



# Student Exchange Hand Book (Bulgaria)

UK Wolf Conservation Trust



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## **The Student Exchange Experience**

Exchange students will have an opportunity to be involved in the unique educational programme at the Large Carnivore Education Centre. Students will be working along side project leader Elena Tsingarska.



**Scat washing**



**Measuring Tracks**



**Collecting Scats**

You will be involved in a variety of activities although these will vary depending on the time of year and duration of the stay. These activities include:

- Day to Day House Keeping
  - cooking
  - dish washing
  - sweeping
- Animal Care
  - Preparing and feeding the dogs, livestock including Bear and Wolves.
  - Mucking out to include daily clearing of dog faeces
  - Administration of medication
  - First Aid
  - General animal handling (including goats, sheep, horses)
  - Collecting eggs from chickens

N/B All animals on site are working animals and should not be treated as pets, the guarding dogs are not to be approached at any time unless feeding or watering. The majority of dogs round the site are chained as they are breeding stock.

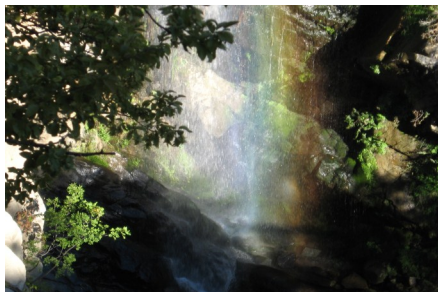
**(Approximately 90% of your time will be spent doing these tasks, there may be opportunity to help with the following.)**

- Manning the Large Carnivore Education Centre
- Wolf Research such as Trapping, Den Location, Tracking, Scat collection and processing for analysis, Collating data.

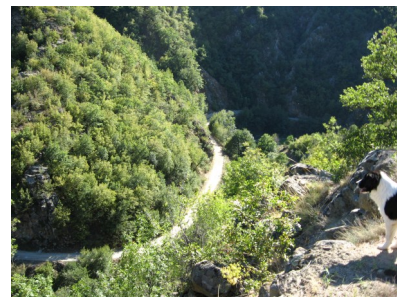
**Involvement in research will be dependent upon the time of year and ongoing project activities which will vary greatly.**



**Pirin Mountains**



**Vlahi Waterfall**



**Road up to Vlahi**

### **STUDENTS PLEASE NOTE:**

- Health and Safety will not be of the same standard as in the UK
- There are times you may be left unsupervised including the possibility of being left overnight due to unexpected circumstances.
- Students are expected to take initiative and once shown progress with daily routines without supervision or prompting.
- The village in which you will be based (Vlahi) is in a very remote mountainous area, with only 12 regular inhabitants and 10km from the nearest town of Kresna.

### **EMERGENCY CONTACT DETAILS**

**PLEASE FILL IN THESE DETAILS BEFORE YOUR TRIP, YOU WILL BE GIVEN THEM BEFORE YOU LEAVE.**

Take this handbook in your hand luggage so that you have a written copy of all emergency contact details .

**UK WOLF CONSERVATION TRUST : (+44) 0118 971 3330 (office hours only)**

Victoria Allison-Hughes:

Toni Shelbourne:

Elena Tsingarska:

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# Bulgarian Language

As English is only spoken by a small number of people in Vlahi, it is worthwhile learning a bit of Bulgarian before you go. Some common greetings, "Thank you", "Please" can go along way to enhancing your visit to Bulgaria. There are a few basic phrases to get you started below: Also have a look at the following link for some free language software: <http://www.byki.com/fls/free-bulgarian-software-download.html?l=bulgarian>

## GREETINGS, POLITE WORDS, AND GOODBYES

dobro ytro	- good morning	ako obichash / izvinete	- please
dobar den	- good day or hello	merci / blagodaria	- thank you
leka nosht	- good night	molya	- your welcome
chao	- goodbye	da / ne	- yes / no *
kak si?	- how are you?	ne razbiram	- I don't understand
blagodarya dobreh	- fine thanks	nyama	- nothing, all gone
nazdraveh	- your health (after sneeze)		

\* Reminder: Bulgarians shake their head up and down for 'no' and back and forth for 'yes'.

## Travel Documents

As Bulgaria is in the EU a visa is not required for British citizens for up to a 90 day visit. When you enter the country make sure you enter as a tourist and NOT as a working visitor although you will be in the country as a work placement student you are still classed as a tourist visitor.

It is entirely your responsibility to ensure that you are in possession of all necessary documents for the student exchange including travel insurance documents, travel tickets, the necessary vaccination certificates (only if vaccinations are recommended) and a valid passport with at least 6 months validity beyond the date of your return travel. If you expect to have to renew your passport or vaccinations before your trip you should allow plenty of time to do so.

### **INSURANCE:**

Remember that it is compulsory that you are in possession of a suitable travel insurance policy which covers you fully for adventurous activities such as hill walking in mountainous environments (Trekking over 2000m) and provides cover for medical treatment and if necessary emergency medical repatriation.

Check out the following links but ensure the insurance covers **YOUR** specific needs (health etc)

- <http://www.globelink.uk.com/general-information/general-information/which-adventure-activities-are-automatically-included.htm>
- <http://www.insureandgo.com/Travel-Insurance/Adventure-Travel-Insurance.htm>

In addition you as EU nationals should also take your EU health card (old E11form), this entitles you to free medical treatment throughout the EU. The EU health card can be applied for on the following website: [www.ehic.org.uk/Internet/home.do](http://www.ehic.org.uk/Internet/home.do) or can be obtained through your local post office.

## **Contact Addresses**

### **Elena Tsingarska**

BALKANI Wildlife Society  
Tsanko Tserkovski Str. 64  
Entr. B, app. 3  
1421 Sofia

### **UK Wolf Conservation Trust**

Butlers Farm  
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## **Equipment**

All scientific research equipment will be provided by the Balkani Wildlife Society. As your trip could be at anytime of the year some of the equipment you may take is entirely up to you (depending on how cold / hot you get!) As is common in mountainous areas temperature fluctuations at any time of year are not uncommon, so it is advisable to wear several layers of clothing, the uppermost of which should be waterproof and wind proof.

In order to avoid early detection by wildlife as you walk through the countryside your clothes and if possible your rucksack should be in subdued colours. Avoid vivid colours and fabrics that make a lot of noise when walking.

Please travel as light as you can and try to limit yourself to one rucksack / holdall and one carry-on (you will be able to hand wash your clothes at your accommodation). If you can't get your gear to the airport alone, you have packed too much! You should be prepared for heavy duty use of your kit so please don't take your Sunday best. It is also a good idea to pack your carryon with essential items so that you are not stuck should you be unlucky enough for your luggage to be delayed. Do NOT take suitcases or similar baggage as they are not suitable and would be difficult to carry up to the centre over uneven terrain.

### **Equipment List**

**This equipment list is a basic outline, you know yourself better than we do! Do some research and take**



clothing suitable for the time of year you are travelling. Remember this is a rural area you won't be able to buy equipment you don't take with you.

## Kit List

Valid passport, insurance papers (Visa not required) Vaccination card, pocket money, emergency money, EU Health Card	
Warm waterproof walking boots + Spare Laces + Care Kit	Your boots will be one of the most important pieces of kit. Please make sure that they are of good quality and well worn in so that they do not give you discomfort or blisters.
Light Shoes + Spare Laces	For walking around base and those times you do not need walking boots
Socks including light, thick and warm pairs	Consider specialist walking socks to reduce the risk of getting blisters, and think about the time of year you will need thermal socks to keep your feet warm in the winter!
Several sets of base layer clothing including short and long sleeved shirts and long johns	Consider some technical materials that wick away moisture from your body, helping to keep you dry and thermal underwear especially in the winter months. Remember in the mountains the temperature can drop rapidly after sunset and night time temperatures can drop to below freezing even in the summer.
Couple of sweaters or other mid layers	
Trousers	
Warm Hat and Sun Hat	
Gloves	
Waterproof Jacket and Trousers	
Washing Kit and Travel Detergent and Towels	Biodegradable detergent if possible. Think about buying quick drying micro towels as they will take up less space in your luggage!
Sunglasses and Sun Cream	When its sunny sun burn is a danger, especially on the higher, exposed ground.
Thermos Flask or other container for warm drink / water bottle	Remember to take fluid with you when your out and about even if its only for a couple of hours.
Pocket Knife / Swiss Army Knife	To be packed in hold luggage!!
Small rucksack / day pack	For taking with you on your day's work. Should be at least 20L in size. For safety you should carry your first aid kit, a mobile phone, a head torch, water and food with you when your out for the day, as well as carrying any necessary research equipment.
Large Rucksack	Do NOT take a suitcase they are NOT suitable! Depending on which accommodation you are staying in you may be required to carry all your luggage approximately 1/2 mile so ensure you pack well and your rucksack is comfortable.

Personal First Aid Kit	Should contain pain killers, adhesive plasters, 1 medium and 1 small dressing, antiseptic wipes, blister plasters, iodine, antihistamine / insect bite cream, insect repellent, and any <b>personal medication</b> needed for the duration of your trip
Compass	For navigation!!
Mobile Phone	Depending on your network mobiles do work in some areas (mostly on top of hills!)
Sleeping Bag	Go for a three or four season sleeping bag dependant on how cold you get at night.
Pocket Torch or preferably Head Torch + spare batteries and bulbs	Go for a head torch with a strong (halogen) beam to light the way ahead at night, however halogen bulbs drain batteries quickly, so you may also want to consider an energy efficient LED head torch for around the base.
Field Notes Book	A simple notepad and pen!
ID Tag	Provided by the UK Wolf Conservation Trust. Please make sure you fill in the information and wear it!
European adaptor plug	For electrical items such as mobile phone / battery chargers
Slippers / Flip-flops	For inside all accommodation (outdoor foot wear is NOT to be worn inside)
<b>OPTIONALS</b>	
Ear Plugs	If you know you're a light sleeper as rooms are shared
GPS	For navigation!!
Binoculars	Although unlikely to see wild wolves binoculars will help you observe some of the other interesting species found in the area.
Photography Equipment	You will see some fantastic views as well as Medo and Vucho of course, a good zoom lens will allow you to photograph wild creatures without the need of getting too close.
Alarm Clock	If your not too good at getting up in the morning
Small Sewing repair kit	<b>Just encase!!!</b>



## **Balkani Wildlife Society**

The Large Carnivore Education Centre, destination for your exchange trip, was officially opened in May 2007 with the attendance of 60 children from the local Blagoevgrad district – for whom the trip provided lasting memories in the form of Medo and Vucho, a live bear and wolf! Since this initial unveiling of the ground floor and our trip in September 2007, at which stage the daunting process of putting the roof on was still looming, the development of exhibition halls with interactive displays, a seminar room, accommodation for staff and students (with arguably the most unspoiled and overwhelming views you may ever find), a stable block and café and gift shop selling local produce, is sure to impress!



The Centre

is the result

of collaboration between, and the dedication of, individuals from both BBPS SEMPERVIVA and the Balkani Wildlife Society, who started their work in 1988 and registered under the original name of Green Balkans Sofia four years later. The Society was formed in its infancy by a group of students at the Capital's university and high schools and adopted its current name in 2000 following numerous early projects, which included successfully obtaining a ban on the poisoning of wolves, a practise proving detrimental to many species, after a month and a half long campaign.

Eight years later, the Balkani Wildlife Society belongs to the Central and Eastern European Working Group for the Conservation of Biodiversity, the Balkan Network for Large Carni-

vores and is the founding member of BlueLink, an electronic resource shared by Bulgarian Non-Governmental Organisations (NGOs) concerned with nature. The Society itself now has in excess of 70 members including biologists and ecologists both at academic institutions and in the field, two of whom are elected representatives in governmental bodies – The High Expert Ecological Council at the Ministry of Environment and Water (Andrey Kovachev), and the Council on Hunting at the National Forestry Board, Ministry of Agriculture and Forests (Elena Tsingarska).

In addition to its work on large carnivores, the Society is also leading public campaigns to save Kresna Gorge and areas of the Pirin National Park, developing nature parks in the Studenets and West Stara Planina areas ('Planina' meaning 'mountains'), and monitoring Bulgarian Red Data book (1985) endangered species such as the Tengmalm's Owl and Balkan Chamois, for whom a breeding programme and reintroduction to Vitosha National Park near Sofia has been created. (At 545m at the foot of Mt. Vitosha, Sofia is the highest capital city in Europe!) Balkani Wildlife Society also researches the development of sustainable relationships between livelihood and biodiversity in the Rhodope mountains in Southern Bulgaria, and has produced a travelling exhibition 'Parks In Bulgaria' which includes over 200 photos and is suitable for display at visitor centres in parks/nature reserves, in exhibition halls and schools both in its home country and abroad.



It seems fitting that the Society

The Large Carnivore Centre  
(September 2007) set in the Pirin National Park in the village of Vlahi

grew from the ideas of a group of young people whilst they were still studying,

given Elena's clear commitment to the educational dimension of her work. A team from Green Balkans Sofia first started to visit schools in 1999, delivering lectures with accompanying visual resources such as slide shows etc. The following year a study book was created for grade 4 and 5 children, and later this scheme was extended with production of a similar resource for younger pupils in grades 2 and 3. In 2001 an education programme was conducted in 45 schools throughout Western Bulgaria which grew to involve 8000 children. Prizes were awarded with selected work featured in exhibitions, and in partnership with Sofia zoo schools celebrated 'day of the large carnivore' on 7<sup>th</sup> June 2003.

( Above: An information board in Vlahi, educating locals and visitors about the work of the Balkani Wildlife society and BBPS Semperviva)





# **Research Carried out by the Balkani Wildlife Society**

## **Wolf Study and Conservation Program**

BALKANI Wildlife Society has been working on this topic since 1993, when the Society started collecting information on the wolf (*Canis lupus*) population status and the problems related to the wolf - human coexistence. At the end of 1996 a National Wolf Workshop was organized, on which an Action Plan for Wolf Study and Conservation in Bulgaria was adopted. In the beginning of 1997 the Wolf Study and Conservation Program started operating .



### **Main priorities**

- Analysis of wolf biology and ecology, species status in the country, long term monitoring.
- Public awareness and education activities.
- Reduce the wolf - human conflict, by ensuring reliable protection of livestock.
- Develop a long term, national wolf conservation strategy.

### **Analysis of wolf status, species biology and ecology, long term monitoring**

Since 1997 field work on this topic has been done in Kraishte area (Middle-west Bulgaria). Since 2002 we extended the studied areas to two, the second one is located in Pirin Mountain. Through observation and analysis of evidence of wolf activity, data has been collected for its status in the region, as well as for important aspects of species biology and ecology. Regular interviews with local people are used to monitor wolf - human relations, as well as the wolf activity towards livestock and the level of damages caused by wolf attacks.

### **Reduction of the wolf-man conflict**

Revival of traditional method for livestock protection in Bulgaria - the Karakachan guarding dog, ensures reliable flock protection. Livestock breeders do not lose animals and the conflict with predators is significantly reduced. Karakachan dog puppies are provided to shepherds to become

guards of their flocks. The project is implemented in partnership with the Bulgarian Biodiversity Preservation Society - SEMPERVIVA.

The local wolf pack to Vlahi is called the Rabish Pack, who take their name from the valley running through part of their territory. It is believed that there are about 32 wolves living in the Pirin Mountains within a general population of 1000 in Bulgaria, and that the territory of a pack in this area can be over 100km<sup>2</sup>. There are believed to be at least two other packs nearby, one in the alpine area of North Pirin and one the far side of Mt.Vihren, although these details may have changed as you read this.

## **Brown Bear**

At the beginning of 2005, work started on projects aiming to increasing knowledge of wild brown bear populations in Bulgaria and at the establishment of an effective action plan to protect the species in the country. The leading organization is ALERTIS – Fund for Bear and Nature Conservation, while the coordination organization in Bulgaria is BALKANI Wildlife Society. Project partners are: The Bulgarian Nature Research Organization, Science and Education Science Centre for Ecology, Sofia Zoo, Institute of Zoology at the Bulgarian Academy of Science and the National Natural Science Museum .

The project comprises of two parts:

The research part of the project is performed by four field teams operating on the territory of the Rhodopi, Rila, Pirin, the central Balkan mountain ranges and the area of smaller mountains inhabited by bears. Information on the bears' habitats quality, food preferences, actual distribution, as well as roads and technical equipment that could be an obstacle for the seasonal movements and bear-human conflicts is collected and analyzed. Another innovative part of the integrative research uses DNA samples gathering by using hair traps.

The social component of the project is the establishment of a working group including

representatives of Ministry of Environment and Waters, Ministry of Forestry and Agriculture, different stakeholders, hunters and NGOs. The aim of the working group is to reveal any problems related to the protection of the bear populations in Bulgaria, to look for methods and ideas for their resolution and to work in the direction of establishment of a working action plan that meets the needs of all interested groups.

## **Captive bear tagging—Registration method and veterinary care of the Brown Bears in captivity in Bulgaria**



The project is implemented by BALKANI Wildlife Society with the financial support of ALERTIS - Fund for bear and nature conservation (former International Bear Foundation - The Netherlands).

In Bulgaria the Brown Bear (*Ursus arctos* L.1754) is declared as protected species by the Ordinance 1023 of 31 December 1992 (State gaset, issue No.7/1993). The ordinance includes special measures concerning bears in captivity. There were not enough possibilities for controlling the exchange and other forms of trade of bears in captivity in an efficient way. It is also difficult to assess the precise number of illegally caught wild specimens, placed into the captive population. The method of microchip registration allows certain identification of those specimens as well as control of the exchange and potential trade with those animals. The executive team of the project consists of three members: vet, vet assistant and project coordinator.

Project implementation started in May 2000 with the signing of an Ordinance RD-212/08.05.2000 by the Ministry of environment and waters. It sets out that all brown bears, kept in captivity must be registered with a microchip. After the end of the registration process in May 2001 each brown bear without microchip is illegal and must be confiscated, according to article 144 from the Regulations of the Veterinary Law.

As a result of the project the number of all captive bears was defined - 74 captive bears:

- 33 in Zoos
- 4 kept by private persons, but they are not dancing bears

- 4 circus bears
- 8 are kept in State Game Breeding station - Kormisosh.
- 25 are dancing bears, 6 of which are hosted in Belitza - a centre for captive bears rehabilitation.

The second phase of the project includes joint control by BALKANI Wildlife Society and the authorities from the Ministry of environment and waters, as well as veterinary care of marked brown bears. Each spring and autumn the executive team together with the bio-diversity expert from the relevant Regional Inspectorate on Environment and Water check the transponders of the marked bears and examine their health status. The brown bear is declared as a protected species, according to the Biodiversity Act, came in force since the summer of 2002.

## Lynx

Information on this species in Bulgaria is very scarce. Lynx existence in Bulgaria has been registered for the first time in 1862. It is thought to be completely extinct in 1941 (Spiridonov, Spassov, 1985). Since then until 1999 there are periodic reports for observed individuals or traces of their activity in various regions. Information usually comes from local people, but evidence is missing. It was only in the winter of 2002/2003 that a team of BALKANI Wildlife Society registered lynx tracks in Mid West Bulgaria. It is now certain that the species is returning to the country, but additional, detailed and long-term research is needed.



Working alongside the Balkani wildlife society is BBPS SEMPERVIVA who specialise in the breeding programmes of various Bulgarian rare breeds including the Karakachan guarding dogs. as well as the rare breed's of livestock such as the horses, goats, sheep etc. Students must remember that these animals are NOT pets.

The Karakachan Guarding dogs are working animals with immense power, they should NOT be approached unless they are being fed or watered, students should follow all instructions that are given when working around the guarding dogs and on NO circumstances should students approach the dogs whilst they are working away from the rare breeds centre.

Further information on the rare breeds breeding projects can be found in the abstracts at the back of this handbook.



**Large Carnivore Centre (09/2007);**



**Rare Breeds Centre (09/2007);**



**Large Carnivore centre (03/2008)**

## **National Parks in Bulgaria**

Bulgaria has three National Parks – Central Balkan, Pirin and Rila, visited by over 150 000 people each year. The Parks are public property, belonging to the state, and are managed by directorates working within guidance of the Ministry of Environment and Waters. They are listed as Category II protected areas by the World Conservation Union (IUCN) and, with a total area of close to 200 000 hectares, constitute over one-third of all protected land in Bulgaria. Various pieces of legislation govern the running of the Parks, including:

The Protected Areas Act (1998);

The Environmental Protection Act (2002);

The Biological Diversity Act (2002);

The Hunting and Game Protection Act (2000);

The Medicinal Plants Act (2000), and

The Fishing and Aqua-Cultures Act (2001).

Each Park is maintained in accordance with a ten-year management plan, in requirement with the Protected Areas Act. Creation of a 'National Strategy for Biological Diversity Conservation' saw Bulgaria as the first European country and second nation worldwide to establish such a scheme, while recent work to found a Bulgarian Parks Endowment Fund marks the only such proposal in Eastern Europe at present.

In order for an area to obtain the status of National Park in Bulgaria, it must 'not only contribute to the national welfare, but to the welfare of local villages and communities' also. It is recognised that by engaging local people in management of these areas and allowing local businesses to capitalise on tourism in the area, communities show more concern for and active involvement in protection of the Parks. From our experience staying in Pirin National Park, we found this concept of mutual benefit to be widely accepted, and it certainly provides an innovative approach to conservation in an age where debates about progress versus preservation provide much media interest. In terms of biological diversity, nationally the Parks boast an astounding

record:

- The three Parks include over 300 lakes and waterfalls, and provide over 7% of freshwater resources in Bulgaria despite occupying less than 2% of the country's total area.
- Over 3500 plant species are found in Bulgaria, with two-thirds of these represented within the country's National Parks. More than 550 species of flora present in these areas have medicinal properties (Bulgaria is the number one exporter of herbs in Europe), and nearly 400 are of high conservation significance.
- The average age of trees in Bulgaria is 90 years old, and forests occupy about 90% of all wooded areas within the Parks – deciduous forests in Central Balkan, and coniferous in Pirin and Rila comprising chiefly evergreen species. 96% of all forests within these areas are natural, meaning that they have not been planted. High altitude mountain meadows are also found within the Parks.
- Bulgaria is home to more animal species than any other European country.
- Over 4000 invertebrate species are found within the Parks, a quarter of which are of high conservation significance. More than 300 different vertebrate species live within Central Balkan, Pirin and Rila. Over 200 of these are protected under both Bulgarian and International Law.

'Rila' comes from the Thracian word for 'mountains of water' and boasts the highest peak in the country, Mount Musala, at 2925m. The Pirin National Park where exchange students can look forward to staying obtained its name from Perun, the Slavic God of Thunder. At over 40 000 hectares, Pirin is the largest of the Parks. It contains 186 lakes and 230 sources of mineral water.

The mountain ranges within the country are distinct and unique; at 1033m the average peak height within Pirin is relatively low (Mount Vihren is the highest at 2915m), and its

landscape is more rocky and rugged than the gentle alpine forests and pastures found in Rila National Park. Pirin was placed on the UNESCO list of world heritage sites in 1983 to protect the 1100 species of flora, 102 of birds and 42 of mammals found within the park. The 'Pirin poppy' is a local endemic species.

**Other species that may be of particular interest to look out for in the Park include:**

- The Mediterranean tree frog (*Hyla arborea*), included on the IUCN list.



- The Golden Eagle (*Aquila chrysaetos*), on both the Annex I European Bird Directive and Bern Convention lists.

- The Short-Toed Eagle (*Circaetus gallicus*), included on both the above as for Golden Eagle (*Aquila chrysaetos*) , plus the CITES listed



- The Forest Dormouse (*Dryomys nitedula*) and the Common Dormouse (*Muscardinus avellanarius*), both included on the IUCN list.



- The Wild Cat (*Felis sylvestris*), CITES listed

- The Brown Bear (*Ursos Arctos*), CITES listed



- The Wolf (*Canis lupus*), CITES listed



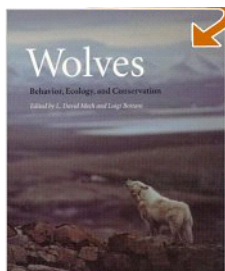
Between Central Balkan, Rila and Pirin the Parks border on 24 different municipalities within Bulgaria with a combined population of over 600 000 people (7.5% of the country's population). In addition to providing a truly stunning landscape in which to live, the concept of sustainable tourism developing within the Parks has already delivered improvements to local livelihoods.



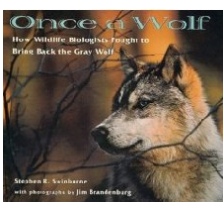
One such example particularly relevant to our interests and work at the UKWCT is the development of the Central Balkan and Rila National Park directorates. In this venture a multidisciplinary team of local teachers and experts from NGOs, cultural institutions and local authorities worked to produce a creative practical natural history and conservation program which was trialled in both primary and secondary schools around the Parks and has since successfully been incorporated into the national curriculum.

## Recommended Reading

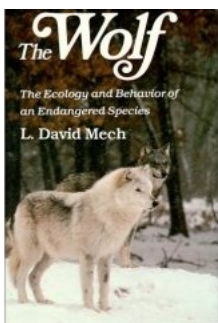
This reading list was compiled by the UK Wolf Conservation Trust, if you would like to take any books field / identification guides with you please feel free to do so, just remember you have to carry everything you take. Some books can be bought through the UK Wolf Conservation Trust or through our site from Amazon.co.uk.



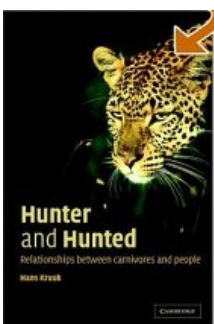
**Wolves: Behaviour, Ecology and conservation; L David Mech and Luigi Boitani.** The first systematic, comprehensive review of wolf biology since 1970. Many of the world's leading experts provide up-to-date coverage of topics including: wolf social ecology, behaviour, communication, feeding habits and hunting techniques, population dynamics, physiology and pathology, molecular genetics, evolution and taxonomy, interactions with non-human animals such as bears and coyotes, reintroduction, interactions with humans, and conservation and recovery efforts.



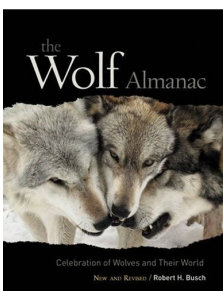
**Once a Wolf (scientists in the field); Stephen R. Swinburne.** Surveys the history of the troubled relationship between wolves and humans, examines the view that these predators are a valuable part of the ecosystem, and describes the conservation movement to restore them to the wild.



**The Wolf, The Ecology and Behaviour of an Endangered Species; L. David Mech.** Comprehensive study of the wolf's habits, behaviour, and relationship with other animals and the environment.

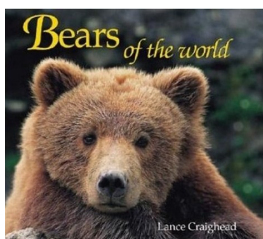


**Hunter and Hunted: Relationships between carnivores and people; Hans Kruuk.** Humans have mixed emotions concerning carnivores. We admire them as beautiful hunters, cosset them as pets, and use their pelts and other products in clothing, medicines and cosmetics. However, they are also responsible for killing us and our livestock, carry disease and compete with us for space and food. While some advocate the conservation of predators such as wolves and tigers, others see them as vermin and want them gone. In this book, Hans Kruuk, a life-long naturalist with a passion for predators tells the fascinating story of carnivores and our intricate relationships with them. Illustrated with specially commissioned drawings, it deals with the wild beauty of carnivores and their conservation, but also with furs and medicine, man-eaters and sheep-killers, explaining in simple terms what the role of carnivores is in nature, how this impacts on human lives, our art and literature, how we instinctively respond to them and why.

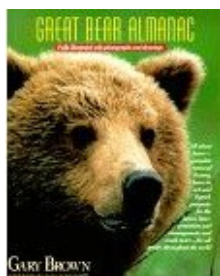


**The Wolf Almanac: A Celebration of Wolves and Their World; Robert H. Busch.** Complete illustrated reference for wolf enthusiasts of all kinds. Among the topics covered are: wolf evolution, habitat, anatomy and behaviour, the wolf in literature, art and myth, man's relationship with the wolf, the distribution and biology of wolves through out the world.

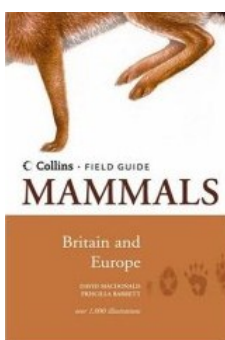




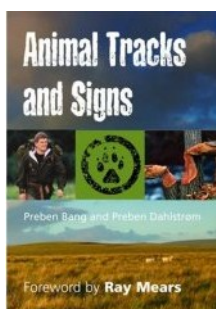
**Bears of the World; Lance Craighead Bears;** Those massive residents of forests and mountains around the world, are creatures of astonishing antiquity as described in the magnificent *Bears of the World*; when ancestral humans migrated out of Africa hundreds of thousands of years ago, bears were likely among the first creatures to greet them as they passed into Europe and Asia. Bears have weathered the encounter badly, writes biologist Lance Craighead, and especially in recent years with the rise of powerful firearms. Of the eight living species of bears worldwide, he observes, only two are not endangered or threatened.



**The Great Bear Almanac; Gary Brown;** A complete, illustrated natural history of the bears of the world. Provides detailed information on the evolution, physiology, and behaviour of bears, discusses human contacts with bears, bears in religion, folklore and related matters and provides data on conservation treaties, organisations interested in bears and other topics.



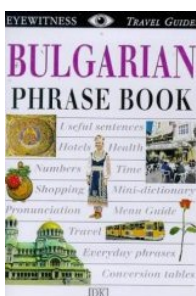
**Field Guide to the mammals of Britain and Europe (Collins field guide); David Macdonald;** A Definitive guide to the mammal fauna of Europe, written by one of the worlds mammal experts. It covers every species of mammal that occurs in Europe, including marine mammals, a total of 230 species. The text covers identification, taxonomy, biology, behaviour and distribution. The plates detail not only identification features but also paw prints, feeding signs and variants.



**Animal Tracks and Signs ; Preben Bang and Preben Dahlstrom;** Animal Tracks and Signs was first published in English in the 1970s, and immediately established itself as an all-time classic. Totally unique in its accessible, down-to-earth approach and detailed coverage of more than 200 creatures, it is the only book in print that enables readers to determine which animals have passed through the countryside by examining the traces they have left behind, opening up a captivating new world that might otherwise remain unseen. A quick-reference plate sections compare actual-size prints, pellets, and droppings for fast identification on the move, covering such diverse wildlife as the shrew, hedgehog, fox, elk, and bear; the sparrow, kestrel, and eagle owl.



**Bulgaria (Lonely Planet Country Guide); Richard Watkins & Tom Masters** The Lonely Planet Country Guides are the complete country guides for independent travellers. They feature inspirational colour highlights sections, easy-to-use grid-referenced maps and insightful history, culture, food and environment chapters by specialised contributors.



**Bulgarian (Eyewitness Travel Guides Phrase Books); Dorling Kindersley Publishers Ltd;** Intended for holiday makers, business people and general travellers this Bulgarian word and phrase book includes a menu guide, a guide to pronunciation and a 2000 line mini-dictionary.



# Articles / Papers / Abstracts

**Bulgarian National**

[http://www.bnr.bg/radiobulgaria/emission\\_english/theme\\_science\\_and\\_nature/material/predat.htm](http://www.bnr.bg/radiobulgaria/emission_english/theme_science_and_nature/material/predat.htm)

**Radio**

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## **Science and nature**

### **Bulgaria and European cooperation in regulating predator population**

On the territory of the Old Continent there are four types of large predators – the brown bear, the wolf, the lynx and wolverine. The preservation of these species in the densely populated European lands has proved a hard job. Bulgaria is one of the few European countries, which can boast of sustainable populations of wolves and bears. Meanwhile these wild animals inflict damage on domestic animals, beehives and crops. That is why this country has to work out plans for the management of those populations.

Large beasts need a lot of space and very often their populations spread on the territory of several neighbouring countries. That on the other hand imposes the need for international cooperation and coordination of the efforts of different countries in that direction. For the purpose the European Commission has entrusted the Institute on Applied Ecology in Rome with the project “Campaign for Improving the Level of Information on Large Predators”. Bulgarian experts from the Ministry of the Environment and Waters, the State Agency on Forests, scientists from the Bulgarian Academy of Sciences and NGO representatives were acquainted with the project. “Our aim is to discuss the project and include your arguments in it,” said Valeria Salvatori, one of the authors of the European initiative.

“At present large predators in Europe spread over growing territories, she explains. They can travel large distances and often one population occupies lands in several neighboring countries. That is why the management of these populations requires international cooperation. Cooperation between different institutions within a country and among regions is also very important.”

According to Valeria Salvatori it is necessary to study the level conflict between the population and the animals, which a given country can tolerate. In her words, Bulgaria is developing intensively, especially in the sphere of infrastructure and urbanization. That entails problems with nature preservation in general. Most of the countries of East Europe, Bulgaria included, still have all these types of animals while in West Europe there exist only one or two of them, with low number populations at that.

“We are one of the few European countries having sustainable populations of these species,” said Velichko Velichkov, Director of the National Service for Nature Protection Department of the Ministry of the Environment. We are trying to include in the campaign a larger part of the public – mainly municipalities, local people and hunters who are partial to the problems wild animals create for agriculture and the ways to compensate the damages. These species should not disappear from wild nature in the future and people should learn to live with them and manage them in such a way as to preserve a sustainable population of them.”

As a result of the opinions of experts and the public in various European countries, the project would be presented for approval. That will entail the creation management plans on predator populations on various levels and among different countries. Bulgaria, for example can work out such a plan for the management of the bear population together with Greece and Serbia.

“Bulgaria can cooperate with its neighbors, Serbia included, even though the latter is not a member of the EU,” Velichkov further explains. “With Greece this cooperation is a must because along our common border there is a population of wolves and bears, while in Serbia there is the lynx, which jumps over to Bulgaria from time to time. That is why our closest contacts will be with Serbia, Macedonia and Greece.”

Written by Darina Grigorova

Translated by Iva Letnikova

Published on February 22, 2008 at 3:26 PM BG

**Extract from the Report on the conservation status and threats for wolf (*Canis lupus*) in Europe available from:**

<http://www.lcie.org/Docs/COE/Salvatori%20COE%20Status%20of%20the%20wolf%20in%20Europe.pdf>

## **BULGARIA**

*Population Status:* The wolf population in Bulgaria is officially estimated to be around 2,300 individuals, although field studies carried out recently suggest the population is probably around 1,000 individuals. The population has been stable in the period 1997 – 2005.

*Distribution:* The presence of wolves in Bulgaria is linked to mountainous areas of the Balkans in the central part of the country and the Rila-Rhodopes mountains bordering with Greece. Small remnants populations bordering with Romania and with Turkey appear to be separated from the overall central distribution area.

*Legal and Conservation Status:* the wolf is a game species in Bulgaria, according to the National Law for Hunting and Conservation of Game. Hunting is allowed all year round. The wolf is included in the Biodiversity Protection Act of Bulgaria as a species under regulated use. This means that if in the whole country, or in some part of it, the species status is reported to be under threat, for the specific region or for a certain period the hunting on the species might be forbidden. The institution responsible for wolf management is the National Forestry Administration, which is a body under the Ministry of the Agriculture and Forests. The number of the wolves which can be killed annually is unlimited (no quotas) and the bounty given to a hunter for a killed wolf was raised in 2003 from 25 leva (around 13 Euros) to 100 leva (50 Euros).

*Potential Threats:* In some regions the occurrence of wolf - dog hybrids has been reported. The increase in bounties for a killed wolf (from 25 to 100 leva), and this has represented an incentive for hunters. Given the number of hunters in the country (currently over 120 000 and increasing) the presence of bounties and resulting over-harvest represents a serious threat.

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## **Wolf Print Article: Issue 31—Building the future in Bulgaria**

<http://www.peopleandwildlife.org.uk/publications/Wolf%20Print%20issue%2031.pdf>

## **International Wolf Magazine: Summer 2005—Wolves in Bulgaria, Research and Conservation**

<http://www.internationalwolf.net/wolves/news/iwmag/2005/summer/world.pdf>

# **Darwin Initiative: Half Year Report (due 31 October 2007)**

**Project Ref. No.** 14-021

**Project Title** Large Carnivore Education Centre, Bulgaria

**Country(ies)** Bulgaria / UK

**UK Organisation** Education 4 Conservation Ltd

**Collaborator(s)** Education 4 Conservation / Balkani Wildlife Society / UK Wolf Conservation Trust

**Project Leader** *Denise Taylor (UK) / Elena Tsingarska (Bulgaria)*

**Report date** 30 October 2007

**Project website** [www.education4conservation.org](http://www.education4conservation.org)

**1. Outline progress over the last 6 months (April – September) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up).**

## **Visitors to the LC centre and the Large Carnivore Project**

After the first phase opening of the LC centre, in May 2007, there have been a number of groups of visitors. Throughout May and June five groups of pupils visited the centre and the ambassador animals. These were pupils aged between 8 and 11 years. The number of children in those groups was 96 in total. At the beginning of July another large group of children (34) visited the Centre. This was organized by friends of the Project Leader, Elena Tsingarska). The friends run an organization which offers alternative “green” tourism. The children who attended were from a summer school in Sofia. They visited the Pirin Mts. for three days to experience hiking, mountain biking, bird watching and they spent one day in Vlahi where they saw all the animals in the rare breeds’ centre of SEMPERVIVA Society. Some of the children rode the Karakachan horses at the Centre, but the most exciting moment for them was to touch the ambassador wolf Vucho and to throw some apples to Medo the rescued brown bear.

Other visits included:

- Visitors to Vlahi who were on the way to the National Park – around 100 people;
- Young people who volunteered in the Eco-centre of CVS organization – around 75 people;
- Tourists who started from Vlahi a horse-riding trip in Pirin – around 40 people;
- Foreign tourists who had heard about Vlahi and the LC centre and came specially to see it – 14 people;
- Foresters and national park rangers from neighboring countries, Kosovo, Macedonia and Serbia – 40 people, who were in Bulgaria for experience exchange with their Bulgarian colleagues. In these cases the local foresters and the Pirin NP administration included a visit to our centre and the ambassador animals as a whole day in the program of the guests;
- Local people from the region, who visited our project in Vlahi in weekends, 60 – 70 people.

## **Workshops**

In mid July, the first workshop was held in the seminar room of the LC centre. The participants were representatives of BALKANI Wildlife Society, SEMPERVIVA Society, Frankfurt Zoological Society (FZS) and two German organizations ENEA and BUND. ENEA and BUND are the German partners of BALKANI in their project to the German foundation DBU for the building of the LC centre and for field analysis on the brown bear population in Bulgaria. This workshop was one of the several which are planned for DBU/FZS.

Balkani Wildlife Society invited their German partners to arrange the workshop in the LC centre in order

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to see the progress that has been made. When the FZS and the ENEA representatives saw the progress made on the construction of the LC centre, they decided during the workshop that the building work will be supported by FZS and DBU with additional funding to purchase materials for the roof.

Although the LC centre building is still not complete, there is already a great deal of interest from different organizations who wish to hold meetings and workshops at the Centre. A trade company for vet products asked to organize a seminar for promotion of different new generation vet products. They rented the seminar hall for one day seminar. A number of livestock breeders were invited on this seminar. As hosts, Balkani were given the opportunity to present their activities and used this to introduce information about large carnivores in Bulgaria and the best damage prevention methods. This seminar was the first practical step towards establishing activities which will help with self-financing for the LC centre.

## **Media coverage**

After the first phase opening of the LC centre in May 2007 a large article about this event and about the LC centre in general was published in the main daily newspaper for Blagoevgrad region, "Struma" newspaper. This region covers all the South-west Bulgaria.

A team of one of the three National TV channels, BTV, visited the team in Vlaha at the beginning of July. They gave wide coverage about the Large Carnivore work and the centre in particular. The report was broadcast twice and at peak viewing time around 19:30.

#### **Other Promotional Activity**

E4C and the UKWCT have publicized and promoted the Large Carnivore Education Centre and the work being undertaken. More recently the International Student Exchange Programme was publicized at the UKWCT Annual Seminar in September 2007. The seminar is run on an international basis with guest speakers from around the world. The students gave a poster presentation at the seminar and were on hand to talk about their experiences during their exchange visit. (See below for further details on the International Student Exchange Programme). The programme has also been publicized on the UKWCT website.

#### **Development of special education program for schools**

In August, the project leader, Elena Tsingarska, and a new assistant developed a range of education programmes for pupils visiting the LC centre. The plan was to start contacting schools in September, and invite them to attend these programmes.

It was planned to have a schedule for one-day and two-days visits for the different schools groups in agreement with the teachers. However, a week after the school term started on 15<sup>th</sup> of September the teachers went on strike. Pupils have not gone to school since then, which has obviously had an impact on the programme. The team is waiting until the strike is over, and hope to start the planned education activities with school groups as soon as possible and continue with these upto the end of 2007. After this new programmes and education activities will be organised.

#### **International Student Exchange**

In September two students from the UK Wolf Conservation Trust spent a week at the Large Carnivore Education Centre. This was a pilot project that was organised to implement the long term International Student Exchange Programme between Balkani Wildlife Society and the UKWCT. Also that month, the Centre hosted a visit from Education Centre Manager, Zegeye Kimbet, from the Ethiopian Wolf Conservation Programme. This was organised with the help of E4C, the UKWCT and WildCRU at Oxford University. Zegeye spent ten days at the Centre learning about the education programmes and the running of the Centre.

For both visits, there was an exchange of ideas and knowledge that will benefit all the collaborative partners involved.

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### **2. Give details of any notable problems or unexpected developments that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities. Building the roof**

The shortage of funding for the construction work forced the team to find alternative ways of completing the construction of the roof. The construction of the concrete and wall building work went over budget and used up all the funds available at the time. In addition, the team discontinued their agreement with the building company who had not performed well. Fortunately, the team in Bulgaria is skilled in building and construction work, and have called in a team of volunteers to help with the work. This means that the roof will soon be completed (anticipated completion end November 2007).

Although the construction work has been a lot slower than originally anticipated, it has not totally hampered progress with regard to visitors to the centre and the hosting of workshops and seminars. Clearly there will be some impact from the delayed full opening of the Centre as not all the facilities are yet available. However, what must be borne in mind is that this is a massive project orchestrated by a very small team. When put in this context, the achievements are enormous by any standards, and the legacy the Centre will have in the long term will be far reaching.

### **Have any of these issues been discussed with the Darwin Secretariat and if so, have changes been made to the original agreement?**

Progress reports have charted the development of the building of the Large Carnivore Education Centre and the delays that have been experienced.

### **3. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?**

There are no other issues relating to the project. Despite the delays in the building work on the Centre, the

programme is still managing to progress extremely well with visitors to the Centre arriving in greater numbers, and workshops and seminars already being hosted. In addition, the Centre and the overall project is receiving a lot of media attention. There have been some additional activities to the original programme such as the International Student Exchange which will also help with the self-sustainability of the Centre in the future.

# SAVE

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SAVE Head Office: Paradiesstr. 13, D-78462 Konstanz/Germany Tel. +49-7531 / 455 940

Web: <http://www.save-foundation.net> E-mail: [office@save-foundation.net](mailto:office@save-foundation.net)

## **Conservation of Karakachan sheep, Karakachan horse and Karakachan dog - one of the oldest breeds in Europe**

**This project is dedicated to Dr. Yordan Danchev, who devoted his life for saving old autochthon breeds and for conservation of Rhodope Mts.**

Project execution: Bulgarian Biodiversity Preservation Society (BBPS) Semperviva

Mr Sider Sedefchev, chairman (e-mail: [semperv@rotop.com](mailto:semperv@rotop.com))

Kv. Tvardi Livadi bl. 51, app. 90; BG-2300 Pernik / Bulgaria

Project financed by: Fondation pour les Animaux du Monde, FL-9490 Vaduz

### **Background information**

The Karakachan sheep, Karakachan horse and Karakachan dog are local breeds, which had been formed on the Bulgarian lands, as a result of the most primitive type of livestock breeding - nomad livestock breeding. The Karakachans are Balkan nomad people of livestock breeders, who are considered by most of the historians, as descendants of the ancient Thracian livestock breeding communities. It is considered that thanks to their extremely conservative livestock breeding traditions, Karakachan people have saved the most primitive and pure domesticated forms of animals - a sheep type "tzakel", a mountain horse and a livestock guarding dog.

**To read the rest of this paper, with further information on the project and its aim's and objectives go to:**

[www.save-foundation.net/Publications/Karakachan.pdf](http://www.save-foundation.net/Publications/Karakachan.pdf)

## Mitochondrial DNA variability in Italian and East European wolves: Detecting the

**Author(s):** Randi E, Lucchini V, Christensen MF, Mucci N, Funk SM, Dolf G, Loeschcke V

**Source:** CONSERVATION BIOLOGY **Volume:** 14 **Issue:** 2 **Pages:** 464-473 **Published:** APR 2000

**Times Cited:** 35 **References:** 44

**Abstract:** The Italian wolf (*Canis lupus*) population has declined continuously over the last few centuries and become isolated as a result of the extermination of other populations in central Europe and the Alps during the nineteenth century. In the 1970s, approximately 100 wolves survived in 10 isolated areas in the central and southern Italian Apennines. Loss of genetic variability, as suggested by preliminary studies of mitochondrial DNA (mtDNA) sequences, hybridization with feral dogs, and the illegal release of captive, non-native wolves are considered potential threats to the viability of the Italian wolf population. We sequenced 546 base pairs of the mtDNA control region in a comprehensive set of Italian wolves and compared them to those of dogs and other wolf populations from Europe and the Near East. Our data confirm the absence of mtDNA variability in Italian wolves: all 101 individuals sampled across their distribution in Italy had the same, unique haplotype, whereas seven haplotypes were found in only 26 wolves from an outbred population in Bulgaria. Most haplotypes were specific either to wolves or dogs, but some east European wolves shared haplotypes with dogs, indicative of hybridization. In contrast, neither hybridization with dogs nor introgression of non-native wolves was detected in the Italian population. These findings exclude the introgression of dog genes via matings between male wolves and female dogs, the most likely direction of hybridization. The observed mtDNA monomorphism is the possible outcome of random drift in the declining and isolated Italian wolf population, which probably existed at low effective population size during the last 100-150 years. Low effective population size and the continued loss of genetic variability might be a major threat to the long-term viability of Italian wolves. A controlled demographic increase, leading to recolonization of the historical wolf range in Italy, should be enforced.

**Document Type:** Article

**Language:** English

**Key Words Plus:** WOLF CANIS-LUPUS; GRAY WOLF; MICROSATELLITE LOCI; GENETIC-VARIABILITY; MOLECULAR-

**Addresses:** Randi, E (reprint author), Ist Nazi Fauna Selvat, Via Ca Fornacetta 9, I-40064 Ozzano Emilia, BO Italy  
Ist Nazi Fauna Selvat, I-40064 Ozzano Emilia, BO Italy  
Zool Soc London, Inst Zool, London NW1 4RY, England  
Univ Bern, Inst Anim Breeding, CH-3012 Bern, Switzerland

**Publisher:** BLACKWELL SCIENCE INC, 350 MAIN ST, MALDEN, MA 02148 USA

**IDS Number:** 300WD

**ISSN:** 0888-8892

# INVESTIGATIONS ON THE NUMBER OF WOLVES AND THEIR EFFECTS ON DOMESTIC-ANIMALS IN BULGARIA

**Author(s):** GENOV PW, KOSTAVA V

**Source:** ZEITSCHRIFT FUR JAGDWISSENSCHAFT **Volume:** 39 **Issue:** 4 **Pages:** 217-223 **Published:** DEC 1993

**Times Cited:** 1 **References:** 0

**Abstract:** The investigation was conducted during the time period 1984 to 1988. The records of the state insurance institute, containing data on wolf attacks on domestic animals were used (Table 1). In addition data on the numbers of wolves shot during that time period were collected. The numbers shot per year are as follows: 1984 - 163, 1985 - 147, 1986 - 179, 1987 - 211, and 1988 - 220 animals. The numbers of wolves living in the various mountains were determined from a survey. For those mountain ranges taken into consideration, the following wolf populations were estimated: Rhodopen - 60-80 individuals and 189-264 km(2)/animal; Rila and Pirin Mountains - 60-80 animals and 109-145 km(2)/animal; Ossogowo - Belassiza Mountains - 40-50 wolves and 57-70 km(2)/animal; West and Central Balkan - 35-38 wolves and 200 km(2)/animal. Then there are 10-15 wolves in the river basin of Beli Lom and about 20 specimens in the Strandscha and Sakar Mountains, A total of 260-330 wolves were living in Bulgaria in 1988.

The damage caused by wolves increases continuously. In 1984 there were 381 wolf attacks on flocks of sheep and 954 sheep were killed. That averages to 2.4 +/- 2.1 sheep killed per attack. For subsequent years the following data were determined (number of attacks, number of sheep killed, average number killed/attack): 1985 - 629 - 1429 - 2.3 +/- 1.6; 1986 - 824 - 1908 - 2.3 +/- 1.6; 1987 - 949 - 2203 - 2.3 +/- 1.5; 1988 - 1101 - 2869 - 2.6 +/- 1.8 (Table 2). During this time wolves also preyed on a total of 458 goats, 38 horses, 160 cows, 41 donkeys, and 28 mules. Measures to reduce the numbers of wolves in regions of intensive animal husbandry on unprotected pasturage must be undertaken without endangering this species in protected areas.

**Document Type:** Article

**Language:** German

**Addresses:** GENOV, PW (reprint author), BULGARIAN ACAD SCI, INST ZOOL, BOUL OSVOBODITEL 1, BU-1000 SOFIA, BULGARIA

**Publisher:** BLACKWELL WISSENSCHAFTS-VERLAG GMBH, KURFURSTENDAMM 57, D-10707 BERLIN, GERMANY

**IDS Number:** MW019

**ISSN:** 0044-2887



# The trophic ecology of wolves and their predatory role in ungulate communities of forest ecosystems in Europe

**Author(s):** Okarma H

**Source:** ACTA THERIOLOGICA **Volume:** 40 **Issue:** 4 **Pages:** 335-386 **Published:** DEC 1995

**Times Cited:** 38 **References:** 211

**Abstract:** Predation by wolves *Canis lupus* Linnaeus, 1758 in ungulate communities in Europe, with special reference to the multi-species system of Bialowieza Primeval Forest (Poland/Belarus), was assessed on the basis results of original research and literature. In historical times (post-glacial period), the geographical range of the wolf and most ungulate species in Europe decreased considerably. Community richness of ungulates and potential prey for wolves, decreased over most of the continent from 5-6 species to 2-3 species. The wolf is typically an opportunistic predator with a highly diverse diet; however, cervids are its preferred prey. Red deer *Cervus elaphus* are positively selected from ungulate communities in all localities, moose *Alces alces* are the major prey only where middle-sized species are scarce. Roe deer *Capreolus capreolus* are locally preyed on intensively, especially where they have high density, co-exist mainly with moose or wild boar *Sus scrofa*, and red deer is scarce or absent. Wild boar are generally avoided, except in a few locations; and European bison *Bison bonasus* are not preyed upon by wolves. Wolf predation contributes substantially to the total natural mortality of ungulates in Europe: 42.5% for red deer, 34.5% for moose, 25.7% for roe deer, and only 16% for wild boar. Food niche breadth (B) of wolves in Europe, calculated only for the ungulates considered in this study, increases with the number of ungulate species in the community. There is also a significant relationship between ungulate community breadth and food niche breadth of wolves. Food niche breadth of wolves, however, does not achieve very high values even in the richest ungulate communities. Wolves easily adapt to locally abundant food of anthropogenic origin (livestock, garbage). The level of predation on livestock may be a result of different husbandry practices (eg use of livestock guarding dogs) rather than of differences in availability of wild and domestic prey. Available data from Europe suggest that wolves likely limit density of red deer and moose in some areas. Roe deer density can be decreased locally by wolves but is limited mainly by lynx *Lynx lynx*. Wild boar density is more influenced by mast crops of *Quercus* spp. and *Fagus silvatica* (and to a lesser extent by snow depth) than by wolf predation.

**Document Type:** Review

**Language:** English

**Author Keywords:** *Canis lupus*; predation; prey preference; ungulates; Europe

**KeyWords Plus:** BIALOWIEZA-NATIONAL-PARK; WHITE-TAILED DEER; WOLF *CANIS-LUPUS*; POPULATION-DYNAMICS; PREY SELECTIVITY; FOOD-HABITS; SNOW DEPTH; CARPATHIAN MOUNTAINS; MOOSE POPULATIONS; BRITISH-COLUMBIA

**Addresses:** Okarma, H (reprint author), POLISH ACAD SCI, MAMMAL RES INST, PL-17230 BIALOWIEZA, POLAND

**Publisher:** POLISH ACAD SCIENCES, MAMMAL RESEARCH INST, 17-230 BIALOWIEZA, POLAND

**IDS Number:** TQ287

**ISSN:** 0001-7051

## **Suggested Websites**

BBPS Semperviva:	<a href="http://www.save-foundation.net/semperviva/home.htm">www.save-foundation.net/semperviva/home.htm</a>
Balkani Wildlife Society	<a href="http://balkani.org/index.php?language=en">http://balkani.org/index.php?language=en</a>
Education For Conservation	<a href="http://www.education4conservation.org/">www.education4conservation.org/</a>
European Nature Heritage Fund	<a href="http://www.euronatur.org/Euronatur_-_European_Nature_Heri.english.0.html">www.euronatur.org/Euronatur_-_European_Nature_Heri.english.0.html</a>
Bulgarian Biodiversity Fund	<a href="http://www.bbf.biodiversity.bg/index.php?&amp;lang=EN">www.bbf.biodiversity.bg/index.php?&amp;lang=EN</a>
Darwin Initiative	<a href="http://darwin.defra.gov.uk/project/14021/">http://darwin.defra.gov.uk/project/14021/</a>
UK Wolf Conservation Trust	<a href="http://www.ukwolf.org">www.ukwolf.org</a>
Before you know it Free Language software	<a href="http://www.byki.com/fls/free-bulgarian-software-download.html?l=bulgarian">http://www.byki.com/fls/free-bulgarian-software-download.html?l=bulgarian</a>
BBC Languages—Bulgarian	<a href="http://www.bbc.co.uk/languages/other/quickfix/bulgarian.shtml">http://www.bbc.co.uk/languages/other/quickfix/bulgarian.shtml</a>