Name of the place:			
Bat forest (Ojców National Park)			
Basic information			
Cadastral zone	Southern part of the Kraków-Częstochowa Upland, 15 kilometers north of Kraków, Poland		
Land register reference	120610_5.0008		
Owner	Ojców National Park		
Contact	opnar@pro.onet.pl		
Latitude GPS	50.203324, 19.823956		
Area	967 ha		
Altitude	445 m above sea level		
Description of wider relations			
Growing culture	Upland forests, protected.		
The nature of the land	The area is covered with forest, covers the Prądnik and Sąspówka valleys, fields in the neighbourhood. There are many caves, gorges, slopes, highlands.		
Current use	Protected area	Comm.: caves	
Water or water source	Two rivers - Prądnik (12 km within the Park) and Sąspówka (4.5 km within the Park), supplied with water from about 30-50 fissure-karst springs.		
Territorial relations	National Park		
Forest management plan (FMP)	No (Nature Conservation Plan)	Valid through	n/a
Age: in %	beech (*Fagus*)	80 years	
	maple (*Acer pseudoplatanus*)	80 years	
	pine (*Pinus*), beech (*Fagus*), fir (*Abies*), spruce (*Picea*)	50 and more	

Biota – forest cover and its inhabitants		
Vegetation as from resources		state
Phytocenology	Upland forest, with a predominance of beech, fir and spruce.	

Original natural vegetation	*Dentario glandulosae-Fagetum* *Querco roboris-Pinetum* – on the tops *Tilio-Carpinetum* – on the slopes European beech (*Fagus sylvatica*) – Smooth crosswort (*Cruciata glabra*) – on the slopes *Fraxino-Alnetum* – in the valley		
Potential natural vegetation	*Tilio-Carpinetum*, Litt-Poll *Luzulo luzuloidis - Quercetum*		
Forest stand: in %	Tree layer:	pine (*Pinus*), beech (*Fagus*), fir (*Abies*), maple (*Acer pseudoplatanus*), spruce (*Picea*)	
	Shrub layer:	hazel (*Corylus*), spindle (*Euonymus europaeus*)	
	Herb layer (description):	*Arum maculatum,* ferns, *Omphalodes scorpioides*	
Fauna – remarkable, known-but-not-seen			state
Vertebrates	17 species of bats, dormouse (*Glis glis*), hare (*Lepus)*, roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), fox (*Vulpes vulpes*), badger (*Meles meles*), squirrel (*Sciuridae*), yellow-necked mouse (*Apodemus flavicollis*) Birds: hawk (*Accipiter*), buzzard (*Buteo*), dipper (*Cinclus cinclus*), gray wagtail (*Motacilla cinerea*), kingfisher (*Alcedinidae*), tawny owl (*Strix aluco*), long-eared owl (*Asio otus*), thrush (*Turdidae*), blackbird (*Turdus merula*), tits (*Paridae*), black woodpecker (*Dryocopus martius*), green woodpecker (*Picus viridis*)		
Insects	*Mesachorutes ojcoviensis*, eared leafhopper (*Ledra aurita*), *Crenobia alpina* , caddisflies (*Trichoptera*), water mites (*Hydrachnidia*), mayflies (*Ephemeroptera*), stoneflies (*Plecoptera*), beetles (*Coleoptera*), leeches (*Hirudinea*), *Lepidoptera*		
Amphibians	smooth newt (*Lissotriton vulgaris*), great crested newt (*Triturus cristatus*), fire-bellied toad (*Bombina bombina*), common toad (*Bufo bufo*), green toad (*Bufotes viridis*), common frog (*Rana temporaria*), European tree frog (*Hyla arborea*)		
Reptiles	slow worm (*Anguis fragilis*), sand lizard (*Lacerta agilis*), adder (*Vipera berus*), grass snake (*Natrix natrix*), smooth snake (*Coronella austriaca*)		

Forest as a cultural aspect of the landscape

PAST		
Culture		
What has influenced the forest so far, is it somehow connected with the culture of the surrounding environment, is it part of the cultural development of the landscape?	- Tourism; tourist activity, tourist trails, cave exploration - Bats hibernating in the caves	
Civilization		
What is the relationship between the forest and civilization now, how does the civilization reflect on its state and development?	People like to relax in this area; they come here to travel and sightsee. They enjoy getting to know the nature. However, most of the area is off limits. People can only walk on the designated paths. Furthermore, only two caves are open for tourists.	
Story		
Origin of the relation	In the 19th and 20th century, there was a sanatorium in the area, which made it very popular. Unfortunately, this popularity led to the forest stands being plundered and the caves being destroyed by irresponsible tourists. In 1956, the Ojców National Park was established, and the area has been under protection ever since.	
PRESENT		
Bats are useful mammals for our forests. They feed on insects and thus contribute to the regulation of the population of tree pests. That is why protecting them is so important. Thanks to the presence of caves in this area, the Ojców National Park is a wintering place for many bats of several species. In summer, bats choose their hiding places in hollows of trees and in the attics of buildings. However, spacious, warm and most importantly unused (or only occasionally used) attics are becoming more and more uncommon every day.		Notes and questions
Natural side of present development		
	Bats use caves and holes in trees as their hibernacula. Bats regulate populations of harmful insects.	
Threats and limits		
	There is a shortage of places for summer colonies of bat species that are not satisfied with tree holes. Light pollution around churches can scare off bats that want to establish colonies there.	

	People don't want bats in their attics due to the abundance of guano.	
FUTURE		
It is planned to shorten the period of visiting the caves during the year so as not to disturb the bats staying there. Artificial summer shelters will be hung. Forest ponds and water reservoirs will be maintained. The diversity of the forest environment will be preserved, and the field-forest borders will be shaped to make them as diverse as possible.		Notes and questions
Natural side of future development		
	If you maintain the water conditions in the forest, you also take care of all the species of animals and plants that need water to live.	
	A large number of bats will reduce the number of harmful insects and protect tree stands against mass appearance of pests.	
Threats and limits		
	Shortening the period of visiting caves may reduce tourist interest, and thus lower the income for the National Park – which may result in less money to be used for the protection of bats.	
Intention of the forest activities		
Expectations	Preservation and improvement of the bat population and their breeding and hibernation sites. Thanks to the presence of bats, the population of harmful insects will be reduced.	
What will my forest provide to people	Forest without persistent insects thanks to the large number of bats. Thanks to the diverse landscape, there will be beautiful views and hiking trails.	
Plan – in 10 years	A stable bat population, especially during summer activities, achieved by increasing the number of places where breeding colonies can be established.	
Plan – in 50 years	Replacing gratings in caves with new ones, adding summer shelters for bats when the old ones are destroyed.	
Who do we need to reach the goal?	Chiropterologists, foresters, local community, NGOs that work with bats.	
Proposals and steps		
What	**Legend**	**Who**
Hanging artificial summer shelters	Shelters for bats will increase the number of possible summer roosts and places for establishing breeding colonies of these mammals.	Ojców National Park / a forester

Reconstruction of single-species stands into diverse stands	This way, the bats will have more feed bases and summer hiding places.	Ojców National Park / forester
Protection of breeding colony sites	Installing bat guano platforms, avoiding lighting possible attic entrances.	Bat NGO
Public education	Shaping awareness and spreading knowledge of the usefulness of bats. Carrying out educational bat catches.	Ojców National Park
Shortening the period of visiting caves made available to tourists	The shortened period of tourist exploration of the caves will help to ensure the peace of bats arriving there, which will have a positive effect on their wellbeing.	Ojców National Park

Monitoring the development		
Time		
02.2023	Winter monitoring of hibernating bats	
04.2023	Inspection and maintenance of cave gratings	
04.2023	Hanging summer shelters for bats in the forest	
07.2023	Summer monitoring of bats in tree stands	
02.2024	Winter monitoring of hibernating bats	
07.2024	Summer monitoring of bats in tree stands	

Inspiration		
Literature		what
	Matuszkiewicz W., Faliński J.B., Kostrowicki A.S., Matuszkiewicz J.M., Olaczek R., Wojterski T., 1995, Potencjalna roślinność naturalna Polski. Mapa przeglądowa 1:300 000. Arkusze 1-12, IGiPZ PAN, Warszawa.	
	Węgiel A. 2006 “Ochrona nietoperzy w lasach”	
Heard around	Katarzyna Sycz	
Meetings	08.2022, 04.2023	

Discussions within the project team	08.2022, 10.2022, 12.2022	