



© Mertzanis/NGO "Callisto"

Den site of a female radio-collared brown bear in Greece.

Denning "Rhythms" of Brown Bears in Greece are Heating Up!

Alex. Giannakopoulos
Email: agiannak@env.aegean.gr

Y. Mertzanis
Member: European Brown Bear Expert Team
Email: mertzanis@callisto.gr

A. Riegler
S. Riegler
Ath. Tragos
C. Godes
NGO "CALLISTO" Wildlife & Nature Conservation Society

As part of the Egnatia Highway impact monitoring project in NE Pindos, Greece, conducted from 2006 to 2009 by NGO "CALLISTO", we sought to better understand the denning chronology of brown bears at the southernmost part of the species' range in Europe.



Female brown bear with two young cubs. Parturient females were unexpectedly active until late January, just before giving birth.

© A. Riegler/NGO "Callisto"

(See *International Bear News* November 2009, 18(4):10-12, 20 for description, map, and photos.) We monitored a sample of 24 radio-tagged individuals (16 males and 8 females, tracked for periods of 0.5-14 months). Their mean date of den entry was 27 December (range: 4 Dec - 4 Feb, $n = 11$) and mean

date of den emergence was 28 March (range: 15 Feb - 17 May, $n = 11$). Mean duration of denning was 83 days (range: 20-145 days, $n = 11$).

Of particular note, 7 of 11 males remained active during almost the entire winter period, travelling within a winter home range averaging 36 km² (100% MCP; range 8-81 km²). One adult male showed alternate periods of inactivity and activity corresponding with winter temperatures fluctuations.

Also striking was a limited level of activity for all four pregnant females prior to parturition (average winter home range = 3 km², range 1.5-7.5 km²); they all settled down by the end of January, and gave birth during the first week of February.

An initial analysis of the data indicates a positive correlation between winter activity and temperature as

temperatures rose above a threshold of ca. 5-10°C. This relationship suggests that vulnerability to human-sources of mortality (e.g., from road crossing, retaliatory killing from livestock depredations) for brown bears in this southernmost part of Europe may increase with continued climatic changes. ■

First Genetic Assessment of the Brown Bear (*Ursus arctos*) Population in Greece

Alexandros A Karamanlidis
ARCTUROS
Rogoti Str. 3
54624 Thessaloniki, Greece
Email: akaramanlidis@gmail.com
Website: www.arcturos.gr

Noninvasive genetic monitoring has emerged as a sensitive, reliable and time- and cost-efficient tool to deal with the inherent difficulties of studying rare, elusive and often endangered animals. A tool that has become nowadays one of the most commonly used methods in studying bears. In Greece, studying brown bears using genetic/molecular methods started in 2003 within the framework of a project carried out by the Arcturos, aiming to evaluate the effects of the construction of the "Egnatia" highway on the local bear population and habitat in the Prefecture of Grevena. Since 2007, the genetic monitoring efforts of Arcturos seeks to evaluate the genetic status of the species at a national level. Based on the marking and rubbing behavior of brown bears on telephone and power poles (Karamanlidis et al. 2007), the "Hellenic Bear Register" project established five study areas within the main distribution of brown bears in the Pindos mountains in Greece; approximately 300 power

poles were fitted with barbed wire and monitored monthly for two years (2007 – 2009). With funds provided by Alertis, fund for bear and nature conservation and the International Bear Association, genetic monitoring activities were carried out in 2008 – 2009 also in Albania, the Former Yugoslav Republic of Macedonia and Serbia.

As of the end of 2009 the project has identified three different bears in Albania, eight in the F.Y.R. Macedonia, eleven in Serbia and 257 in Greece. More specifically, in Greece and in 2008 alone, 215 different bears were identified.

Considering the general lack of knowledge regarding the status of the brown bear population in the country (the official minimum population estimate for brown bears in Greece in 2006 was 190-260 individuals) and the success of the genetic monitoring efforts of ARCTUROS until now, the newly founded Hellenic Ministry of Environment and Climate Change has recently appointed Arcturos with the task of carrying out the first genetic assessment of the bear population in the country. The 18-month project was initiated in November 2009. During the preparatory phase of the project (November 2009-April 2010) guidelines for streamlining all future genetic research on brown bears in Greece were defined and a dense network of noninvasive sampling stations was established. In order to build upon the already existing knowledge and experience and produce comparable results the six microsatellite loci identified and used within the “Hellenic Bear Register” will be used (Karamanlidis et al. 2010). Due to the increasing number of individual bears identified in the country a soon-to-be-identified seventh marker is going to be added to the ones already used. In addition to the five already existing sampling areas of the “Hellenic Bear Register”, another three were established in the Prefecture of Ioannina, in the National Park of Prespes and along the vertical axis of the “Egnatia”


highway in Kastoria (> 350 sampling stations in total), thus covering the biggest part of the species range in the Pindos Mountains.

Due to lack of suitable power poles, genetic monitoring of brown bears in the eastern part of their distribution, in the mountains of Rodopi, will rely on the collection of scats and hair from rub trees. Sampling efforts started in March 2010 and are expected to commence the same time in 2011, after which a thorough analysis of all the genetic data available to Arcturos will take place. This will lead to recommending concrete conservation and management actions for the effective protection of brown bears in Greece.

Acknowledgements

The genetic monitoring efforts of Arcturos have been carried out in cooperation with the Aristotle University of Thessaloniki/Greece, the University of Zvolen/Slovakia, the University of Ås/Norway and Wildlife Genetics International/Canada. The whole project has received generous funding from Alertis, Fund for bear and nature conservation, the International Bear Association, Vodafone Hellas and the Hellenic Ministry of Environment and Climate Change. The activities of the project have been recently featured on BBC Earth; for more information visit http://news.bbc.co.uk/earth/hi/earth_news/newsid_8560000/8560235.stm

References

- Karamanlidis, A. A., D. Youlatos, S. Sgardelis, and Z. Scouras. 2007. Using sign at power poles to document presence of bears in Greece. *Ursus* 18:54-61.
- Karamanlidis, A. A., E. Drosopoulou, M. De Gabriel Hernando, L. Georgiadis, L. Krambokoukis, S. Pllaha, A. Zedrosser, and Z. Scouras. 2010. Non-invasive studies of brown bears using power poles. *European Journal of Wildlife Research*. 

New Highway Monitoring Efforts in Greece: the Egnatia Motorway vertical axis “Siatista – Kastoria – Kristalopigi” project

Alexandros A Karamanlidis
ARCTUROS
Rogoti Str. 3
54624 Thessaloniki, Greece
Email: akaramanlidis@gmail.com
Website: www.arcturos.gr

Determining and understanding mortality factors and species threats is essential in defining and implementing effective conservation actions. Greece has witnessed in recent years a dramatic increase in bear – vehicle collisions; since 1998 there have been 44 collisions, 28 of which were fatal to bears. Considering the potentially devastating effects that the construction of highways might have on local brown bear populations and their habitat, the Greek State has been funding two highway monitoring projects: the first one, now-completed “Egnatia” highway and the second one at the “E65” highway, which is still under construction.

A close inspection, however, of the locations where fatal bear–vehicle collisions have occurred recently, indicates that a significant percentage of collisions have taken place along one of the vertical axes of “Egnatia”, a 72 km stretch of highway, known as the “Siatista – Kastoria – Kristalopigi” vertical axis. Expanding an already existing stretch of road, this new highway, which is going to connect Greece with neighboring Albania, threatens to become an impermeable barrier to the West –East movements of the Pindos mountains bear population.