

## **ABSTRACT**

### **ACTION A2**

The present technical report is the deliverable from project's LIFE15NAT/GR/001108 action A2. Action's 2 main objectives are: (a) the evaluation of presence, distribution and population size of the brown bear (*Ursus arctos*. L.) population in the areas of Amyndaio and Florina.

To answer the aforementioned objectives, (3) combined approaches and methodological protocols have been implemented as follows: (a) evaluation of presence, distribution and circadian activity with the use of IR phototraps, (b) evaluation of presence and distribution with the collection of bear biosigns and (c) evaluation of the population size, genetic variability and genetic balance using DNA analyses and fingerprinting.

As regards to (a): a network of 12 IR camera traps was deployed over a 4 months sampling period in the area of Amyndaio. After processing 30.078 shots/frames and 17.238 videos we determined the relative abundance of bear presence in the study area as well as the circadian activity of the species which was also correlated to human presence and activity. We observed that the relative abundance of bears appears higher in specific habitat sectors of the study area (a fact that was also validated through the biosigns sampling). This relative abundance appears to increase in relation to human presence and activity which is related to anthropogenic food resources attractive to bears. This relative abundance index decreases as long as the distance from forest edges and rivers and streams increases.

Bears showed mostly nocturnal activity patterns in relation to human presence and activity. Humans and bears presence and activity showed a low degree of temporal overlapping (especially as regards to shepherds and livestock raising activity).

Regarding approach (c): genetic analyses and fingerprinting has shown that: the indigenous brown bear sub-population in the study area suffers of mediocre levels of genetic variability, which appear slightly lower compared to other Greek bear sub-populations but slightly higher than certain European brown bear populations.

The population size  $N_c$  was estimated at 154 individuals which is 3 times higher than the estimated effective minimum population ( $N_e=54$ ). However this result has to be treated with caution as according to the software creators the estimation accuracy of  $N_c$  strongly depends on the capture/recapture rate which has to be around 2 or more. In our case this value hardly exceeds an average of 1,36. A more intensive sampling that will take place under action D5 is expected to better validate with higher accuracy the brown bear population size in the study area. Finally the high index values for inbreeding in combination with the low value of  $N_e$  make the targeted brown bear subpopulation vulnerable over time, a fact that should urge conservationists and managers to undertake appropriate measures to slow down and or reverse this trend and secure the viability of this sub-population.