



Project LIFE09 NAT/GR/333  
«Improving conditions of bear-  
human coexistence in Kastoria  
Prefecture, Greece»

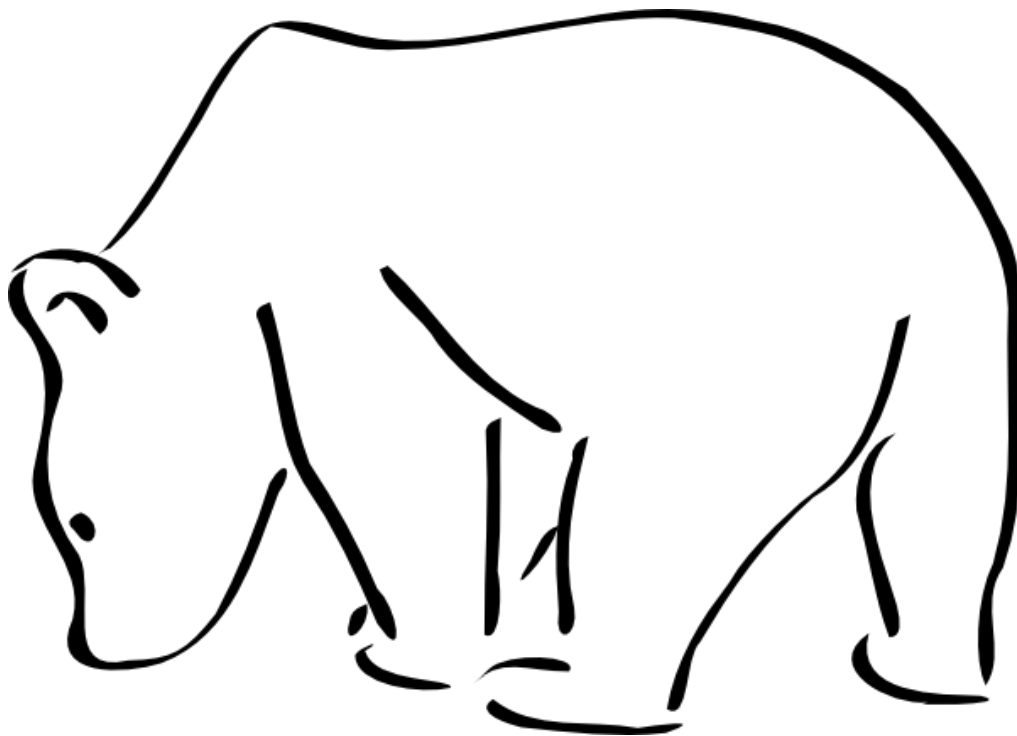


## FINAL REPORT

[Covering all project activities from 01/10/2010 to 30/09/2015]

## ANNEX VI

[After LIFE Conservation Plan]



LIFE09 NAT/GR/0333 - ARCTOS/KASTORIA

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**“Improving conditions of bear-human coexistence in  
Kastoria Prefecture, Greece - Transfer of best practices”**



**FINAL REPORT**

**Annex VI**

**After-LIFE conservation plan**

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LIFE Project Number  
**LIFE09 NAT/GR/0333**

LIFE+ PROJECT NAME or Acronym  
**ARCTOS/KASTORIA**

Data Project

<b>Project location</b>	Kastoria Regional Unit, Greece	
<b>Project start date:</b>	01/10/2011	
<b>Project end date:</b>	30/06/2014	<b>Extension date:</b> 30/09/2015
<b>Total budget</b>	€ 1.128.326	
<b>EC contribution:</b>	€ 846.244	
<b>(%) of eligible costs</b>	75%	

Data Beneficiary

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## 1. INTRODUCTION

For many mammal populations including brown bears, the main demonstrated impact of roads to date has been in terms of increased disturbance or mortality. Avoidance of otherwise suitable habitats in close proximity to roads has been shown to occur for brown bears (*Ursus arctos*) in the U.S.A. (McLellan and Shackleton 1988, Mace et al. 1996, Mech et al. 1988). For some mammal species, roads have been shown to act also as a considerable barrier to dispersal (Mader 1984). Roads and highways can therefore have a significant effect in fragmenting wildlife populations and habitats and eventually lead them to local extinction (Fahrig and Merriam 1994). Increased awareness of environmental problems caused by infrastructure construction has moved engineers, ecologists and policy makers to develop planning concepts to deal with the impacts on nature and landscape. Mitigation measures and solid fencing along highways are envisaged as the only viable solution to reduce the impact of a highway in the landscape as a linear habitat disrupting and/or deadly barrier. The case of highway KA45 impacted *Ursus arctos* population in the area in both ways causing high traffic mortality rates over a certain number of years (2009-2014) along with an impact on habitat connectivity assets.

In the same time, in the prefecture of Kastoria there has been an increase in the number of bears that tend to approach residential areas (e.g. villages of Nestorio and Klisoura). In order to address these incidents, specific preventive measures are required: These measures need to be deployed according to a precise technical protocol, depending on the case and the complexity of each incident. It was absolutely necessary, therefore, to establish and operate a special "Bear Emergency Team" (BET), which could intervene to such cases, either providing advices to local authorities (e.g. on management of garbage dumps or small orchards close to villages), or undertaking implementation of recommended methods and techniques (relocation, aversive conditioning).

Moreover, in the district of Kastoria, the agricultural sector (farming, animal breeding, and apiculture) plays a very important role for the economic and social life of the community. The damages caused by bears on livestock, apiaries, fruit trees and crops are a significant nuisance in rural areas and sometimes result in illegal methods of human caused bear mortality.

The LIFE ARCTOS KASTORIA project aimed to improve the conditions of bear-human coexistence in the area.

This report constitutes the last deliverable of the LIFE ARCTOS KASTORIA project and aims at describing the continuation of the conservation needs for bears and the planned activities after the project end.

The report has been prepared according to the relevant requirements of the EU Commission as shown on the formal site of the Commission. It describes the current situation of the area, including an assessment of it, as well as future conservation and management needs in the area.

## 2. ASSESSMENT OF THE SITUATION AT THE END OF THE PROJECT

### *What activities have been successful, which have presented problems and what problems?*

Project's activities addressing specifically these aforementioned major problems have not only been successfully implemented, resolving these problems, but also instigated/urged the highway constructor EGNATIA ODOS SA to claim for and obtain additional financing (from other EU resources) for the installation of a bear proof fence along highway KA45 coupled to a spectacular improvement of the mitigation structures numbers and features on the last highway stretch under construction.

Often brown bears (as part of large carnivores) are used as "scape goats" by local interest groups (mainly from the primary sector) to express their resentment and frustrations about other constraints hindering their profession such as: hard working conditions, "injustice" in damage compensation criteria, restrictions of activities in protected areas etc. Improving the relationships between local interest groups and authorities is also a tool to improve the image of bears among these stakeholders.

This has been achieved through several important steps:

- the encouragement (through free dissemination) of the use of effective damage prevention measures and tools
- the implementation of several communication and consultation campaigns
- the operation of a permanent supporting and consulting unit (emergency telephone number and advisory support) (D5)

But the most significant added value of the project's activities is that it has set the basis for long-term effects of the most important actions after project completion. Further to the project, which has encouraged the use of damage prevention measures and tools by propagating them for free among farmers, the project has made it possible that these tools will be further used in the future (one category of them: the electric fences, having been incorporated and subsidized in the RD program).

In general all project's activities have been successfully implemented, achieving all project objectives: the highway and network safety standards versus bear traffic mortality have been substantially improved. Best practices and experience have been transferred to all involved parties. Supporting units and structures have effectively managed human-bear interference problems. Attitudes of the local interest groups towards the conservation of bears and cooperation with stakeholders in bear conservation measures have been improved.

The survey on local interest groups attitudes versus the brown bear (A4) proved to be very useful to better target concrete conservation actions and information campaigns. The findings about attitudes of local communities provided important information on what should be done to achieve or maintain tolerance of stakeholders towards bear conservation.

The demonstration of the use of bear proof garbage containers and of electric fences (C2) has proved to be efficient and important in raising awareness on efficiency and advantages of using damage prevention tools. In the case of electric fences, the local farmers got aware of the importance of this preventive tool and continued promoting it with own initiatives among other farmers.

Also further development of the livestock guarding dog network (C3) has had a significant importance in two directions: (a) on one hand because several dogs have been delivered to livestock breeders in the project area, (b) on the other hand because this activity has had an important demonstration function and also because it enhanced the range of its effect through its complementarity under previous LIFE projects (LIFE PINGRE and LIFE EXTRA). The networks are now working autonomously and in the future many livestock breeders will benefit from the protection of efficient dogs thanks to this action.

The establishment and operation of the Bear Emergency Teams (BET) (C5) has also been extremely successful. Many different conflict situations have been managed throughout the project duration. But the milestone of this action's success was its contribution in officially establishing and putting in force a national BET following close cooperation with the Ministry of Environment a fact that guarantees the long term operation of this structure not only in the project area but also over the whole *Ursus arctos* range (when and where needed).

The project has also been very important for the transfer of expertise between participants (D2 and D4) in specific fields dealing with bear conservation and management practices such as: the assessment of damage on livestock, the use of damage prevention tools, the management and handling of bear-human interference problems and involvement tools for the management of conflicts.

Last but not least is the synergy of the project with project "ALPINE" for the development and pilot implementation of a sensors device capable of detecting the use of mitigation structures by bears along highway KA45. (E2).

### ***How is the outlook for the targeted habitat type and/or species?***

From the results obtained through the monitoring of the bear population in the project area using genetic analysis as the main tool (actions A3 and E3 implemented in the beginning and end of the project respectively), we acquired relevant information on the structure and trends of the targeted species population in the project area.

The population of the species estimated between 75-200 ind. seems to be substantially stable in the project area despite the persisting threat of poaching which remains always underestimated due to its illegal nature. Results from genetic analysis combined to telemetry data (action A1) showed a seasonal and/or prolonged concentration/segregation of a large population fraction in habitat types dominated by agroforest ecosystems with human related food resources (mainly cultivations) which are particularly attractive to bears due to easy and concentrated food availability and accessibility. Monitoring data on the use of highway KA45 mitigation structures have shown so far a selective use by individuals (less than expected) depending also on the location and type of the mitigation structure. This may have two interpretations: (a) bears are through an adaptive phase after the installation of the bear proof fence exploring the most suitable and safe mitigation structures as passages (b) the bear proof fence acts as a linear barrier. The large number of mitigation structures and the behavioral plasticity of bears support the first option.

### ***What are the remaining threats?***

In bear conservation the main threats are generally represented by conflicts with human activities. As long as there will be an overlap of areas inhabited by bears and humans (which is the case of the project area) these conflicts will always exist to a more or less severe degree. The solution to that problem is to create and to maintain the tools to minimize these conflicts as much as possible and to promote tools to ease coexistence as much as possible. This has been achieved successfully, and the project has established useful tools to minimize several of the existing threats.

On the other hand, since bear populations continue to expand and to re-colonize more humanized areas and since the socio-economic status of the local communities vary, there will be a continuous evolution of the interactions between bears and humans, which will constantly have to be faced by adapting an integrated management strategy.

In the case of the project area, although the techniques for managing conflict situations have been demonstrated and knowhow has started being transferred to competent services and local authorities with the establishment of the national BET, adequate operational capacity has not yet reached its maximum level due to institutional and financial reasons .

Also, although bear habituation to human related food sources has been identified as one of the main reasons generating human bear conflicts and subsequent poaching, in the project area, further concrete conservation actions should be implemented in the future (e.g. electric fences bear-proof garbage etc.) but also a more severe control and sanctioning of poaching has to be urgently endorsed by the competent authorities.

### ***What activities have to be carried on and why?***

The continuation of certain activities launched or established by the project have to be continued in order to keep the remaining threats at a certain level which will not be detrimental to the species conservation status. Especially, there will be a need for the following activities:

- Continue to promote modern damage prevention techniques. Maintenance and monitoring of the bear-proof refuse containers and electric fences
- Continuation of the LGD's network operation. The LGD (Livestock Guarding Dogs) Network can continue functioning as the livestock raisers could have access to provide each other with high-quality LGD through the project's webpage. The existing core of the Network can inform the webpage by making announcements of LGDs for adoption or for sale, with photos and other information (age, gender, condition etc). The LGDs can be either donated or sold.
- Develop the stakeholder involvement and consultation processes more widely
- Continue training the staff involved in damage assessment and prevention
- Secure the effective and efficient operation of the Bear Emergency Team
- Continue public information and awareness activities

- Continuation of the operation of the Local Office. With the special telephone line and the email address, with all the informational material can still being available to locals through the Forest Service of the Regional Unit of Kastoria.
- The Forest Service has the responsibility and authority to coordinate the operational part for the Bear Emergency Team (BET). Also, representatives of the Veterinary Service, the Police, the ELGA as well as the environmental organizations Callisto or Arcturos who participate in the BET can inform and serve locals on brown bear matters. It can be done immediately after the end of the project, by representatives of each participants of the Coordinating Crisis Management Committee, using source of finance of The Green Fund that is stated at the Joint Ministerial Decision KYA 104180/433/5.2.2014 (ΦΕΚ Β'272).
- Continue monitoring of the efficiency and effective use of the mitigation structures along highway KA45.
- Regular analysis of relevant official data bases from ELGA. The damages can also be reported in the project's webpage by the stockbreeders after the end of the project. A thematic group described as «complaints» can be created as a banner in the project's website. Every three months the complaints can be gathered and processed by the Directorate of Rural Economy and Veterinary (Regional Unit of Kastoria) and the Directorate of Forestry and discussed for the implementation of further actions of protection.
- Surveys on the local people perception of human-bear coexistence. In order to promote a conversation plan after the Life Project it is important to take into account the general public views, attitudes and habits in order to adjust the awareness campaigns. It is more than a necessity to continue communicating using mainly traditional media messages about the project and the conservation of bears as well as use measures, such as road signs, electric fences etc. In addition more measures regarding the compensation of farmers and breeders should be implemented in order to enrich the proactive conservation of bears. Educational programs through schools can also contribute, since as it results from the survey younger generations tend to adopt a more friendly approach. The Forest Service has the responsibility and authority to coordinate the operational part for the Bear Emergency Team (BET). Representatives of the Veterinary Service, the Police, the ELGA as well as the environmental organizations Callisto or Arcturos who participate in the BET can inform and serve locals on brown bear matters. Also, questionnaires can be available to the public or complain forms regarding brown bear matters. It can be done immediately after the end of the project, by representatives of each participants of the Coordinating Crisis Management Committee, using source of finance of The Green Fund that is stated at the Joint Ministerial Decision KYA 104180/433/5.2.2014 (ΦΕΚ Β'272).
- Continuation of Environmental education programme.

The positive and negative aspects, identified in a SWOT analysis, are summarized below:



## STRENGTHS

- Better knowledge of conflict situations and stakeholder expectations
- Integration of the technical requirements in the environmental terms and conditions of the construction of the Koromilia highway section, in order to minimize the impact on large carnivores
- Significant decrease on the number of bear related highway accidents
- Improved awareness of the society about conservation issues
- Improved conditions for conservation
- Improved capacities and information level of conservation actors
- Institutionalization of the operation of Bear Emergency Team
- Slightly better relations and cooperation between stakeholders and between authorities and stakeholders
- Improved capacities in the use of innovative techniques (BET, HD etc.)
- Improved awareness of authorities of the importance of adequate techniques
- Increased involvement of local communities in management
- Increased awareness on legal and institutional shortcomings
- Integration of the preventive measures in the rural development program
- Increased cooperation of conservation actors

## WEAKNESSES

- Lack of human and financial resources and capacities
- Not sufficient involvement of national and local authorities and institutions
- Limited political will to support brown bear conservation actions
- Delays in implementation

## OPPORTUNITIES

- Extension of project experiences and best practice at country and EU level
- Improvement of regulations (e.g. for preventive measures)
- Further training of local actors about innovative techniques (BET, stakeholder involvement etc.)
- Further use of stakeholder involvement and consultation techniques
- Further transfer of experience from and between partners
- Further awareness raising of authorities about institutional shortcomings and innovative management techniques

## THREATS

- Changes in socio-economic and political situation in Greece
- Economic recession
- Institutional conflicts
- Decreased tolerance levels due to socio-economic and political reasons Lack of a common ground between different authorities and interest groups on monitoring and management etc.
- Slow reaction of institutions to legal issues and requirements

- Lack of continuity of funding for the long-term implementation of conservation activities
- Lack of awareness of institutions about modern management techniques
- Insufficient capacities in the use of modern management techniques

## **2. AFTER LIFE OBJECTIVES AND METHODOLOGY**

### *Conservation priorities*

- Financial support by Green Fund and in practice implementation of the Bear Emergency Team protocol by competent services and local authorities (Forestry Service District Departments, Managing Authorities of Protected Areas/Parks, etc.)
- Further support to implementation of preventive measures, in time and efficient implementation of relevant Measures in the new RDP of Greece 2014-2020.
- Implementation of bear aversive measures for minimization of bear food conditioning.
- Further stakeholder consultation and involvement for at least two more years.

### *Capacity needs*

- Employment of experts dealing with large carnivore/human coexistence by the Forestry Service District Departments.
- Capacity building of permanent personnel working for the local Forestry Service District Departments and Management Authorities of Protected Areas-National Parks (further transfer of experience and best practices).

### *Institutional issues and political problems*

- Additional support by EU Financial tools may be necessary (LIFE, Operational Programme “Transportation-Environment”, Regional Operational Programmes, Rural Development Programme of Greece, Territorial Cooperation Programmes etc.), due to economic crisis in Greece.
- During financial recession and economic crisis, decision makers tend to put environmental objectives as a second, or a third class priority.

## **3. FUNDING NEEDS AND SOURCE OF FUNDINGS**

The details of the continuation of the project activities are described for each action separately in the following tables.

<b>ACTION</b>	<b>METHODOLOGY / TECHNIQUES</b>	<b>WHO? (Organisation, personnel, etc.)</b>	<b>FUNDING</b>	<b>TIMING</b>
Action C1 " Installation of warning signs and deterrents for safer road network"	Regular Control of equipment, maintenance and replacement of missing and/or damaged items	REGION OF WESTERN MACEDONIA (RWM), technical services department – EGNATIA ODOS SA	REGION OF WESTERN MACEDONIA – EGNATIA ODOS SA	Till 2020, at least
Action C2 "Construction and use of bear-proof refuse containers and electric fencing"	Regular Control of equipment, maintenance and replacement of missing and/or damaged items regarding electric fences and bear-proof refuse-containers. As for E/F: regular visits to beneficiaries for control of operational status, efficiency and use.	Municipalities and RWM (technical services department)	Municipalities and RWM (technical services department)	Till 2020, at least
Action C3 "Development of a network of Livestock Guarding Dog owners"	Continuation and follow-up of network operation in terms of additional LGD's puppies' provision and periodical control and monitoring of already provided LGD's.	CALLISTO	CALLISTO's own resources	Till 2018, at least
Action C4 "Establishment and initial operation of an "Eco-Volunteers Programme"	Implementation of Eco-Volunteers Summer projects	CALLISTO own personnel and volunteers	Sponsors and EU co-financed programmes	During next 2 years, at least

<b>ACTION</b>	<b>METHODOLOGY / TECHNIQUES</b>	<b>WHO? (Organisation, personnel, etc.)</b>	<b>FUNDING</b>	<b>TIMING</b>
Action C5 "Establishment and pilot operation of a "Bear Emergency Team"	Continuation of BET operation under its new official status instituted by Joint Ministerial Decision No 104180/433 (272/05-02-2014).	Local forestry Services – with contribution of NGO CALLISTO (among official delegates)	Green Fund	Till 2020, at least
Action D1 "Public information and awareness raising campaign"	Dissemination of informational material left (brochure and posters)	CALLISTO, ANKAS Forestry Service Offices, Hotels	No extra funding necessary	During next 3 years, at least
	Publication of After LIFE activities through CALLISTO's e-newsletter and website	CALLISTO	CALLISTO's own resources	During next 3 years, at least
	E-banner linking to <a href="http://www.arctoslife.gr">www.arctoslife.gr</a> will be published at CALLISTO's new website	CALLISTO	CALLISTO's own resources	During next 3 years, at least
Action D2 "Special information campaign for agriculture professionals"	The Best Practice Manual and other informational material left will be available through both the project's and CALLISTO's website	RWM and CALLISTO	CALLISTO's own resources	During next 3 years, at least
	Publication of articles concerning wildlife damage control and prevention measures through CALLISTO's e-newsletter, website, blog and social media channels.	CALLISTO	CALLISTO's own resources	During next 3 years, at least
Action D3 "Production and dissemination of a special brochure for drivers"	The brochure for drivers will be available through the website of the project	RWM (REGION OF WESTERN MACEDONIA)	No additional funds are necessary	Till 2020, at least

<b>ACTION</b>	<b>METHODOLOGY / TECHNIQUES</b>	<b>WHO? (Organisation, personnel, etc.)</b>	<b>FUNDING</b>	<b>TIMING</b>
Action D5 "Operation of a Project's Local Office supporting bear-human coexistence"	Continuation of the operation of the Local Office	ANKAS	ANKAS own resources	During next 3 years, at least
Action D7 "Website set up and maintenance"	RWM will transfer both websites <a href="http://www.artoslife.gr">www.artoslife.gr</a> and <a href="http://www.arctoslife-2015.eu">www.arctoslife-2015.eu</a> to a private web-server owned by RWM	REGION OF WESTERN MACEDONIA	RWM Own resources	During next 3 years, at least
Action D8 "Environmental Education Programmes"	Implementation of new Environmental Education programmes throughout the school year	CALLISTO own personnel and volunteers	Sponsors and other fundraising activities	During next 2 years, at least
Action E2 " Monitoring of mitigation measures' effectiveness and efficiency "	Use output from synergy between LIFE and ALPINE projects – extension of motion sensors network over a larger number of mitigation structures along KA45 for regular detection of their use by brown bears	EGNATIA ODOS SA	EGNATIA ODOS SA own resources or EU co-financed programmes	Till 2020, at least
Action E3 " Monitoring of brown bear population and distribution status and trends"	Regular use of the already installed hair-traps network for collection of bear biological material and DNA analysis. Follow up of population status	CALLISTO NGO (volunteers – internship of graduate or post graduate students) - Aristotle University of Thessaloniki (internship students)	CALLISTO's and Aristotle University of Thessaloniki's own resources	Till 2020, at least

<b>ACTION</b>	<b>METHODOLOGY / TECHNIQUES</b>	<b>WHO? (Organisation, personnel, etc.)</b>	<b>FUNDING</b>	<b>TIMING</b>
Action E4 " Monitoring of damage caused by bears in the project area	Regular analysis of relevant official data bases from ELGA	CALLISTO NGO (volunteers – internship of graduate or post graduate students)	CALLISTO's own resources	Till 2020, at least
Action E5 " Follow-up surveys on the local people perception of human-bear coexistence "	Management of conflict resolution	Forestry Service Department, CALLISTO, Universities	Green Fund, CALLISTO's own resources	Till 2018, at least