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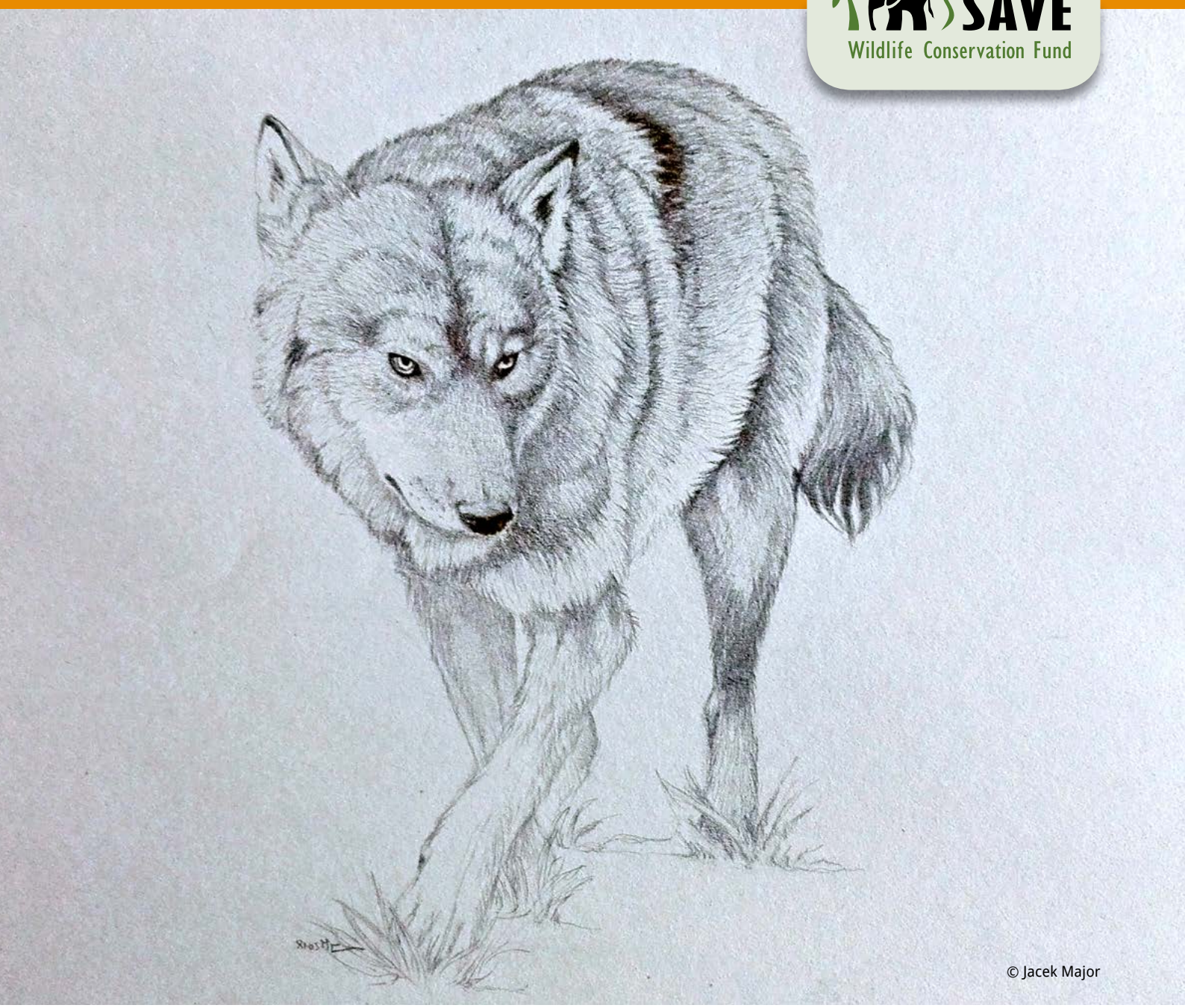

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Wolf research and monitoring

7th interim report - September 2018

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1. Wolf monitoring in the Świętokrzyskie (Holy Cross) Mountains region

Methods and area of monitoring

We continued the systematic wolf survey in the area of about 4500 km^2 situated along the borderline of the Mazowieckie and Świętokrzyskie Provinces (Fig. 1; 50^{0}52'-51^{0}22'N, 20^{0}21'-21^{0}27'E). Mean human density in the area is 127 inhabitants/km^2 (68 inhabitants /km^2 if larger towns of Końskie, Skarżysko-Kamienna, Starachowice and Ostrowiec Świętokrzyski are excluded). Of the area 41% is urbanized and 27% covered by forest.

We monitored wolf presence in 10 forest complexes:
Przysucha Forest (PB, forest districts of Przysucha and Barycz), **Niekłań Forest** (LN, forest districts of Stąporków and Skarżysko Kamienna), **Majdów Forest** (LM, forest district of Skarżysko-Kamienna), **Kierz Niedźwiedzi Forest** (KN, forest district of Skarżysko-Kamienna), **Czarna Konecka Forest** (DC, forest districts of Stąporków and Barcza), **Kołomańskie Hills** (WK, forest district of Zagnańsk), **Świętokrzyska Forest** (PS, forest districts of Suchedniów and Zagnańsk), **Siekierzyńskie Forest** (LS, forest districts of Suchedniów and Skarżysko Kamienna), **Lipie Forest** (KL, forest district of Starachowice, Marcule and Skarżysko-Kamienna) and **Iłżecka Forest** (PI, forest districts of Starachowice, Marcule and Ostrowiec Świętokrzyski). Additionally, we obtained information about wolf presence from **Klonowskie Hills** (PK, forest districts of Suchedniów and Świętokrzyski National Park) and **Ćmielów Forest** (KC, forest district of Ostrowiec Świętokrzyski)

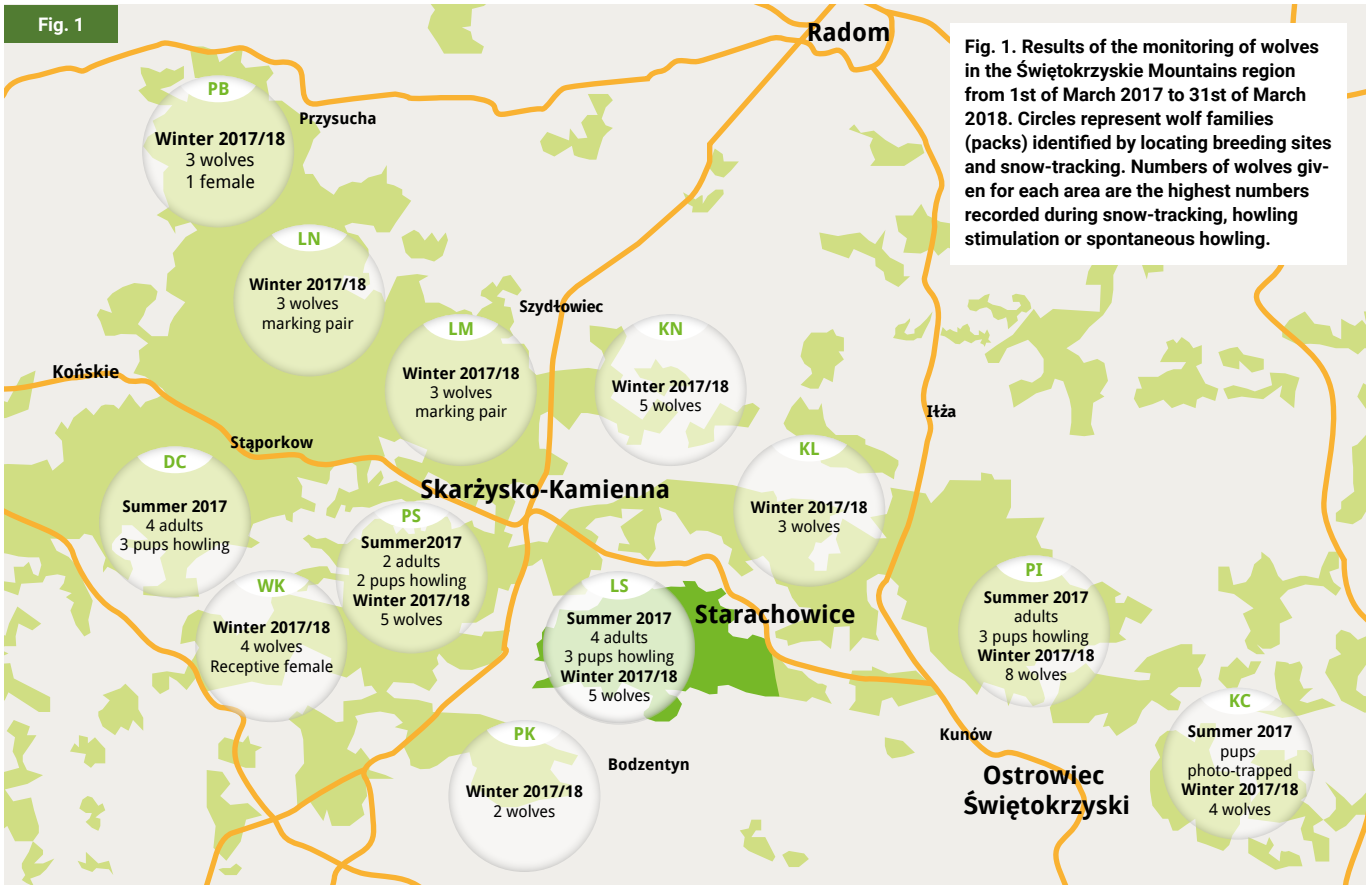


Fig. 1. Results of the monitoring of wolves in the Świętokrzyskie Mountains region from 1st of March 2017 to 31st of March 2018. Circles represent wolf families (packs) identified by locating breeding sites and snow-tracking. Numbers of wolves given for each area are the highest numbers recorded during snow-tracking, howling stimulation or spontaneous howling.

Between the 1st of March 2017 and the 31st of March 2018, we spent 105 days in the field, searching for wolf tracks, scats and other signs of wolf presence by patrolling forest roads and trails. From July to October, we systematically tried to stimulate wolf howling to check for presence of pups to confirm pack breeding. The stimulation was carried out at night, by two teams communicating via radio. We stopped our vehicles 2-3 kilometers apart, howled simultaneously and then listened for a possible wolf response. We repeated the procedure until we had covered the entire forest complex. In the winter 2017/18, snow appeared for 2 weeks in December, then during the second part of January and lasted until mid February. The snow cover enabled us to estimate the size of packs by following fresh tracks in the snow. As in the previous periods, fieldwork was supplemented by information received from the Forest Service, hunters and local residents. We also monitored places where wolves potentially cross the highway S7, which divides the wolf habitat in the region.

Status of the monitored packs

We recorded 17 direct observations of wolves, 109 scats, wolf tracks at 178 locations, four howling responses, four spontaneous howlings, two dead wolves and a live wolf trapped by a poacher.

Przysucha Forest

As in previous years, during summer and fall of 2017 we attempted to stimulate howling. We only once got a response of a single adult wolf. In winter 2017/18, we recorded 14 times tracks of 1-3 wolves. In December of 2017, we snow-tracked a pair of wolves, of which one was urinating like a female. In the end of January, we snow-tracked 3 wolves. Two tracks were relatively small, which suggest that they were left by juvenile wolves.

Niekłańskie Forest

During the summer and fall of 2017, we recorded many tracks and scats, although no wolf responded to our howling stimulation. As in previous years, we recorded many tracks of 1-3 wolves during the winter. At the end of January, we snow-tracked a pair that intensively marked the area by urination and scratching. During this period, we also found 4 times wolf prey – a red deer hind and 3 roe deer.

Lasy Majdowskie

We recorded tracks and scats in this area much more frequently than in previous years (25 vs 6 times). During summer and fall, we did not get a response to howling stimulation. During the winter, we most often snow-tracked 2 wolves. In February, a pair of wolves intensively marked on forest roads. On the 19th of February, two wolves were observed while crossing the major road DK42 in the village of Górki, heading south. We checked the nearby area and we found tracks of a third wolf that did not cross the road and returned to the forest north of the road.

Kierz Niedźwiedzi Forest

In the previous report we treated Kierz Niedźwiedzi and Majdów forests located SW and SE of Szydłowiec and separated by the DK47/S7 highway as one forest complex. During the winter of 2017/2018, however, we simultaneously snow-tracked wolves in both areas, which seeemed to be of different packs. Moreover, due to the upgrade of DK7 to a highway (S7), the road dividing these two areas is now only crossable for wolves in 2 places. Therefore, it is very that likely we are dealing with two packs. Forests of this area consists of several separated patches interconnected by abandoned pastures/fields, partially overgrown with trees and bushes. The western part of the forest is adjacent to the S7 highway and is connected to the Lipie and Iłżecka Forests in the east. We have been recording wolf presence in this area since 2016.

We did not carry out howling stimulations in the area in 2017. During the winter of 2017/18, we recorded 12 times wolf scats and snow tracks of 1-5 wolves in the snow. In February, 2 wolves came close but did not cross the tunnel under the S7. On the 1st of February, a large, 3-year old male was found caught in a neck snare set by a poacher (Photo 1 and 2). The wolf was tranquilized, released from the snare and inspected by a veterinarian. It weighed 40 kg, was not wounded and in good condition. We stayed with him until he woke up and walked back to the woods.

On the 29th of January, four wolves hunted a roe deer in the suburbs of Skarżysko-Kamienna at night (a town of about 50 000 inhabitants). A local observed the wolves consuming the prey. The location of the kill suggests that it might be the wolves that we follow in the Kierz Niedźwiedzi Forest.

Photo 1

A. Milanowski and R. Gula during the examination of a wolf caught in a neck snare set by poachers near Bieszków village – January 2018.

Photo 2

Wolf released from the snare is recovering from tranquilization – January 2018.

Photo 3

The site where 4 wolves killed a roe deer in the suburbs of Skarżysko Kamienna in January 2018. The remains of the kill were removed earlier and only some hairs and bloodstains remained.

Czarna Konecka Forest

Wolves of this pack responded to the howling stimulation in August 2017. There were at least 4 adults and 3 pups. In winter of 2017/2018, we recorded many wolf tracks but never more than 2 wolves together. In December 2017, a wolf was seen crossing the road between Wąsosz and Końskie.

Kołomańskie Hills

In previous years, we were not sure if the wolves recorded in Czarna Konecka Forest and Kołomańskie Hills belonged to the same or different families. During the winter of 2017/18, we recorded several times fresh wolf tracks in both locations on the same day. The large distance between these tracks (about 18 km) suggests that they were left by two family groups.

In the Kołomańskie Hills, we recorded tracks of 1-4 wolves, which were intensively marking on the forests roads. On the 17th of February, we snow-tracked a pair of wolves, of which one was a receptive female, indicated by patches of blood stains. Also in February of 2017, we recorded a receptive female in the area, although during the summer we did not succeed to get a response to howling stimulation.

Świętokrzyska Forest

In August of 2017, the PS pack responded to howling stimulation. There were 2 adults and at least 2 pups howling. In October, a forest worker observed 2 pups on the road. Adult wolves have been seen in the area five times by local people. During the fall and winter, we registered tracks and scats of wolves all over the forest. In February, we followed fresh snow tracks of 2 and 3 wolves, respectively, likely left by 5 different individuals.

Siekierzyńskie Forest

In October of 2017, wolves of this forest responded to our howling stimulation for the first time. There were 3 adults and 4 pups howling. Foresters found a wolf den close to the place where we heard wolves howling (Photo 4). The den was used by wolves in the summer of 2017. During the fall and winter of 2017/18, we recorded tracks and scats of wolves all over the forest. In January, we snow-tracked a group of five wolves, which intensively urine and scratch marked on the forest roads. In February, two wolves attacked and killed a hound that was separated from the hunter. We afterwards inspected the site and found that the dog was killed next to remains of a female red deer consumed by wolves.

Photo 4

A wolf den in Siekierzyńskie Forest

Lipie Forest

Lipie forest is a continuation of Iłża forest west of the road DK 9 (Fig 1). We have monitored this area systematically since the summer of 2017. In January and February, we snow-tracked 1-3 wolves in the area on 10 occasions.

Iłżecka Forest

In June of 2017, foresters found a wolf den used by wolves in 2017 (Photo 5). The den was already abandoned and nearby we found the remains of a dead pup. Local foresters had heard howling wolves – adults and at least 3 pups. During the summer and fall of 2017, there were tracks and scats all over the forest. Also in winter, we recorded many times (114) wolf snow tracks and scats. There were most often tracks of single wolves, but several times, we recoded larger groups of 3-5 wolves and once a group of 8 individuals. Local hunters had seen a group of 8 and 4 wolves, respectively, during a drive hunt. On the 18th of February 2018, we snow-tracked a receptive female (bleeding marks). In March of 2018, we found a carcass of a dead wolf in an advanced stage of decomposition. We did not manage to establish the cause of death.

Photo 5

A wolf den in Iłżecka Forest.

Klonowskie Hills

We did not cover this area by systematic monitoring. We only checked the nearby passage under S7 highway, which is a potential connection between the Świętokrzyska Forest and Klonowskie Hills, followed by the Świętokrzyski National Park. We obtained information about wolf presence in Klonowskie Hills from foresters of the Zagnańsk forest district and personnel of the Świętokrzyski National Park.

In October of 2017, foresters of Gózd forest division saw a wolf twice. In January 2018, a park ranger snow-tracked for 8 km two wolves travelling along Klonów, Barcza and Gózd forests divisions. Several days later, snow-tracks of two wolves were registered in the Podgórze division of Świętokrzyski National Park. In February, we found snow-tracks of a wolf approaching the S7 underpass from the east. The wolf did not enter the passage and headed back east.

Ćmielów Forest

This forest is also not covered by our systematic monitoring. We visited the area in March 2018 to examine a carcass of a wolf that died in the neck-snare set by poachers near Brzozowa village. It was a 4-5 year old male, which stayed long in the snare and died due to leg injuries and dehydration (Photo 6).

Hunters and foresters have systematically observed signs of wolf presence in the area for 3 years. In the summer of 2017, they observed pups on several occasions near Julianów village. One pup was recorded by a photo-trap in August (Photo 7).

Photo 6

Wolf killed in a neck snare set by poachers near Brzozów village of Ćmielów Forest in 2018.

Photo 7

Wolf pup recorded by a photo-trap near Julianów village in Ćmielów Forest in summer of 2017.

Summary

We have systematically been recording signs of wolf presence all over the monitored borderline area (about 4500 km^2) between the Świętokrzyskie and Mazowieckie provinces. Over the last 6 years, we confirmed wolf breeding in 6 forest complexes (LN, DC, PS, LS, KN and PI). In the other 4 forests (PB, WK, LM and KL), we recorded a permanent presence of wolves, including scent-marking pairs and receptive females. Therefore, wolf reproduction in these 4 areas is also likely. In the largest forest complexes, we cannot exclude the possibility that more than one wolf family is present. Wolves occur also south of the monitored area, in Klonowskie, Cisowskie, Orłowińskie and Daleszyckie Hills (SAVE Report no 6) and east of the monitored area, in the forests covering the area from Ostrowiec Świętokrzyski to Vistula river (Ćmielów Forest) where wolves reproduced at least in 2017.

2. Wolves in the Lower Silesia Forest

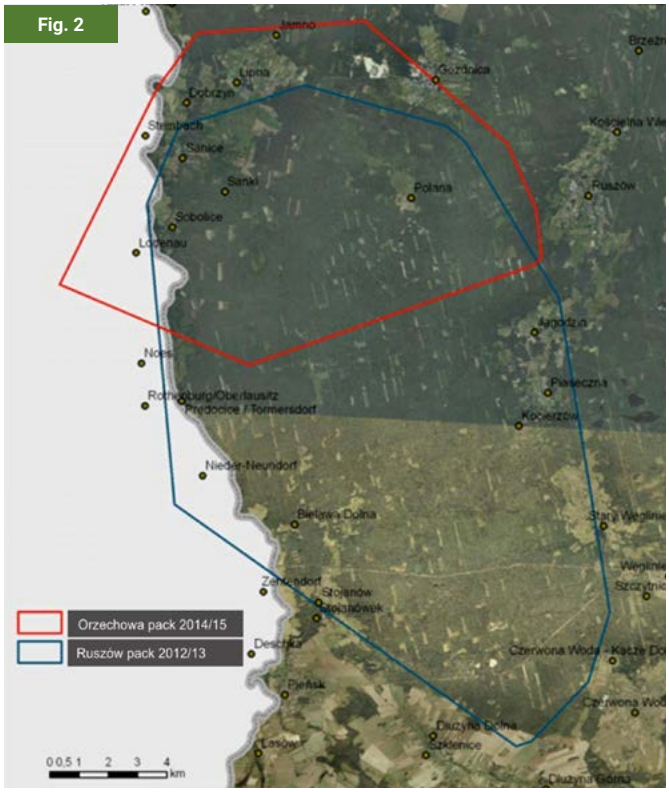
How the wolf numbers have increased in the Lower Silesia Forest

The Ruszów wolf pack monitored via telemetry in 2012-2013 held a territory of ca 250 km^2 in the forestry districts of Pieńsk, Ruszów and Wymiarki (Fig. 2). This family group had seven members (Fig. 3) and in 2015, it split its territory between two groups. After the splitting, the Orzechowa pack occupied the western part of Ruszów Forestry District and the southern part of Wymiarki Forestry District, whereas the second pack lived in the Pieńsk Forestry District and the western part of Węgliniec Forestry District.

The changes in wolf numbers in these family groups, assessed via snow tracking and photo trapping, were different between families although both packs bred every year. The Pieńsk pack rapidly grew, from two individuals in 2014/15 to eight in 2016/17 (Fig. 3).

The size of this group seems now stabilized, because last winter (2017/18), it counted only seven wolves. In contrast, the number of members in the Orzechowa pack remained stable (4-5 individuals) during the first three years and increased last winter to seven individuals (Photo 8). Most of young wolves from this family have probably dispersed to other areas, like the wolf Pumpak. To sum up, the number of wolves in the western part of the Lower Silesia Forest in 2012-2018 has doubled. Despite this, there have been no recorded attacks on livestock or other problems caused by wolves in the region.

Fig. 2

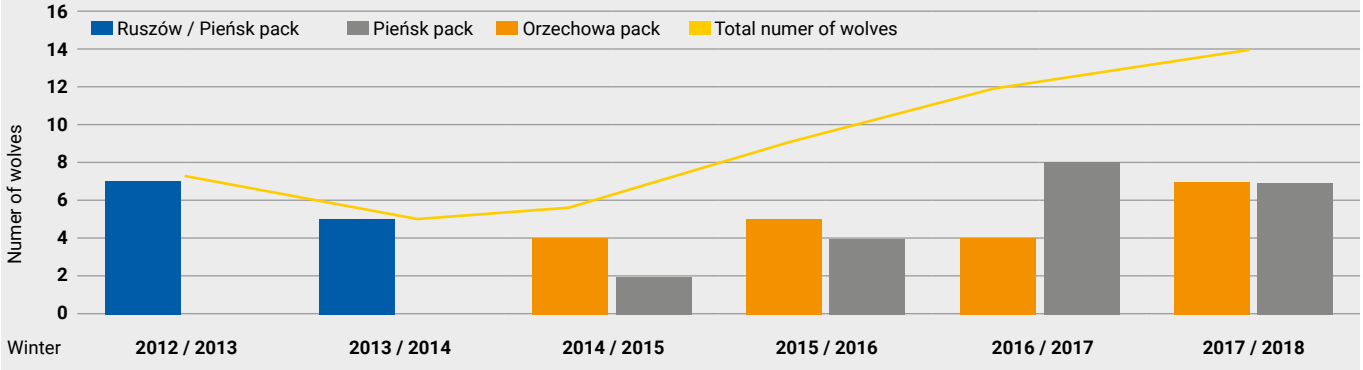


Home ranges of Pieńsk/Ruszów and Orzechowa packs based on GPS-telemetry locations.

Photo 8

Orzechowa pack recorded by a photo-trap on a forest road in Lower Silesia Forest.

Fig. 3



Changes in the number of wolves and wolf packs in the western part of the Lower Silesia Forest. The Ruszów/Pieńsk pack divided its territory between two family groups: Orzechowa pack and Pieńsk pack.

Wildlife activity on forest roads in Lower Silesia Forest

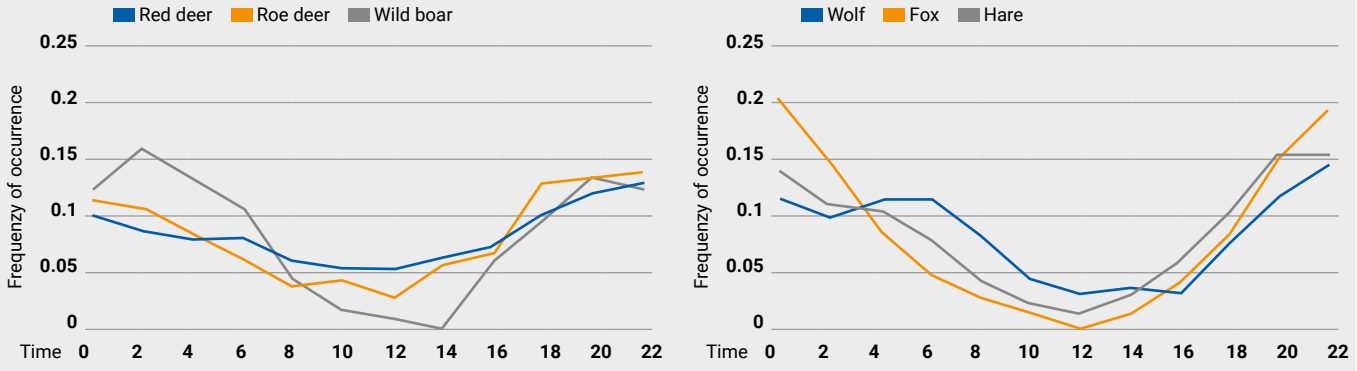
Wolves often use secondary roads for the ease of travel and scent marking with scats, urine and scratching. Some studies suggest that forest roads are also sites of increased probability of encounters between wolves and their prey.

In summer 2017 and winter 2017/18, we used photo traps to study wildlife activity on forest roads in the Lower Silesia Forest. The forest roads were closed for public use with motor vehicles, but they were used by forestry workers, cyclists and pedestrians. We placed photo traps at 50 sites and recorded animals on roads for 7 days in summer (March-July) and 7 days in winter (December-March).

The most commonly recorded species on forest roads were fox (295 times) and brown hare (195 times). Among ungulates, red deer used roads most often (88 times), followed by roe deer (70 times) and wild boar (38 times). We recorded wolves 85 times, mostly members of the Orzechowa family, and sometimes the packs from Pieńsk and Wymiarki Forestry Districts. Interestingly, wolves travelled most often alone (70 times, Photo 9), less often in pairs (5 times). We recorded all family members together only on three occasions.

All species used the roads most often during the night (Fig. 4). Wild boars and foxes were the most nocturnal on roads, whereas red deer were the most diurnal (Photo 10). Wolves used forest roads mainly between 20:00 and 23:00 hours, but also early in the morning, before 8:00 (Fig. 4).

Fig. 4



Activity patterns of animals on forest roads in the Lower Silesia Forest.

Photo 9

Wolf recorded by a photo-trap on a forest road in the Lower Silesia Forest.

Photo 10

Red deer stag recorded by a photo-trap on a forest road in the Lower Silesia Forest.

3. Education

Documentary about wolf family

A short documentary entitled „Orzechowa and her family" was edited from footage taken by photo-traps. We set the photo-traps next to the den of the breeding female Orzechowa, monitored by GPS-telemetry in Lower Silesia. The documentary illustrated the behavior of Orzechowa pups born in 2016, when they were 5 weeks old. The yearling Pumpak, son of Orzechowa born in 2015, was tenderly looking after the pups.

Link: https://www.youtube.com/watch?v=Q5YSKdqfN1s

WILKnet

WILKnet is a cooperation of Polish wolf researchers and conservationists supported by the SAVE Foundation through web hosting and programming assistance, while the website is edited voluntarily by WILKnet participants. The idea is to exchange information from projects concerning wolf monitoring, research and conservation in Poland and to disseminate science-based wolf knowledge among the public. Over the last year, we posted 47 notes regarding activities in wolf projects and other wolf news. The notes were illustrated with photos, figures and videos.

Link: www.wilknet.pl

Lectures and other educational activities

- Two lectures presented at the conference "Wolf management and conservation" in Robledo de Sanabria, Zamora, Spain (May 2017): „Where the wolves kill they prey in the commercial forest" and "The Vistula river as the borderline between recovering wolf populations in Europe", – K. Bojarska, R. Gula (Photo 11)
- Lecture „Status of wolf population in Poland" presented at a seminar organized by the Chief Inspectorate for Environmental Protection, Warsaw, Poland (July 2017) – K. Bojarska, R. Gula
- Lecture about wolves presented during the "Grand Opening of the Wolf Trail" held by forest fistrict of Marcule (July 2017) – R. Gula

Photo 11

K. Bojarska during the lecture given at the conference „Wolf management and conservation" held in Robledo de Sanabria, Zamora, Spain.

- Lecture about wolves for school pupils in Brzoza Bydgoska (September 2017) – K. Bojarska
- Training on wolf ecology and wolf depredation of livestock organized by the Ujście Warty National Park (October 2017) – K. Bojarska
- Lecture during the "Wolf Awareness Weekend" organized by Paradise Hertfordshire Wildlife Park , Great Britain (November 2017) – K. Bojarska

- Lectures about wolves presented during the "Night of Biologists" organized by the Jan Kochanowski University in Kielce (January 2018) – A. Milanowski (Photo 12)
- Workshop „Wolf call" organized for boy scouts in the Lower Beskidy Mountains (March 2018) – R. Gula
- Lecture on wolf biology and ecology presented at the 28th Conference of the Association for Nature Research and Conservation (March 2018) – R. Gula
- Seminar "Wolves of Świętokrzyskie region" organized by the Public Library of Starachowice (April 2018) – R. Gula, A. Milanowski, J. Major (Photo 13)
- Lecture on wolf biology and ecology for veterinary students of the Warsaw University of Life Sciences (June 2018) – K. Bojarska
- Workshop about wolves for pupils of elementary schools organized in the Zoological Garden in Kraków (June 2018) – K. Bojarska
- Holiday classes for pupils of an elementary school in Skarżysko Kamienna (July 2017) – R. Gula (Photo 14)

Photo 12

A. Milanowski is giving the lecture during the Night of Biologists at the Jan Kochanowski University in Kielce.

Photo 13

Poster of the wolf seminar organized by the Public Library of Starachowice.

Photo 14

Summer wolf class for pupils of the public school no 9 in Skarżysko Kamienna (R. Gula).

Acknowledgements

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