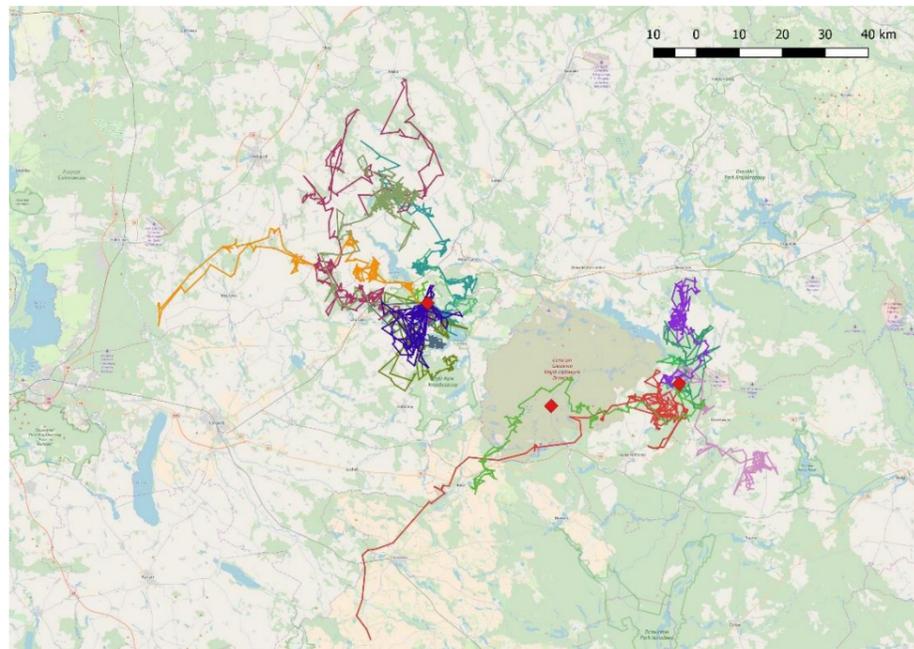
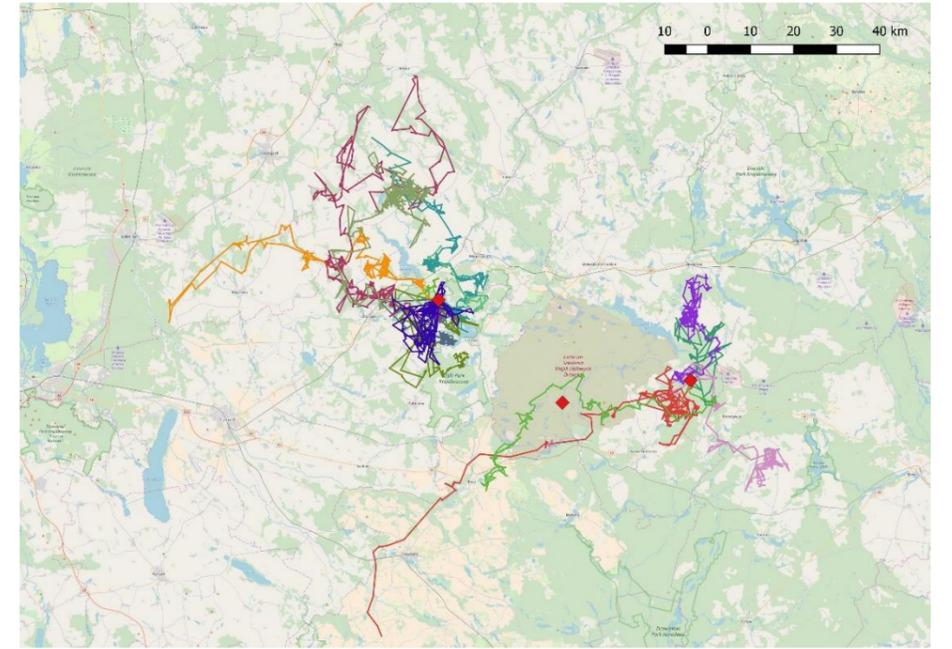
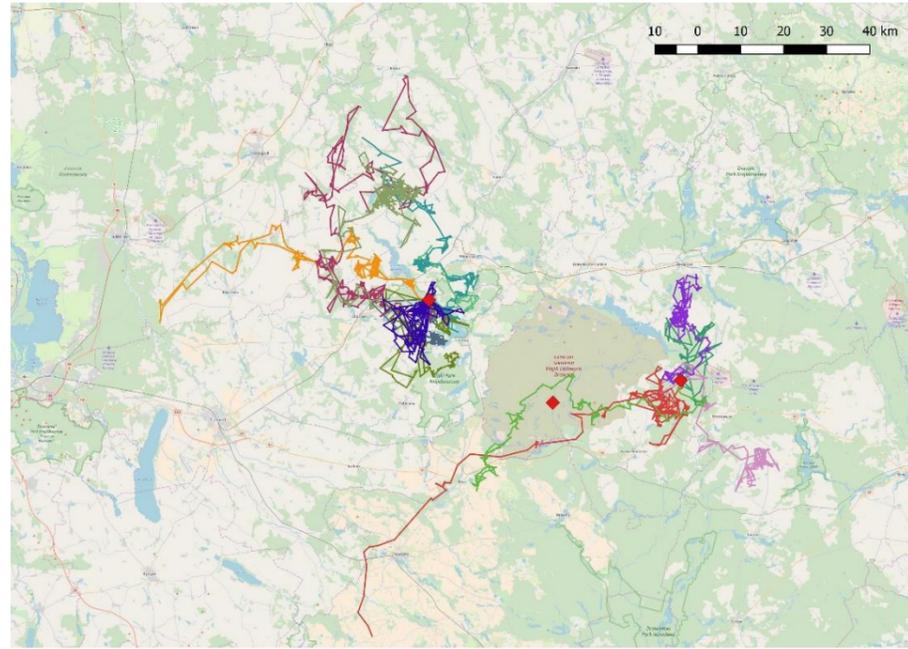
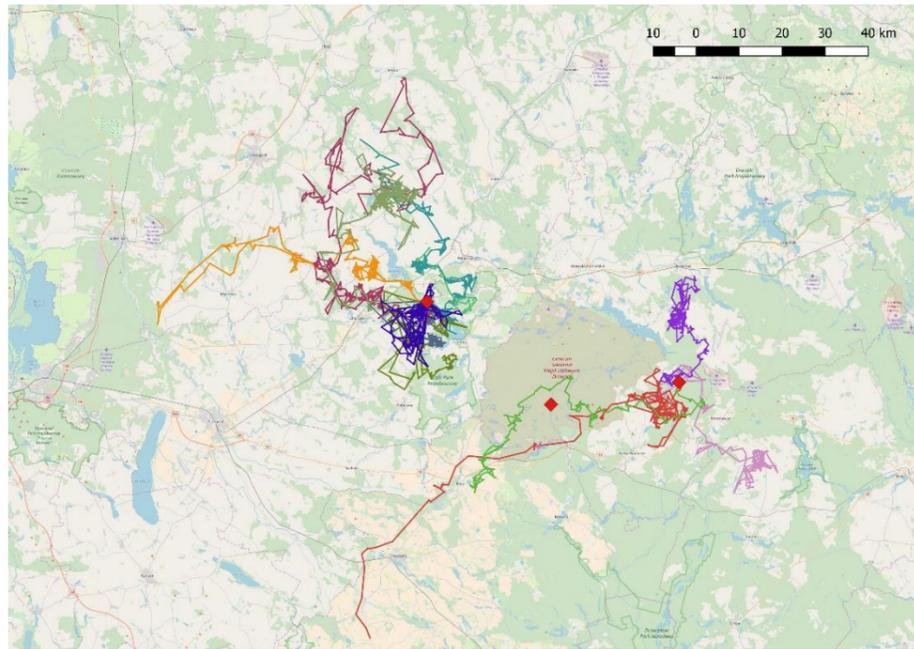
Map no 2 – 7



Maps no 8 - 13



Map no 14 - 19



Lynx clearly diverge from places where released and avoid mutual contacts. We observed, only in oestrus season, after released first lynxes into the wild: Rudy (male) and Cleo (female) visited the same places. After finished estrus period, lynxes remained in different places.

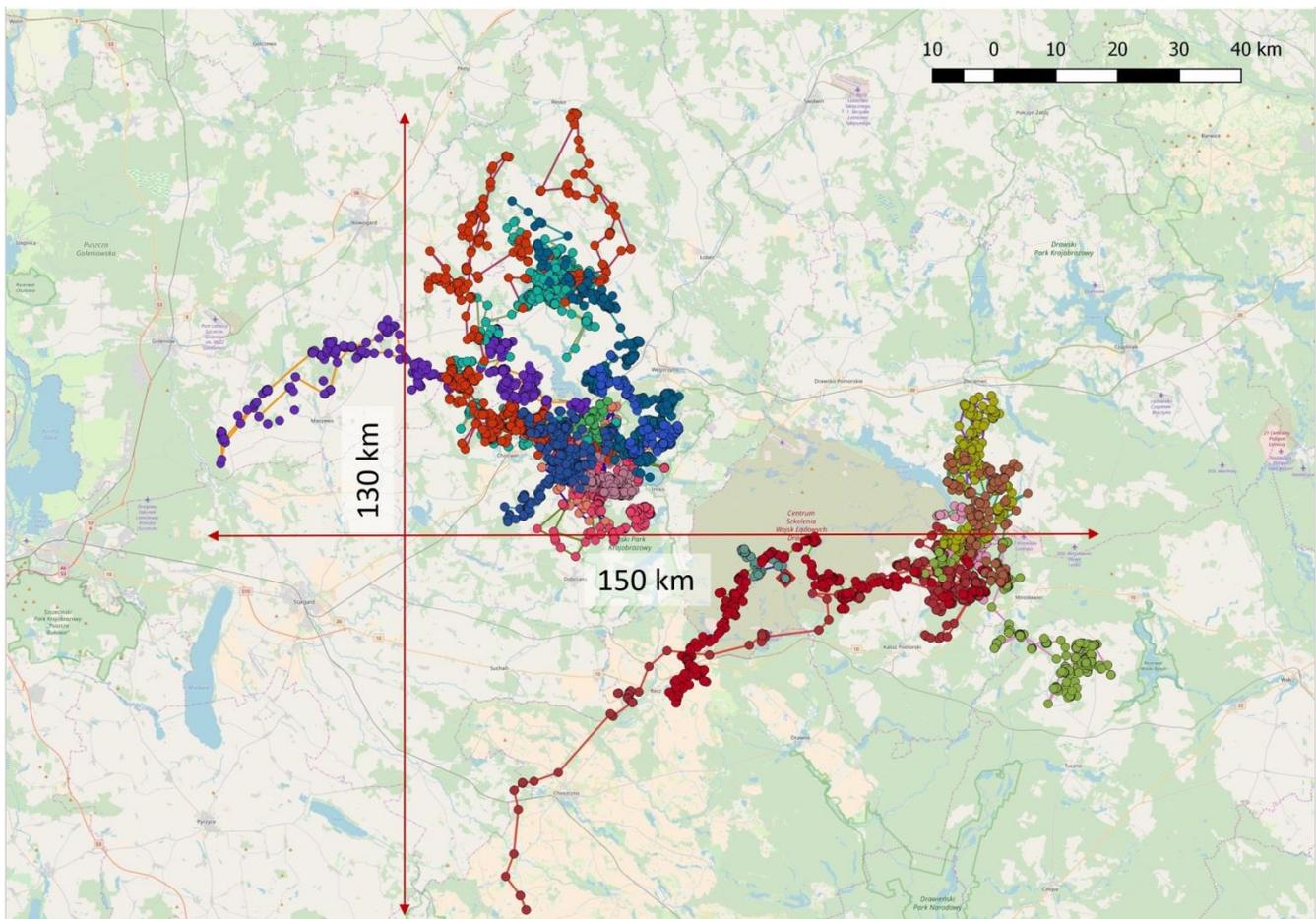
Two released males are dead. Złodziej was found on a railway embankment, but the autopsy showed a gunshot (police are investigating this). Łapa was found in a mid-field clump in a state of extreme dehydration and emaciation, and the autopsy showed intestinal obstruction caused by a ten-centimeter plug of compact hair of victims.

Telemetry data were stopped transmission from two individuals (Rudy, Osa), while in the case of Rudy the collar probably stop working, then Osa is probably dead.

Males take long distances. The Speedy male from the Ińsko Lakeland migrated to the Goleniów Forest, covering a distance of about 50 km in a straight line, then retreated back and settled about 10 km to the release pen. Male Łopuch traveled from Miroslawiec Forest District near Pełczyce and is now also returning. The females occupy the territories much closer to the places of release and move shorter distances.

Map no 20 shows the range of occurrence of lynx released into the wild with the marking of the farthest migrations of Speedy and Łopuch males.

Map no 20 showed range of occurrence of reintroduction lynxes at the end of September.



The first female released (Cleo) in May 2019 gave birth to offspring. It is definitely at least one male (we succeeded to take pictures of one kitten and a genetic hair test showed that it is a male). We received information about Cleo with three young, at this moment we cannot confirm this information. The female raising her young, moves at long distances and often catching prey.

Among the 18 animals released, only one individual - a female named Nelly - began behaving abnormally in the wild (staying in the village). She was caught, which was not difficult thanks to the telemetry collar, she was subjected to the next phase of training, after she was released again. For four months he has been doing well and avoiding contact with people.

We have not noted any cases of lynx attacks on farm animals.

The remaining lynxes transmission data, and noteworthy are distant migrations undertaken by males, but in the south-west, west and north direction.

## **V. SUMMARY**

1. The success of the project depends on the number of animals released, the larger the number, the greater the chances of achieving the target are covered.
2. Genetic tests and animal design qualifications corresponding to the requirements based on genetic evaluation are necessary. Unfortunately, basing on pedigrees is often misleading (two males appear in the project, which according to pedigree data are suitable for the project, and after using genetics it was not allowed)
3. Training animals makes it easier for them to return to nature, sending returns of maladapted drawings to pens and assured mortality.
4. Telemetry collars available assessments of the possibilities of using the measures taken, a significant increase in the effectiveness of the measures taken to resolve conflicts with local communities. Based on telemetry data, we can verify the available knowledge about the species.