LIFE ARCPROM

LIFE18 NAT/GR/000768

Improving Human-Bear Coexistence in 4 National Parks of South Europe

NATURA 2000

Callisto

UNIVERSITY OF WESTERN MACEDONIA

WWF

N.E.C.C.A.

Parco Nazionale della Maiella

General Information

Budget:

Total: 2.786.497 €

EU Contribution: 75%

Duration: 5 years (plus 9 months)
Start day: 01/10/2019
End day: ~~30/09/2024~~ (30/06/2025)

Coordinating Beneficiary: CALLISTO (GR)

Spyros Psaroudas / CALLISTO
LIFE ARCPROM Project Manager

http://lifearcprom.uowm.gr/

Project Implementation Areas

Pursuant to Law 4685/20, the Management Body of North Pindos National Park was abolished on 23/12/2021, being followed by the abolition of the other two Management Bodies, Prespa and Rhodope Mountain-Range, on 10/3/2022.
The above three Bodies were integrated as Management Units or part of Management Units of the Natural Environment and Climate Change Agency.

N.E.C.C.A.
Natural Environment and Climate Change Agency

PREPARATORY ACTIONS

A1 - Identification - delineation of sectors with high risk of human-bear conflicts (to implement conservation actions aimed at preventing negative interactions and minimizing conflicts)

A2 - Assessment of the distribution and numbers of bears in the project areas (to optimize the monitoring of the results and the impact of the actions implemented by the project)

A3 - Study for valorisation & promotion of bear-friendly products and services (for the preparation and better implementation of action C10- Bear-friendly labelling in products and services)

A1 - Identification - delineation of sectors with high risk of human-bear conflicts

Aim / objectives	Results / achievements	Evaluation
Concrete ranking, mapping & visualization of sectors within the 4 Parks (both in GR & IT), presenting a high risk of human-bear interference which might degenerate into conflict situations detrimental to the target species. Generate necessary information to prepare the ground for the implementation of specific concrete conservation and communication actions	Technical report (delivered June 2021): • Sectors with a high risk of human-bear conflict probability identified and scored • Relevant maps produced • GIS Geo Data Base operational	Identification, mapping, and ranking of the critical sectors susceptible to generating human-bear conflicts served as the main decision-making tool and a road map to better orientate and implement CCAs and communication actions. The maps produced will be the basis for the development of technical and awareness activities after the end of the project too.

A1 - Identification - delineation of sectors with high risk of human-bear conflicts

Maiella NP

MAXENT analysis performed by an hired expert

MNP bear presence data from 2011 to 2020

Raw environmental predictor variables from MNP or public domain

Assessment of risk of damage by bears and to bears

RISK OF HUMAN-BEAR CONFLICT ASSOCIATED WITH

Presence of chicken coops ⟶ risk map produced

Presence of beehives ⟶ risk map produced

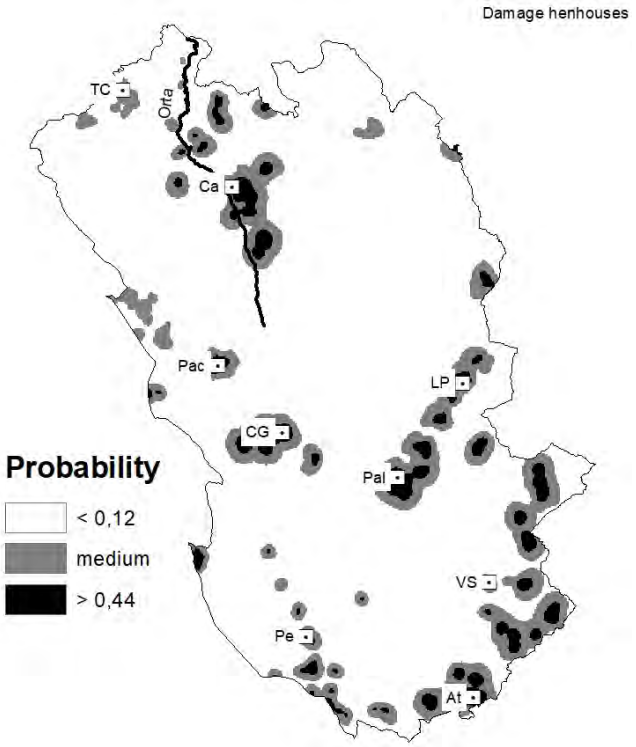
RESULTS USED FOR ACTIONS

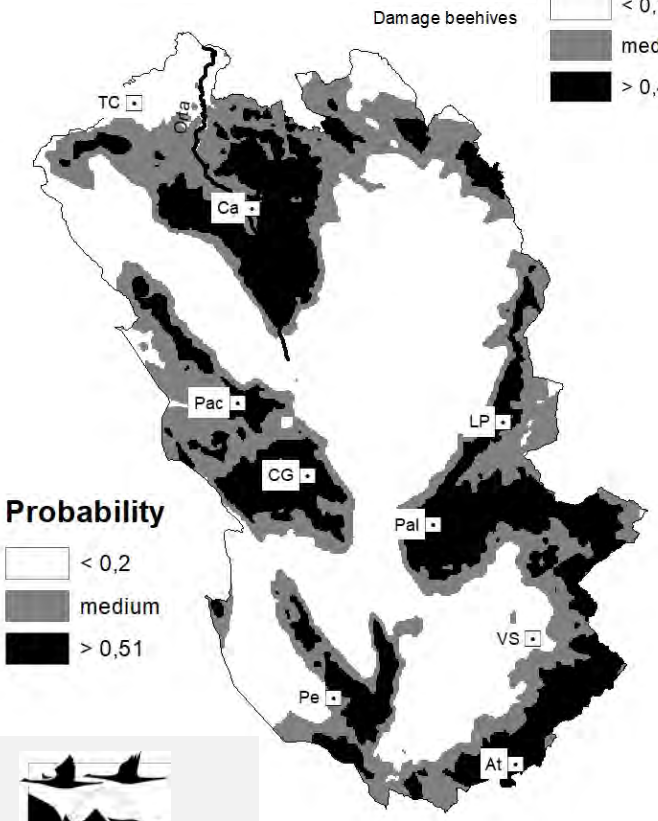
C1 – stakeholder involvement

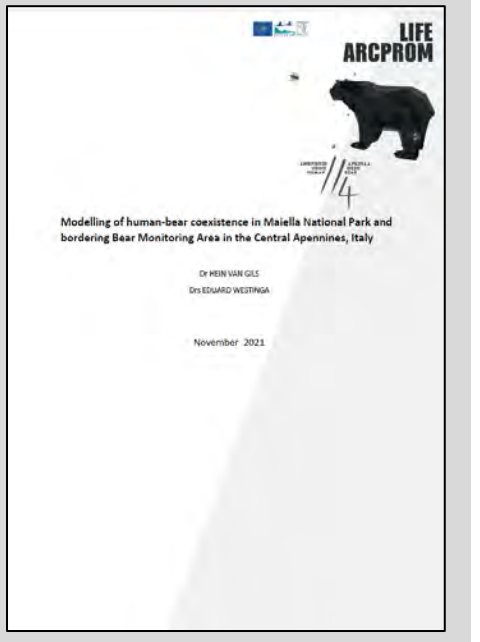
C6 - Bear Tour

C10 – Bear Friendly label establishment

E1 – Local events



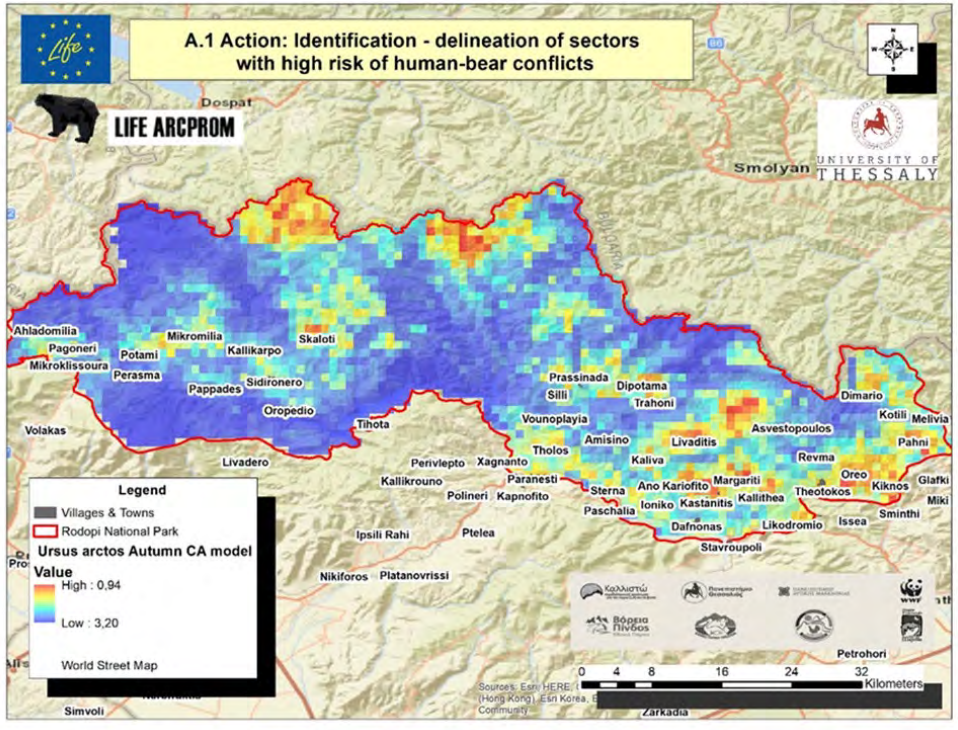




A1 - Identification - delineation of sectors with high risk of human-bear conflicts

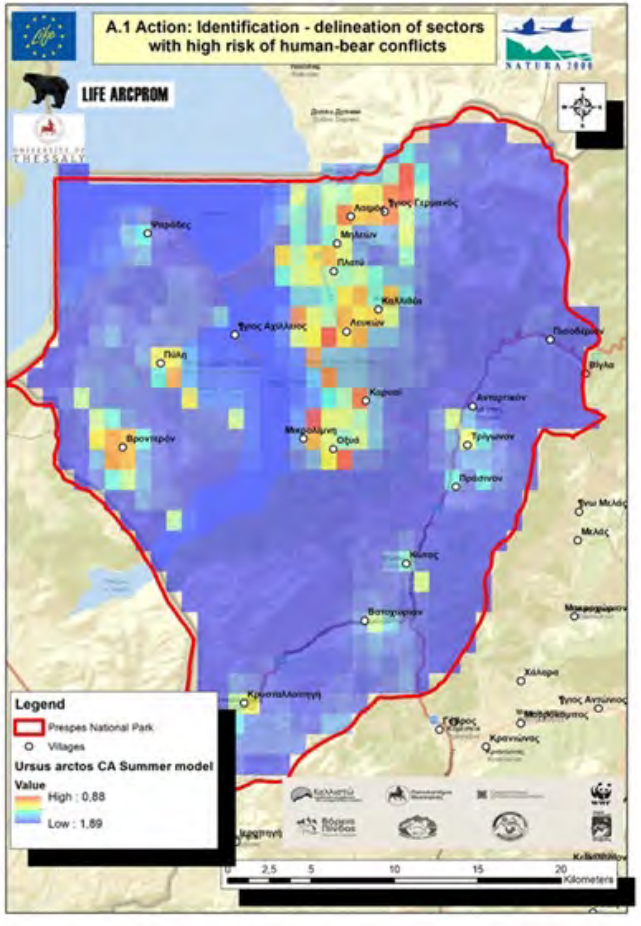
GREECE

- Raw data came from **a) the dissemination of a targeted questionnaire** for the sampling of bear damage in agricultural production, **b) the incidents of the Bear Emergency Teams** involving damage while **c) bear losses in agricultural production over the last 20 years (2009-2020)** were used for verification of the results from the statistical model.
- Data from **(a)** and **(b)** were used for the development of "**MaXent" (Maximum Entropy) model** in order to identify and **map the sectors and to evaluate spatially the intensity and seasonality of bear-human conflicts within** (2) project sub-areas (***Rodopi Mountain Range National Park and Prespa National Park***)



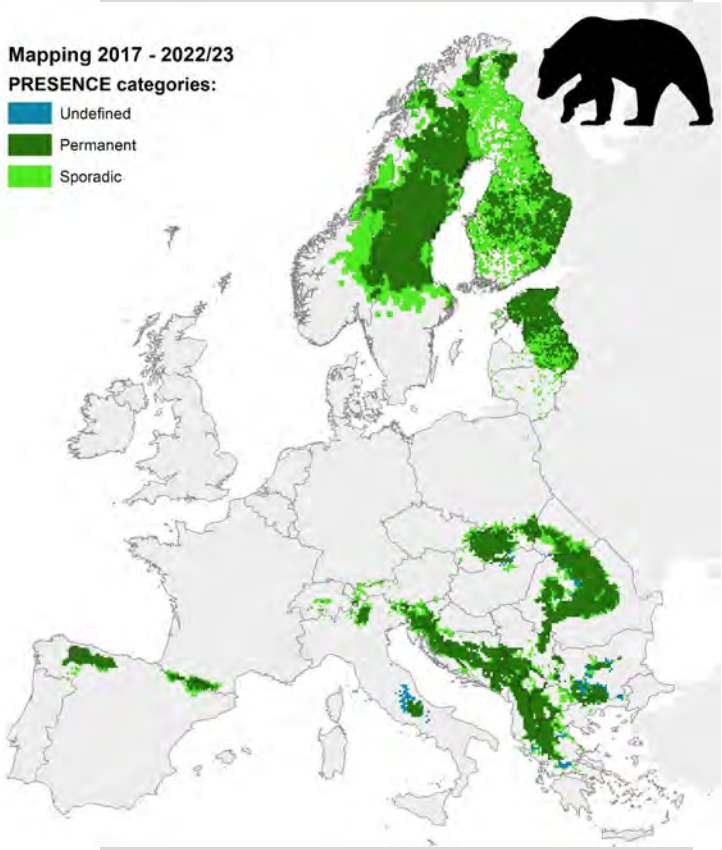
RESULTS USED FOR ACTIONS

- C1 – stakeholder involvement
- C5 – BET interventions
- C7- bear proofing preventive measures
- C10 – Bear Friendly label establishment
- E1 – Local events



A2 - Assessment of the distribution and numbers of bears in the project areas

Aim / objectives	Results / achievements	Evaluation
Quantified figures on the actual population status of the target species in the four project sub-areas: a) number of bears in the 4 sub-areas, b) population structure with emphasis on females and females with cubs; c) genetic variability & robustness in Greece; d) spatial distribution of bears sampled in MNP in relation to other portion of the bear range.	Figures on population distribution strongholds, recolonisation trends, numbers (maximum population – Nc- and effective population – Ne-) as well as on genetic variability, genetic balance, inbreeding problems and sex ration indicators have been obtained.	The findings gave significant information on the bear population overall status in the 4 project sub-areas with emphasis on the weaknesses and vulnerability in certain project sub-areas. The combinatory effect of the three methodological protocols enhanced the sharpness of the produced results and figures. Results obtained gave an essential contribution in assessing bear presence in the project areas and results obtained were used to orientate all the Concrete Conservation Actions foreseen in the project.



A2 - Assessment of the distribution and numbers of bears in the project areas

APENNINE BROWN BEARS: NUMBERS AND DISTRIBUTION IN MNP

OBJECTIVES OF ACTION A2

MNA: Minimum Number of bears in the Park

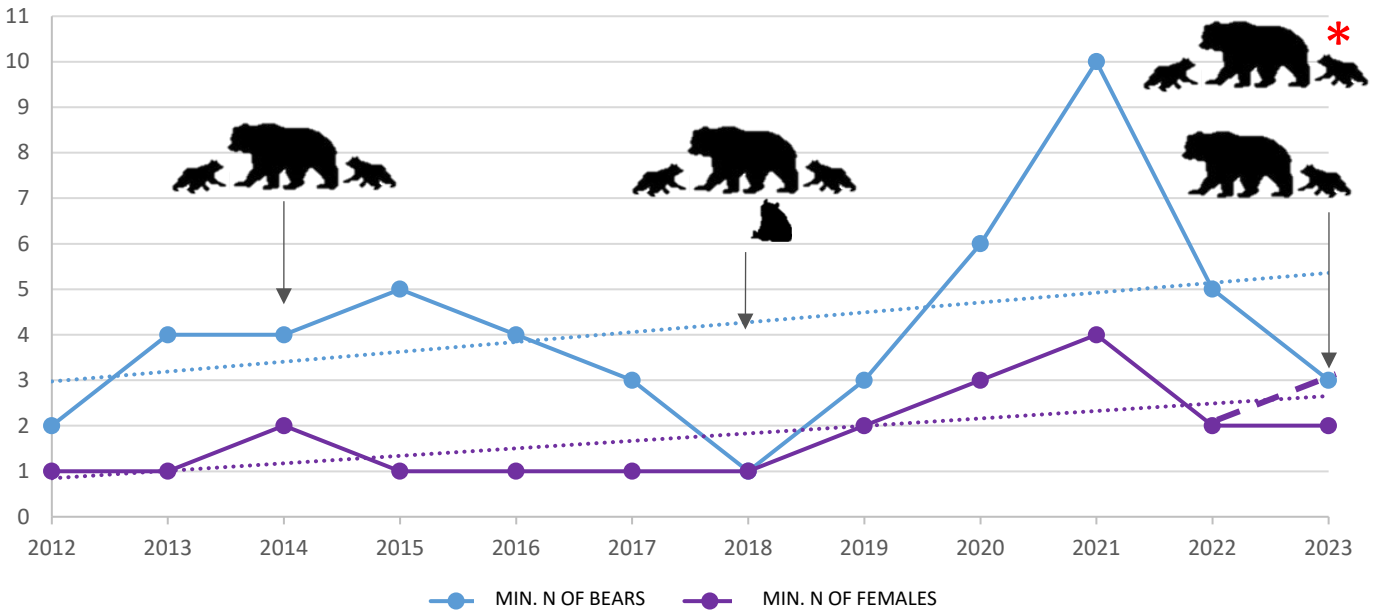
N of females

Bear range

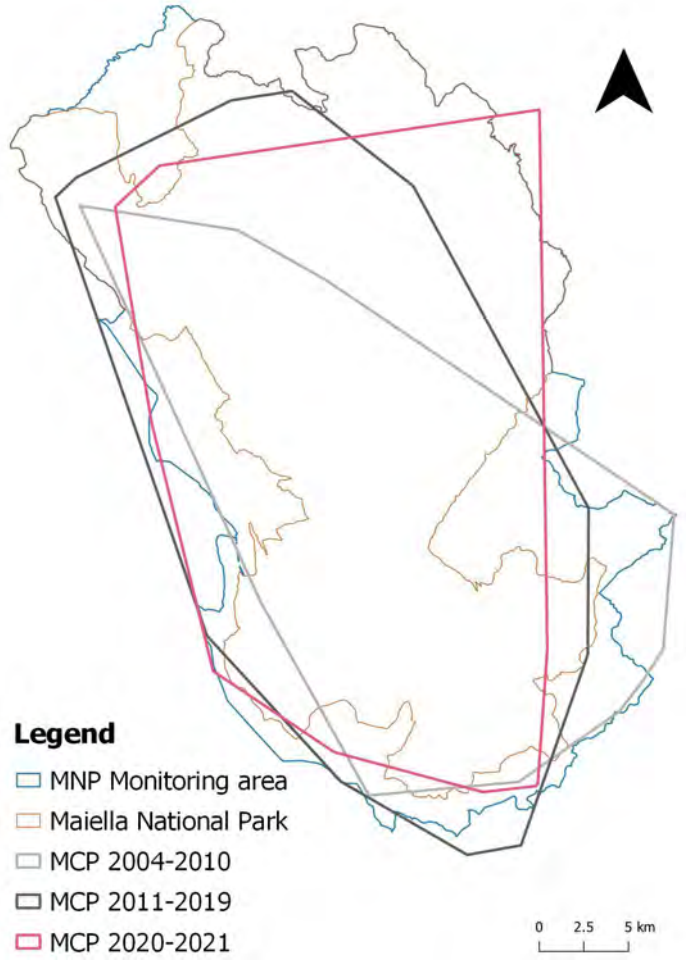
→ AT LEAST 19 ADULTS FROM 2012 TO 2023

AT LEAST 5 FEMALES

AT LEAST 4 F WITH CUBS



DURING A2 (2020-2021) DETECTED THE MAXIMUM BEAR RANGE AND A BEAR "EXPANSION" TOWARD THE NE PORTION OF THE PARK



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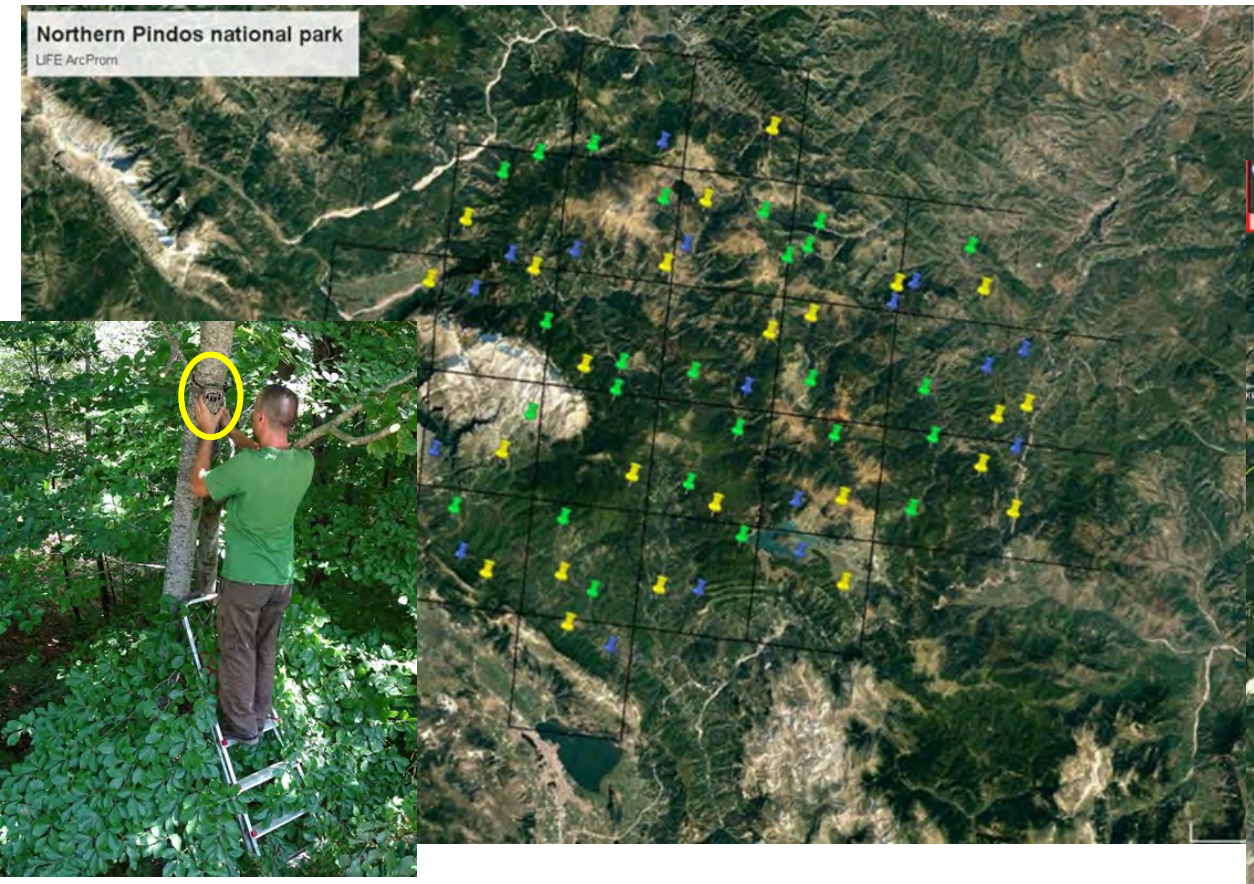
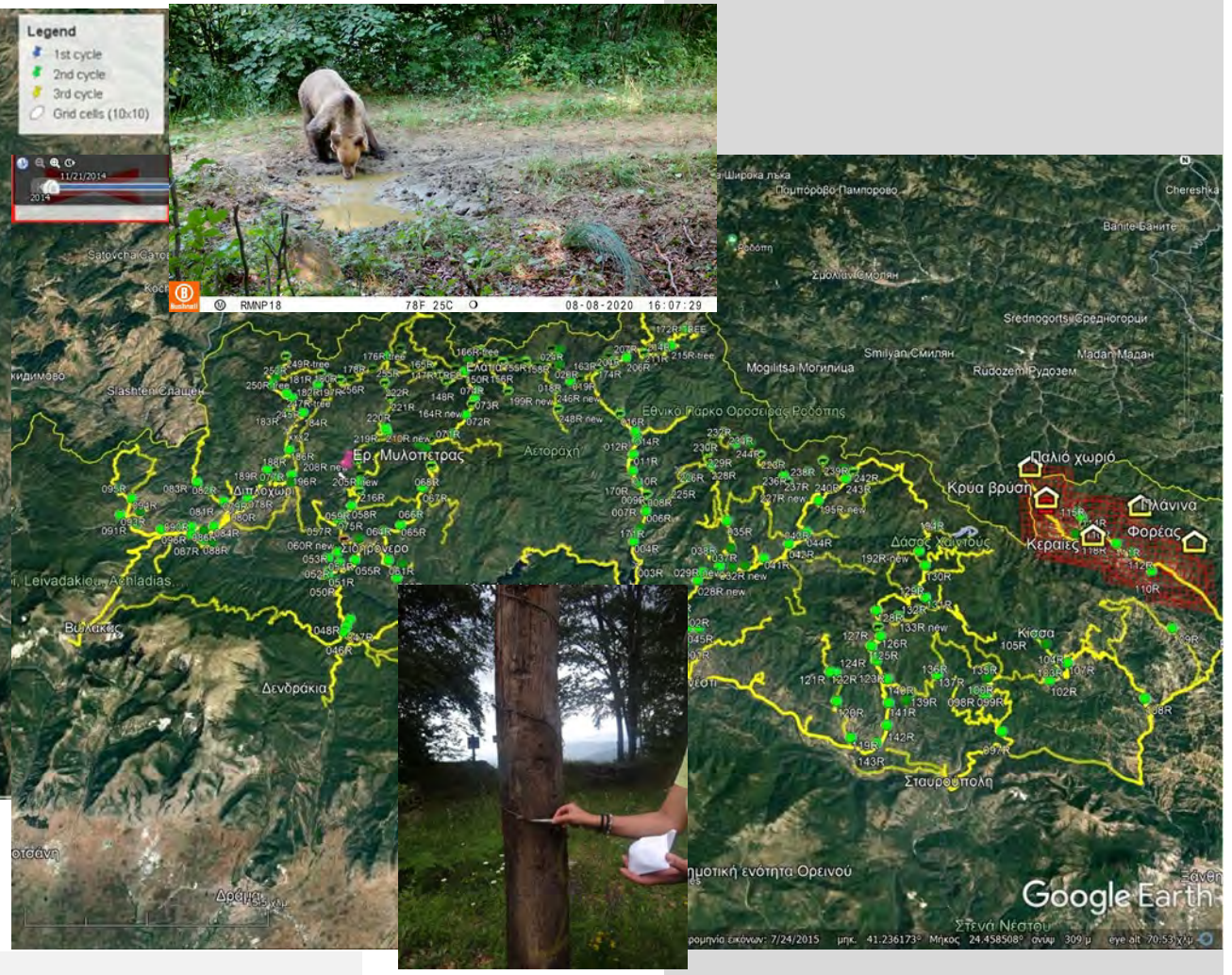
A2 - Assessment of the distribution and numbers of bears in the project areas

GREECE: Relative abundance and analysis of the (3) bear sub-populations: Use of camera traps and genetics



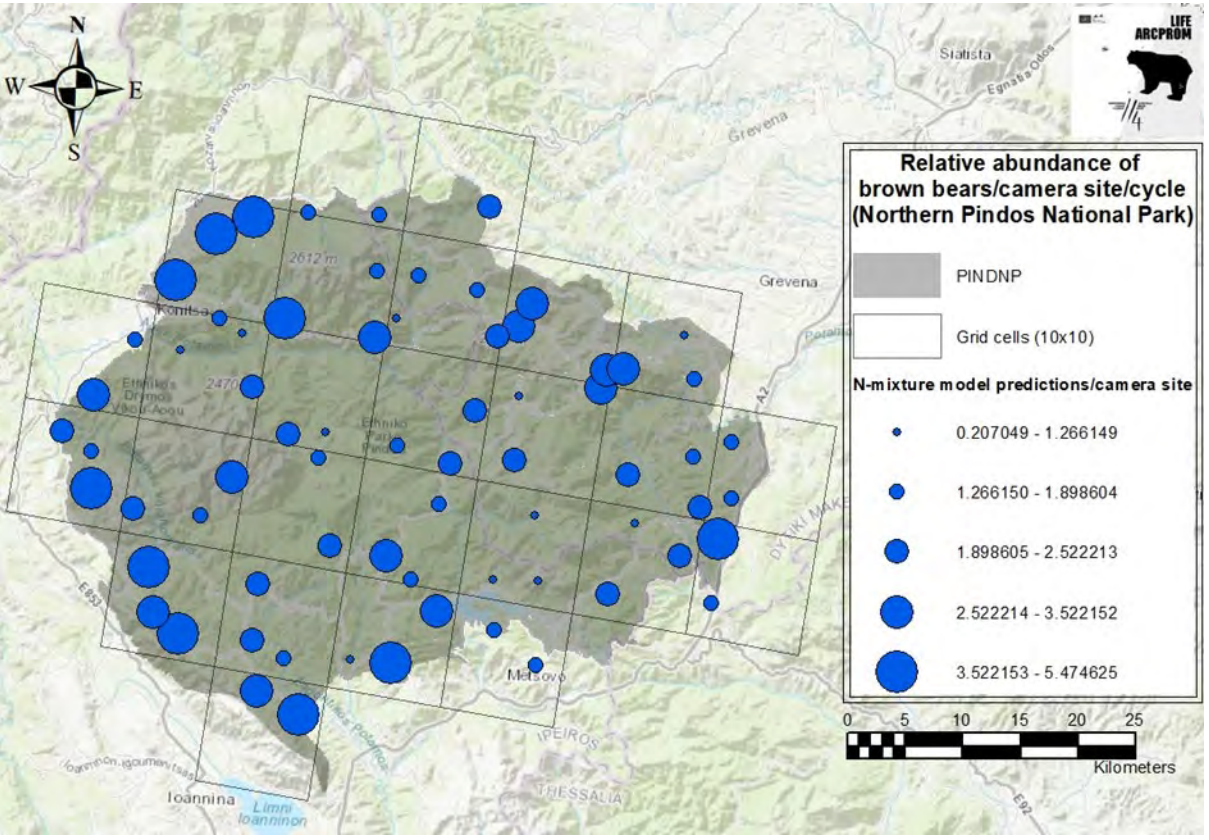
Map 1: IR Cameras sampling network in Pindos NP (3 rotations) (24 cameras)



Map 2: Network of hair-traps (n=256) in Rodopi National Park

A2 - Assessment of the distribution and numbers of bears in the project areas

GREECE: Relative abundance and analysis of the (3) bear sub-populations: Use of camera traps and genetics: Results



Map 1: IR Cameras results: Bears relative abundance in Pindos NP

Population	Number of Samples with >6 loci	Different Individuals	A	He	Ho	Nc	Ne	PIC	Fis
Prespa	59	53	7	0.73	0.42	191	35 (25–52)	0.69	0.28
Pindos	77	65	6.7	0.65	0.6	202	118 (66–271)	0.6	0.13
Rhodopi	121	77	8.4	0.72	0.54	92	61(47–84)	0.68	0.3

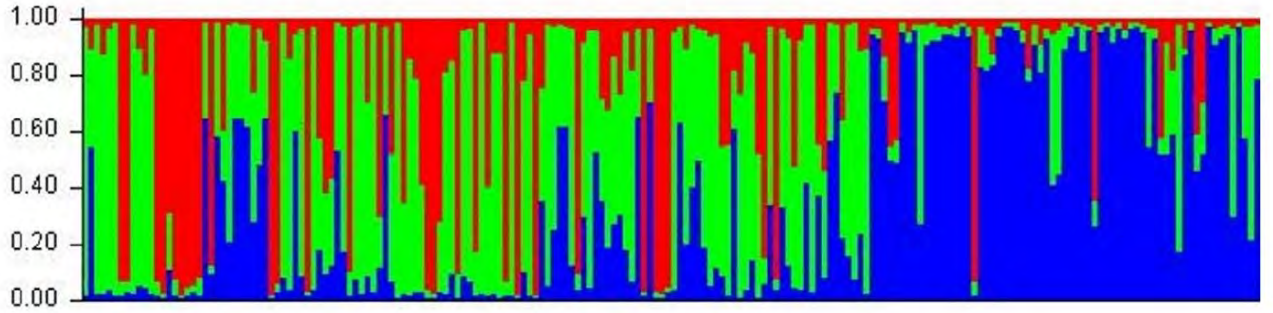


Fig 1: Genetic analyses results on the (3) bear sub-populations in the (3) NP's (project sub-areas) in Greece

A3 - Study for valorisation & promotion of bear-friendly products and services

Aim / objectives	Results / achievements	Evaluation
Identification of products and tourist services offered in the project area that could be positively related to the conservation of the brown bear. Setting specific guidelines for the Bear Friendly labelling on products & services and describing the contract terms	• Products and services correlated with bear conservation were spotted and selected. • Guidelines for the Bear Friendly scheme's establishment and acquisition were developed. • Bear Friendly promo and informative activities were held	The action was a pilot and preparatory for implantation of the project Action C10.

A3 - Study for valorisation & promotion of bear-friendly products and services

MAIN A3 STEPS AND RESULTS IN MNP

Stakeholder Analysis

Analysis of the socio-economic context

Analysis of existing human-bear conflicts

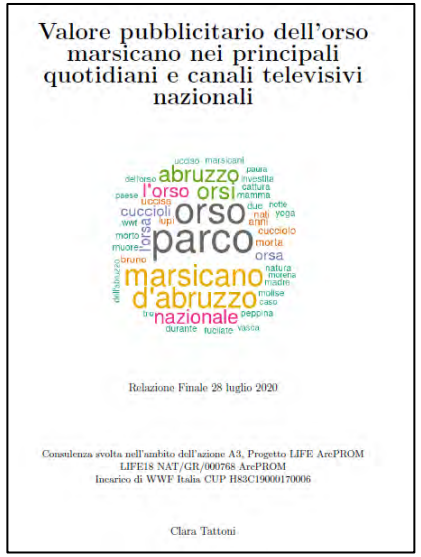
Analysis of past experiences of Bear Friendly label granting in Italy and Europe

Assessment of the Advertising Value Equivalent of the Apennine brown bear

→ TWO TARGET CATEGORIES FOR C10 INDIVIDUATED

↓

PRODUCTION OF SEVERAL DOCUMENTS AND PUBLICATIONS



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BEEKEEPERS

AGRICULTURAL FARMERS

A3 - Study for valorisation & promotion of bear-friendly products and services

MAIN A3 STEPS AND RESULTS IN GREECE

Review of the socio-Economic status and key challenges in all 3 parks

Analysis of Past Experiences with Bear-Friendly Label Granting in Greece (LIFE AMYBEAR Project)

At least one open-to-public informative course in all 3 Parks

Production and dissemination of informative material

Beekeepers and Apicultural Products

&

Accommodation Facilities

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CONCRETE CONSERVATION ACTIONS (CCAs)

C1 - Stakeholder consultation and involvement: Interaction through the creation and operation of Local Platforms for Human-Bear Coexistence, one in each Park-sub-region of the project.

C2 - Training for staff of the National Parks and other conservation actors in the project areas: Transfer of best practices and monitoring protocols to the 4 Parks – sub-areas of the project.

C3 - Operation of Anti-Poison Dog Units (ADUs) to minimize the problem & dissemination of Anti-Poison First Aid Kits to deal with cases of poisoning of Livestock Guard Dogs.

C4 - Operation and demonstration of a Karelian Bear-Dogs (KBDs) Unit: Trained dogs of certain breeds (Karelian, etc.), to deal with incidents of bear approach in residential areas.

C5 - Operation, equipment and capacity building of Bear Emergency Teams (BETs): Creation of Teams composed of executives from the 4 Parks to make BETs more effective.

CONCRETE CONSERVATION ACTIONS (CCAs)

C6 - Mobilisation of volunteers: Support specific conservation actions, especially those against poisoned baits.

C7 - Installation of bear-proof constructions and electric fences into/near human settlements to prevent bears from becoming habituated to human-related trophic resources

C8 - Support livestock farmers for exchanging Livestock Guarding Dogs (LGDs): Promote the use of suitable breeds as a damage prevention measure.

C9 - Installation of special aversive means in hot spots of bear-human interference: Prevent habituation of brown bear specimens to human settlements and activities

C10 - Bear-friendly labelling in products and services: Valorisation & promotion of bear-friendly products and services

C1 - Stakeholder consultation and involvement

Aim / objectives	Results / achievements	Evaluation
<u>Sub-action C1.1</u> should provide the necessary background for Sub-action C1.2 by delivering a SWOT analysis for each Park, highlighting Strengths, Weaknesses, Opportunities and Threats for adopting good practice in bear conservation and management. <u>Sub-action C1.2</u> aimed at establishing and operating one Platform for Coexistence between People and Bears in each Park for structuring stakeholder interaction for the adoption of good practice in bear conservation and management.	• Establishment of Platforms in each Park was concluded in the summer of 2021(August 2021). • All the platform meetings and the workshop foreseen implemented. • Due deliverables produced.	Platform synthesis in each Park reflects a broad array of stakeholders. Participation in Platform events has been satisfactory, allowing for an inclusionary and constructive discussion and planning of joint action. Decisions taken unanimously have revealed the potential for stakeholder agreement and collaboration.

C1 - Stakeholder consultation and involvement

MNP

Stakeholder list also based on around 400 interviews previously collected

SWOT Analysis

6 Platform meetings (June 2021 – March 2024)

3 workshops

⬇

Concrete involvement of the stakeholders

Involvement of citizens and tourists in the platform work

Involvement of high-school students as stakeholders-to-be

Drafting of a shared operational plan to improve human-bear coexistence

Realization of actions foreseen in the plan including initiatives funded with LIFE ARCPROM funds by WWF

C1 - Stakeholder consultation and involvement

GREECE

	Rhodope Mountain Range National Park	Prespa National Park	Northern Pindos National Park
No. of participatory processes (2021-2024)*	11 (6 Platforms; 5 Workshops)	11 (6 Platforms; 5 Workshops)	11 (6 Platforms; 5 Workshops)
No of participants**	240	177	159
No of questionnaires gathered	306	303	295

* Local Platforms for Human-Bear Coexistence; Workshops for Human-Bear Coexistence.
** Another 268 participants took part in three online workshops, where people from all three study areas could take part.

Human Dimensions Actions in LIFE ARCPROM

- Action C1. Stakeholder consultation and involvement
  - ✓ 844 participants
  - ✓ 33 participatory processes
  - ✓ >25 participants per process
- Action D5 Follow-up surveys on the perception and behavior of the stakeholder groups
  - ✓ 904 questionnaires gathered and analyzed

C2 - Training for staff of the National Parks and other conservation actors

Aim / objectives	Results / achievements	Evaluation
Dissemination of knowledge, transfer of experience & best practices adoption among stakeholders and bear conservation actors. Increase the existing skills or development of new ones, regarding all four NPs' personnel including in the project.	• Two webinars with significant participation from stakeholders involved in wildlife conservation. • Three two-day workshops to train the staff of the Parks involved in the project. • Two three-day training seminars at the facilities of the University of Thessaly • Four knowledge & experience exchange trips. • One training course/seminar in MNP	The training courses, webinars, seminars, and exchange trips contributed to improve the skills of the attendants in bear conservation. Evaluated techniques and best practices developed in previously implemented projects were presented.

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C2 - Training for staff of the National Parks

Knowledge & experience exchange trips

Task C2.3: Exchange trips

- 6-10 June 2022: LIFE16 NAT/SI/634 “LYNX” and LIFE18 NAT/IT/972 “WOLFALPS EU”, Slovenia,
- 22-26 May 2023: LIFE19 NAT/ES/913 “Osos con Futuro”, Spain
- 13-15 November 2023: LIFE BEAR SMART CORRIDORS, Italy
- 8-10 October 2024: LIFE HUMAN BEAR COEX, Italy

Task C2.4: Training courses/seminar in MNP

- 10-15 October 2022: Greek and Italian Project teams, Maiella National Park, Italy

C3 - Operation of Anti-Poison Dog Units & dissemination of Anti-Poison First Aid Kits

Aim / objectives	Results / achievements	Evaluation
C3.1: Discourage and actively prevent use of poison baits; Reduce primary and secondary poisoning of bears and other wildlife; Increase awareness of local people against poisoning; Use this effectively "tool" to deal with the poison bait problem. C3.2: Reduce the poison-related mortality of LGDs, that can have an impact in damages to livestock from large predators.	C3.1: NECCA operates, under the framework of LIFE ARCPRPOM, three (3) Anti-Poison Dog Units (ADUs), PINDNP's, PRESPNP's and RMNP's. C3.2: 500 Anti-Poison First Aid kits were financed by OPTIESD and produced for PINDNP. The LIFE ARCPROM project financed production of 300 AFAKs for RMNP and 200 for PRESPNP.	C3.1: Despite the difficulties, all three NP ADUs operated from 2022 to 2024, successfully handling **34 poison bait incidents** (18 strictly located inside the National Parks). C3.2: The design and preparation of the kit was made with great care and the dissemination of the kits had already saved some LGDs.

Number of poison baits incidents handled by the LIFE ARPROM project ADUs

	2022	2023	2024	
PRESPA	8	0	6	14
PINDOS	0	0*	7	7
RODOPI		6	7	13
TOTAL	**8**	**6**	**20**	**34**

**8 when financed by OPTIESD 2014-2020*


34
incidents
of possible poisoned bait use
366
patrols
were conducted
681 klm
covered by the ADU handlers
1101 klm
covered by the ADU dogs
48 dead animals
In all the incidents
36
possible poisoned baits were found
13
14
7
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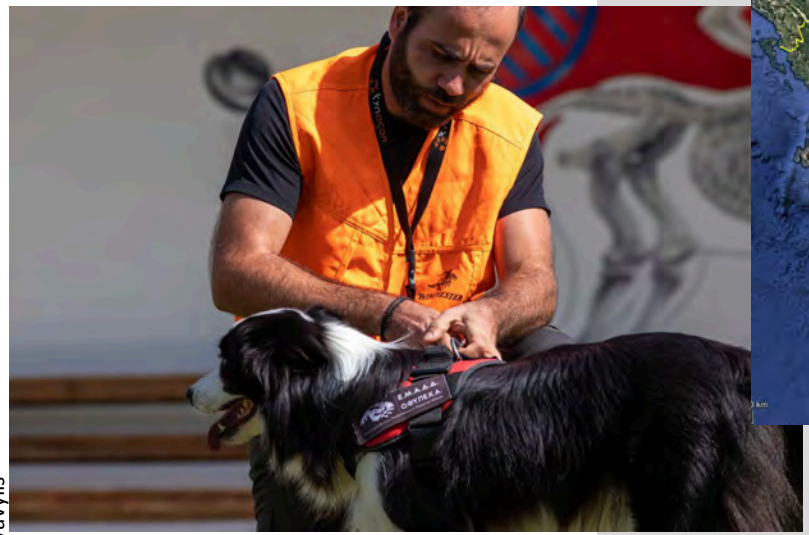
C3 - Operation of Anti-Poison Dog Units & dissemination of Anti-Poison First Aid Kits

Ioli – Victoria Saravia
Prespes National Park

© D. Vavylis

Jasmin – Aristotle Ioannides
N. Pindos National Park



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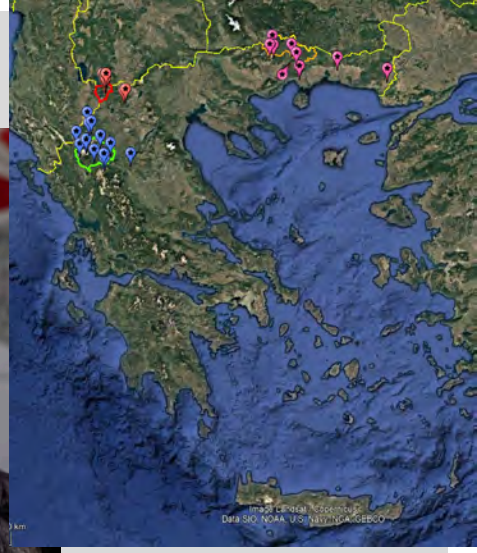
Laika – Kostas Kyriakides
Rhodope Mountain Range Nat. Park



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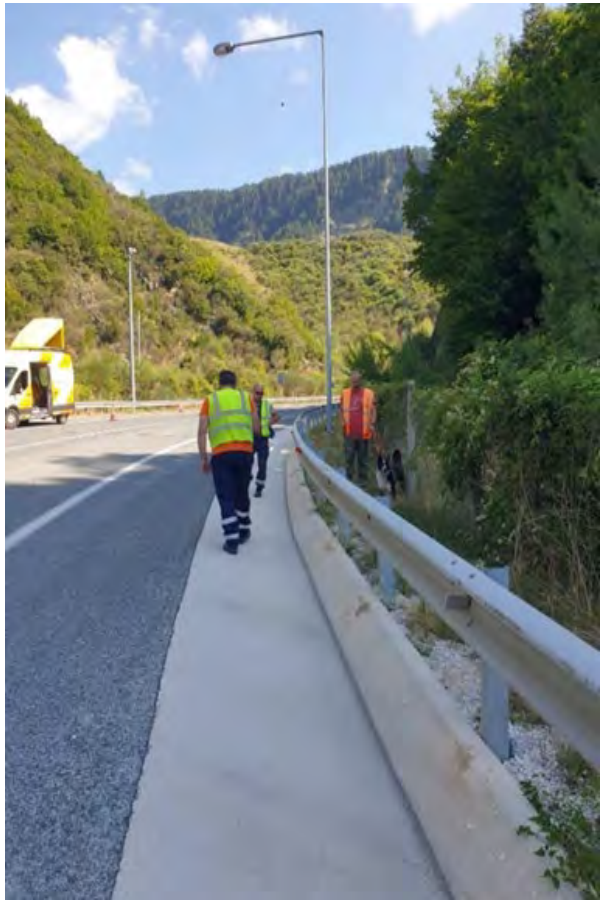
C4 - Operation and demonstration of a Karelian Bear-Dogs (KBDs) Unit

Aim / objectives	Results / achievements	Evaluation
Create and operate for the first time in Greece a KBD unit: A 2-dog unit from Karelian Bear Dog breed or equivalent. These dogs will help in some bear human incidents the way that these teams are used in North America and Europe.	Despite the issues that arose since the beginning of the project (COVID, new NECCA regime) KBDs Unit is operational from 13/11/2023. First demonstration sessions have been organised: 1st demonstration session: 16/11/2023 in PRESPNP; 2nd demonstration session: 14/3/2024 at Meteora; 3rd demonstration session: 3-7/7/2024 in RMNP.	Great experience gained by the handlers on training this type of working dogs. Many issues have been tackled and many more need attention mainly in legislative and institutional aspects, regarding the team's flexibility and availability. A dog team can offer a lot in bear conflict management. The dogs can be used to track the movements of a bear, locate food sources that can attract bears and help make a better connection with local communities to provide information and enhance awareness. They are also useful in hard releases. The new culvert trap (the first in Greece) and the other equipment will make this possible in the near future. NECCA is planning to upscale this whole scheme and create & operate more KBD teams in the future.

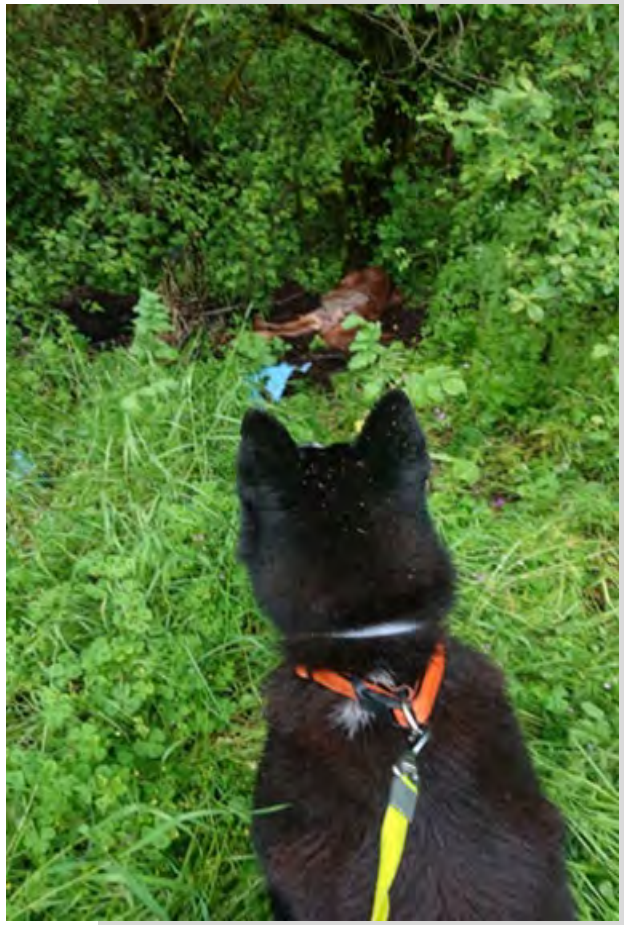
Athene and Adele the first KBD team in Greece - N. Pindos National Park

C4 - Operation and demonstration of a Karelian Bear-Dogs (KBDs) Unit



Adele shows the spot where a bear entered the Egnatia Highway, close to North Pindos National Park

Demonstration in Meteora.



Athene discovered a dead calf very close to a settlement in the North Pindos National Park, where a bear was sighted

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C5 - Operation, equipment, and capacity building of Bear Emergency Teams (BETs)

Aim / objectives	Results / achievements	Evaluation
In GR: establishment & operation of two Bear Emergency Teams in Prespa & Rodopi MR Parks, involving staff members from PRESPNP & RMNP as well as from CALLISTO. These BETs will be intervening in cases where a bear-human interference incident occurs & is characterised by an emergency degree. In IT: production of a BET protocol and the establishment of a BET team in MNP.	• **355** interventions achieved in all (4) project sub-areas (Greece & Italy): 182 in Greece and 173 in Italy. • Successful use in many cases of bear-deterring devices and preventive measures • Transfer of know-how and expertise between the teams of the two countries • Final draft of BET operational protocol in Italy completed • Demonstration of certain types of bear-deterring devices provided among partner countries' teams.	The obtained results and achievements are in line with the initial objectives. In certain cases, the cooperation of the mixed BETs in GR with the local forestry services had a multiplier effect regarding the efficacy of each intervention.

C5 - Operation, equipment, and capacity building of Bear Emergency Teams (BETs)

BET OPERATION IN MNP

Exchange of expertise with the GR staff - November 2021

Drafting of the BET protocol

Establishment and operation of a BET team

⬇

More than 170 BET interventions mainly for bears feeding in chicken coops

2 BET interventions required special treatment

- A bear avoiding prevention measures
- A bear translocation

C5 - Operation, equipment, and capacity building of Bear Emergency Teams (BETs)

BET Operation in Greece

182 interventions in the three National Parks, **3** of which needed long-term management: Two cases of sub-adult bears frequently visiting settlements in N. Pindos NP: Food-conditioned “habituated” behavior, and one case of out-ranged bear occurrence and repetitive damage to properties

Specially designed culvert trap (specifications from MNP)

Thermic Camera

IR cameras

Drone

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C6 - Mobilisation of volunteers

Aim / objectives	Results / achievements	Evaluation
Promotion of the value of volunteerism in favour of nature conservation goals	Volunteering programs were implemented in both Greece and Italy. In Greece, 31 volunteers, supported by CALLISTO, carried out 63 days of short-term voluntary activities, while 3 volunteers carried out 108 days of long-term volunteering activities in Prespa and Rhodope MR Parks. In Italy, WWF organised also short-term and long-term volunteering activities in MNP: 27 “WWF Youngs” carried out 17 days of short-term voluntary activities (“Summer Bear Tour”), while 38 qualified “WWF Environmental Guards” carried out 34 days of long-term volunteering activities (patrols to prevent and counter threats to bears).	In Greece, the participants evaluated very positively both the quality of the volunteer activities and the staff who accompanied them. It was also considered important that they received training to deal with incidents of poisoned baits and that they participated in awareness campaigns about them. In Italy, WWF volunteers helped effectively to communicate the LIFE Project’s messages to residents, local officials, and visitors of MNP. The “WWF Environmental Guards” who performed joint patrols with Carabinieri officers, demonstrated strong oversight and protection in the Park, during tourist peak season from late spring to early autumn.

C6 - Mobilisation of volunteers

MOBILIZATION OF VOLUNTEERS BY WWF (IT)

Long-term volunteers

Short-term volunteers

MOBILIZATION OF VOLUNTEERS BY CALLISTO (GR)

Installation of orientation signs on existing paths

Training of volunteers by UTH experts

Patrols and support to the Parks in informing visitors

C7 - Installation of bear-proof constructions and electric fences

Aim / objectives	Results / achievements	Evaluation
• Provide bear-proof refuse containers in selected sites in Greece. • Make a pilot for a new user-friendly garbage bin type for the existing refuse containers in PINDNP. • Provide electric fences in GR & IT. • Provide bear-proof hen houses or iron doors for hen houses in Italy.	In Greece, a prototype type of bin cover was developed by PINDNP. 4 of them were installed in PINDNP and 10 in PRESPNP. 21 e-fences were purchased by PRESPNP: 11 of them were donated to local farmers-producers of beans. The remaining ones are used for demonstration and emergency purposes. Similarly, in RMNP, 4 electric fences were purchased for demonstration purposes and immediate use (installed in 7 sites so far). In MNP 20 e-fences and 15 iron protections were distributed, 5+5 more than the 15 and 10 foreseen in the proposal budget, respectively.	Apart from the delay in the tenders in PRESPNP, the overall Action was implemented as expected. Besides the cover bins installed in the framework of LIFE ARCPROM, PINDP and RMNP installed another 7 and 5 cover bins, respectively, funded by other projects, besides LIFE. Similarly, RMNP has distributed another six (6) e-fences funded by other projects. MNP achieved a good level of chicken coop protection.

C7 - Installation of bear-proof constructions and electric fences

MNP:

- 20 e-fences for the protection of chicken coops
- 16 additional e-fences for the protection of beehives
- 15 iron protections

C7 - Installation of bear-proof constructions and electric fences

Greece:

N. Pindos NP: **4** Bear-proof garbage bins with metallic shells

Prespa NP: **10** Bear-proof garbage bins with metallic shells + **21** e-fences

Rhodope NP: **4** electric fences

C8 - Support livestock farmers for exchanging Livestock Guarding Dogs (LGDs)

Aim / objectives	Results / achievements	Evaluation
Establishment of a Livestock Guardian Dog (LGD) Owners Network for the exchange, donation & dissemination of LGDs to breeders. • Development of a Network between LGD owners promoting cooperation among livestock breeders (approximately 20 participants). • Donation of 30 puppies and 4 adult dogs to livestock-breeders.	• A valuable collaboration network has been consisted, currently involving 41 LGDs owners. • A total of 62 LGDs were donated to livestock breeders, exceeding the original plan of 30.	The action exceeded initial expectations by establishing a network for exchanging evaluated LGDs, which can significantly reduce bear attacks on livestock.

C8 - Support livestock farmers for exchanging Livestock Guarding Dogs (LGDs)

LIFE ARCPROM

LIFE18 NAT/GR/000768

Improving human-bear coexistence in 4 National Parks of South Europe

Action C.8

Support to livestock farmers for exchanging Livestock Guarding Dogs

GIS data analyses reporting owners and dogs donated

July 2024

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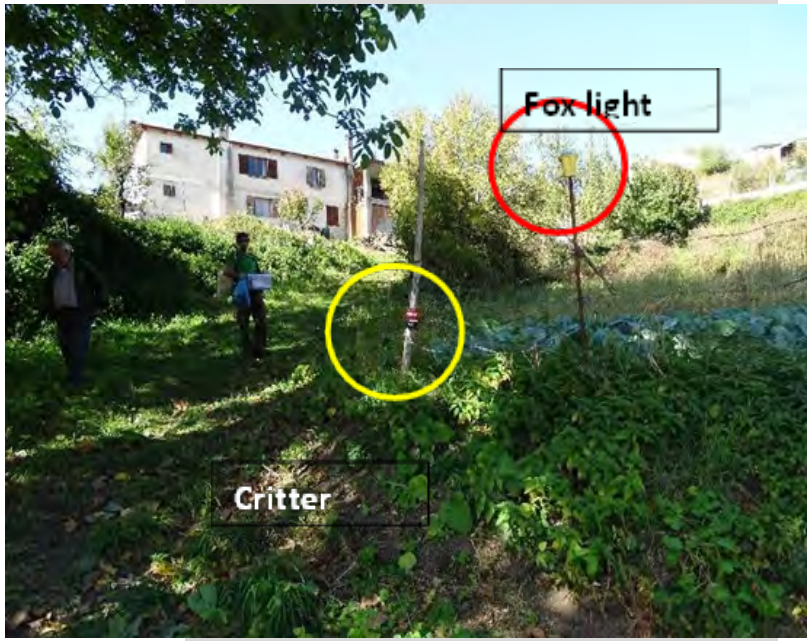
Improving human-bear coexistence in 4 National Parks of South Europe

C9 - Installation of special aversive means in hot spots of bear-human interference

Aim / objectives	Results / achievements	Evaluation
Reverse bear's habituated behaviour and subsequently reduce human bear conflict situations (namely, reduce probabilities of bear human-caused mortality). Aversive conditioning of habituated and/or problem bears occurring in the four project sub-areas using aversive means and devices specifically designed for bears.	Purchasing of specific items and deterring devices has been carried out. Synergy with other LIFE projects for the use of these devices was achieved. Two devices were tested experimentally in MNP.	In MNP, both alarms (Critter Gitter) and Super horns were essential in managing two problem bears (M1.176 and F1.143). Although Action D1 is still ongoing, the effectiveness of deterring means has been already proven.



C9 - Installation of special aversive means in hot spots of bear-human interference

AVERSIVE MEANS USE IN MNP

Critter Gitter used to protect chicken coops

Pump horns used to chase M1.176 out of villages

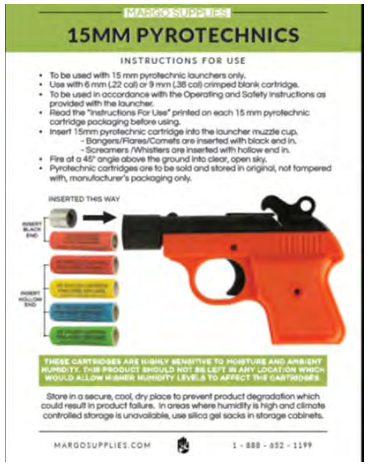
Pepper spray traps purchased but not used

C9 - Installation of special aversive means in hot spots of bear-human interference

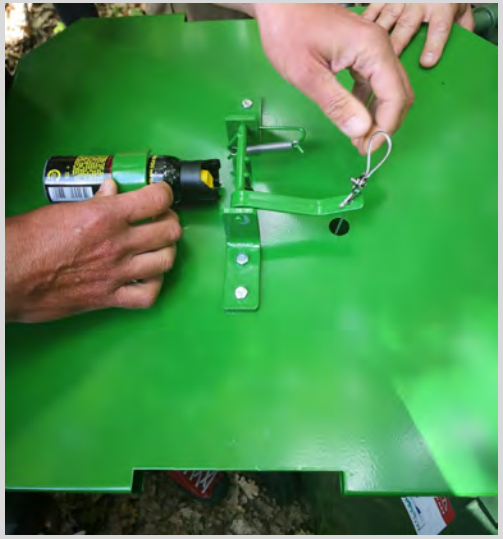
GREECE: Use of various bear-deterring devices in BETs:

Supersonic horn

Critter Gitter alarm



Kit with pyrotechnics



Modified Garbage Bin with pepper spray

C10 - Bear-friendly labelling in products and services

Aim / objectives	Results / achievements	Evaluation
Promotion of coexistence between bears and human activities through the production of bear friendly agricultural products & the adoption of bear friendly practices by tourist holdings & other services.	In Greece, 21 producers met the established criteria and awarded with the Bear Friendly loge, named RESPECT. In Italy 27 producers have been granted with the BF label: 16 beekeepers, 10 agricultural farmers and 1 beekeeper/agricultural farmer. All the seminars and workshops have been implemented. A specific promotion plan was drafted in a participatory way by MNP and the producers and is being implemented also using MNP's own-funds.	The establishment of the BF labels in both countries (Greece and Italy) and their promotion through local events, national fairs, the media, and social networks, is expected to attract the interest of numerous producers and hoteliers, even beyond the project areas. The awarding of good practices that preserve the bear habitat is an innovative approach.

C10 - Bear-friendly labelling in products and services

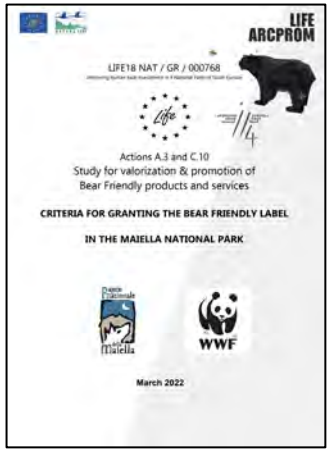
KEY FEATURES OF THE BEAR FRIENDLY LABEL IN MNP

Participatory approach to draft the final regulation

Ecosystem approach (awarded good practices that preserve bear habitat)

Training of awarded producers

Participatory approach to draft the promotion plan



C10 - Bear-friendly labelling in products and services

KEY FEATURES OF THE BEAR FRIENDLY ''*RESPECT*'' LABEL IN GREECE

Establishment of minimum demands and requirements for ''*Respect*'' awarding

Website development dedicated to the scheme

''Respect'' scheme's promotion via in-person meetings in all 3 Parks

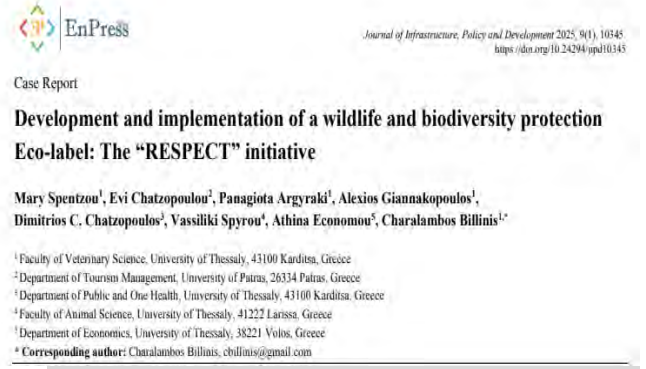
Training of awarded producers

Promotion of the ''RESPECT'' scheme in commerce exhibitions

Promotion of the ''RESPECT'' scheme in social media

Development of a promotion ''RESPECT'' video

A relevant research scientific paper was published


EnPress

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https://doi.org/10.24294/jipd10345

Case Report

Development and implementation of a wildlife and biodiversity protection Eco-label: The "RESPECT" initiative

Mary Spentzou[1], Evi Chatzopoulou[2], Panagiota Argyraki[1], Alexios Giannakopoulos[1], Dimitrios C. Chatzopoulos[2], Vassiliki Spyrou[4], Athina Economou[5], Charalambos Billinis[1,*]

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MONITORING ACTIONS

D1 - Monitoring the impact of actions C4, C5, C7 & C9 (mitigating/minimizing bear-human interference)

D2 - Monitoring the impact of action C2 (training)

D3 - Monitoring the impact of Actions C8 (LGDs) & C10 (bear-friendly labelling)

D4 - Monitoring the impact of actions C3 (ADUs) and C6 (volunteering)

D5 - Follow-up surveys on the perception and behaviour of the stakeholder groups

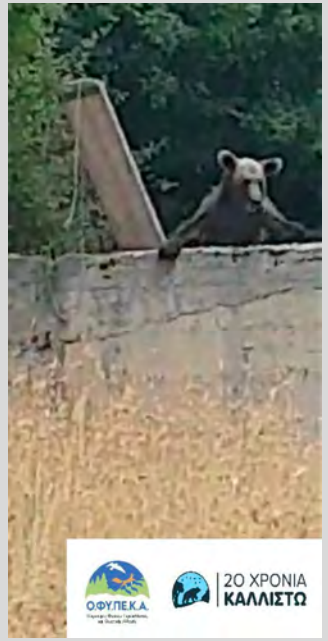
D6 - Monitor and measuring the project performance indicators

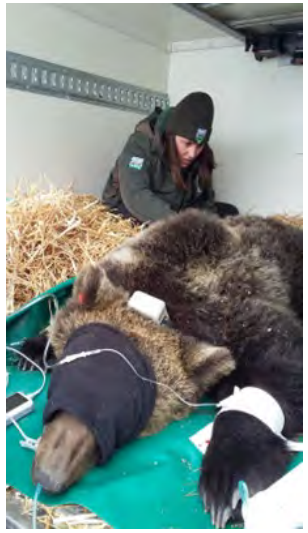
D7 - Assessment on the ecosystem functions

D8 - Study for the socio-economic impact of the project

D1 - Monitoring the impact of actions C4, C5, C7 & C9

Aim / objectives	Results / achievements	Evaluation
Provide information for adjusting or intensifying specific concrete conservation measures. Improved effectiveness of the respective concrete conservation actions.	Outcomes from actions C5 (173 cases in MNP and 183 cases in GR) and C9 have been obtained and evaluated, to make BET interventions even more effective.	The evaluation of C5, C7 and C9 actions proved the efficacy of methods used and gave insights for possible improvements. Data analysis is still ongoing, and results will be delivered with the final report.





D1 - Monitoring the impact of actions C4, C5, C7 & C9

MONITORING OF C5, C7 & C9 IN MNP

C5: analysis of bear reactions to after the interventions

C7: analysis of damages after e-fences/iron protection installation

C9: analysis of bear reactions to the means used

- High effectiveness of BET's interventions but also affected by people's behaviour
- 100% effectiveness of e-fences/iron doors properly used
- High effectiveness of Critter-Gitter (at least in the short term)
- Efficacy of the pump horns depending on the context

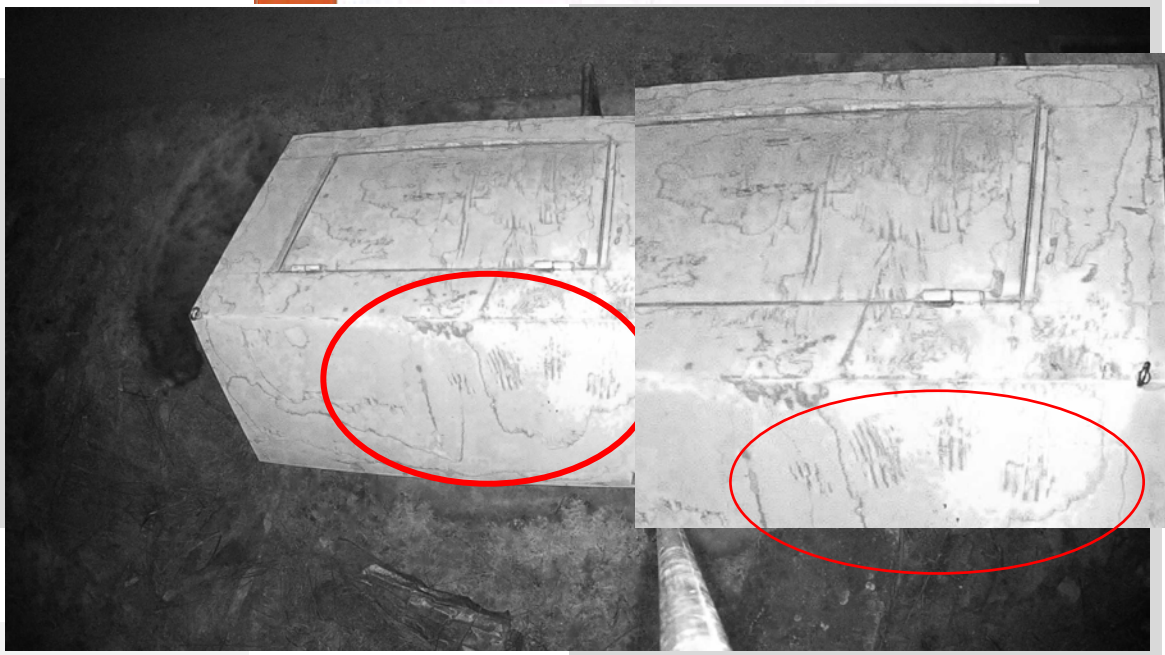
D1 - Monitoring the impact of actions C4, C5, C7 & C9

MONITORING OF C5, C7 & C9 IN GREECE

C5: of bear reactions after BETs interventions

C7: analysis of bear visits to e-fences/bear proof garbage containers

C9: analysis of bear reactions to the deterring devices used



- High effectiveness of BET's interventions but also affected by local communities' behaviour
- 100% effectiveness of e-fences/bear-proof garbage containers (importance of maintenance and proper use)
- High effectiveness of Critter Gitter alarms (at least in the short term)
- Effectiveness of the pump horns depending on the context
- High effectiveness of the kit with pyrotechnics

D5 - Follow-up surveys on the perception and behaviour of the stakeholder groups

Aim / objectives	Results / achievements	Evaluation
Production of scenarios for monitoring stakeholder interaction in Platforms (established within Action C1). Produce quantitative input by means of a questionnaire for monitoring stakeholder perceptions and behaviour.	Evaluation questionnaire produced for Greece and Italy Questionnaire distributed Around 200 feedbacks were collected in MNP in 2022 and 2024 for before-after comparison	In MNP the outcome of this Action underlines that the issues addressed during the Platform meetings are in line with the issues raised by interviewed people and that the work that has already emerged as well as the work planned for the future, are consistent with the actions proposed during the survey

D5 - Follow-up surveys on the perception and behaviour of the stakeholder groups

MNP

Adaptation of the questionnaire to the MNP social context and work context

Distribution of questionnaires during platform meetings, workshops and through digital media

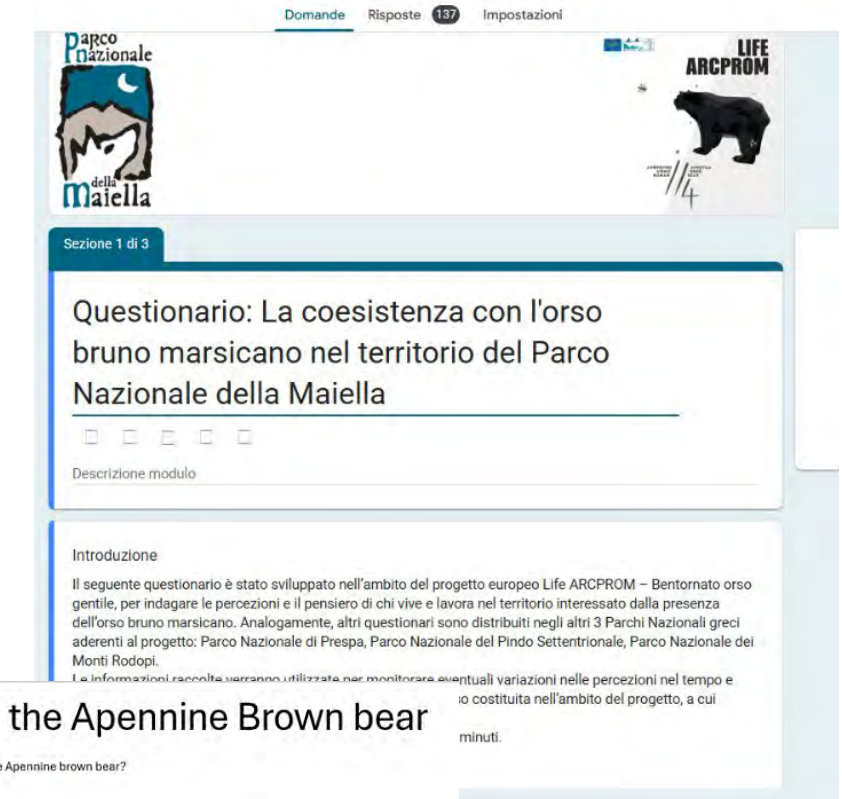
Analysis of questionnaires

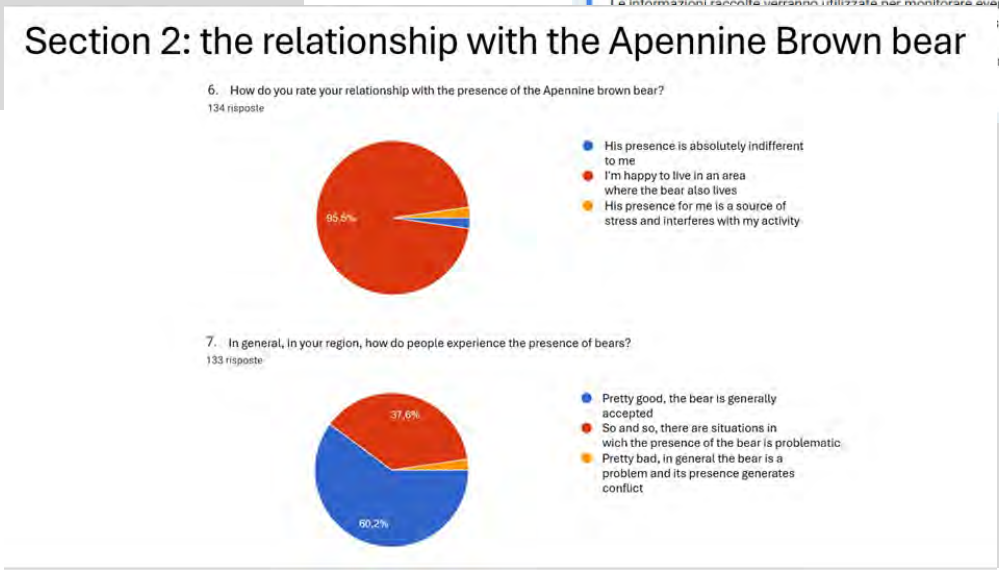
Assessment of platform work evaluation by people and individuation of possible actions to improve the outcome

⬇

General acceptance of the bear by people

Platform work in line with issues arisen from the survey





D5 - Follow-up surveys on the perception and behaviour of the stakeholder groups

Greece

	Primary producers (livestock breeders and farmers)	Beekeepers	Resident-other	Employees of the Natural Environment Climate & Change Agency (NECCA)	Entrepreneurs and employees in the tourism sector
Strengths [ingroup aspects favoring (good practice in/agreement for) bear conservation and management]	Believed that stakeholder interaction in the Platform can influence wider stakeholder interaction	Optimistic about platform dynamics	Optimistic about platform dynamics	Valued Platforms for information credibility, reducing human-bear conflict, and local expectations	Believed that stakeholder interaction in the Platform can influence wider stakeholder interaction
Weaknesses [ingroup aspects hindering (good practice in/agreement for) bear conservation and management]	• Perceived human-bear conflict increasing • Pessimistic about platform dynamics • Concerns that Platforms may introduce stakeholder conflict	Perceived human-bear conflict increasing	Concerns that Platforms may introduce stakeholder conflict	Considerable fluctuation of perceived Platform outcomes and weaknesses	Peripheral role in stakeholder interaction
Opportunities [intergroup aspects favoring (good practice in/agreement for) bear conservation and management]	• Quite high percentages of good working relations and trust • Decreasing ingroup favoritism	Preference of working with and trusting primary producers	Balanced preference of working with stakeholder groups and trust	Quite high percentages of good working relations and trust	Balanced preference of working with stakeholder groups and trust
Threats [inter-group aspects hindering (good practice in/agreement for) bear conservation and management]	• Increasing time trend of stakeholder conflict • Lack of common and practical action	• Increasing time trend of stakeholder conflict • Challenging intergroup collaboration • Persistent trust deficit • Lack of common and practical action	Lack of common and practical action	Lack of common and practical action	Lack of common and practical action

DISSEMINATION - COMMUNICATION ACTIONS

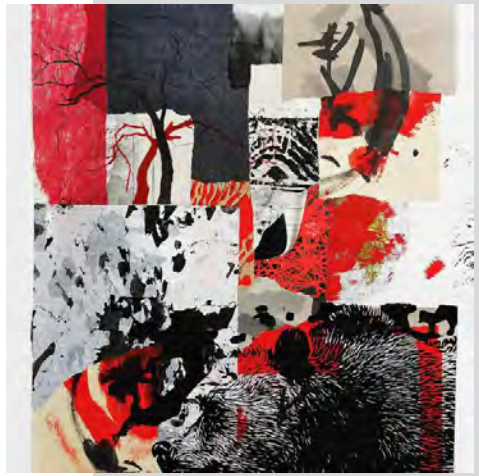
E1 - Dissemination and awareness raising activities

E2 - Development of Dissemination Material

E3 - Activities to ensure replication and transfer of implemented actions

E4 – Networking and International Conference

E5 – Environmental education activities



E1 - Dissemination and awareness raising activities

Aim / objectives	Results / achievements	Evaluation
At least 40 publications in local & national media. Totally 240 people should participate in the local events. At least 3 presentations of the project in events of other entities.	In Greece, 41 Press Releases (PRs) have been issued so far. The three (3) TV spots were published successively on LIFE ARCPROM's social media (~2674 views). Five (5) local events organised so far, attended by around 70 locals. In Italy, 3 Notice Boards were installed, 30 press releases have been distributed in National and local media and additional more than 50 clippings were published about the Bear Trail. The 3 local events were attended by around 100 people in total, but with Action C6 hundreds of people were involved every year. Overall, the project presented in six (6) events (webinars, seminars, conferences and other meetings), so far.	Despite the problems encountered at the beginning of the project due to the pandemic restrictions, Action E1 has been successfully implemented. In Italy, a special effort was made to organise engaging summer events like star observations and narrative walks. Additional local events were promoted and organised by local people! Some news releases picked up by leading online news agencies like Tg5 (3 million viewers) and UnoMattina – RAI1 (> 1 million viewers).

E1 - Dissemination and awareness raising activities

MAIN LOCAL EVENTS IN MNP

LIFE ARCPROM - LIFE18 NAT/
Improving human-bear coexis
Parks of South Europe

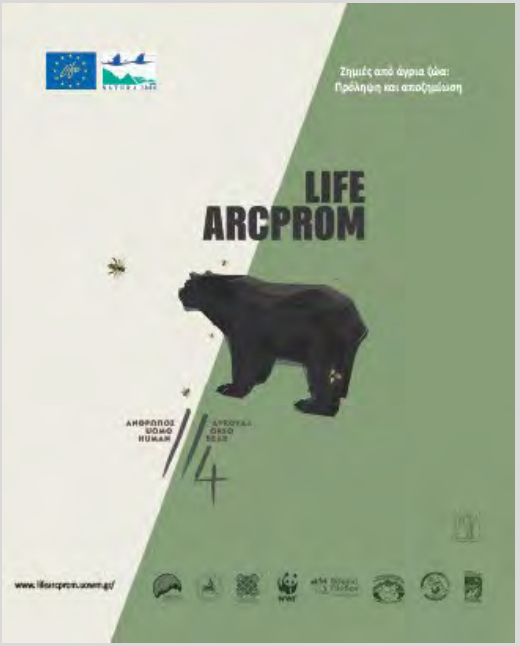
E1 - Dissemination and awareness raising activities

LOCAL EVENTS IN GREECE

LIFE ARCPROM - LIFE18 NAT/GR/000768
Improving human-bear coexistence in 4 National Parks of South Europe

E2 - Development of Dissemination Material

Aim / objectives	Results / achievements	Evaluation
Dissemination of the project messages to the target audience (general public, locals and key stakeholders)	All the products foreseen in this Action have been produced: • Posters, Leaflets • Technical Guides • Maps and Visitor Guides • TV spots, Radio spots • Documentary • Roll-ups • Gadgets / Calendars	The Action has been implemented according to the proposal and all the objectives have been achieved. The adaptation of the media to the different contexts played a key role in determining the effectiveness of the tasks implemented.



E2 - Development of Dissemination Material

DISSEMINATION MATERIAL PRODUCED IN ITALY

Posters (500 copies)

Human-bear coexistence leaflet (15.000 copies)

Itinerant exhibition: 6 roll-ups

Italian version of the video “Why bears”

6 short videos in a long (1 minute) version for Youtube and a shorter version for Instagram and Facebook

USB pens drives (200)

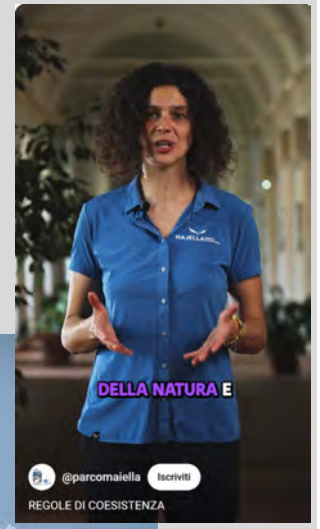
Restaurant paper mats (5.000)

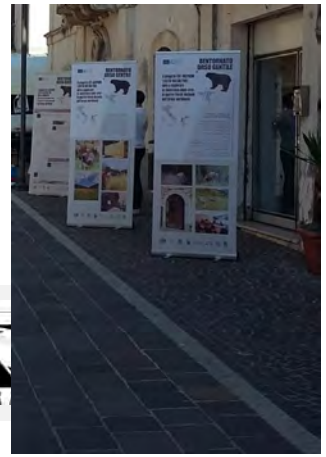
Bear Art stickers (1000)

Metal pins “Bentornato Orso Gentile” (1.000)

Bear Art shopper bags (200)

Bear Art metal pins (1.000)





E2 - Development of Dissemination Material

DISSEMINATION MATERIAL PRODUCED IN GREECE

LIFE ARCPROM - LIFE18 NAT/GR/000768
Improving human-bear coexistence in 4 National Parks of South Europe

E3 - Activities to ensure replication and transfer of implemented actions

Aim / objectives	Results / achievements	Evaluation
Assessment of the replicability needs and organisation of events facilitating replication. By the end of the project at least 3 entities/organisations besides the project beneficiaries have actually taken action by organising events and raising awareness regarding the National Day of Action Against Poisoned Baits.	Replicability Plan was elaborated, identifying the types of activities, actions, and interventions that have the highest potential for replication to other areas or conflict resolution efforts. Replication of C3.1 ("Operation of Anti-Poison Dog Units - ADUs) was facilitated by using the RMNP's ADU and applying the protocol established in the framework of the project in four (4) incidents of illegal use of poisoned baits in areas outside the borders of the National Park (2024). More than seven (7) entities-organisations besides the project beneficiaries organised events raising awareness regarding the National Day of Action Against Poisoned Baits. One (1) specific replication event was organised in MNP in December 2024.	Postponing of replication events to 2023 and 2024, allowed the development of more fruitful events and seminars: All replication events are based on more consolidated results of CCAs, resulting in a higher final quality of content delivered during meetings

E3 - Activities to ensure replication and transfer of implemented actions

Maiella National Park

<u>Task E3.2.2</u>: Seminars on management of bears exposing a "habituated" behaviour or/and causing unusually frequent damages on agriculture

- 12/12/2024 Replicability meeting held in MNP headquarters targeting all the protected areas involved in the Apennine brown bear conservation

E3 - Activities to ensure replication and transfer of implemented actions

Greece

Task E3.2.1: Seminars on mitigation of the illegal use of poison baits

- Eight (8) seminars were organised as well as eleven (11) events, instead of the three seminars scheduled in the framework of the project proposal

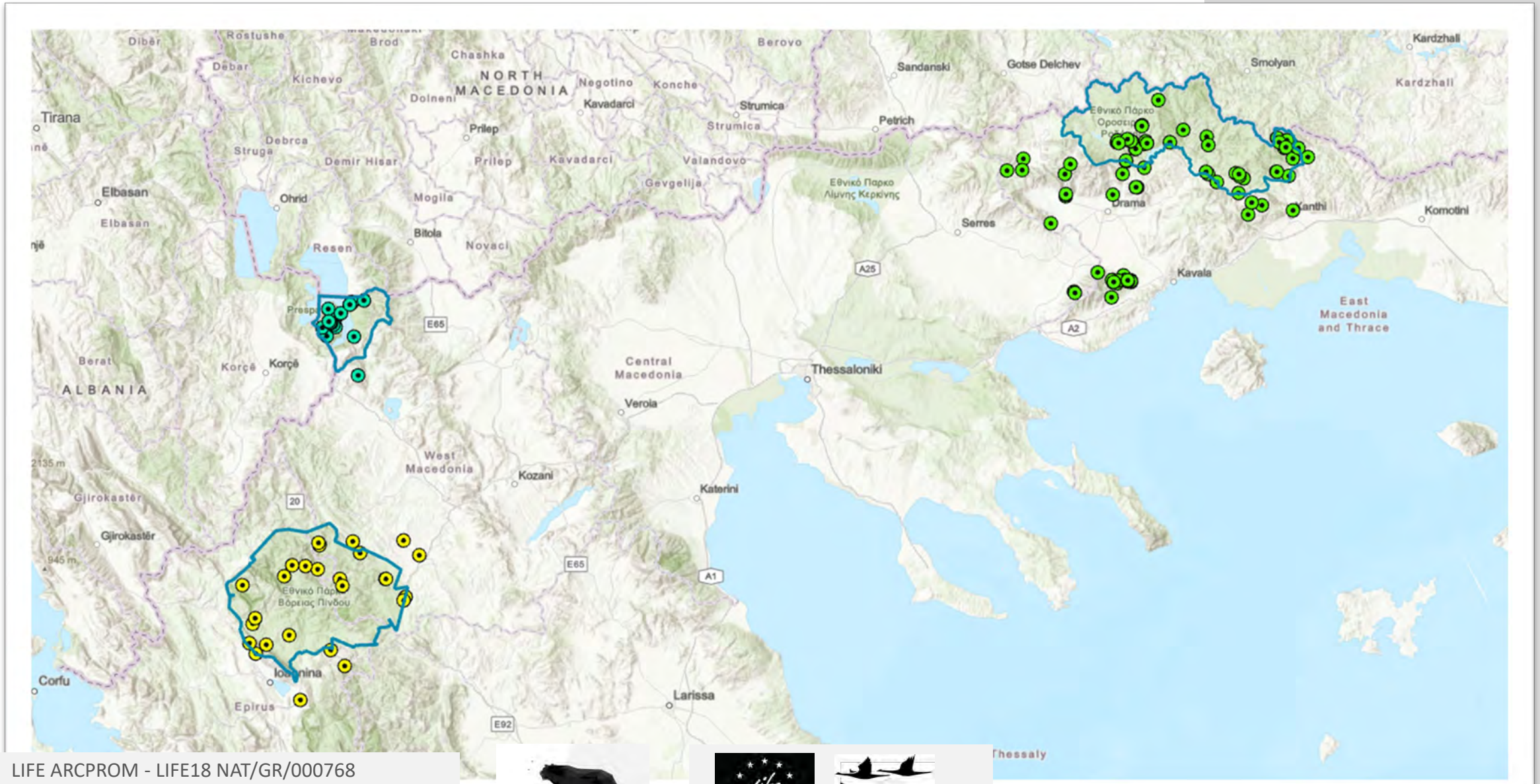
Task E3.2.2: Seminars on management of bears exposing a "habituated" behaviour or/and causing unusually frequent damages on agriculture

- In cooperation of the LIFE Projects "LIFE ARCPROM" and "LIFE IP4Natura", Yorgos Mertzanis presented the subject in a webinar, held on 2 July 2024, which was attended by 152 staff members of the Forestry Service, NECCA, NGOs, and other stakeholders.

Task E3.2.3: Special meeting with officers of the Green Fund, the Ministry of Environment/Forestry Service and the Ministry of Citizen Protection

- Two special meetings have been organised so far with officers of the Green Fund, and the Ministry of Environment/Forestry Service.
- The National Platform on Coexistence between Humans and Large Carnivores established on 18/12/2024 supports replication and transfer of good practices.

E3 - Activities to ensure replication and transfer of implemented actions



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E5 – Environmental education activities

Aim / objectives	Results / achievements	Evaluation
Improvement of the awareness level on the added values of the targeted species in relation to the areas targeted by the project. Delineation and mapping of the thematic bear trails Educational programs for “The Coexistence Trails”. Production of educational material.	In GREECE, educational material (leaflet, guide, activity boxes and for the landscape interpretation boards) for 3 Coexistence Trails (2 paths in Rodopi and 1 in Prespes) were printed. In ITALY, an improved Bear Trail was produced using MNP funds. A press tour and workshops for teachers and guides organized All the printed materials & 100 copies of the board game “My Orsella” were produced and distributed among schools, environmental education centres and environmental educators	In GREECE, environmental landscape interpretation trails were created to help students and visitors to understand better the coexistence challenges. In ITALY, the Bear Trail became part of the community, and it is also used for the implementation of festivals and other initiatives by the Municipality, which realised 2 additional thematic trails following the Bear Trail steps. The board game My Orsella was greatly appreciated by educators and children during ad hoc workshops to promote both the Bear Trail and the board game

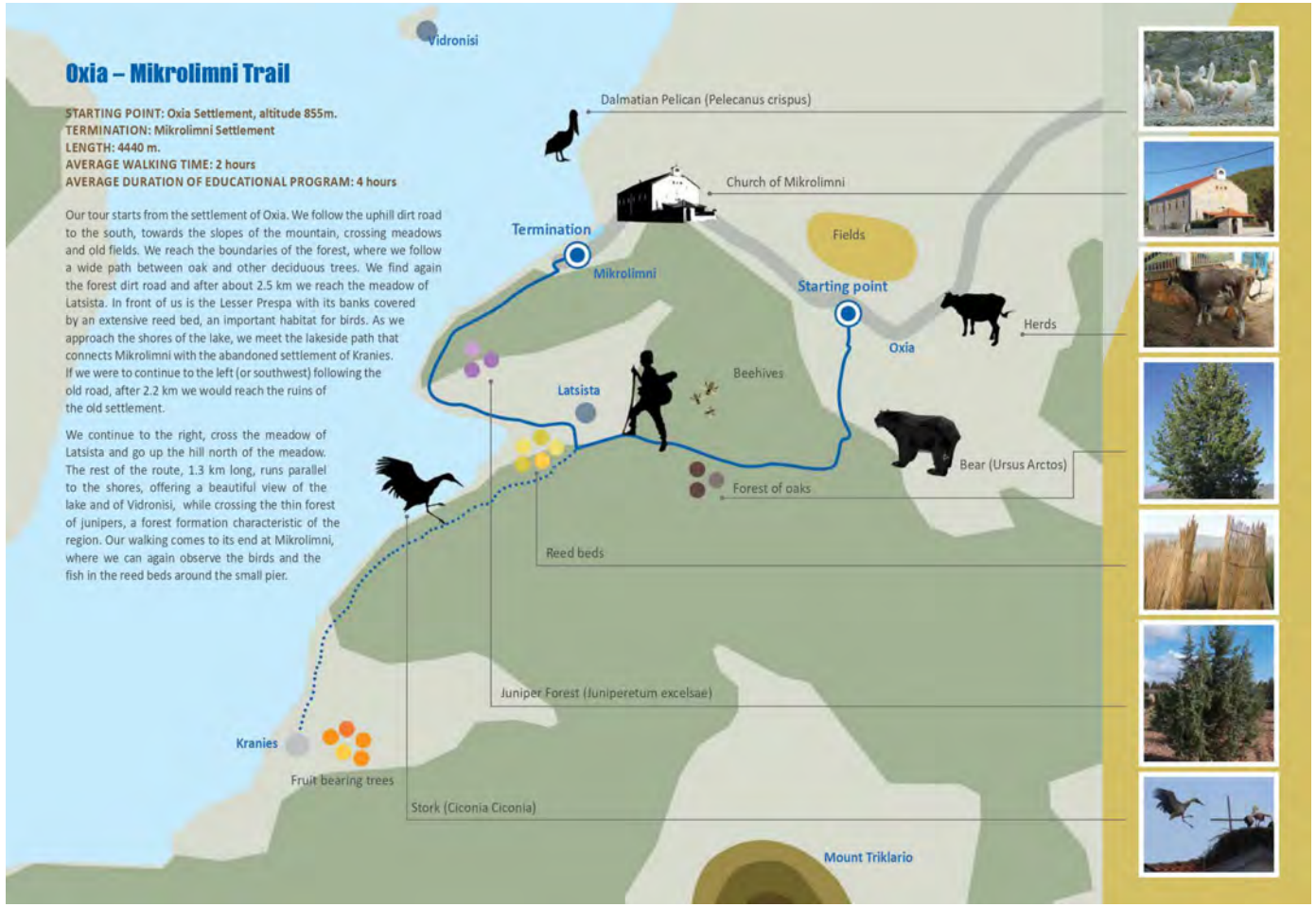
E5 – Environmental education activities

Key features of the Bear Trail in MNP

- Targets children and schools but also everyday tourists
- Suitable for Joelette
- 6 3-facial totems (18 panels)
- 3 interactive totems
- Reduced impact (removable totems)
- Reduced use of pictures and the ones used are ethical
- 2 leaflets produced (1 printed and 1 digital)
- Workshops implemented not only for teachers but also for guides

E5 – Environmental education activities

Bear-trails in two Parks of Greece: Prespes & Rhodope MR



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Improving human-bear coexistence in 4 National Parks of South Europe

SUSTAINABILITY

Continuation & replication

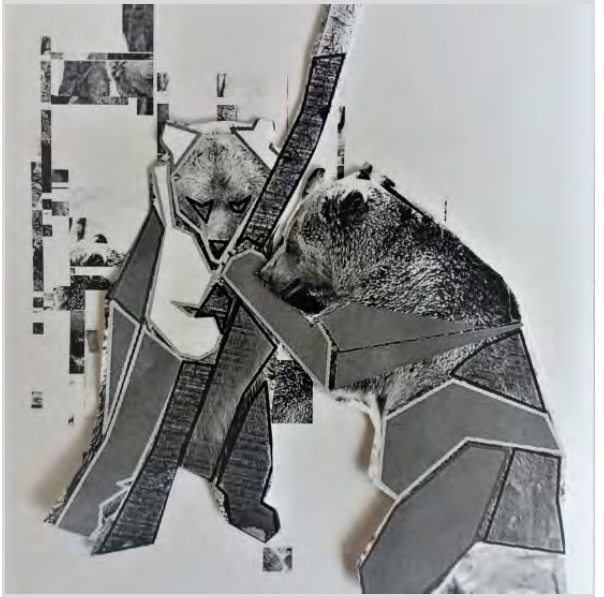
In all project areas the Management Bodies of the corresponding Parks will implement most of the project's actions, both in Greece & Italy.

Parks will continue implementing them in the future, using the improved management capacity, the equipment acquired and the structures created, including the Local Platforms for human-bear coexistence, Bear Emergency Teams, Anti-Poison & Bear Dogs Units, or the bear-friendly labelling process.

Members of the LGDs Network benefitted by prior exchange of dogs will make it “self-functioning”, minimizing mediation & necessary resources.

Eco-volunteering will be continued by NGOs, raising funds mainly by the private sector.

Finally, the Universities participating in the project as beneficiaries, the Forestry Service, other Governmental Organizations, local authorities & NGOs (such as CALLISTO & WWF) will continue supporting human-bear coexistence in the project areas & beyond them, after the end of the project.



SESSION 1 10:00-12:00

Bear Friendly Scheme Beneficiaries Member Networking, Collaboration Opportunities & Label Implementation Challenges

Coordination: Dimitris Chatzopoulos,UTH/Giovanna Di Domenico, MNP

RESPECT® label

Σήμα για την προστασία της άγριας ζωής και της βιοποικιλότητας

RESPECT ® label

Σήμα για την προστασία της άγριας ζωής και της βιοποικιλότητας

Το Εργαστήριο Μικροβιολογίας και Παρασιτολογίας
του Τμήματος Κτηνιατρικής του Πανεπιστημίου Θεσσαλίας
εισάγει το καινοτόμο πρόγραμμα επισήμανσης προϊόντων και υπηρεσιών
φιλικών προς την άγρια ζωή
RESPECT LABEL
στο πλαίσιο του ευρωπαϊκού Προγράμματος LIFE ARCPROM (LIFE 18NAT/GR/000768)
με επιστημονικό υπεύθυνο για το Π.Θ. τον Καθηγητή Χαράλαμπο Μπιλλίνη.

Τι είναι το σήμα RESPECT;

Το σήμα RESPECT® συμβολίζει ότι το προϊόν που το φέρει έχει παραχθεί από επιχείρηση που αξιολογήθηκε για τη συμμόρφωσή της με συγκεκριμένες απαιτήσεις ως προς την προστασία της άγριας ζωής και της βιοποικιλότητας. Τα κριτήρια για την απονομή του σήματος προστασίας άγριας ζωής και βιοποικιλότητας (RESPECT®) περιλαμβάνονται στην ειδική προδιαγραφή που έχει εκδοθεί απότο Πανεπιστήμιο Θεσσαλίας (www.respect-label.gr)

RESPECT
FOR WILD LIFE
& BIODIVERSITY

Πλεονεκτήματα για τον καταναλωτή

Τα πιστοποιημένα προϊόντα διευκολύνουν τους καταναλωτές να επιλέγουν προϊόντα και υπηρεσίες που ταιριάζουν με τις περιβαλλοντικές αξίες τους.

«Παραγωγή φιλική προς το περιβάλλον: Σε παγκόσμιο επίπεδο, το 49% των καταναλωτών ισχυρίζεται ότι έχει αλλάξει τη διατροφή του τα τελευταία δύο χρόνια για να ακολουθήσει έναν πιο φιλικό προς το περιβάλλον τρόπο»

Πλεονεκτήματα για τον παραγωγό

Η παραγωγή γεωργικών προϊόντων φιλικών προς τις αρκούδες & η υιοθέτηση πρακτικών φιλικών για τις αρκούδες από τουριστικές εκμεταλλεύσεις και άλλες υπηρεσίες, μπορούν να συμβάλουν στην προώθηση της τοπικής πολιτιστικής ταυτότητας, στην εφαρμογή προδιαγραφών υψηλής ποιότητας σε προϊόντα και υπηρεσίες και, τελικά, στην βιώσιμη ανάπτυξη των σχετικών αγροτικών περιοχών.

Ποιοί μπορούν να αποκτήσουν το σήμα;

Το σήμα RESPECT® δύναται να χρησιμοποιηθεί σε προϊόντα φυτικής ή ζωικής προέλευσης, καθώς και σε υπηρεσίες αγροτουρισμού, φιλοξενίας (ξενοδοχεία), δραστηριοτήτων αναψυχής κ.α., καθώς, επίσης, να επεκταθεί και στην πιστοποίηση παραγωγικών διαδικασιών φιλικών και προς άλλα άγρια είδη, πέραν της αρκούδας.

Φορέας απονομής σήματος

Το σήμα και η διαδικασία απονομής του δημιουργήθηκαν από το Πανεπιστήμιο Θεσσαλίας (Εργαστήριο Μικροβιολογίας & Παρασιτολογίας του Τμήματος Κτηνιατρικής, Σχολής Επιστημών Υγείας) στο πλαίσιο του έργου LIFE ARCPROM (https://lifearcprom.uowm.gr/el)

Το Εργαστήριο έχει μακρά εμπειρία σε ερευνητικά έργα για την άγρια ζωή και τη βιοποικιλότητα, και η διαδικασία αξιολόγησης των αιτήσεων των ενδιαφερομένων γίνεται από ομάδα έμπειρων και εξειδικευμένων επιστημόνων. Η διαδικασία περιλαμβάνει επιτόπιους ελέγχους, αλλά αξιοποιεί και σε μεγάλο βαθμό τις νέες τεχνολογίες και καινοτομικά εργαλεία παρακολούθησης και ανατροφοδότησης.

ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
ΕΤΟΣ ΙΔΡΥΣΗΣ 1984

Λίγα λόγια για το Έργο

Το έργο LIFE ARCPROM "Improving Human-Bear Coexistence in 4 National Parks of South Europe" έχει ως στόχο τη βελτίωση των όρων συνύπαρξης της καφέ αρκούδας και του ανθρώπου σε τρία Εθνικά Πάρκα της Ελλάδας (Πρεσπών, Β.Πίνδου, Οροσειράς Ροδόπης) και σε ένα πάρκο της Ιταλίας (Maiella). Η καφέ αρκούδα (Ursus arctos) είναι ένα είδος που απειλείται με εξαφάνιση και χαρακτηρίζεται ως «είδος προτεραιότητας», όντας απόλυτα προστατευόμενο από την Ευρωπαϊκή νομοθεσία.

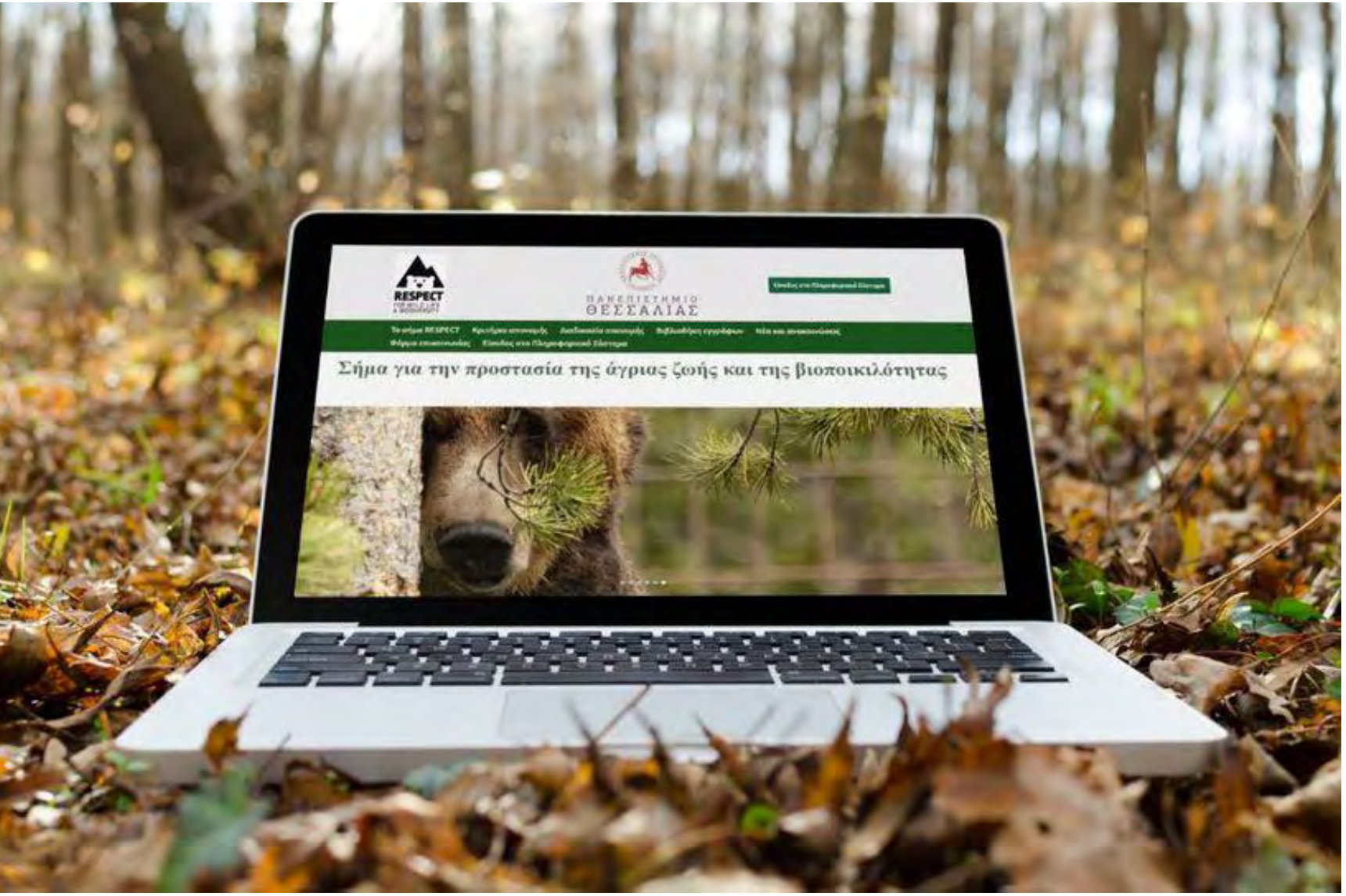
Στο πλαίσιο του στόχου του έργου για τη μακροπρόθεσμη διατήρηση και προώθηση της συνύπαρξης αρκούδων με την κτηνοτροφία & με άλλες ανθρώπινες δραστηριότητες, καθιερώνεται το πρόγραμμα σήμανσης ως «φιλικών προς την αρκούδα» προϊόντων που παράγονται μέσω «φιλικών προς την αρκούδα» παραγωγικών πρακτικών με τη χρήση του καταχωρημένου λογότυπου RESPECT®.

LIFE ARCPROM

NATURA 2000

ΠΡΑΣΙΝΟ ΤΑΜΕΙΟ

Φιλική προς το χρήστη διαδικασία απονομής σήματος



Το bear-friendly σήμα RESPECT® απονέμεται μέσω μιας φιλικής προς το χρήστη ηλεκτρονικής διαδικασίας.

Η διαδικασία υποβολής αίτησης και η αξιολόγηση ολοκληρώνονται μέσω ηλεκτρονικής πλατφόρμας:

http://respect-label.gr/award-process/

Official Site: www.respect-label.gr

ΚΑΤΟΧΟΙ ΣΗΜΑΤΟΣ

- Τα πρώτα είκοσι ένα (21) προϊόντα & υπηρεσίες έχουν λάβει το σήμα RESPECT®
- Οι δικαιούχοι δραστηριοποιούνται εντός των 3 εθνικών πάρκων Β. Πίνδου, Πρεσπών & Ροδόπης:

1. North Pindos Ecotourism Office
2. ‘’Rokka’’ Guesthouse
3. Hotel ‘’Porfyron’’
4. ‘’Aggelon Katafygio’’ Guesthouse
5. ‘’Kerasies’’ Guesthouse
6. ‘’Frida's Berries’’, Food Products
7. ‘’Wild Mushroom Products’’, Food Products
8. ‘’Koziakas’’ Honey
9. ‘’Iama Zagori Herbs’’ Food Products
10. Kontogiannis Michalis
11. ‘’Hippophaes Zagoriou’’, Food Products
12. ‘’Laista Beans’’ Food Products
13. ‘’Honey-900’’- Honey Diamantopoulos Manolis
14. ‘’Trekking Hellas’’
15. ‘’Ktima Chroni’’ Honey
16. Hotel ‘’Agios Germanos’’
17. ‘’Prespa Top’’ Food Products
18. ‘’Vrigiis’’ Guesthouse
19. ‘’Forestis’’ Outdoor Activities
20. "To Meli tis Arkoudas’’ Honey
21. "Kirgion’’ Honey – Fondoulakos
22. Vergis George - Rafting

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Prespa top
ΔΗΜΗΤΡΟΠΟΥΛΟΣ ΤΟΠΙΚΑ ΠΡΟΪΟΝΤΑ ΠΡΕΣΠΩΝ

Prespa-Top

“Δημητρόπουλος Προϊόντα Πρεσπών”

ΚΑΤΟΧΟΙ ΣΗΜΑΤΟΣ

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Παραδοσιακό Ξενοδοχείο «ΑΓΙΟΣ ΓΕΡΜΑΝΟΣ»

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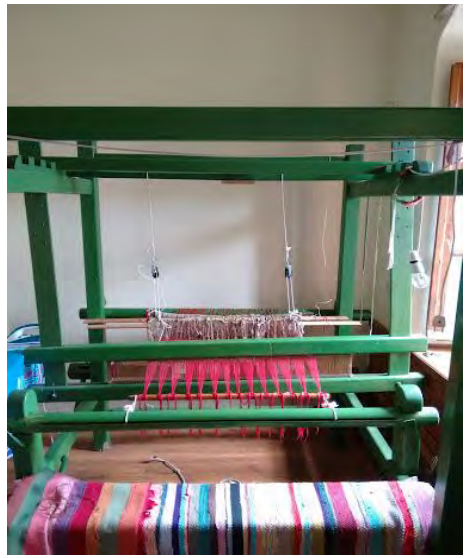

Παραδοσιακός Ξενώνας «ΡΟΚΚΑ»

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Βότανα Ζαγορίου «IAMA»
Zagori Herbs

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Γίγαντες Λάϊστας Ζαγορίου
BIO

Γίγαντες «ΛΑΪΣΤΑΣ ΖΑΓΟΡΙΟΥ»

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ΙΠΠΟΦΑΕΣ ΖΑΓΟΡΙΟΥ
Z
HIPPOPHAES ZAGORIOU
Hippophaes

Ιπποφαές ΖΑΓΟΡΙΟΥ

ΚΑΤΟΧΟΙ ΣΗΜΑΤΟΣ

Μανιταροπροϊόντα Γρεβενών

μανιταροπροϊόντα
ΓΡΕΒΕΝΩΝ
γήινες γεύσεις

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FRIDA'S berries

Frida's berries

RESPECT® label

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Scan Me!

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Life

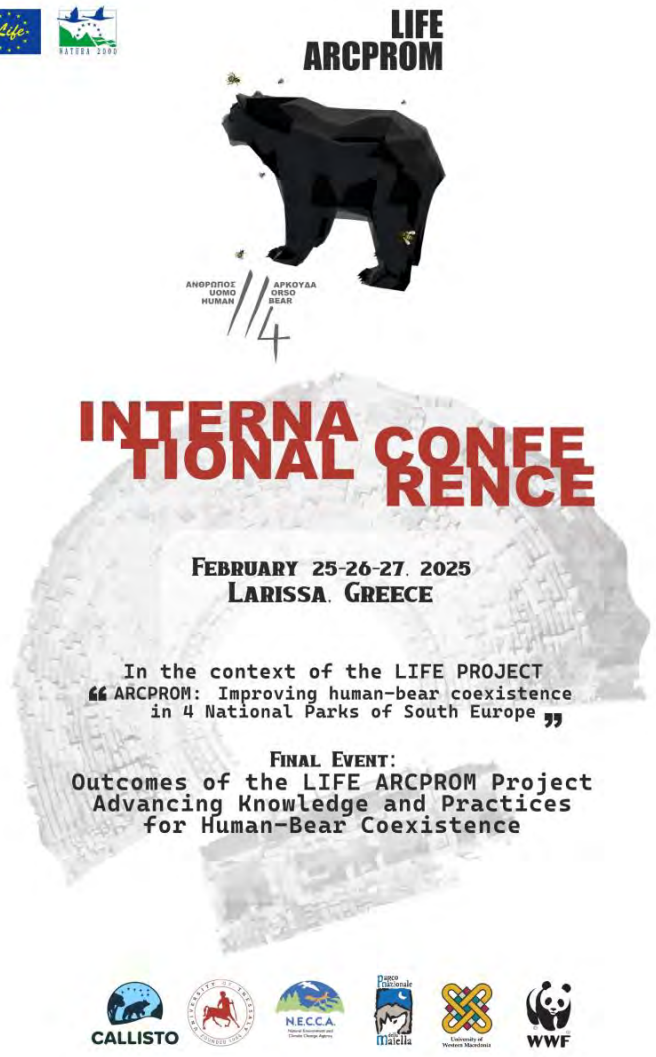
NATURA 2000

ΠΡΑΣΙΝΟ ΤΑΜΕΙΟ

SESSION 2 10:00-12:00

Monitoring Population Structure and Conservation Management of Brown Bears in Europe

Coordination: Maria Satra, UTH

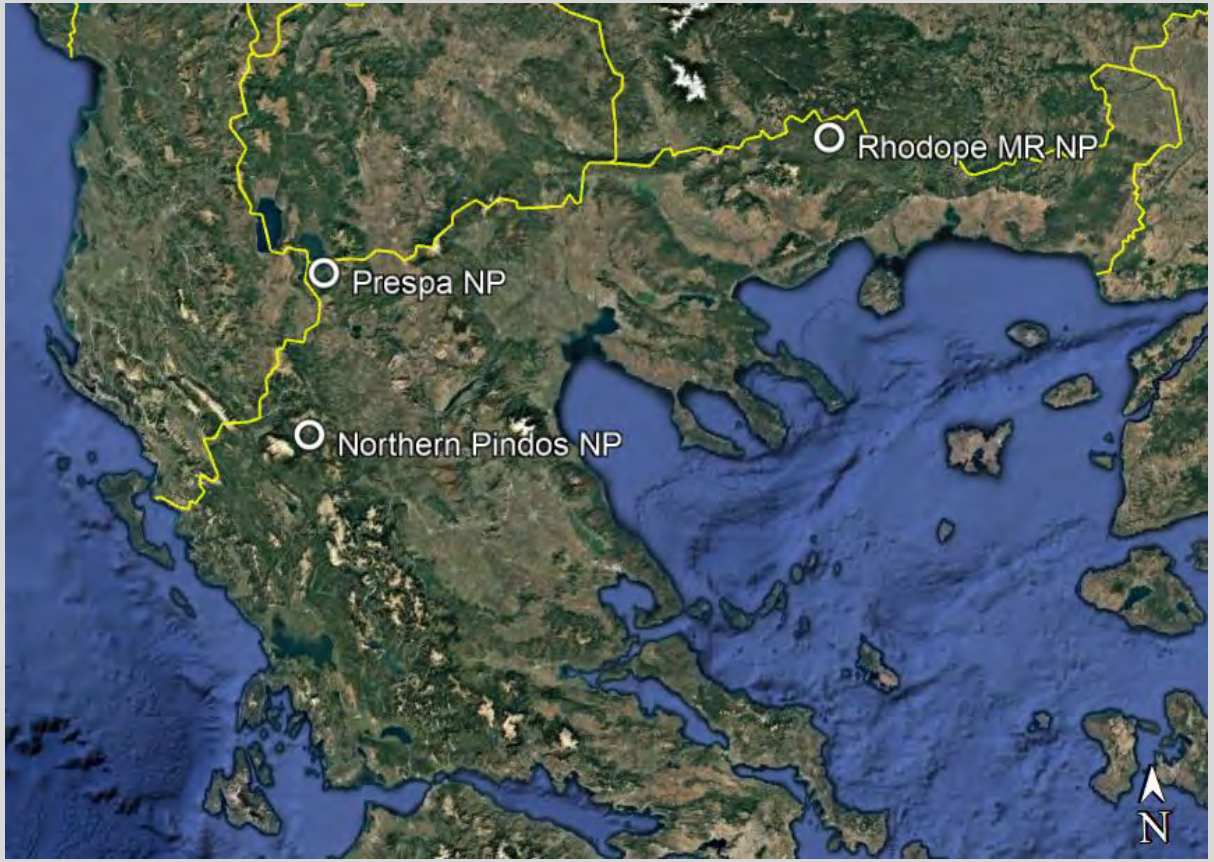


A2: EVALUATION OF BROWN BEAR POPULATION STATUS IN THE THREE NATIONAL PARKS IN GREECE USING IR CAMERAS

Stefanos Kyriakidis, Callisto

Introduction

- A2 action took place in 2020-2021
- Camera trapping
  - Non-invasive
  - Observation of wildlife without altering behaviors
- Three national parks in Greece
  - Northern Pindos National Park
  - Prespa National Park
  - Rhodope Mountain Range National Park



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Camera trap placement

- Criteria for the camera placement locations
  - Presence of bear bio-signs in the surrounding area
  - Testimonies on brown bear occurrences in the area by locals
  - Distance from settlements
  - Decrease of the likelihood of detection by people
  - Ensure optimal field of vision

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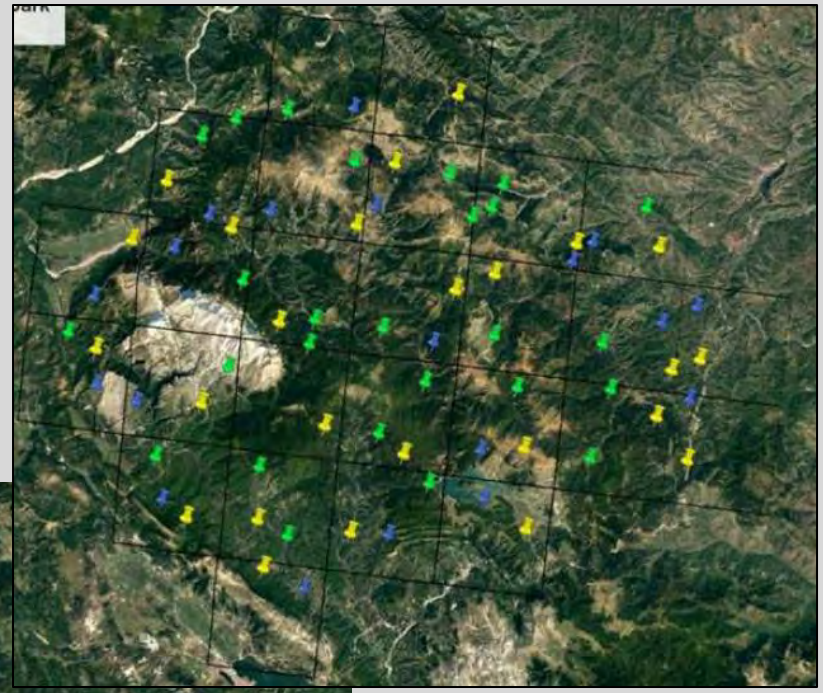
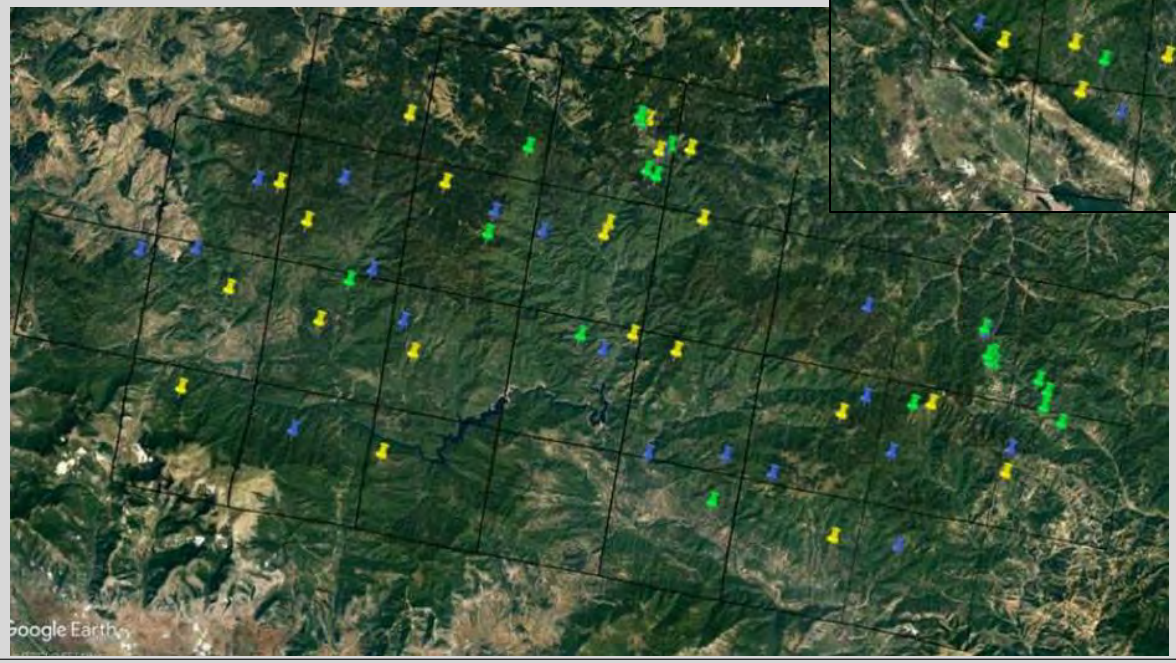
Camera trap locations

- Three to four sampling cycles with a rotation every roughly two months
- A total of 215 camera-trap locations were used

Northern Pindos NP



Rhodope Mountain Range NP



Prespa NP

Data analysis

Data entry and species identification

Cycle	Cam	Y	X	Species	Nb_I	Scientific	Hunt	Vehi	Nb_Ve	Temperat	Filename	Date	Time
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	23	IMG_6475.JPG	31-07-21	11:39:46
2	K4	40.036367	20.978096	Bird	1	Turdus merula				15	IMG_7078.JPG	01-08-21	7:14:36
2	K4	40.036367	20.978096	Wildcat	1	Felis sylvestris				16	IMG_7093.JPG	01-08-21	8:45:36
2	K4	40.036367	20.978096	Bird	1	Garrulus glandarius				18	IMG_7698.JPG	02-08-21	6:50:02
2	K4	40.036367	20.978096	Bird	1	Turdus merula				18	IMG_8545.JPG	03-08-21	8:43:42
2	K4	40.036367	20.978096	Dog	1	Canis familiaris				18	IMG_8546.JPG	03-08-21	9:22:38
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	17	IMG_8539.JPG	03-08-21	6:56:00
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	25	IMG_8591.JPG	03-08-21	11:29:52
2	K4	40.036367	20.978096	Human	1	Homo sapiens		Yes	1	22	IMG_8569.JPG	03-08-21	10:29:40
2	K4	40.036367	20.978096	Bird	1	Turdus merula				17	IMG_9315.JPG	04-08-21	7:41:32
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	22	IMG_9371.JPG	04-08-21	10:48:28
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	25	IMG_0047.JPG	04-08-21	21:49:52
2	K4	40.036367	20.978096	Human	1	Homo sapiens		Yes	1	41	IMG_0037.JPG	04-08-21	17:51:52
2	K4	40.036367	20.978096	Human	1	Homo sapiens		Yes	1	43	IMG_0001.JPG	04-08-21	16:30:56
2	K4	40.036367	20.978096	Bird	1	Erithacus rubecul				22	IMG_0092.JPG	05-08-21	10:16:54
2	K4	40.036367	20.978096	Bird	1	Turdus merula				18	IMG_0075.JPG	05-08-21	8:12:08
2	K4	40.036367	20.978096	Bird	1	Garrulus glandarius				22	IMG_1366.JPG	06-08-21	12:12:14
2	K4	40.036367	20.978096	Bird	1	Turdus merula				17	IMG_1105.JPG	06-08-21	8:30:54
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	29	IMG_2211.JPG	06-08-21	17:22:34
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	38	IMG_2131.JPG	06-08-21	16:25:26
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	2	17	IMG_1080.JPG	06-08-21	7:01:48
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	2	17	IMG_1098.JPG	06-08-21	7:53:54
2	K4	40.036367	20.978096	Brown bear		*Ursus arctos*				23	IMG_2801.JPG	07-08-21	21:41:28
2	K4	40.036367	20.978096	Hare	2	Lepus europaeus				12	IMG_2311.JPG	07-08-21	6:50:12
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	22	IMG_2403.JPG	07-08-21	12:14:10
2	K4	40.036367	20.978096	Human		Homo sapiens		Yes	1	32	IMG_2572.JPG	07-08-21	14:19:24
2	K4	40.036367	20.978096	Wildcat	1	Felis sylvestris				12	IMG_2323.JPG	07-08-21	7:07:52
2	K4	40.036367	20.978096	Bird	1	Garrulus glandarius				20	IMG_2875.JPG	08-08-21	10:59:24
2	K4	40.036367	20.978096	Bird	1	Turdus merula				16	IMG_2862.JPG	08-08-21	9:21:54

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Data analysis

Database with species events per camera and per cycle

Cycle1	1	2	3	4	5	6	7	8	9
Camera name	Browning1	Browning2	Browning3	Browning4	Browning5	Reconyx6	Reconyx7	Browning7b	Browning8
Grid cell	K1	K2	K3	K4	K5	K6	K7	K7B	K8
Starting date	25-05-21	25-05-21	18-05-21	18-05-21	18-05-21	14-04-21	18-05-21	14-04-21	18-05-21
Ending date	10-07-21	10-07-21	09-07-21	09-07-21	10-07-21	12-07-21	13-07-21	09-07-21	07-07-21
Duration (Trapping days)	46	46	52	52	53	89	56	86	50
Julian Date	44364	44364	44360	44360	44360.5	44344.5	44362	44343	44359
Latitude Y	40.13272	40.13526	40.04737	40.04958	40.05197	40.01388	40.01853	39.98378	40.02174
Longitude X	20.94816	21.04258	20.81988	20.88574	20.99942	21.19874	21.23198	20.69372	20.78094
Number of photos	5759	0	12603	2592	13034	0	747	10938	451
Brown bear Events			2		1		3	2	
Wolf Events								38	
Human Events	5		36	38			19	19	2
Dog Events	3			2					
Cattle Events	6								
Smaller livestock Events	28			1			9		
Red fox Events	4			4	1		9	23	1
Marten Events									
European badger Events							9	2	
Wild goat Events							1		
Roe deer Events			2	4			2		1
Wild boar Events				2			2	24	
Hare Events	4			4	10		14	173	
Wildcat Events								4	
Otter Events									
Hedgehog Events									
Horse Events								42	
Bird Events	25		8	4	1		14	10	15
Reptile/Amphibian Events								1	
Rodent Events					10		4		1
Total Events	**75**	**0**	**48**	**59**	**23**	**0**	**86**	**338**	**20**
Hunter Events (inc. in Human Events)							3	3	

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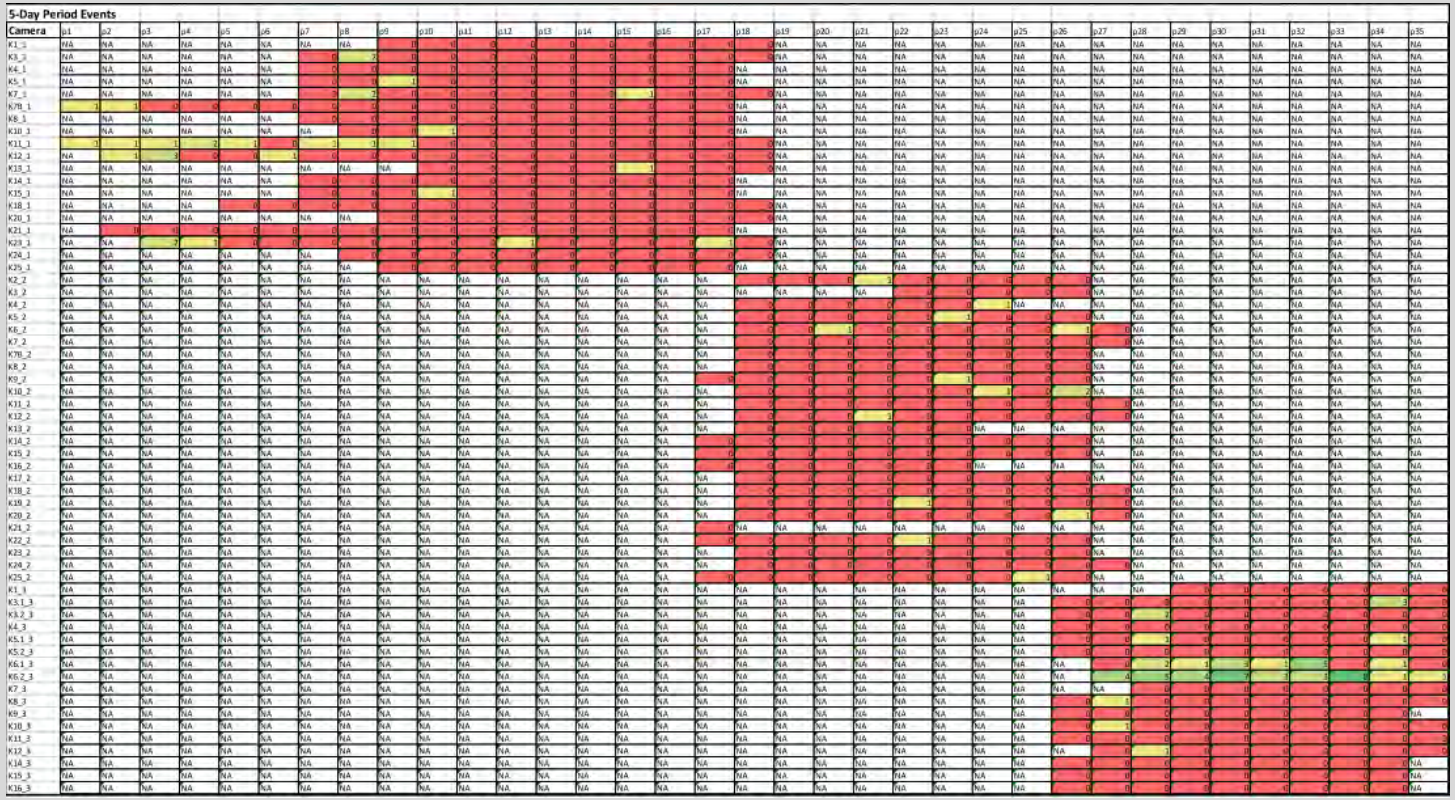
Data analysis

- Database with five-day period events per camera and per cycle

- N-mixture models (analysis of camera-trapping data with unmarked individuals)



Data analysis

Variables used in the statistical models

Table 6. Set of environmental and anthropogenic variables used for estimating bear detection probability in the sampled areas.

Anthropogenic variables	Environmental variables	Variables for detection probability
Distance from settlements (m)	Distance from rivers	Operation time (in days)
Distance from main roads	Distance from water bodies	Camera model
Distance from secondary roads	Distance from shrubland	Julian date
Distance from agriculture	Distance from coniferous forests	
Distance from Natura 2000 areas	Distance from broad-leaved forests	
Human RAI	Distance from mixed	
Road density	Elevation	
Land cover	Slope	
	Aspect	
	Average temperature	

Table 7. Variables combination from the best significant (fittest) models by survey area (3 NP's).

Northern Pindos National Park	Prespes National Park	Rodopi Mountain-Range National Park
Camera model (r)	Julian date (r)	Average temperature (r)
Julian date (r)	Distance from agriculture (N)	Distance from shrublands (N)
Distance from settlements (N)	Slope (N)	Distance from agriculture (N)
Distance from rivers (N)		Distance from Natura 2000 areas (N)
		Road density (N)

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Results

Table 18. Overall cameras sampling results in PINDNP.

Northern Pindos National Park	Cycle A	Cycle B	Cycle C	Total
Time period	14.04 - 11.07	05.07 - 22.08	17.08 - 03.10	14.04.21 - 03.10.21
Cameras	19	25	26	70
Trapping days	1561	950	1018	3529
Photographs	132767	78274	79439	290480
Brown bear Events	29	14	82	125
Human Events	1126	872	1598	3596
Bear RAI	1.86	1.47	8.06	3.54
Human RAI	72.13	91.79	156.97	101.90

Table 19. Overall cameras sampling results in MBPNP

Prespes National Park	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Total
Time period	01.04 - 30.05	24.05 - 12.07	09.07 - 03.09	23.09 - 19.10	01.04.21 - 19.10.21
Cameras	17	17	17	12	63
Trapping days	942	779	856	266	2843
Photographs	5064	41796	15322	6452	68634
Brown bear Evets	43	89	30	28	190
Human Events	836	1326	1253	75	3490
Bear RAI	4.56	11.42	3.50	10.53	6.68
Human RAI	88.75	170.22	146.38	28.20	122.76

Table 20. Overall cameras sampling results in RMNP.

Rodopi National Park	Cycle 1	Cycle 2	Cycle 3	Total
Time period	01.07.20 - 30.09.20	27.08.20 - 16.12.20	02.03.21 - 27.10.21	01.07.20 - 27.10.21
Cameras	25	27	30	82
Trapping days	1190	1635	2918	5743
Photographs	40487	37107	107187	184781
Brown bear Events	36	37	98	171
Human Events	326	428	498	1252
Bear RAI	3.03	2.26	3.36	2.98
Human RAI	27.39	26.18	17.07	21.80

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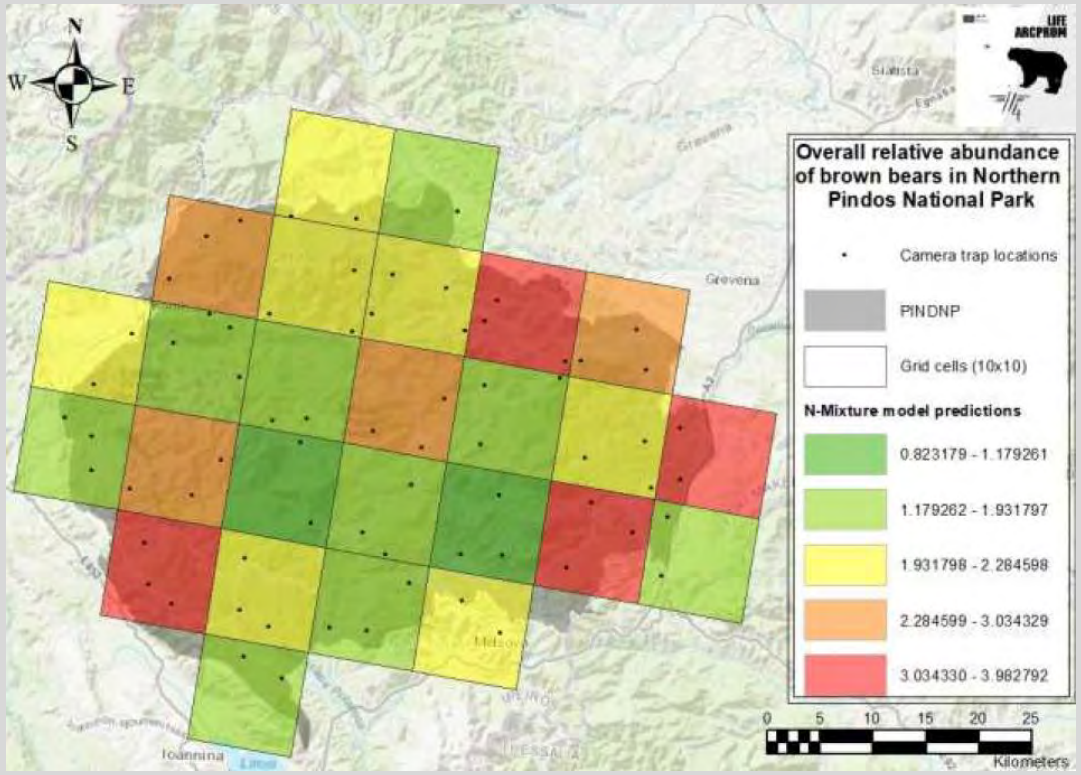
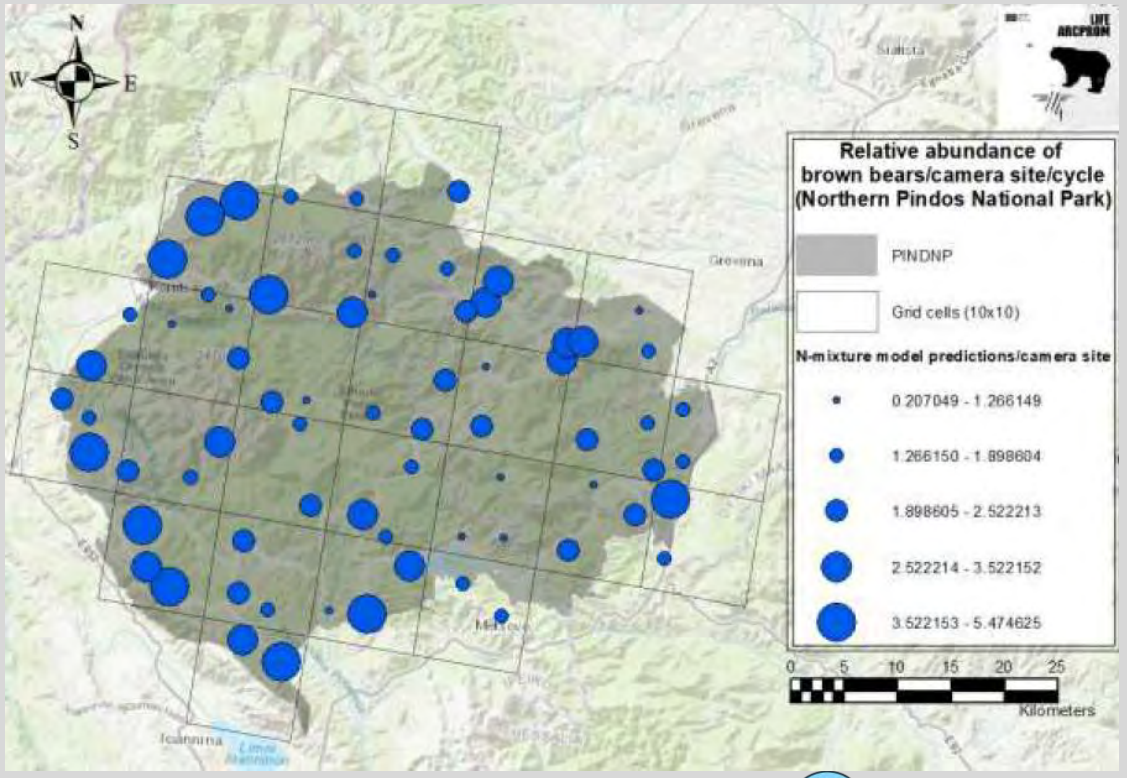
Results-Northern Pindos NP

Relative abundance estimations
p = 0.04 (SE = 0.007)
N = 2.57 (SE = 1.24)





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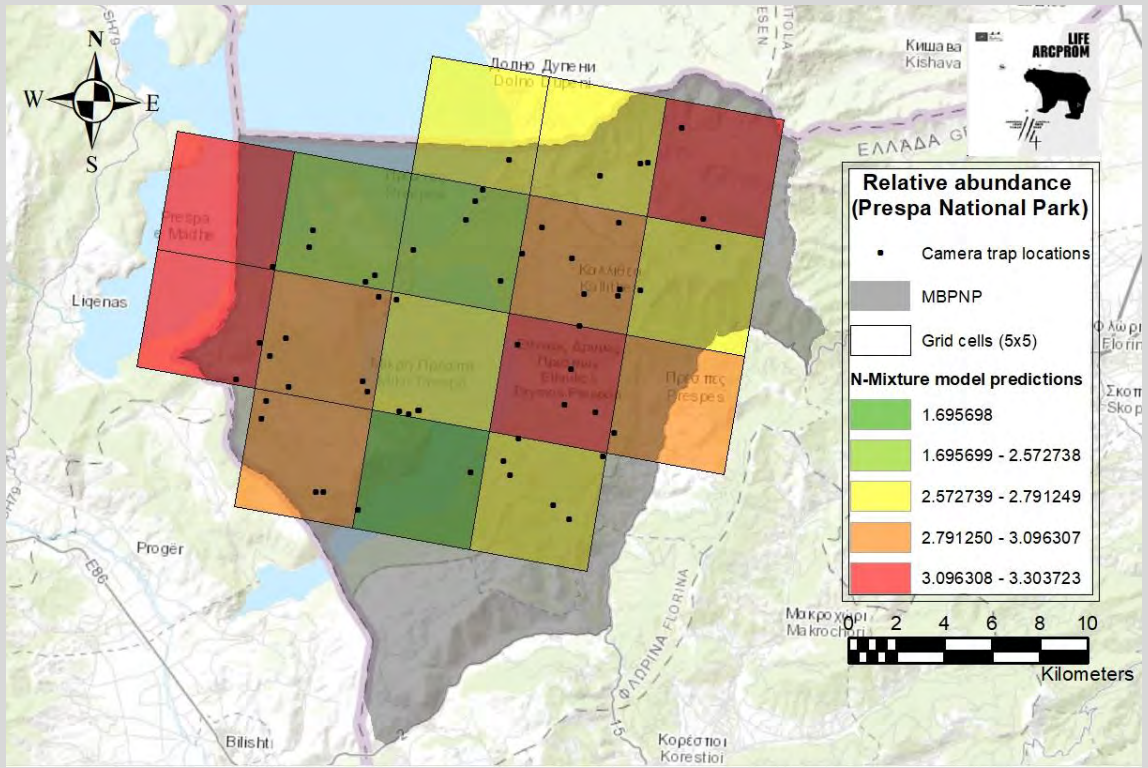
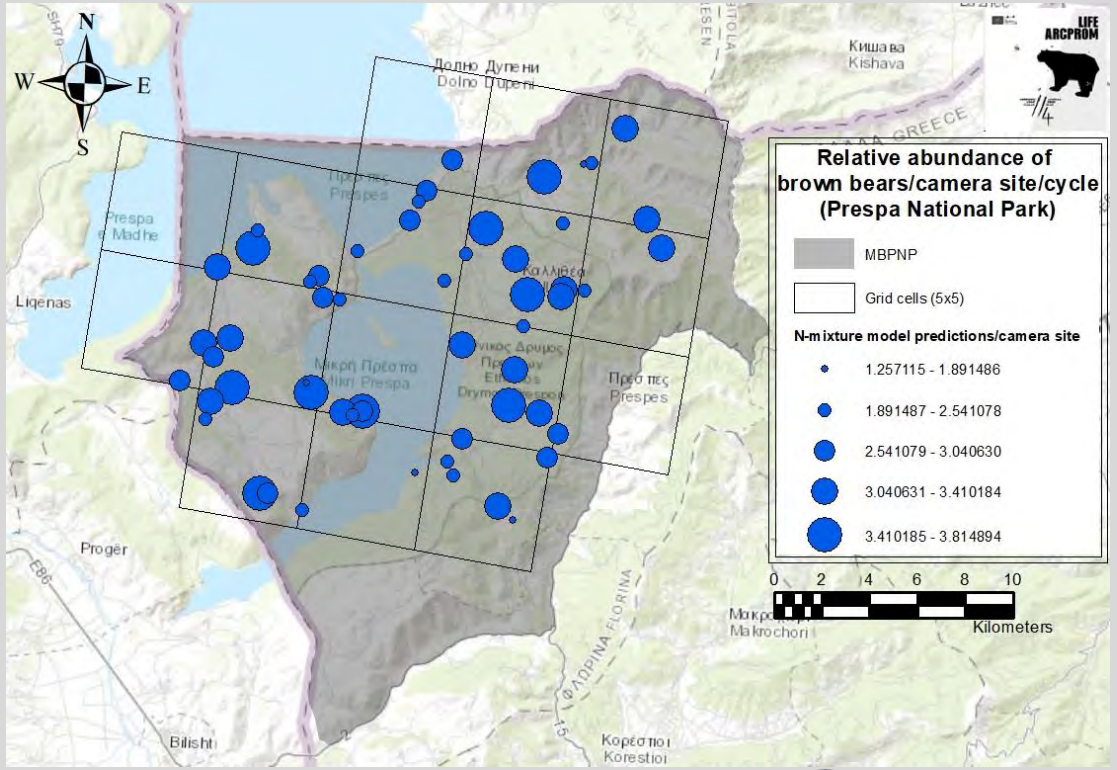
Results-Prespa NP

Relative abundance estimations

p = 0.1 (SE = 0.03)

N = 2.56 (SE = 1.04)

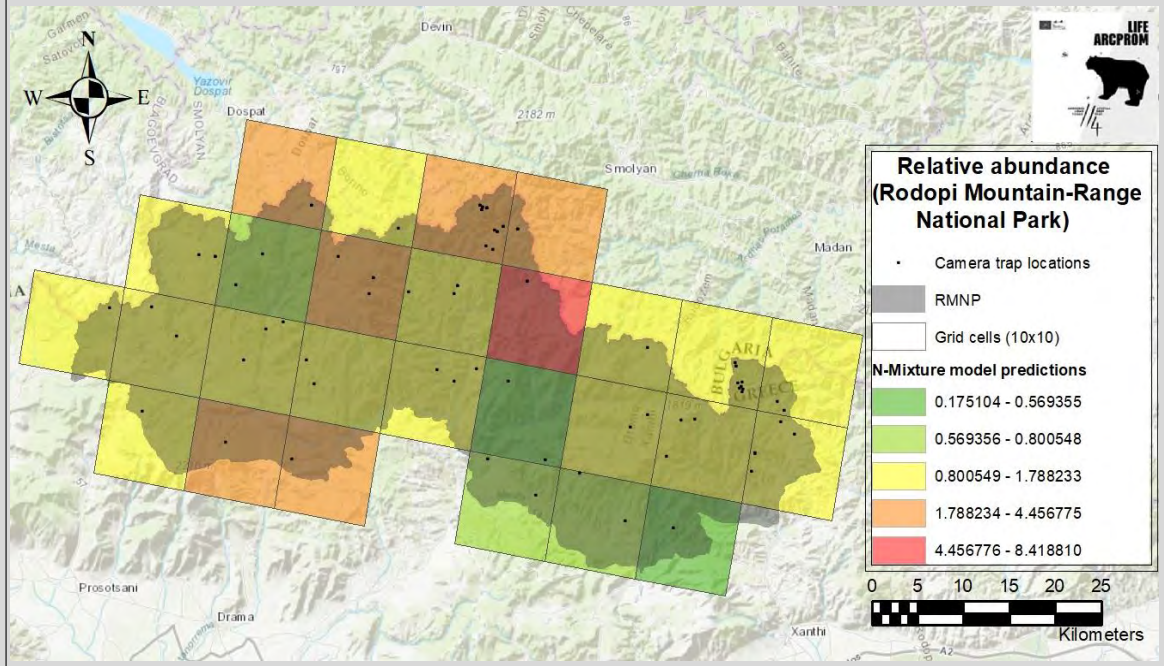


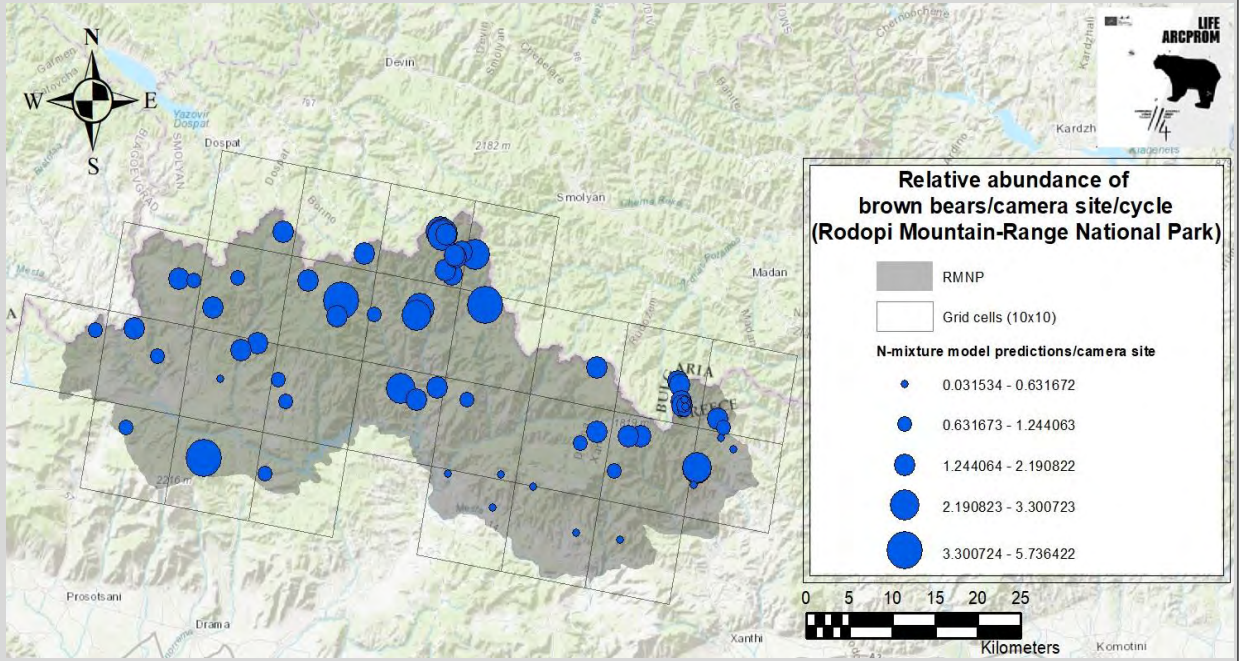


CALLISTO

Results-Rhodope MRNP

Relative abundance estimations
p = 0.07 (SE = 0.02)
N = 1.76 (SE = 0.54)





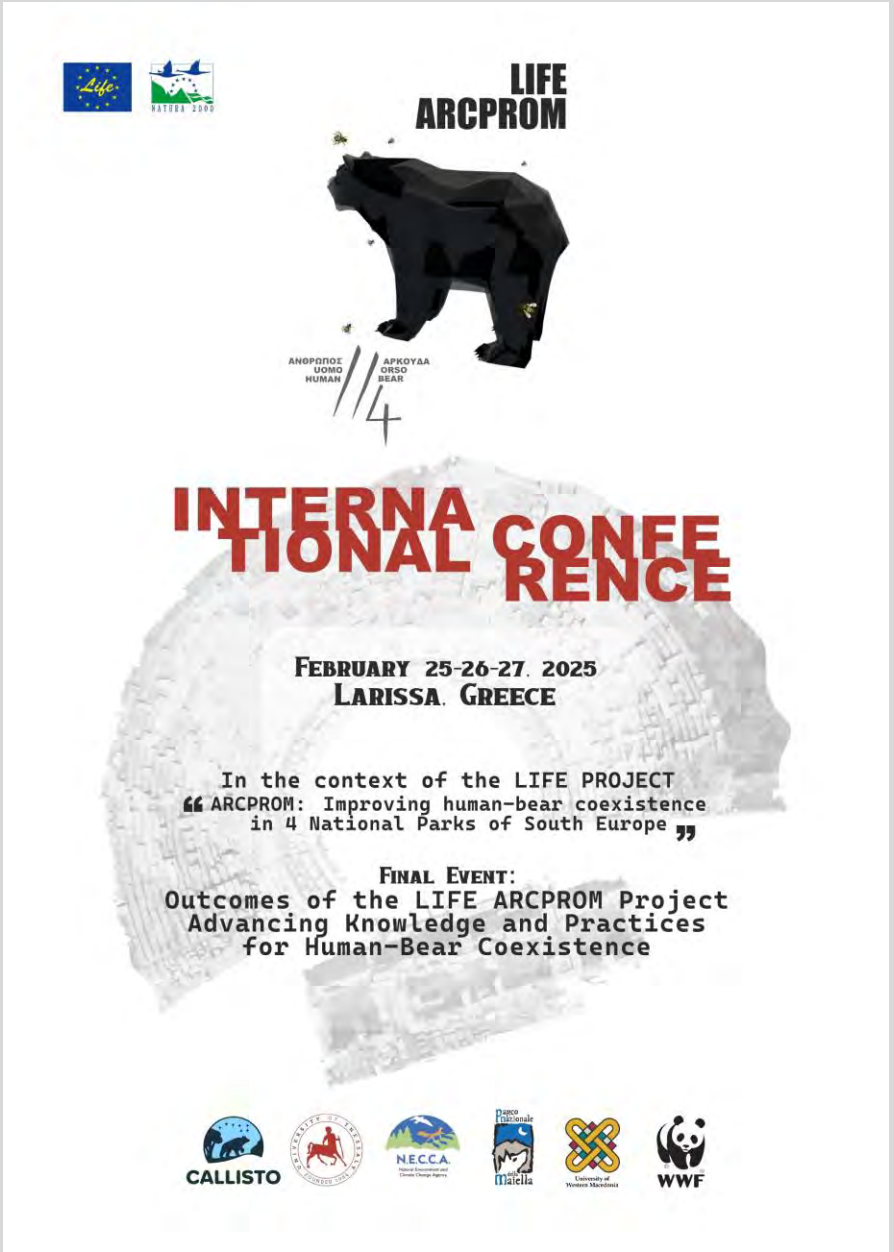
CALLISTO

Results

- Areas with higher relative abundance were chosen for the implementation of the program’s concrete conservation actions





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A. Tragos (biologist)
Y. Lazarou (field technician)
Y. Tsaknakis (field technician)
Y. Mertzanis (PhD biologist)

Thank you for your attention!

Stefanos Kyriakidis

CALLISTO

Genetic Analysis of Brown Bear Sub-Populations in Three National Parks of Greece

LIFE ARCPROM

LIFE18 NAT/GR/000768

“Improving human-bear coexistence in 4 National Parks of South Europe”

Genetic Analysis of Brown Bear Sub-Populations in Three National Parks of Greece

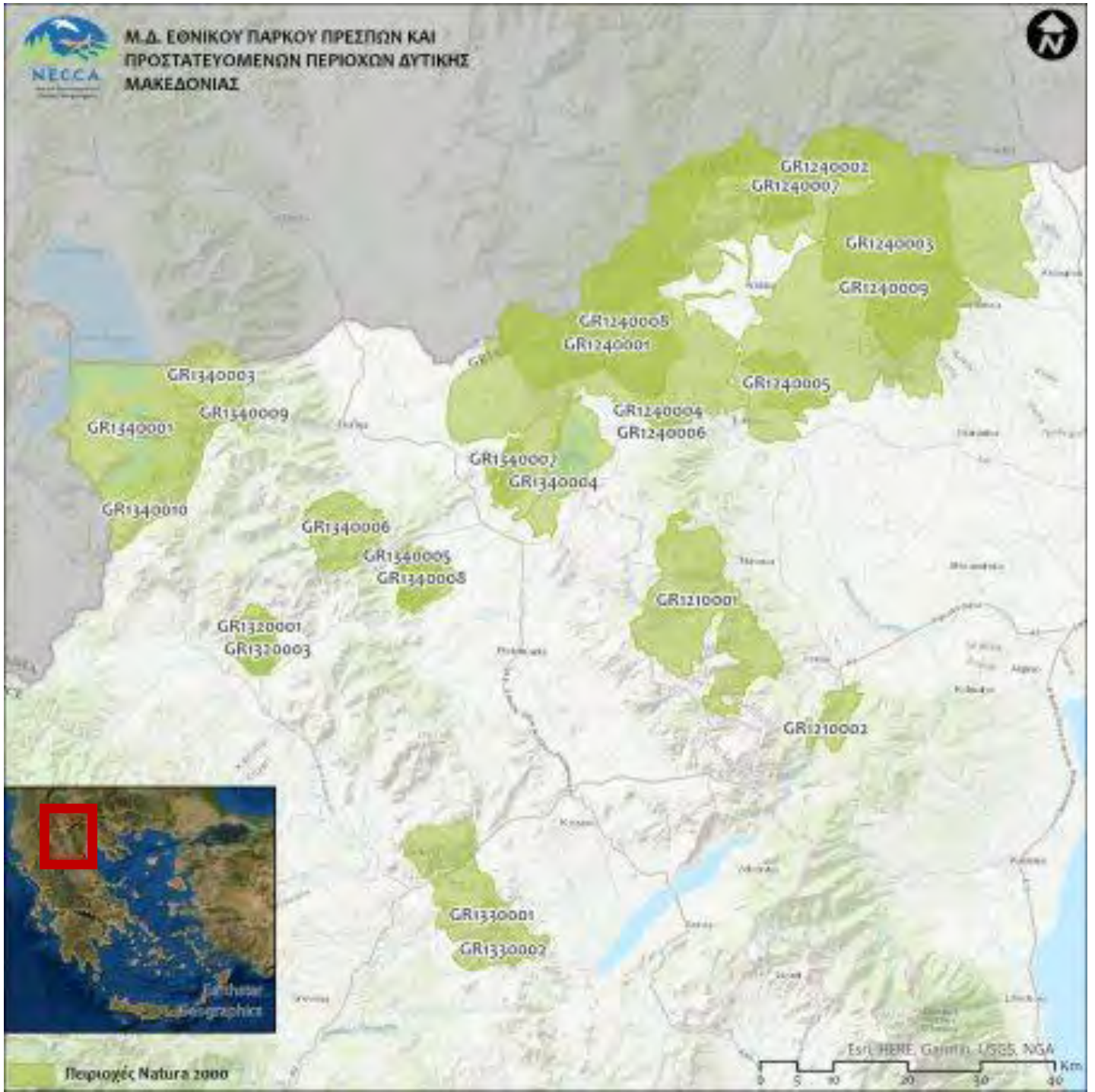
Tzoulia Tsalazidou, Biologist, PhD candidate

Maria Satra, As. Professor of Molecular Genetics (UTH)

Nikoleta Karaiskou, As. Professor (AUTH)

Prespa National Park

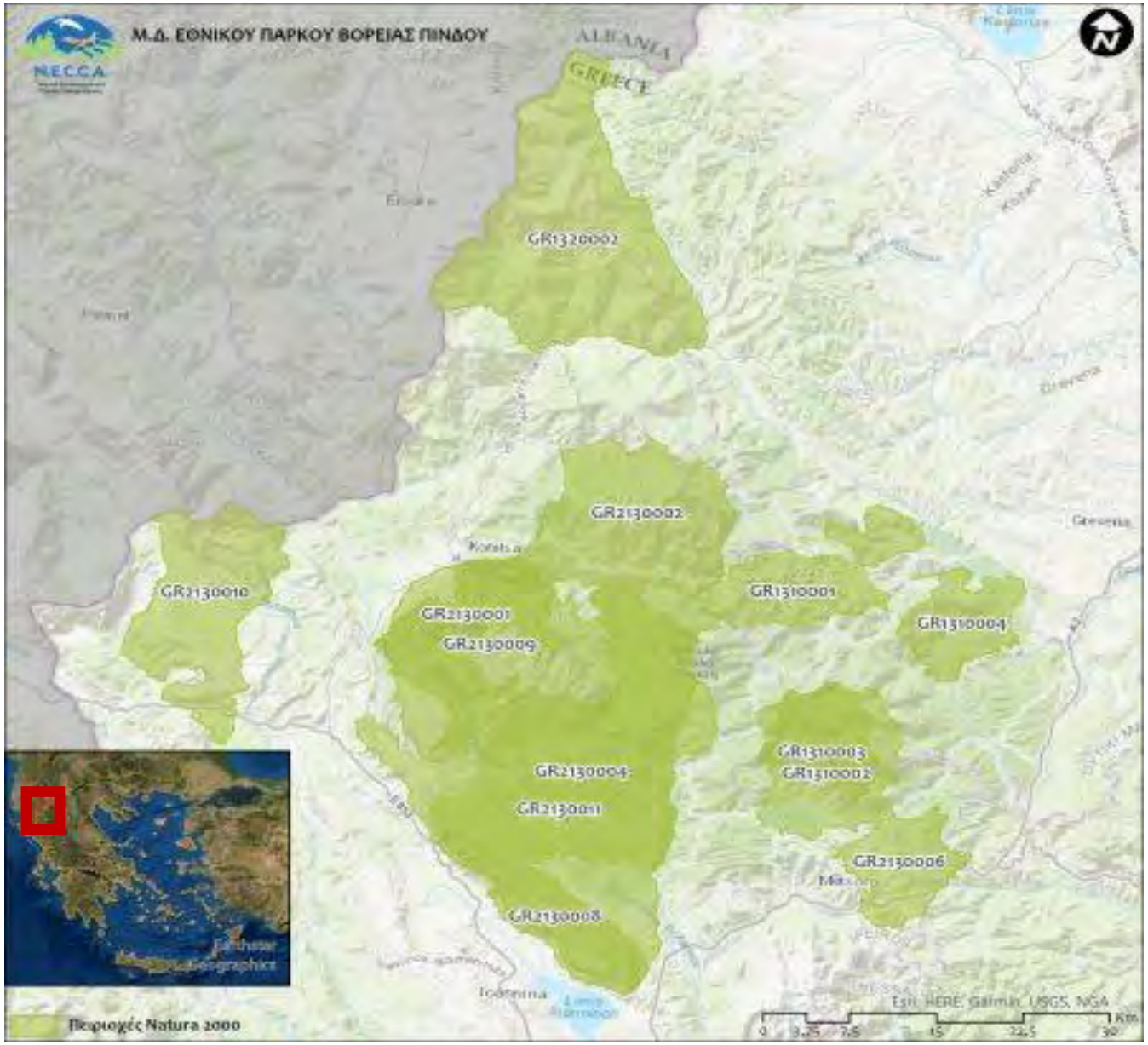
(Management Unit of Prespa National Park and Protected Areas of Western Macedonia)



Ο.ΦΥ.ΠΕ.Κ.Α.
Οργανισμός Φυσικού Περιβάλλοντος και Κλιματικής Αλλαγής

Pindos National Park

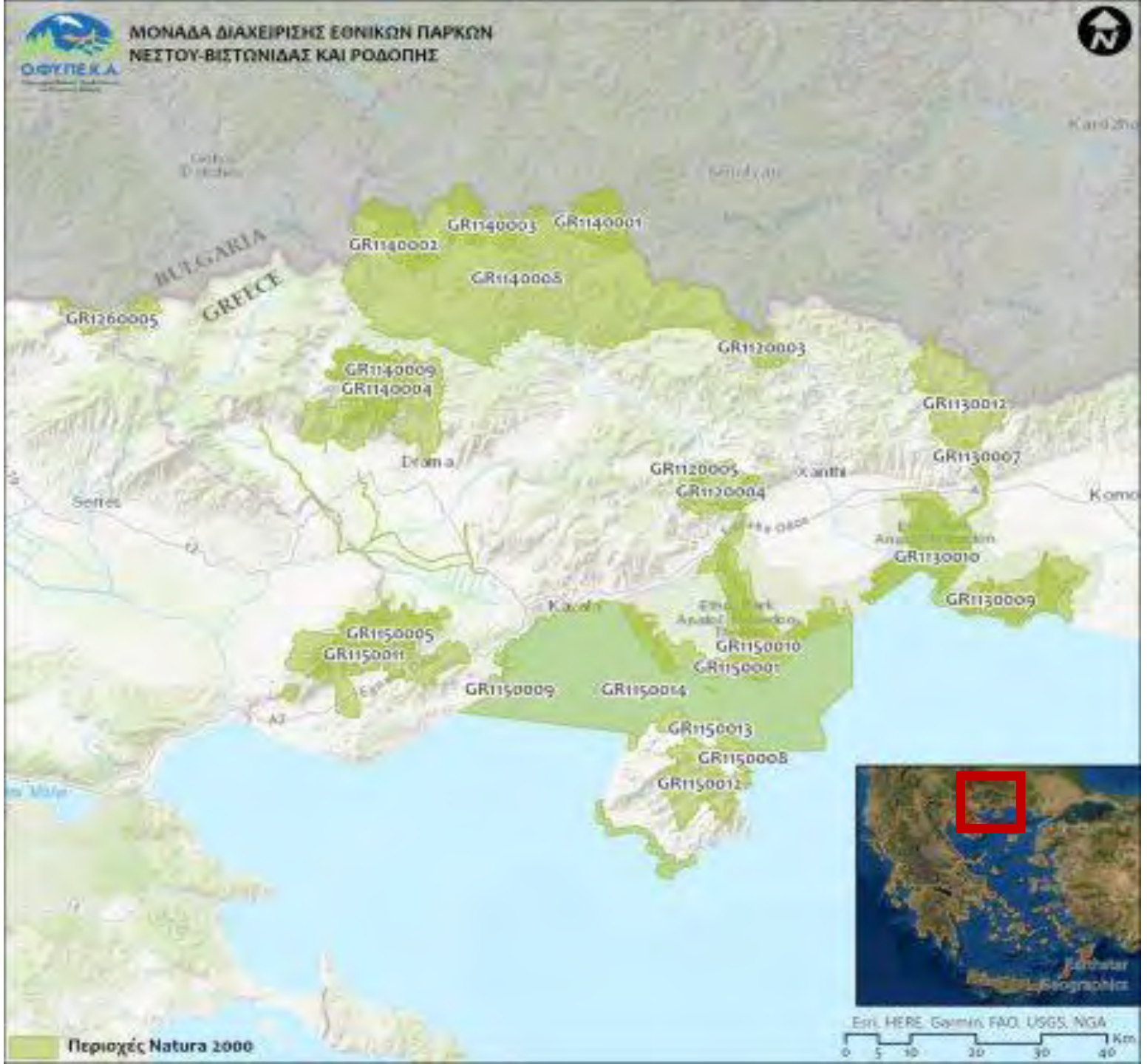
(Management Unit of Northern Pindos National Park)



Ο.ΦΥ.ΠΕ.Κ.Α.
Οργανισμός Φυσικού Περιβάλλοντος και Κλιματικής Αλλαγής

Rodopi National Park

(Management Unit of Nestos -Vistonida and Rhodope National Parks)



Methods used in Actions A2, D7

3 non-invasive methods/techniques

1. Field collection of bear biological material (hair)

2. Field tracking surveys

3. IR cameras network operation

Main objectives of the Actions

Action A2: Assessment of the distribution and numbers of bears in the project areas

- acquiring quantified figures on the actual population status
- the number of bears present in the 4 sub-areas
- the population structure
- their genetic variability & robustness in Greece
- the spatial distribution of bears
- crucial parameters that will indicate population viability & allow, management decisions & conservation planning on a mid & long terms basis
- evidence of possible connectivity and migration

Action D7: Assessment on the ecosystem functions

- distribution status in the project area
- a second cycle of population genetic analysis
- compare data between
- output from action A2 and action D7

Sampling

Hair-trap network: **about 569 hair-traps**

- 51 in Prespes
- 262 in Pindos
- 256 in Rodopi

A2: In total UTH received 472 hair samples: 96 from Prespes, 170 from Pindos and 206 from Rodopi.

- *during 2020-2021*

D7: In total UTH received 680 hair samples: 166 from Prespes, 259 from Pindos and 255 from Rodopi.

- *during 2022-2023*

Methodology

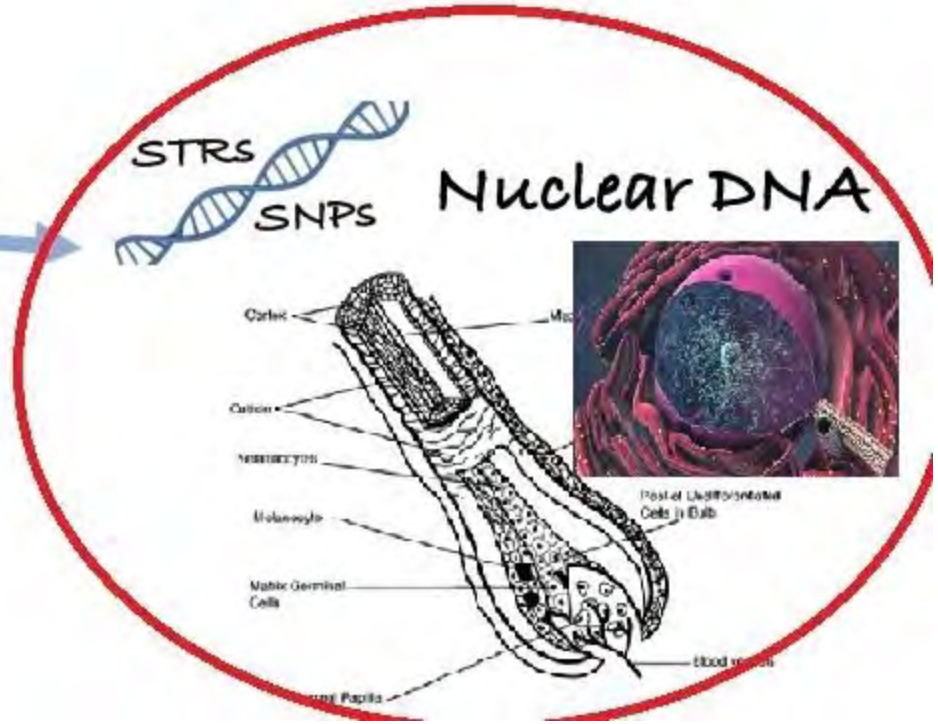
Samples: hair from traps was stored at -20^{o}C in zip-lock bags with silica gel

- ***Root cutting*** (3-25 hair roots)
- ***DNA extraction*** (DNA Mini kit-QIAGEN)
- ***PCR Amplification***: G10H, Mu26, G1D, G10X, G1A, G10P, G10C, Mu59, G10L, Mu50, sex marker
- ***2% agarose gel electrophoresis***
- ***Capillary Electrophoresis*** (QIAxcel DNA high resolution Kit-QIAGEN, Hilden, Germany)

Methods

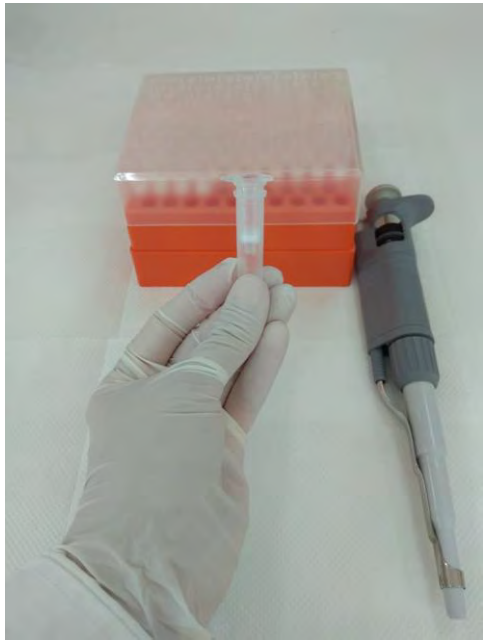
DNA extraction from hair samples

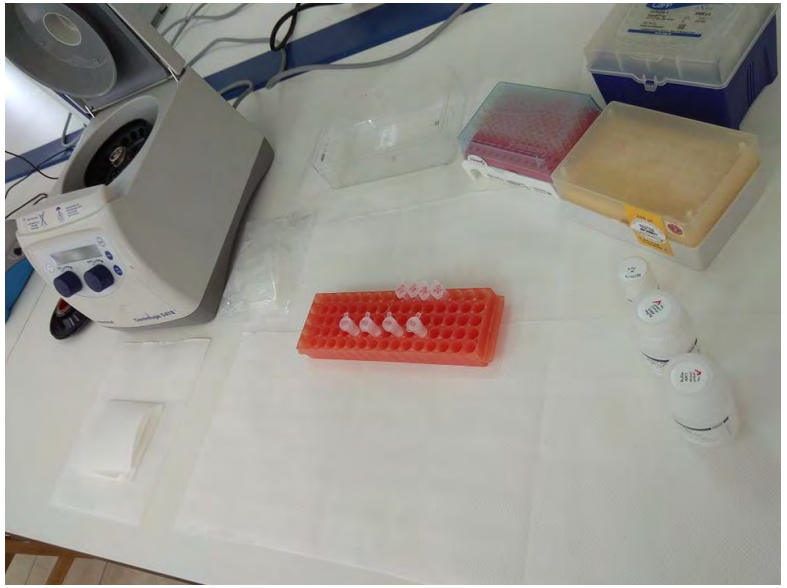
Observation & selection in the stereoscope

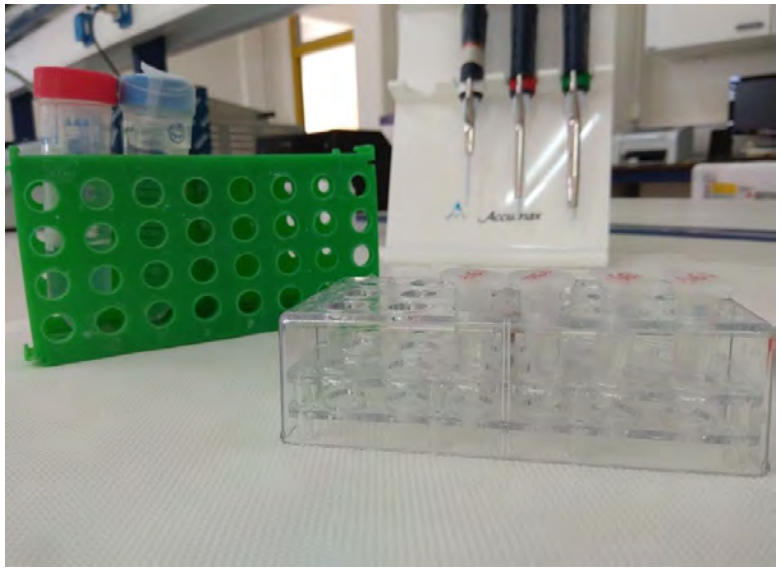


Methods

DNA extraction procedure

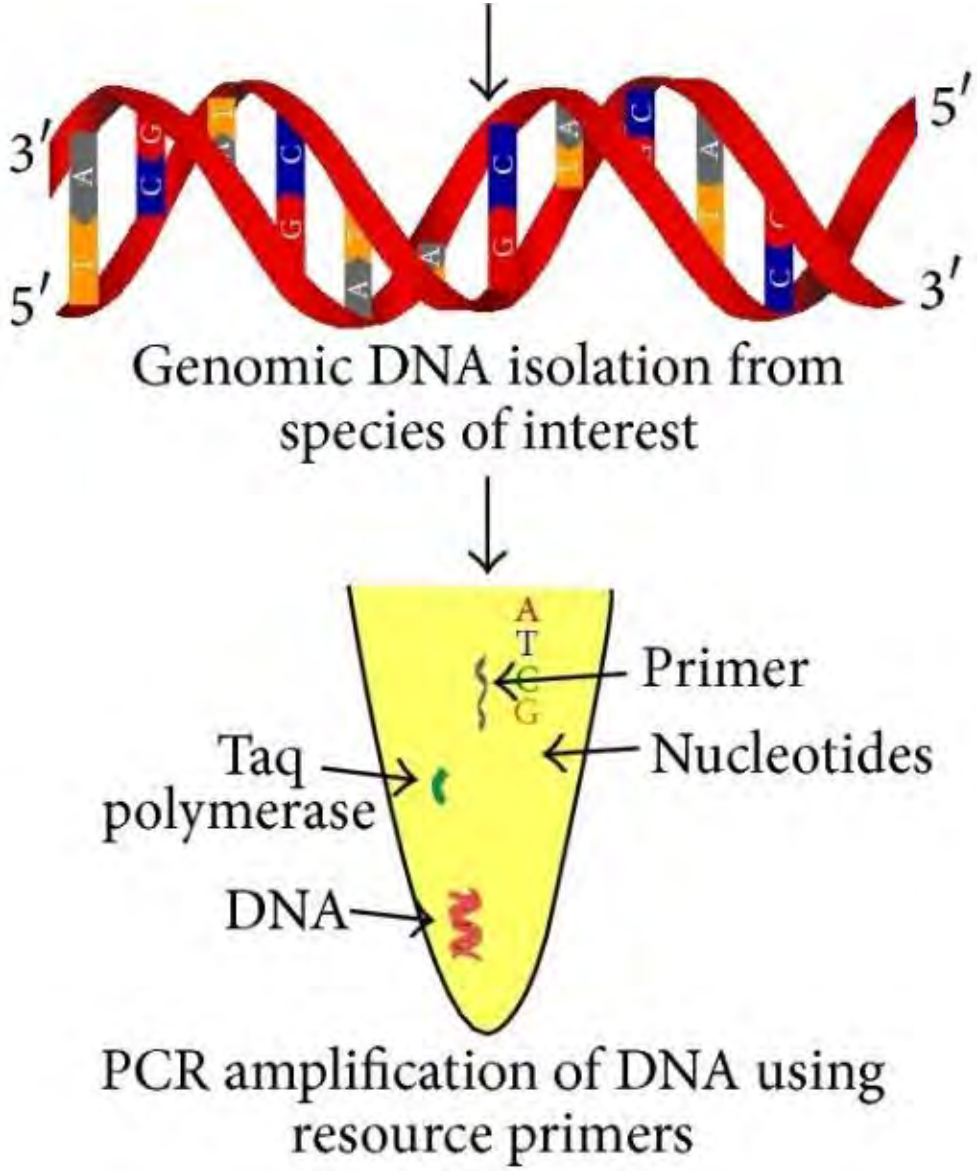






PCR amplification

- Microsatellites have a unique length of 1–6 bp repeated up to about 100 times at each locus *(M. Litt et al., 1989)*.
- Differences in repeat numbers represent the base for most DNA profiling techniques used today.



P. M. Abdul-Muneer, Application of Microsatellite Markers in Conservation Genetics and Fisheries Management: Recent Advances in Population Structure Analysis and Conservation Strategies. Hindawi Publishing Corporation Genetics Research InternationalVolume 2014, Article ID 691759, 11 pages, http://dx.doi.org/10.1155/2014/691759

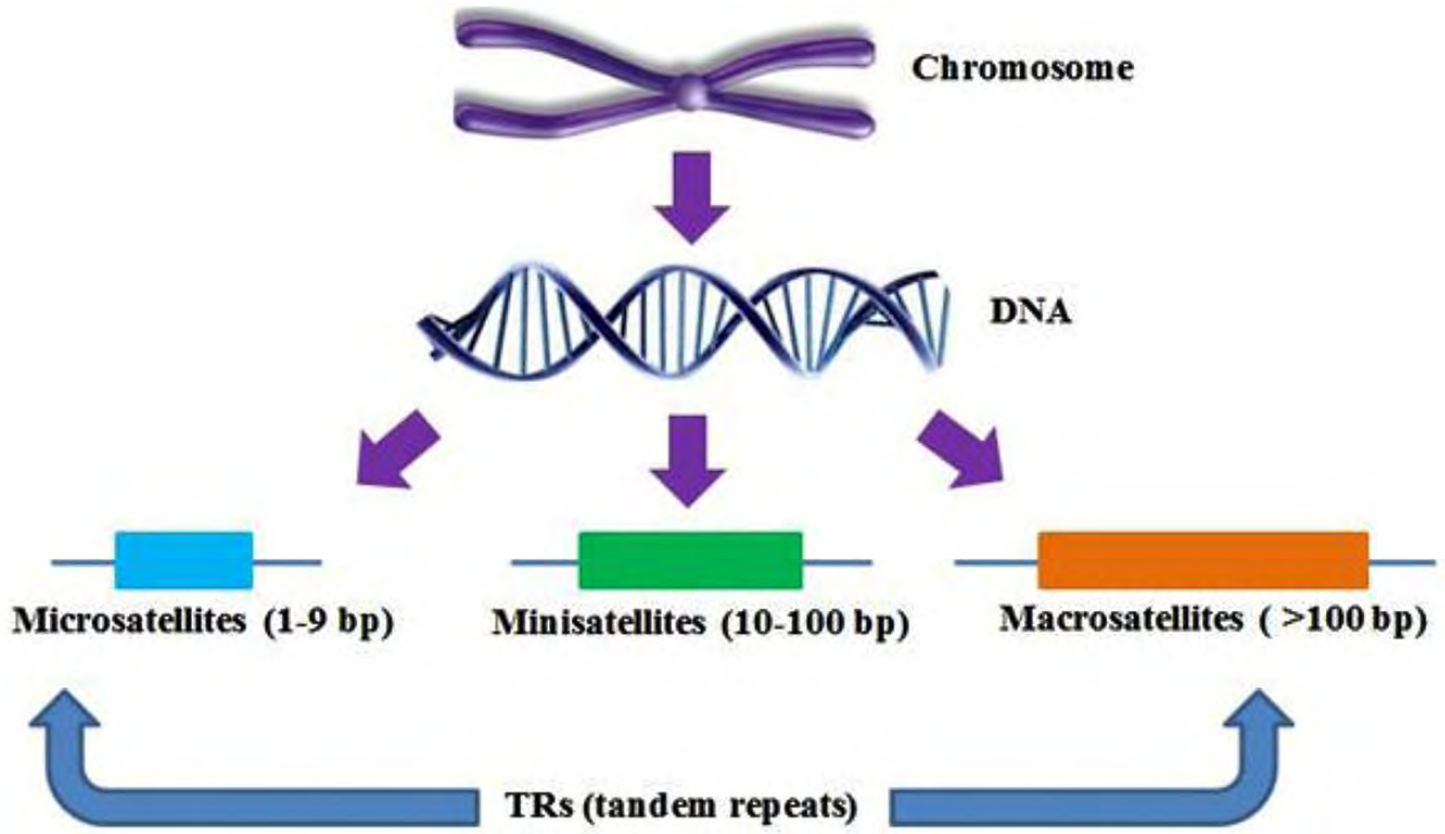
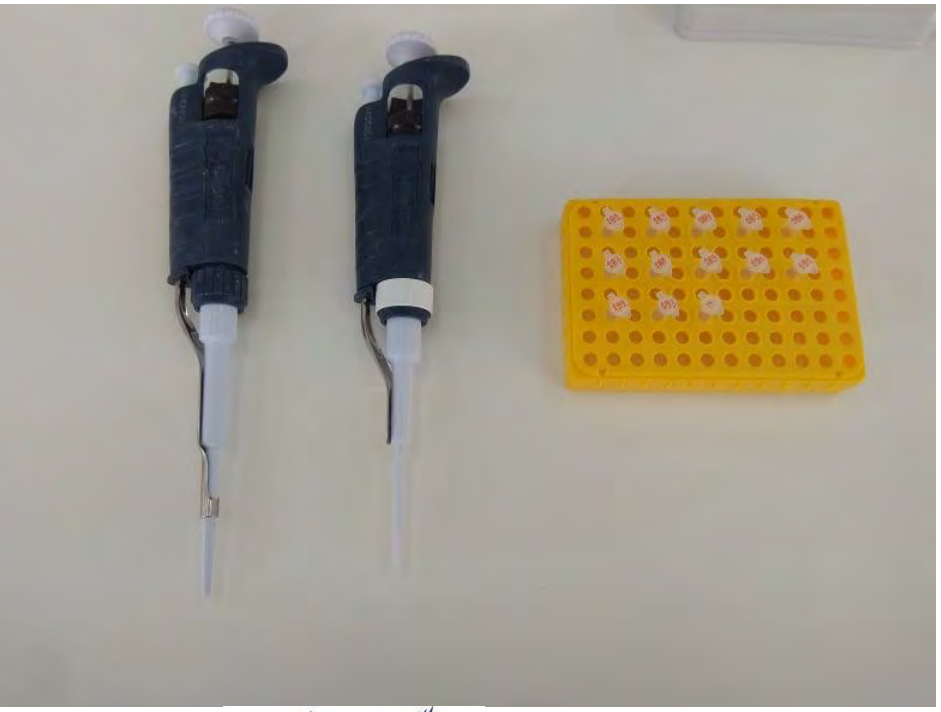


FIGURE 1. Diagram illustrating the different types of tandem repeats (TRs). The width of boxes has been shown to develop visual precision of the figure *Saeed et al.* ***Microsatellites in Pursuit of Microbial Genome Evolution,*** *Microsatellites in Genome Evolution, January 2016 | Volume 6, Article 1462 doi: 10.3389/fmicb.2015.01462*

Microsatellites or simple sequence repeats (SSRs) are short tandem repeats (STRs) of DNA sequence motifs predominantly abundant in various genomes and have been widely used for genetic studies and as molecular markers (*Han et al., 2015*). The term "**microsatellites**" was first coined in by *Litt and Luty (1989)* and they have applications in various fields of molecular biology, biotechnology and evolutionary biology.

Methods

PCR for gender identification



Results

PCR for microsatellite loci

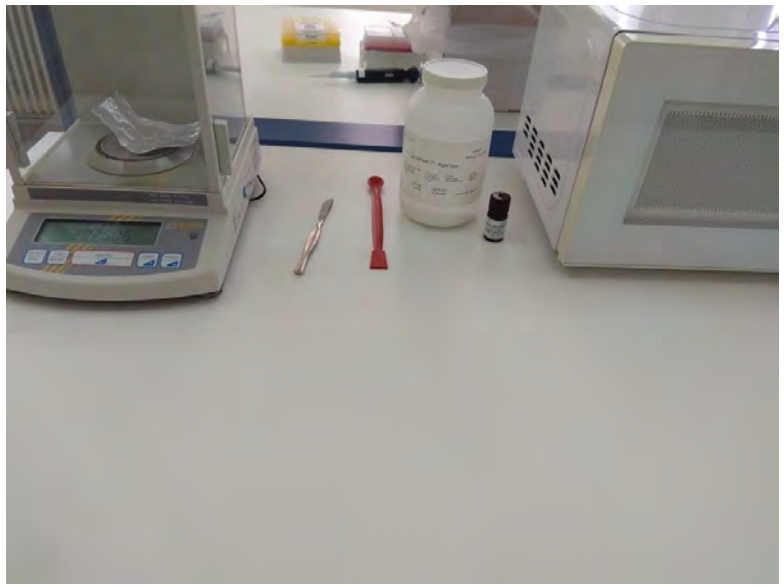
Microsatellite loci
G10H (221-257 bp)
Mu26 (182-200 bp)
G1D (172-184 bp)
G10X (132-154 bp)
G1A (180-190 bp)
G10P (145-160 bp)
G10C(97-126 bp)
Mu59 (219-251 bp)
G10L (153-163 bp)
Mu50 (110-130 bp)

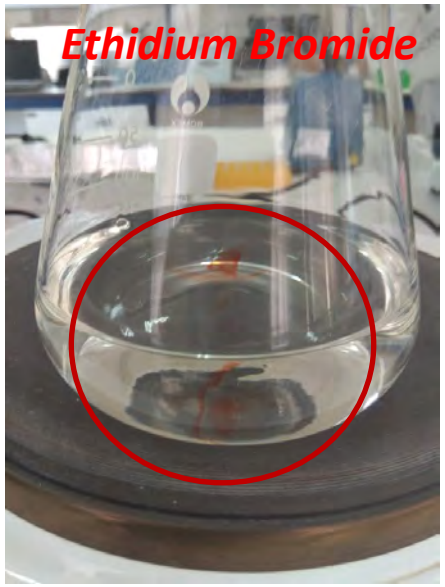
PCR for each microsatellite locus

Microsatellite locus: a system of repeated motives of DNA sequences (1-6 or more base pairs), up to 50-100 times. Microsatellite loci are identified in many positions of an organism's genome.

Methods

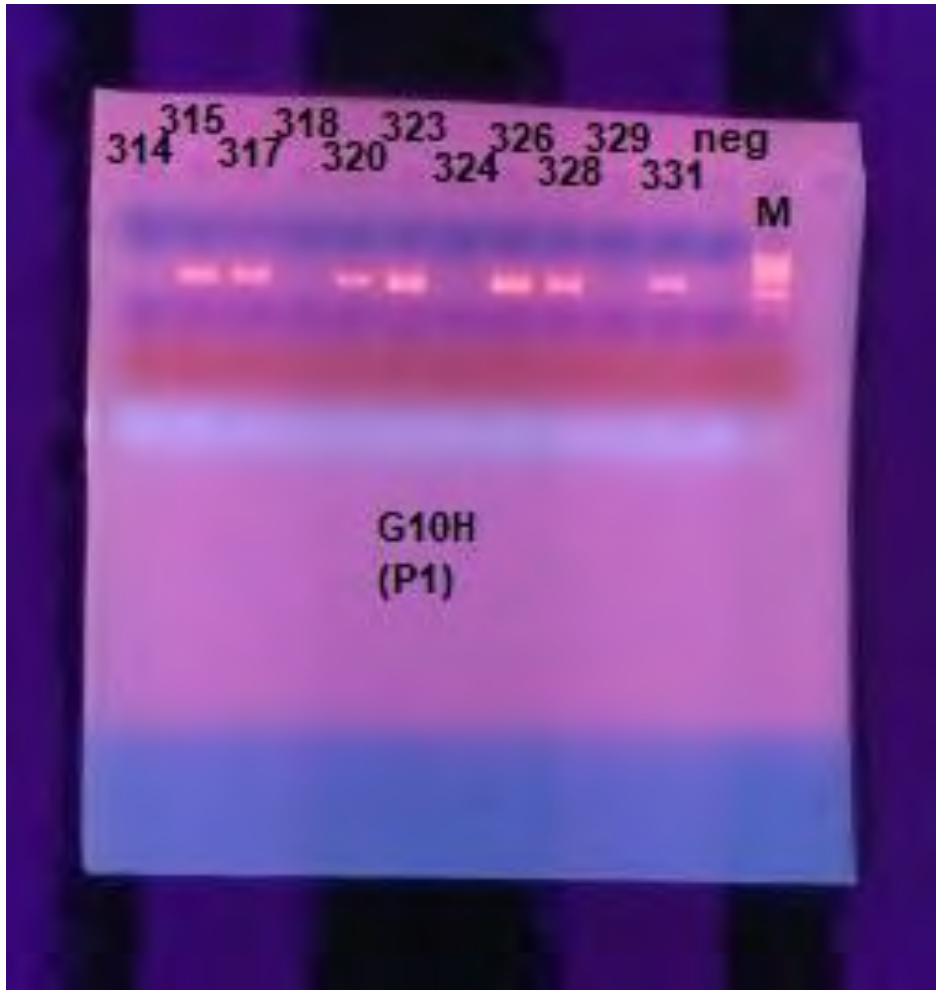
Electrophoresis



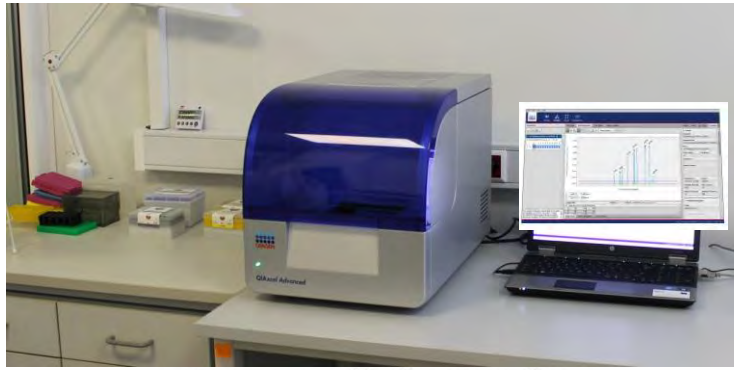


Results

Capillary Electrophoresis for each microsatellite locus (for example G10H) - QIaxcel



G10H *(221-257 bp)*



G10H: allele 238bp

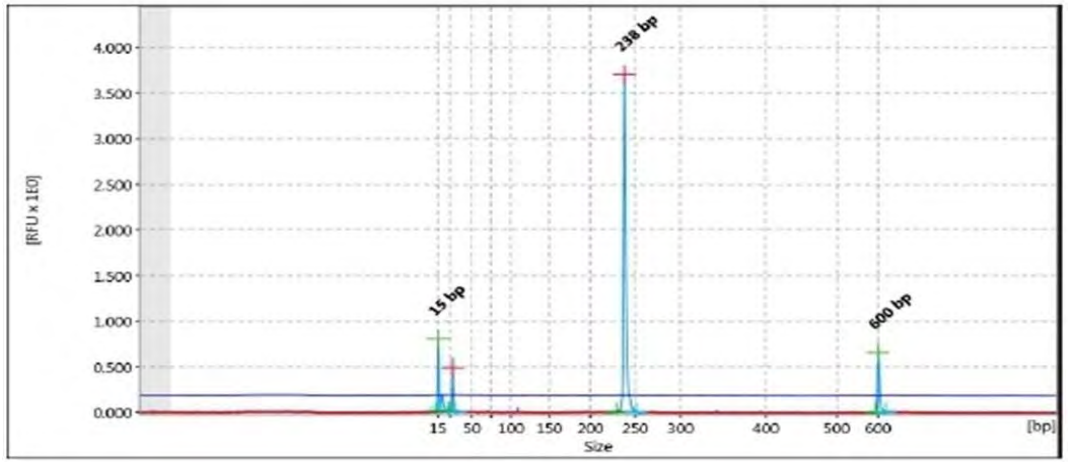


Figure: 149

Results

…after statistical analysis…

- **expected heterozygosity (He):** a common statistic for assessing genetic variation within populations. Estimation of this statistic decreases in accuracy and precision when individuals are related or inbred, due to increased dependence among allele copies in the sample

- **observed heterozygosity (Ho):** while He is estimated from allele frequencies, Ho is estimated from individual genotypes directly and depends on both the amount of genetic variation in the population and the level of inbreeding, which increases homozygosity

- **census population (Nc):** is the total number of individuals

- **effective population size (Ne):** contains only the breeding individuals

- **PIC**>0.5 a threshold value considered to be highly informative for the evaluation of genetic variance

- **Fis (inbreeding coefficient)**: is the proportion of the variance in the sub-population contained in an individual. High Fis (>0.15) implies a considerable degree of inbreeding.

LIFE ARCPROM RESULTS

Actions A2 – D7

	A2 (2020-2021)	D7 (2022-2023)
Samples collected	472	680
DNA extraction	472	273
Amplified ≥6 loci	257 (54.5%)	126 (46.1%)

Almost 50% of the samples are successfully amplified for 6-10 loci, due to the low quantity and quality of the DNA obtained from hair samples.

Samples collected	A2	D7
Pindos	170	83
Prespes	96	86
Rodopi	206	104

Amplified ≥6 microsatellite loci	A2	D7
Pindos	77 (45.3%)	35 (42%)
Prespes	59 (61.5%)	39 (45%)
Rodopi	121 (58.7%)	52 (50%)

Unique Individuals	A2	D7
Pindos	65	30
Prespes	53	29
Rodopi	77	43

A2	Samples ≥6 loci	Unique	A	He	Ho	Nc	Ne	PIC	Fis (>0.15)
Pindos	77	65	6.7	0.65	0.6	202 (175-300)	118 (66-371)	0.6	0.13
Prespes	59	53	7	0.73	0.42	191 (150-222)	**35** (25-52)	0.69	0.28
Rodopi	121	77	8.4	0.72	0.54	**92 (89-112)**	**61** (47-84)	0.68	0.3

D7	Samples ≥6 loci	Unique	A	He	Ho	Nc	Ne	PIC	Fis
Pindos	35	30	5.4	0.6721	0.738	133 (51-149)	97 (36.1-300)	0.6087	0.029
Prespes	39	29	6.1	0.7110	0.7269	76 (80-200)	**38 (23-88)**	0.6580	0.055
Rodopi	52	43	6.2	0.680	0.699	**156 (84-155)**	**70 (40.1-180)**	0.6185	0.0104

D7

Area of Population	Unique Samples	He	Ho	Nc	Ne	Fis	Reference
Pindos	30	0.711	0.729	133 (51-149)	97 (36.1-300)	0.055	Present study
Pindos	65	0.65	0.6	202 (175-300)	118 (67-371)	0.13	Action A2 (Tsalazidou-Founta et al., 2022)
North Pindos	65	0.658	0.676	-	65-149.8	-	Karamanlidis, 2018
South-Central Pindos	99	0.68	0.681	-	80.5-148.7	-	Karamanlidis, 2018
Pindos	99	0.64	0.61	299 (193-351)	97.4 (64.3-164.8)	0.042	Pylidis et al., 2021
Prespes	29	0.672	0.738	76 (80-200)	38 (23-88)	0.029	Present study
Prespes	53	0.73	0.42	191 (150-222)	35 (25-52)	0.28	Action A2 (Tsalazidou-Founta et al., 2022)
Kastoria	82	0.548	0.584	219 (145-271)	49 (37.1 -65.1)	0.07	Tsaparis et al., 2014
Peristeri	28	0.69	0.65	109 (52-196)	59.1 (32.8-181)	0.047	Pylidis et al., 2021
Amyntaio	75	0.582	0.685	116 (135-271)	35 (29-49)	0.08	Mertzanis et al.,2018 LIFE15NAT/GR/001108
Rodopi	43	0.689	0.699	156 (84-155)	70 (40.1-180)	0.014	Present study
Rodopi	77	0.72	0.54	92 (89-112)	61 (47-84)	0.3	Action A2 (Tsalazidou-Founta et al., 2022)
Rodopi	22	0.73	0.71	91 (41-261)	42.2 (25.3-97.7)	0.021	Pylidis et al., 2021

Migration rate-Gene flow D7

A2: Pindos sub-population is more genetically distinct, whereas Prespa and Rodopi show mutual overlaps.

Prespes to Pindos **8.29**%
Prespes to Rodopi **10.19**%
Rodopi to Prespes **14.96**%

D7: Rodopi is a more differentiated cluster, Pindos and Prespa show signs of higher admixture than the other areas.

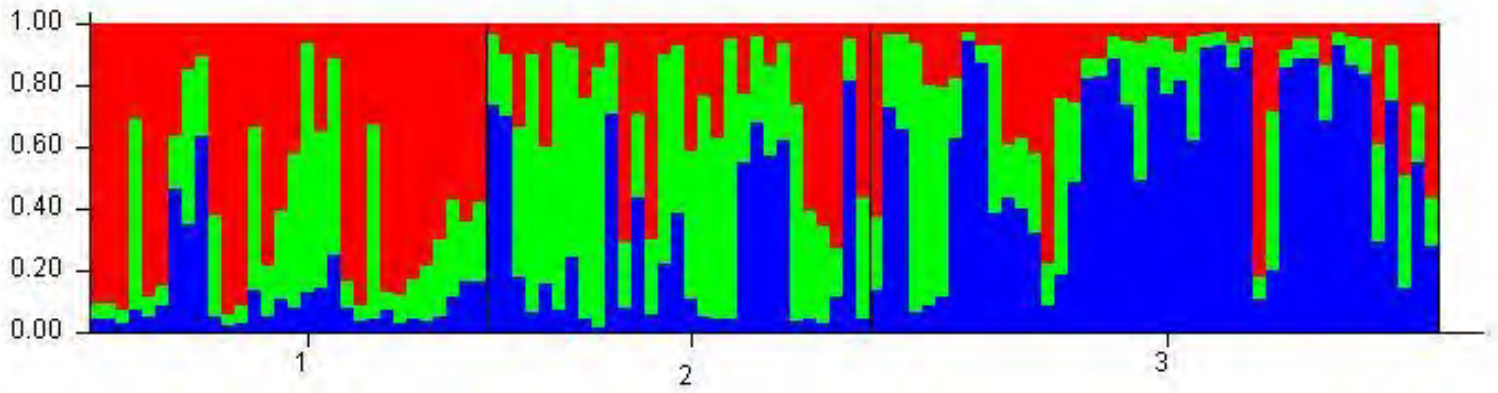
Prespes to Pindos **11.36**%
Prespes to Rodopi **12.27**%
Rodopi to Prespes **9.90**%

Results

Rodopi is a more differentiated cluster, followed by Pindos while Prespa NP show signs of higher admixture than the other areas

Each individual is represented by a thin horizontal bar, which is partitioned in colors that denote the inferred clusters.

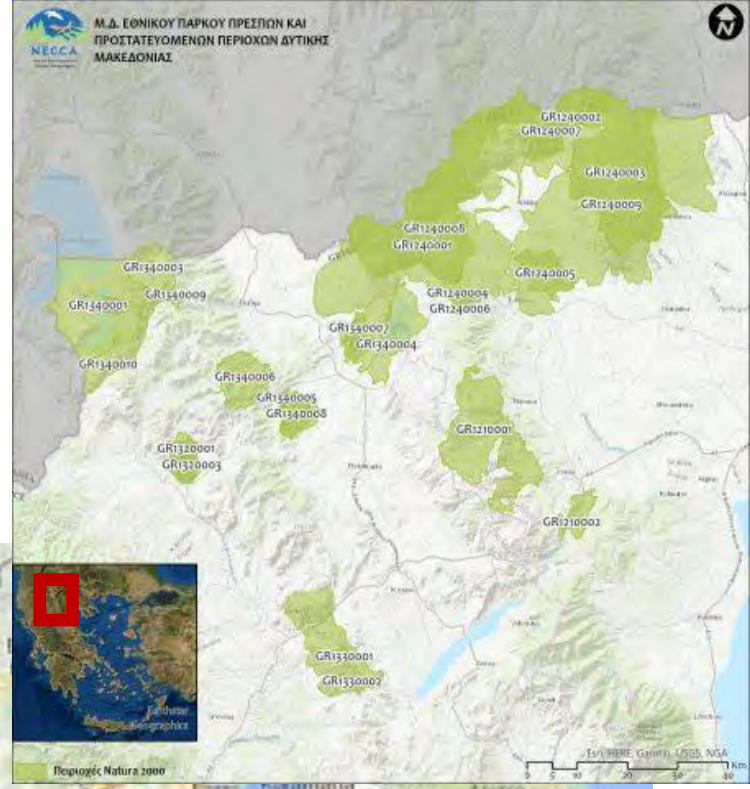
1=Pindos, 2=Prespa and 3=Rodopi



STRUCTURE software: *shows the three populations with the estimated class membership probabilities.*

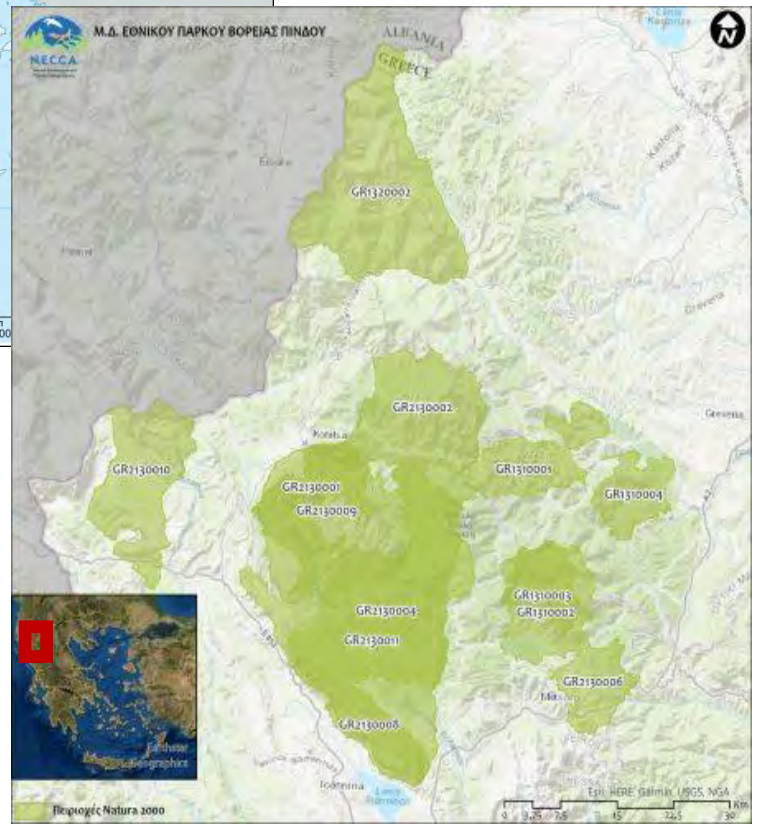
In summary…Prespes

- Ne remains stable comparing the two actions
- The Fis value decreases, which indicates a positive sign for the inbreeding status of the sub-population



In summary…Pindos

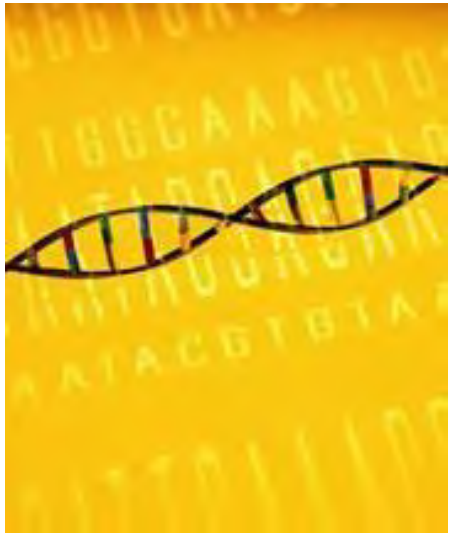
- He and Ho seem to be almost stable between actions A2-D7
- Migration rates are higher between Pindos and Prespes as well as from these populations to the eastern one and lower from Rodopi to any of these western populations



In summary…Rodopi

- Nc and Ne exhibit an increased tendency
- Comparing D7 with A2, the Fis value decreases, which indicates a positive sign for the inbreeding status of the sub-population
- Rodopi sub-population is much more differentiated compared to Pindos and Prespes, that revealed higher levels of admixture
- Migration rates are higher between Pindos and Prespes as well as from these populations to the eastern one and lower from Rodopi to any of these western populations

Discussion



- Analysis of our genetic data showed that our **3 sub-populations can be successfully distinguished in two clusters**, with a clear distinction between the western (Pindos, Prespes) and the eastern (Rodopi) sub-populations.
- Based on the **Nc/Ne** ratio and inbreeding co-efficient (**Fis**) in the three studied areas the sub-populations seem to be more stable and **they are not in risk of losing genetic diversity in the near future**.
- Overall, **high *Ne* estimated value in combination with high heterozygosity values and low F*is* detected in all 3 areas**, correspond well with population growth and expansion of bears living in a broader area
- **Levels of gene flow and exchange of individuals between the western and eastern part** of brown bear distribution range, indicated that during the last years connectivity between the two geographic regions may **has been re-established** at a certain level, since past studies propose no or very limited gene flow
- Although females show philopatric behavior, **dispersal is mainly exhibited, regardless of sex, due to the increased population density**, in an attempt to increase mating success and food availability

Discussion

- Point estimate of population size based only on one sampling session **represents a snapshot of the population**
- Intensive sampling that will **increase the recapture ratio is necessary** for more accurate estimate of population size
- A **long-term genetic monitoring program** is valuable for every state that hosts a bear population
- The present study results support the hypothesis of **sub-populations in good conservation status**, that does not seem to suffer from genetic erosion the forthcoming years

*The abovementioned results led to a scientific paper, published in the peer reviewed journal "**Genes**"*

genes

MDPI

Article

Genetic Analysis and Status of Brown Bear Sub-Populations in Three National Parks of Greece Functioning as Strongholds for the Species' Conservation

Tzoulia-Maria Tsalazidou-Founta [1], Evangelia A. Stasi [2], Maria Samara [3], Yorgos Mertzanis [4], Maria Papathanassiou [3], Pantelis G. Bagos [2], Spyros Psaroudas [4], Vasiliki Spyrou [5], Yorgos Lazarou [4], Athanasios Tragos [4], Yannis Tsaknakis [4], Elpida Grigoriadou [6], Athanasios Korakis [7], Maria Satra [8,†], Charalambos Billinis [1,8,*,†] and ARCPROM project [‡]

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5 Faculty of Animal Science, University of Thessaly, 41222 Larissa, Greece
6 The Rodopi Mountain-Range National Park (RMNP), Mesochori Paranestiou, 66035 Paranesti, Greece
7 Northern Pindos National Park Management Agency Aspraggeloi PC 44007, Municipality of Zagori, 45221 Ioannina, Greece
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* Correspondence: billinis@uth.gr
† These authors contributed equally to this work.
‡ Collaborators of the ARCPROM project team are provided in the Acknowledgement Section.

Published: 4 August 2022

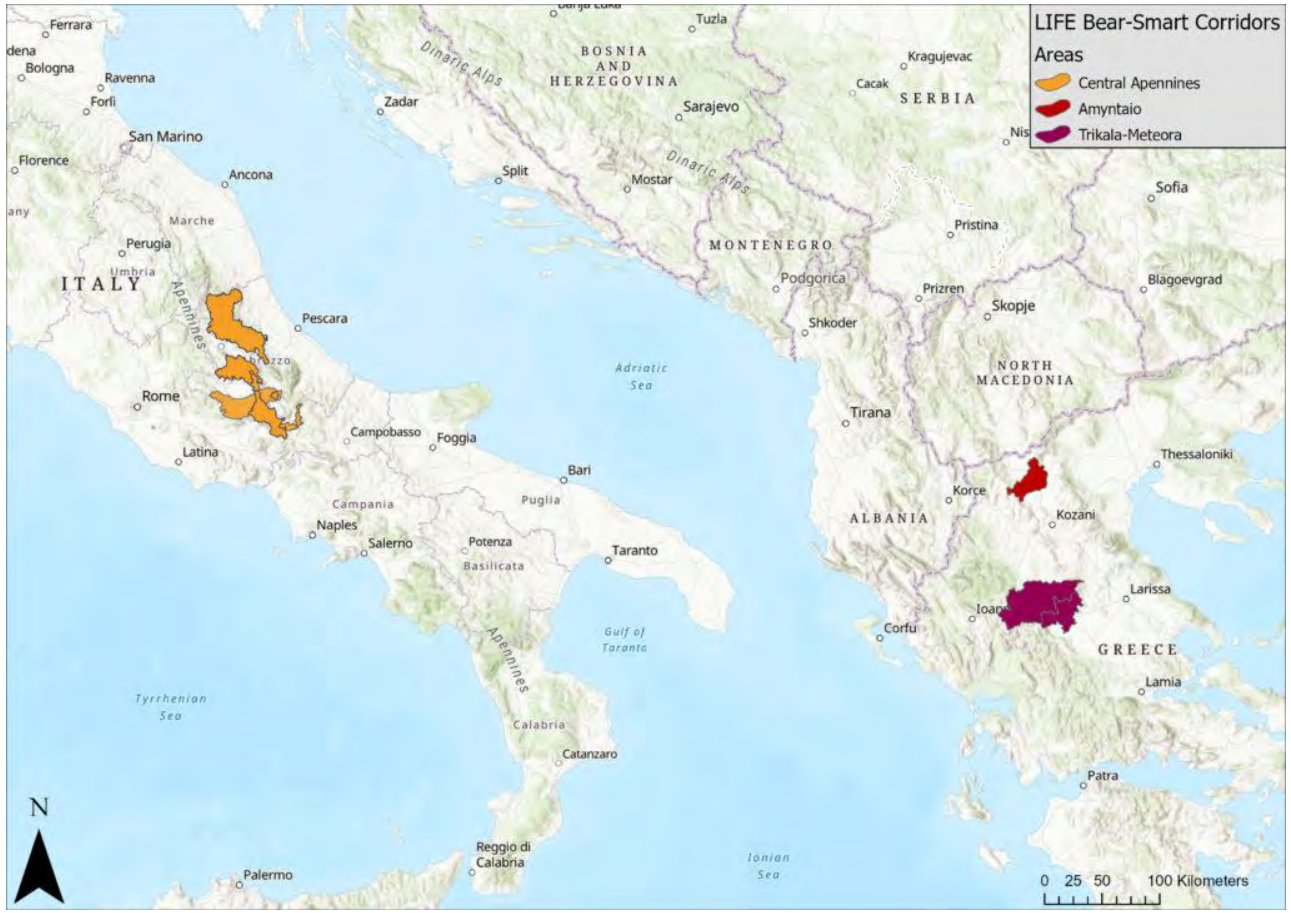
check for updates

Future goals

project running in Greece
Trikala – Meteora area

LIFE Life Bear Smart Corridors

2 Actions - genetic analysis of brown bears with the same methodology in Central Greece/South Pindos



*The results led to a scientific paper, published in the peer reviewed journal "**Animals**"*

animals

MDPI

Artide

Genetic Analysis of the Brown Bear Sub-Population in the Pindos Mountain, Central Greece: Insights into Population Status and Conservation

Tzoulia-Maria Tsalazidou-Founta [1,†], Nikoleta Karaiskou [2,†], Yorgos Mertzanis [3], Ioannis Sofos [4], Spyros Psaroudas [3], Dimitrios Vavylis [5], Vaios Koutis [5], Vassiliki Spyrou [6], Athanasios Tragos [3], Yannis Tsaknakis [3], Antonia Touloudi [4], Alexios Giannakopoulos [1], Dimitrios Chatzopoulos [4], Charalambos Billinis [1] and Maria Satra [4,*]

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check for updates

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Simple Summary: Fragmented habitats threaten animals by reducing genetic diversity. It is essential to understand the genetic composition and movement patterns of brown bears for effective conservation strategies and fostering coexistence with humans. This study analyzed 214 hair samples collected non-invasively from brown bears in the Trikala-Meteora area of Central Greece, revealing the genetic status and demographics of a local sub-population. Although the broader Central and South Pindos regions have not been examined in over ten years, findings indicate high genetic diversity, no signs of inbreeding, and an estimated effective population size of 99, suggesting a healthy conservation status. Additionally, a natural corridor facilitating bear movement between the western and eastern sections of the study area supports the population's sustainability. These results will aid in future conservation efforts aimed at maintaining natural corridors for brown bear habitats in Greece.

Future goals

- Targeted actions for the species conservation
- Ensure the species' viability
- Preserve the corridors and allow connectivity between sub-populations

Thank you for your attention!

Challenges in the non-invasive genetic monitoring of the Appenine Brown Bear

Patrizia Giangregorio

ITALIAN INSTITUTE FOR ENVIRONMENTAL PROTECTION AND RESEARCH (**ISPRA**)

UNIT FOR CONSERVATION GENETICS (**BIO-CGE**)

THE NON-INVASIVE MONITORING OF THE APENNINE BROWN BEAR

SAMPLE DATABASE

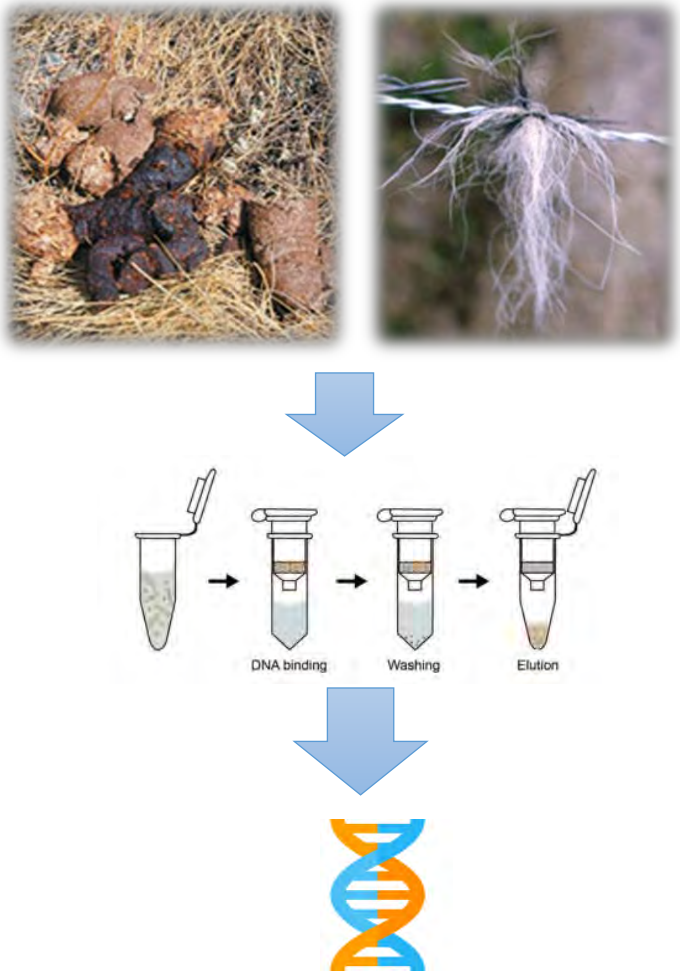
ISPRA | Utilità ISPRA | Anagrafiche | Schede orso | Caricamenti massivi | BIO CGE

Scheda Orso

Cerca

Azioni | Conteggia record: 8

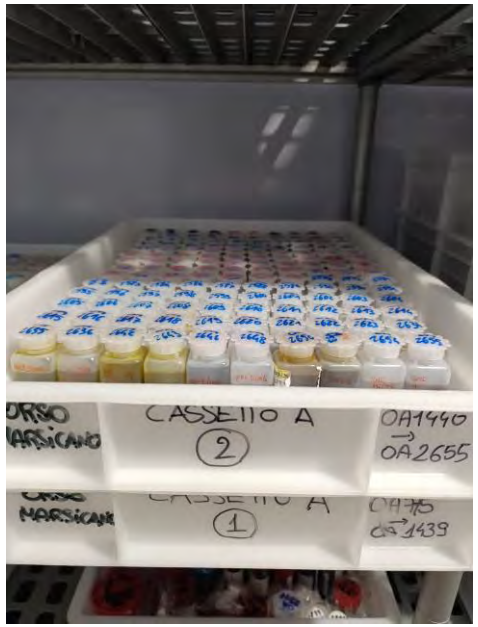
Id Ispra	Id Campo	Area	Note Campo	Data Raccolta	Ente Invio	Campione	Metodo Campionamento	Linea Veloce	Sesso	Genotipo
OA4674	PNM_CG_270	IVA	In caso di genotipo nuovo ipotesi cucciolo Orsa F1.143	2024-07-02	PNM	Peli	Danno	False	F	Gen1.143
OA4675	PNM_CG_271	IVA	None	2024-07-04	PNM	Peli	Danno	False	F	Gen1.143
OA4676	PNM_CG_272	IVA	None	2024-07-03	PNM	Peli	Danno	False	F	Gen1.143
OA4677	PNM_CG_273	IVA	None	2024-07-06	PNM	Peli	Danno	False	F	Gen1.143



- **25 years** of monitoring **(2000-2025)**
- Almost **5,000 samples** analyzed

THE NON-INVASIVE MONITORING OF THE APENNINE BROWN BEAR

BIOBANK

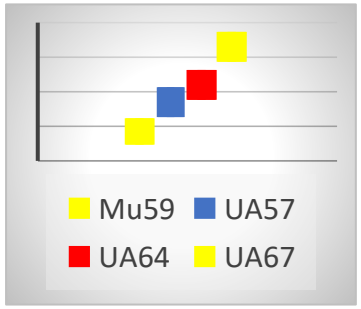


Availabilty of samples:

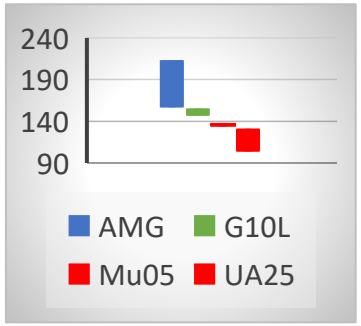
- More than **2,300 non invasive samples** belonging to **152 bears**
- **78 invasive samples** belonging to **66 bears**

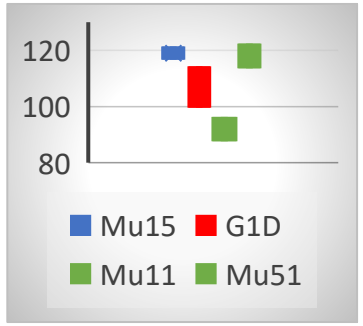
THE NON-INVASIVE MONITORING OF THE APENNINE BROWN BEAR

ANALYSIS PROTOCOL

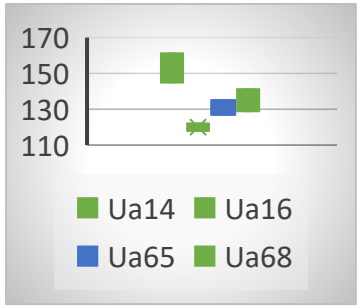


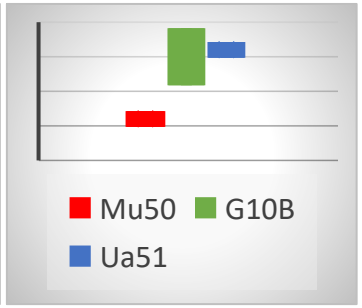
1) SCREENING (4 LOCI)
to identify bad-quality samples (degraded/low amount DNA, mixed samples)





2) INDIVIDUAL IDENTIFICATION
(+7 LOCI = TOTAL 11 LOCI + AMG FOR SEX DETERMINATION)
to identify bear resamplings

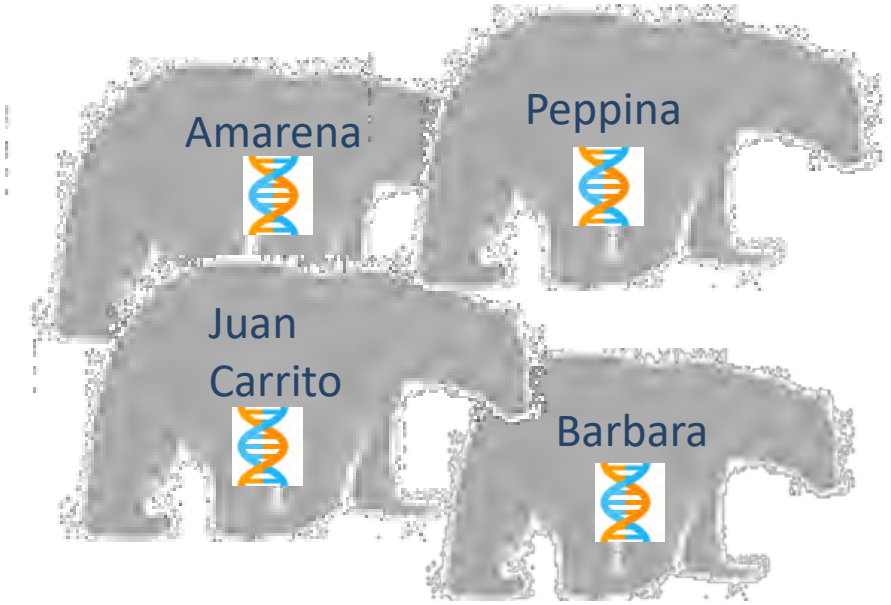




3) IDENTIFICATION OF NEW GENOTYPES
(+8 LOCI= TOTAL 19 LOCI + AMG FOR SEX DETERMINATION)
each newly identified genotype must be confirmed through a second independent extraction

THE NON-INVASIVE MONITORING OF THE APENNINE BROWN BEAR

GENOTYPE DATABASE



2	Genotipo	Se	WGI	Nome comu	Anno nascita	Cattura SI/NO	ultimo rilevamento cer	Morto SI/NO - Carcassa?	Anno morte	N campio	Mu59	Mu59	UA57	UA57	UA64	UA64
4	Gen1.002_F	F	Acc079							5	101	107	108	108	113	117
5	Gen1.003_M †	M		Carlo				MORTO	2002	9	107	107	108	108	117	117
6	Gen1.004_F	F	HS001							32	107	107	108	116	117	117
7	Gen1.005_M	M								49	107	107	108	108	117	117
9	Gen1.007_F	F	FP01	Gemma	1994 (stimato)	CATTURA	2023			100	101	107	108	116	121	121
11	Gen1.009_M	M	M01	Claudio/Renato	1995 (stimato)	CATTURA	2010			46	101	107	116	116	121	121
13	Gen1.011_M †	M	M06	Bernardo	1998 (stimato)			MORTO	2017	48	101	107	108	116	117	121
14	Gen1.012_F	F	F04	Orsa maggiore	1991 (stimato)	CATTURA	2011			45	101	107	108	116	117	121
15	Gen1.013_F †	F			1991 (stimato)			MORTO (CARCASSA)	2001	3	101	101	108	116	121	121
20	Gen1.018_F	F	HS343-F16	Amanda	2001-2004 (stimato)	CATTURA	2019			29	101	107	108	108	117	117
21	Gen1.019_F	F								78	101	107	116	116	117	121
22	Gen1.020_M	M	M10	Ciccio	2000 (stimato)	CATTURA	2017			62	101	107	108	108	117	121
23	Gen1.021_M †	M	M02	Nestore	1997 (stimato)			MORTO	2008	30	101	107	108	116	121	121
24	Gen1.022_F	F	F05	Atessa	1997 (stimato)	CATTURA	2015			22	101	101	108	108	113	117
25	Gen1.023_F	F	F07	Ura	1994 (stimato)	CATTURA	2019			38	101	107	108	116	113	117
26	Gen1.024_M	M	M12	Cicerone	1997 (stimato)	CATTURA	2014			77	101	101	108	116	117	117
27	Gen1.025_F	F	F01	Reginella	1998 (stimato)	CATTURA	2014			35	101	101	108	116	117	121
33	Gen1.031_F †	F	F13	Tranquilla	2004-2005 (stimato)			MORTO	2014	46	107	107	116	116	121	121
34	Gen1.032_F	F								27	107	107	108	116	117	117
35	Gen1.033_F †	F			2002 (stimato)			MORTO (CARCASSA)	2009	13	101	107	108	116	117	117
36	Gen1.034_F	F								11	101	107	108	108	113	117
38	Gen1.036_F	F								8	101	107	108	116	113	117
39	Gen1.037_F	F	RT187	Vittoria	2005-2008 (stimato)	CATTURA	2023			11	101	101	108	108	117	121
40	Gen1.038_F	F								57	101	107	108	108	113	121
43	Gen1.041_F	F	RT233							79	107	107	108	116	117	121
46	Gen1.044_F	F	F03	Valery	2002 (stimato)	CATTURA	2014			25	101	101	116	116	117	117
47	Gen1.045_M	M	M07	Edoardo	2003 (stimato)	CATTURA	2007			6	101	107	108	108	117	121
48	Gen1.046_M	M								10	101	107	108	116	121	121

- **197 genotyped bears** (166 at all 19 STRs loci=**84,2%**) – analyses to reach 100% ongoing
- 144 (**73%**) bears **sampled at least twice**
- Information about deaths, hypothetical mother-cub relationships, sampling years and sample availability

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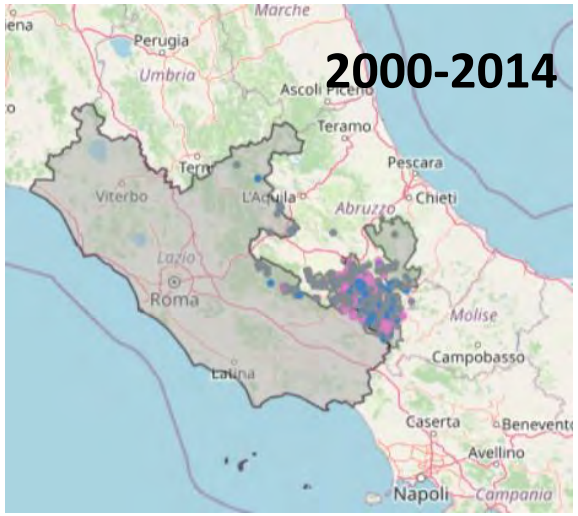
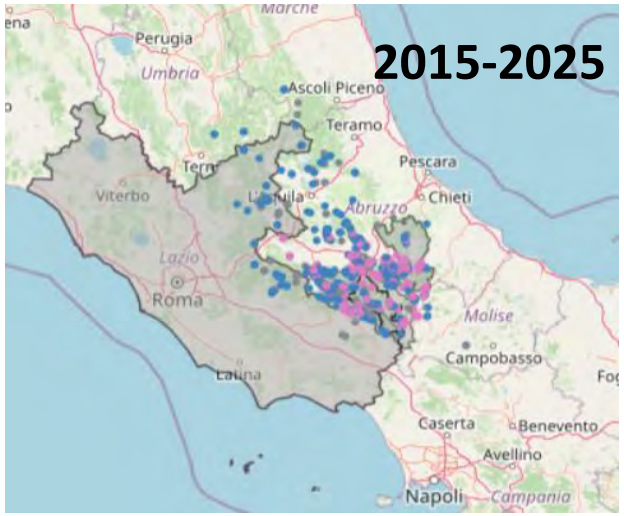
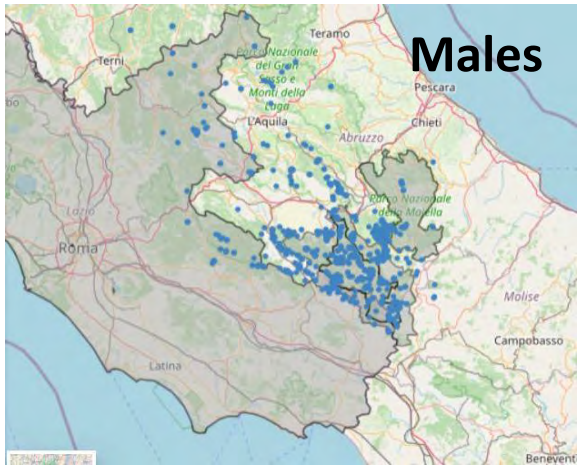
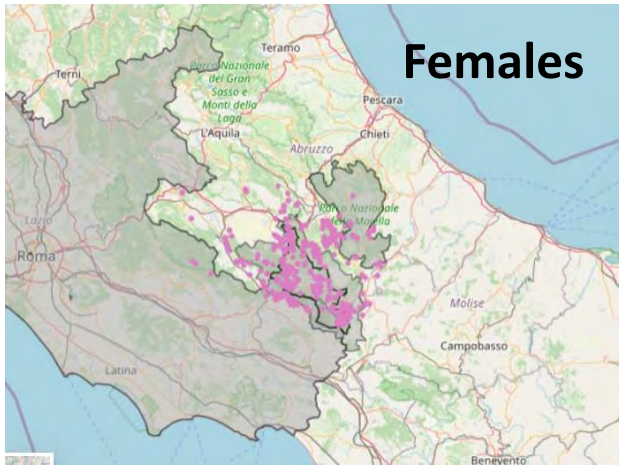
Sistema Nazionale per la Protezione dell'Ambiente

RESULTS OF 20 YEARS OF GENETIC MONITORING…









Recolonization of territories

Philopatric behavior, however females are expanding their distribution as well

MAIN ISSUES: low DNA quality and amount

DNA is degraded by long exposure to environmental factors

We can use the barcode representation to exemplify the combination of the results derived from the analysis of different regions of the genome

Genotyping errors

- **ADO – Allelic Drop-Out**
- **FA – False alleles**

Sample genotypes from the same individual are different

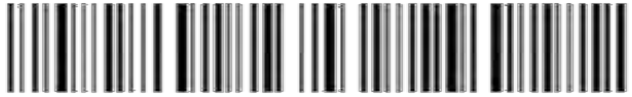
Overestimation of individuals

Sample freshness is critical for reliable genotyping
DNA markers are differently prone to accumulating errors: genetic marker choice is crucial in genotyping and monitoring of population parameters

MAIN ISSUES: Admixed samples

ID1

ID2



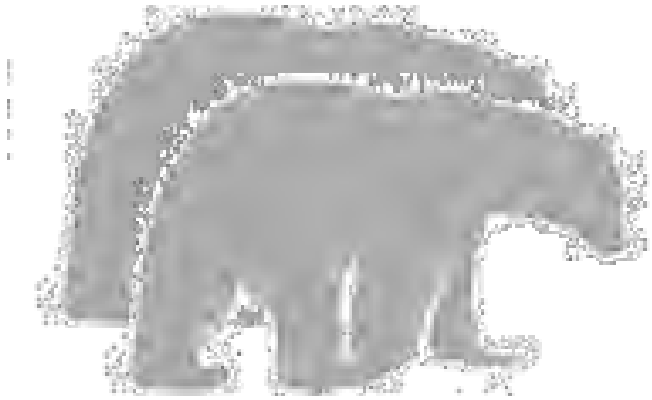
Admixed DNA - False genotypes

Overestimation of individuals

Sample collection is crucial in achieving reliable genotyping
Genetic marker choice is an important factor in detecting admixed samples

MAIN ISSUES: low genetic variability

Many DNA traits are not variable between individuals



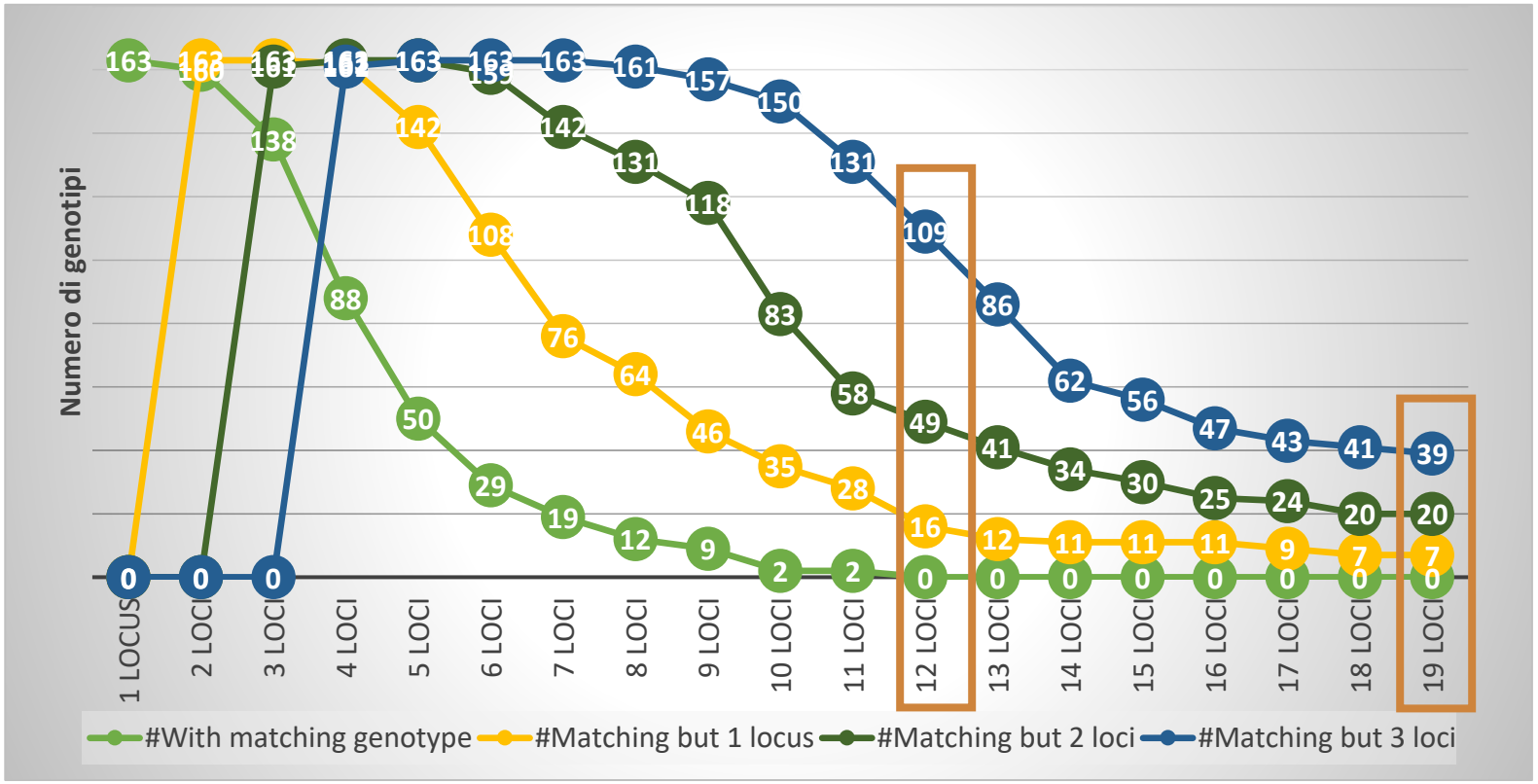
Sample genotypes from two different individuals are identical

Underestimation of individuals

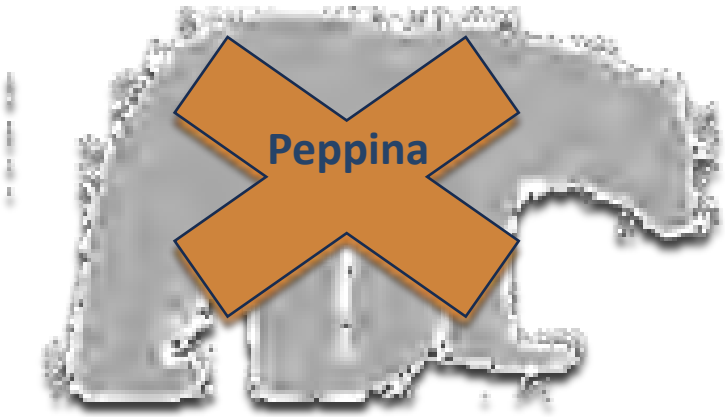
Marker choice is relevant in genotyping and monitoring the parameters of a population

Individual identification is challenging and only hypothesized mother-cub relationships can be confirmed or rejected (often with low probability values)

MAIN ISSUES: low genetic variability



A genotyping error at only 1 locus can invalidate the attribution of the sample to the correct genotype



- 12 loci are sufficient to distinguish individuals
- At 19 loci, however, we still have 7 genotypes that differ at 1 locus, 20 that differ at 2 loci, 39 that differ at three loci.

TESTING OF NEW MOLECULAR MARKERS

STRs=Short Tandem Repeats

Kleven et al. 2012

Conservation Genet Resour (2012) 4:737–741
DOI 10.1007/s12686-012-9634-5

TECHNICAL NOTE

Identification and evaluation of novel di- and tetranucleotide microsatellite markers from the brown bear (*Ursus arctos*)

Oddmund Kleven · Björn M. Hallström · Frank Hailer · Axel Janke · Snorre B. Hagen · Alexander Kopatz · Hans Geir Eiken

20 STRs (Uar) tested on 43 genotyped bears

Locus	Na	Ne	Ho	He
UarD0804	3	2,511	0,605	0,602
UarD4572	4	2,164	0,442	0,538
UarT259	3	2,127	0,605	0,530
Mean	3,333	2,267	0,550	0,556
SE	0,333	0,122	0,054	0,023

Preliminary results:
3 were polymorphic
Mean Na: 3,3 (range 3-4) / He 0,55

TESTING OF NEW MOLECULAR MARKERS

HT-STRs = GENOTYPING BY HIGH-THROUGHPUT SEQUENCING STRs

divjaLABS
#BiodiversityInSight

UNIVERZA V LJUBLJANI

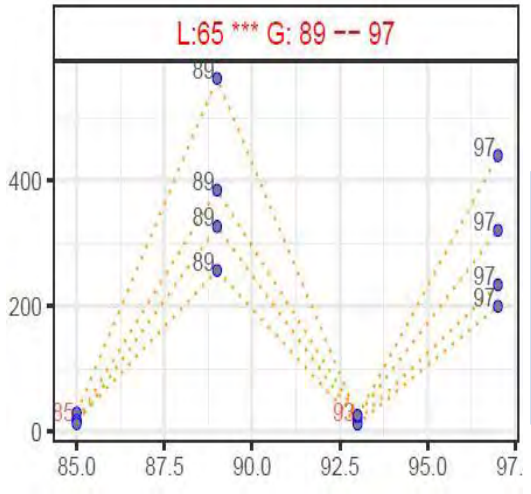
De Barba et 2017 + Unpublished

MOLECULAR ECOLOGY RESOURCES
Molecular Ecology Resources (2017) **17**, 492–507 doi: 10.1111/1755-0998.12594

High-throughput microsatellite genotyping in ecology: improved accuracy, efficiency, standardization and success with low-quantity and degraded DNA

M. DE BARBA,*†[1] C. MIQUEL,*†[1] S. LOBRÉAUX,*† P. Y. QUENETTE,‡ J. E. SWENSON§¶ and P. TABERLET*†
*Laboratoire d'Ecologie Alpine (LECA), Centre National de la Recherche Scientifique , F-38000 Grenoble, France, †Laboratoire d'Ecologie Alpine (LECA), Université Grenoble-Alpes, F-38000 Grenoble, France, ‡ONCFS, Equipe Ours, RN 117, F-31800 Villeneuve de Rivière, France, §Department of Ecology and Natural Resource Management, Norwegian University of Life Sciences, PO Box 5003, NO-1432 Ås, Norway, ¶Norwegian Institute for Nature Research, NO-7485 Trondheim, Norway

12 + 30 new STRs (Ua) tested for
48 genotyped bears (+ZF for sex determination)



Na	Ne	Ho	He
2.88 (0.16)	1.93 (0.09)	0.44 (0.03)	0.43 (0.03)

Preliminary results:
36 out of 42 were polymorphic
Mean Na 2,88 (range 2-5) / He 0,43
PID 5.0×10^{-16} / PIDsibs 4.1×10^{-8}

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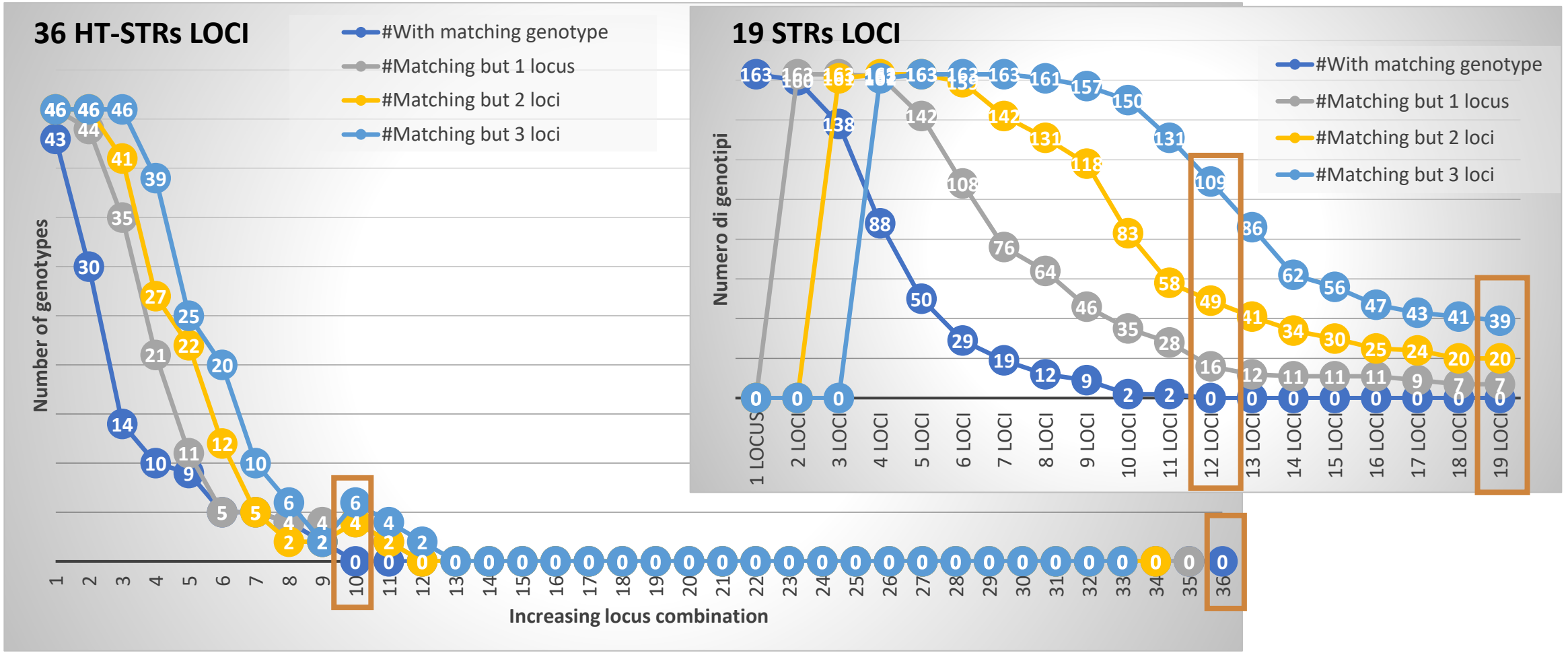
TESTING OF NEW MOLECULAR MARKERS

HT-STRs = GENOTYPING BY HIGH-THROUGHPUT SEQUENCING STRs



TESTING OF NEW MOLECULAR MARKERS

SNPs=single nucleotide polymorphisms

Benazzo et al. 2017

Survival and divergence in a small group: The extraordinary genomic history of the endangered Apennine brown bear stragglers

Andrea Benazzo[a,1], Emiliano Trucchi[a,b,1], James A. Cahill[c], Pierpaolo Maisano Delser[d,e,f], Stefano Mona[d,e], Matteo Fumagalli[g], Lynsey Bunnefeld[h,i], Luca Cornetti[j], Silvia Ghirotto[a], Matteo Girardi[k], Lino Ometto[l,m], Alex Panziera[a], Omar Rota-Stabelli[l], Enrico Zanetti[a], Alexandros Karamanlidis[n], Claudio Groff[o], Ladislav Paule[p], Leonardo Gentile[q], Carles Vilà[r], Saverio Vicario[s], Luigi Boitani[t], Ludovic Orlando[u], Silvia Fuselli[a], Cristiano Vernesi[k], Beth Shapiro[c], Paolo Ciucci[t], and Giorgio Bertorelle[a,2]

26 invasive samples + 21 non invasive samples genotyped (47 samples in total, 42 of which in pair from 21 individuals)

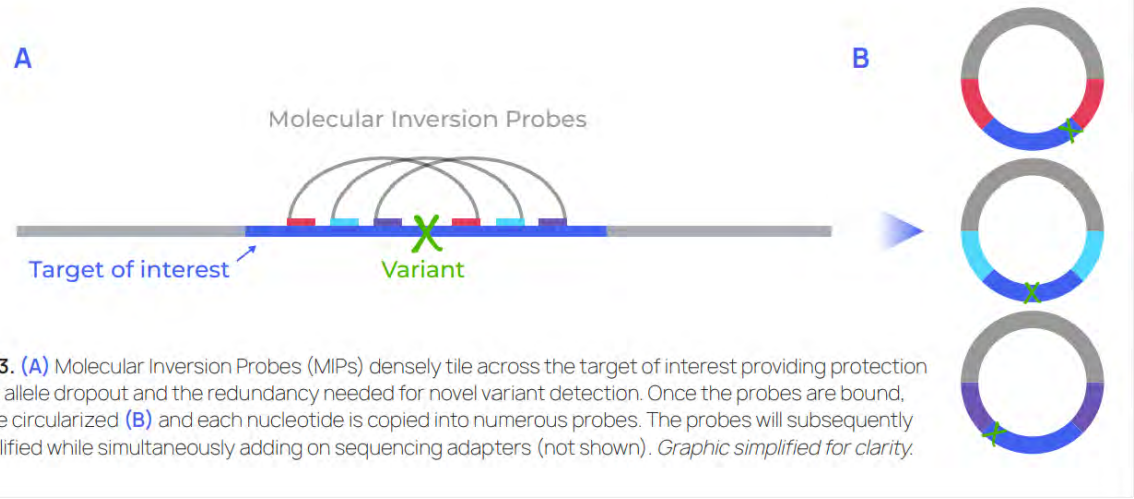
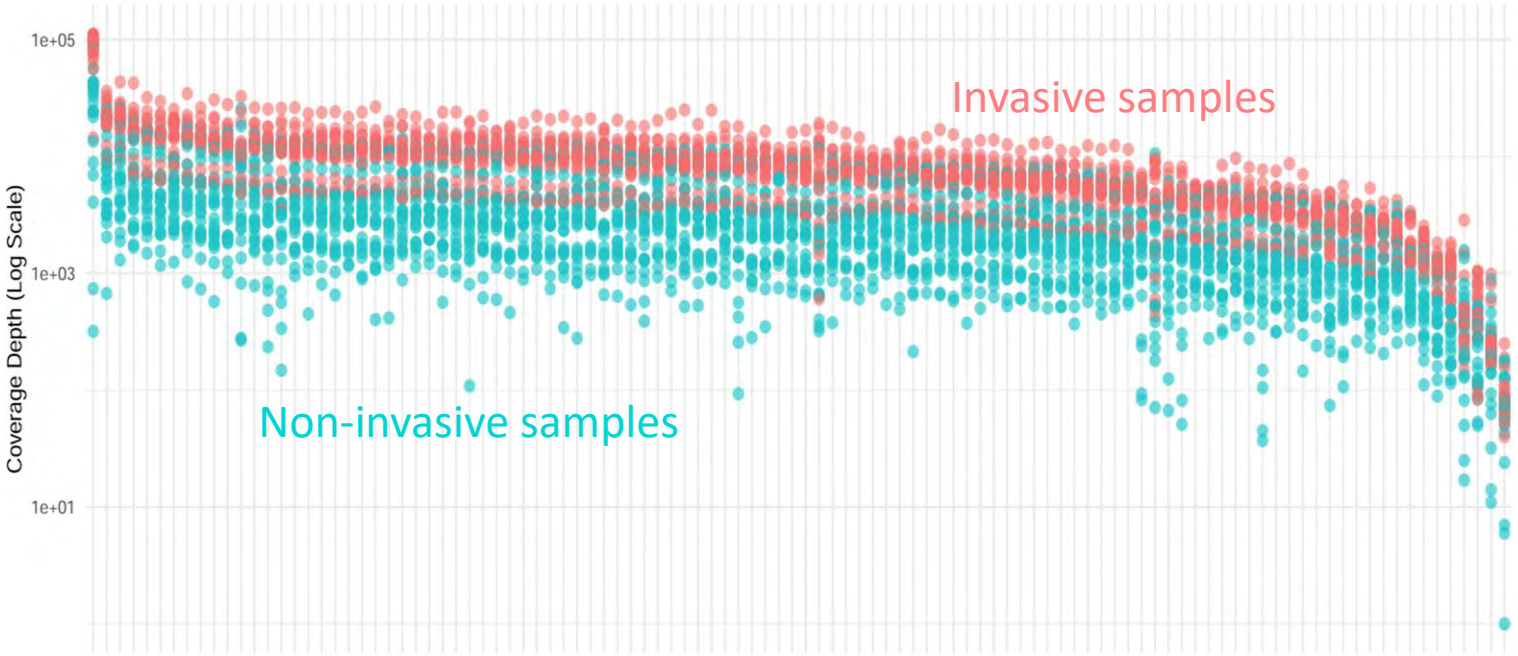
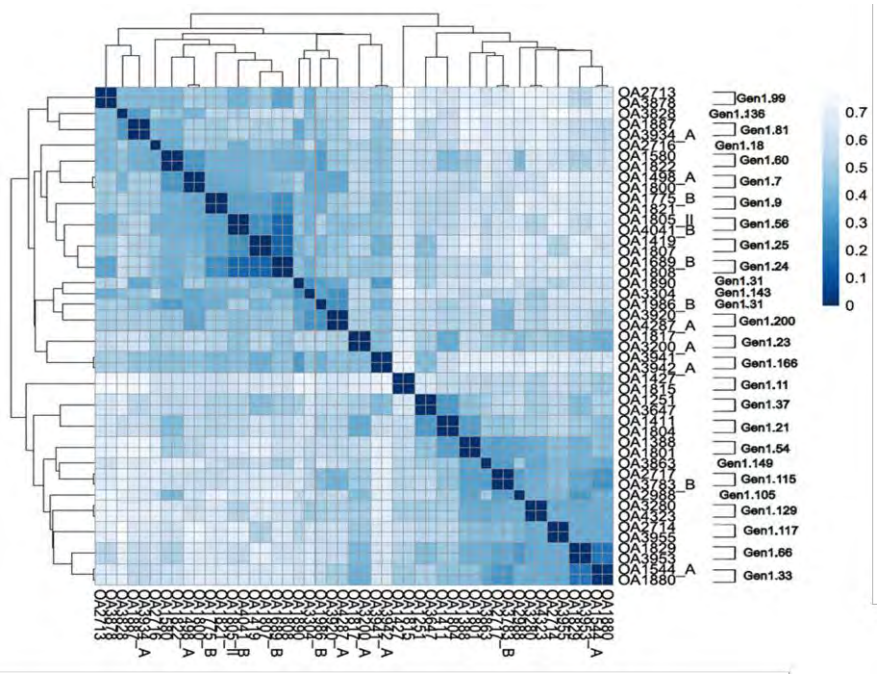


Figure 3. (A) Molecular Inversion Probes (MIPs) densely tile across the target of interest providing protection against allele dropout and the redundancy needed for novel variant detection. Once the probes are bound, they are circularized (B) and each nucleotide is copied into numerous probes. The probes will subsequently be amplified while simultaneously adding on sequencing adapters (not shown). *Graphic simplified for clarity.*

TESTING OF NEW MOLECULAR MARKERS

SNPs=single nucleotide polymorphisms





Preliminary results:

- SNP analysis based on MIPs showed **robust performances for both invasive and non-invasive samples**.
- The analysis method was reliable and had a high call rate and a low allelic drop out, with **95 out of 106 positions successfully called in nearly all samples**.
- **Concordant genotypes** were obtained from invasive and corresponding non-invasive samples, despite low DNA quality of the latter.

FUTURE PERSPECTIVES

- The **population size estimation** will be performed next year, with an intense systematic sampling design.
- The intense sampling program will allow to sample large part of the Marsican brown bear population.
- The **genotypes database must be implemented** with new polymorphic panels.
- The new genotype database must be used to perform **parentage analyses and pedigree reconstruction.**
- **…. continue**

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Sistema Nazionale per la Protezione dell'Ambiente

Patrizia Giangregorio, Federica Mattucci, Anna Padula, Romolo Caniglia, Nadia Mucci

Thank you for your attention

www.isprambiente.gov.it/it

ISPRA- AREA BIO-CGE

CALLISTO

A1: IDENTIFICATION-DELINEATION OF SECTORS WITH HIGH RISK OF HUMAN-BEAR CONFLICTS IN THE PROJECT SUB-AREAS (PART II) : (2) NATIONAL PARKS IN GREECE

Alexios Giannakopoulos – University of Thessaly (UTH)
Elpida Grigoriadou – Rodopi Mountain Range National Park (NECCA)
Yorgos Mertzanis – Callisto
Maria Papazekou – Callisto (AUTH)

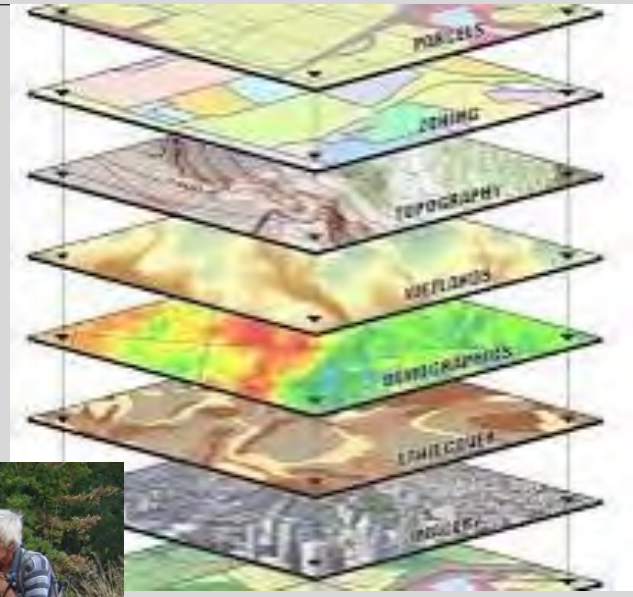
Action A1: Main objectives

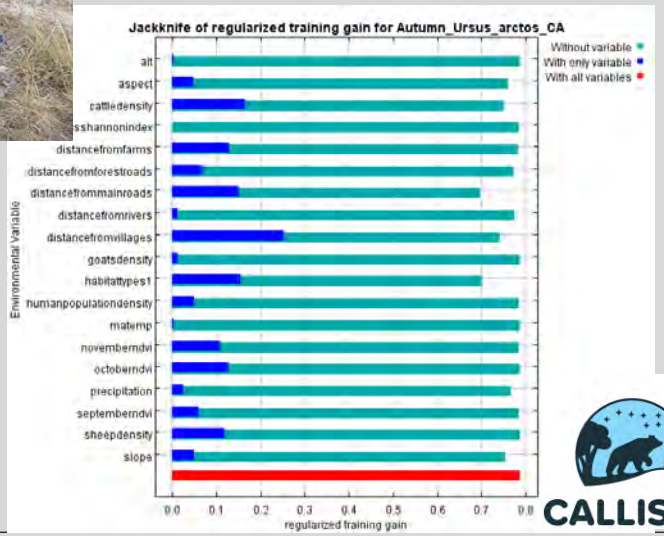
- Effective identification/delineation of important/sensitive sectors with high risk of bear-human conflict in (2) National Parks in GREECE : Prespa National Park (PNP) and Rodopi Mountain Range National park (RMNP)

CALLISTO

Action A1: Main Tasks

1. Development of a geographic data base (GIS) -geo-referenced data input from the targeted areas on the following information layers: topographic, administrative, forest vegetation, settlements, road network, agricultural lands etc.
2. Collection & mapping of additional field data through interviews using a questionnaire on human activities related to human related bear human interactions
3. Statistical analysis using risk assessment tools for spatial scoring & delineation of hot spots with high risk of human-bear interference which will be colourfully visualized on thematic maps





CALLISTO

Action A1: Main Tasks

- Task 1: Development of a geographic data base (GIS) - (UTH)
- The different steps and stages for the Geo Data base elaboration were as follows.

➢ Definition and classification of the different information layers sourced from Corine Land Cover Classes (CLC) – at 3 levels of variables refinement (i.e.)

CLC_CODE	LEVEL1	LEVEL2	LEVEL3
322	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Moors and heathland
323	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Sclerophyllous vegetation
324	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Transitional woodland-shrub
331	Forest and semi natural areas	Open spaces with little or no vegetation	Beaches, dunes, sands
332	Forest and semi natural areas	Open spaces with little or no vegetation	Bare rocks
333	Forest and semi natural areas	Open spaces with little or no vegetation	Sparsely vegetated areas
334	Forest and semi natural areas	Open spaces with little or no vegetation	Burnt areas
335	Forest and semi natural areas	Open spaces with little or no vegetation	Glaciers and perpetual snow
411	Wetlands	Inland wetlands	Inland marshes
412	Wetlands	Inland wetlands	Peat bogs

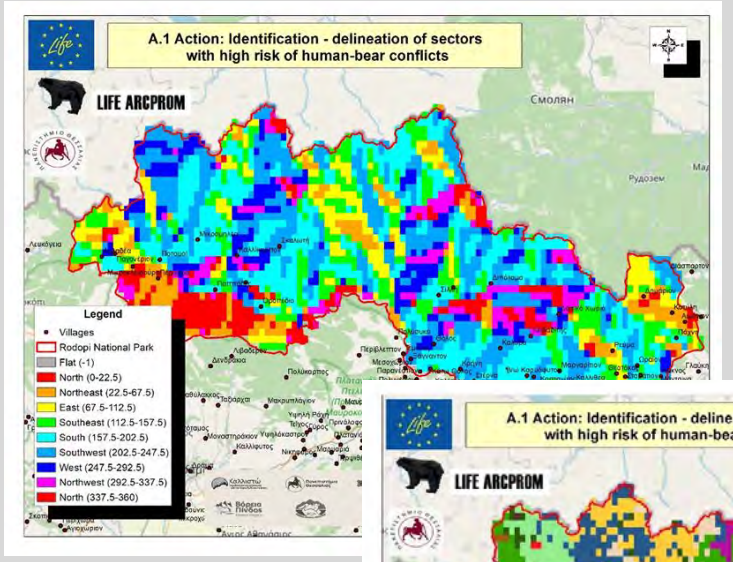
➢ The CORINE Land Cover (CLC) consists of an inventory of land cover in 44 classes. CLC uses a Minimum Mapping Unit (MMU) of 25 hectares (ha) for areal phenomena and a minimum width of 100 m for linear phenomena.

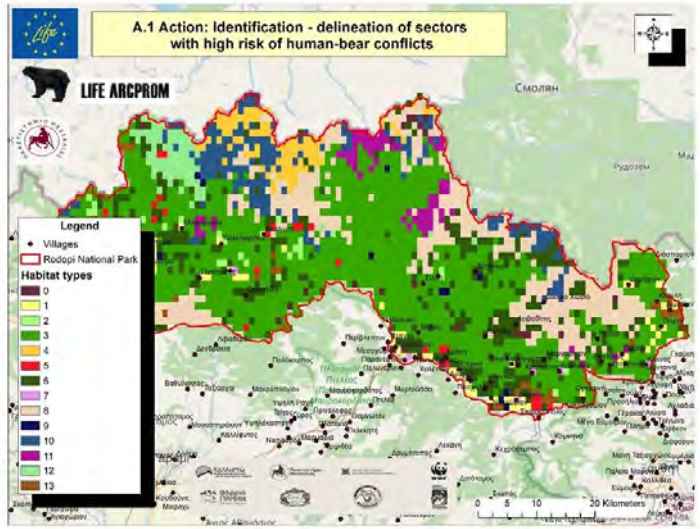
CALLISTO

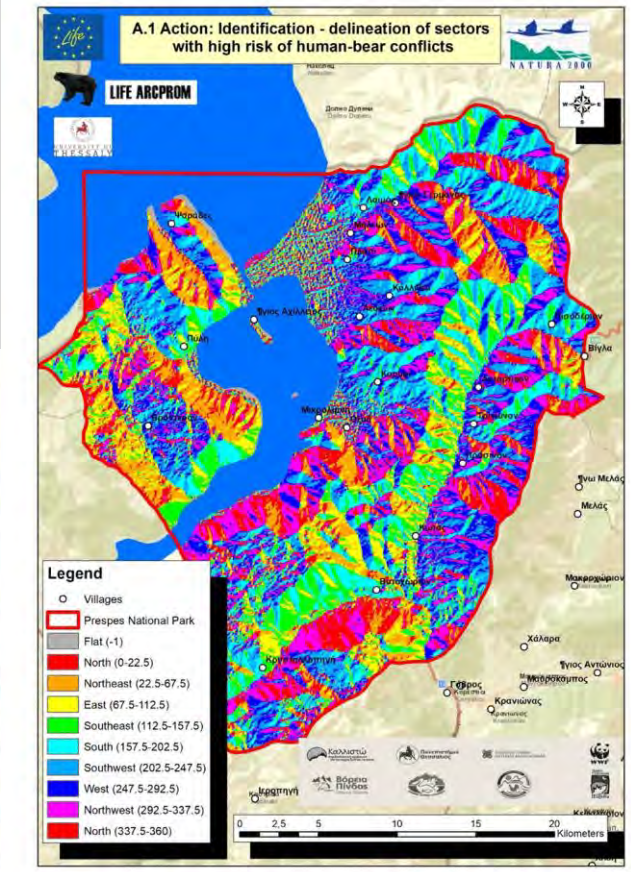
Action A1: Main Tasks

- Task 1: Development of a geographic data base (GIS) - (UTH)

➢ GIS layers processing, storage in the Geo Data base and elaboration of the mapped and scored version of the (15) selected environmental variables classification, necessary for the statistical analyses in Rodopi and Prespa National Parks project sub-areas







- Elevation -altitude
- Aspect classification
- Distance from villages
- Distance from main roads
- Distance from forest roads
- Distance from farms
- Distance from rivers
- Habitats/Habitat types
- Bovine-Cattle density
- Goat flocks density
- Sheep density
- Mean annual temperature
- Precipitation classification
- Human population density
- NDVI index

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Action A1: Main Tasks

Task 2: Collection & mapping of additional field data through interviews using a semi- structured questionnaire on human activities related to human related bear human interactions: live interviews were conducted in the (2) National parks.

- The questionnaire was developed in (3) different versions depending on the human-bear interaction category and the respective targeted farmers group: a) cultivators, b) livestock raisers and c) beekeepers.
- The interviews were conducted by personnel from Callisto (CB), Prespa National Park and Rodopi National park

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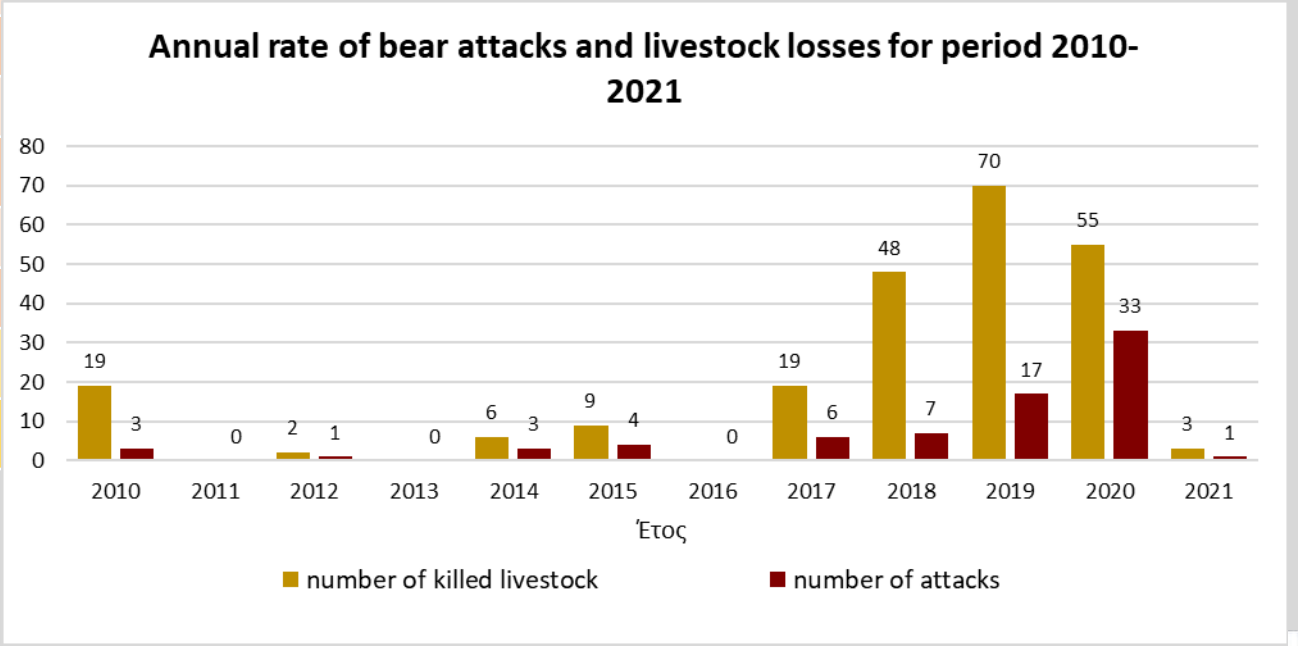
Action A1: Main Tasks

Task 2: semi- structured questionnaire results processing (survey covered an 11 year period 2010_21).

- Prespa National park: Data on Bear attacks

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Livestock raisers	**Number of attacks**	3		1		3	4		6	7	17	33	1
	Bovines	9				3	9		6	21	30	23	
	Goats												
	Sheep					3					3		
	Sheep and goats	10							13	25	37		
	Equiids			2						2			
	TOTAL	19		2		6	9		19	48	70		
Beekeepers	**Number of attacks**										2		
	Number of beehives										10		



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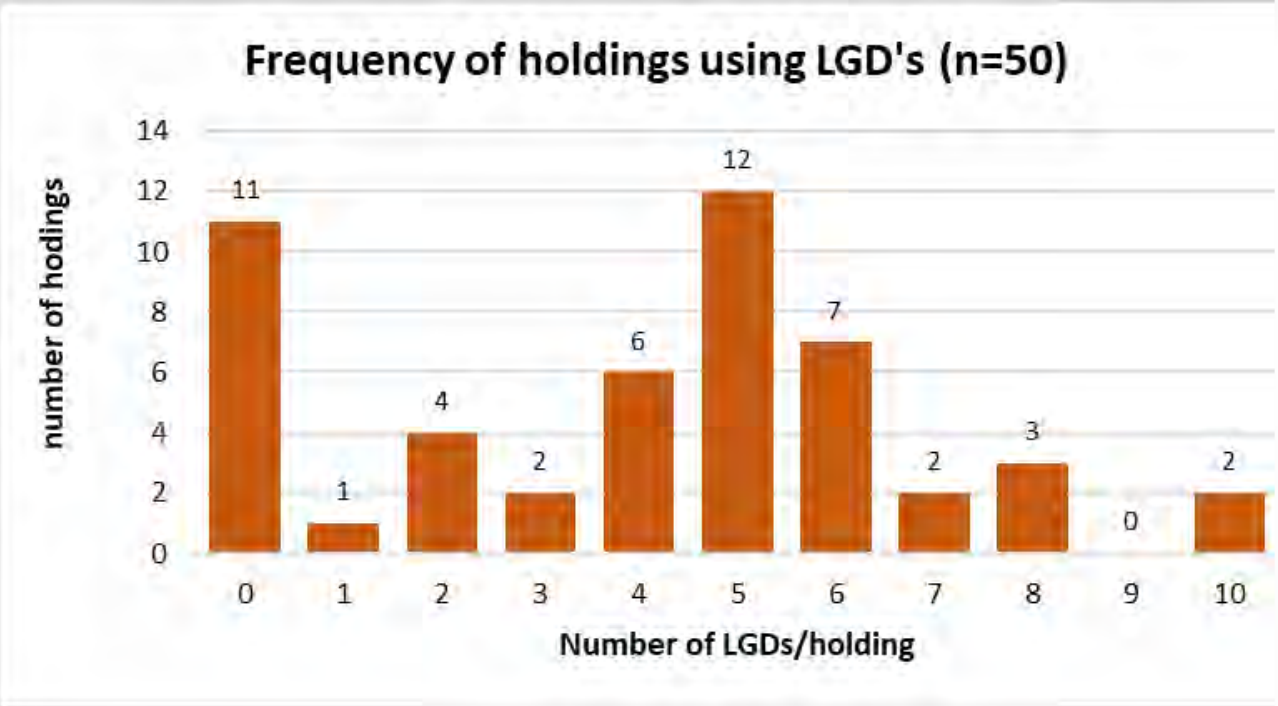
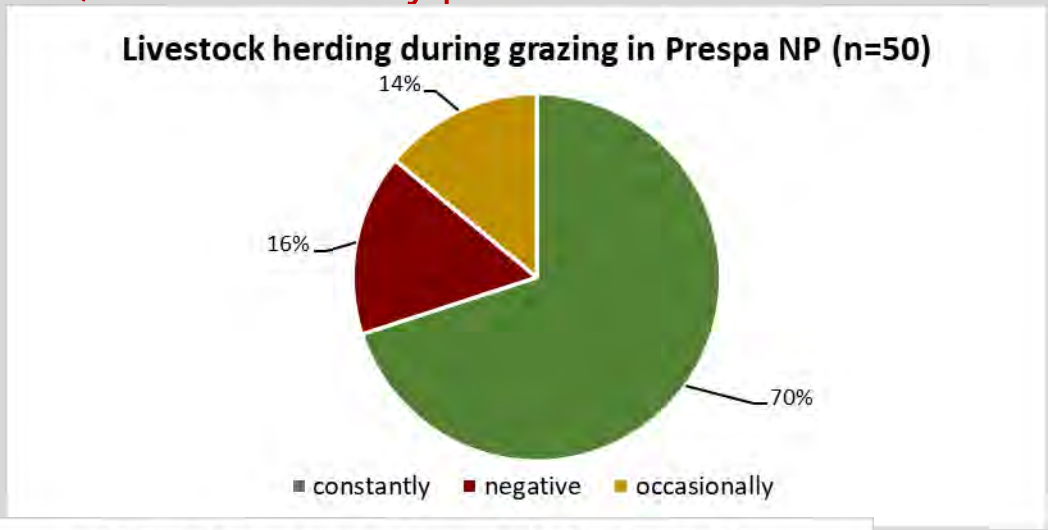
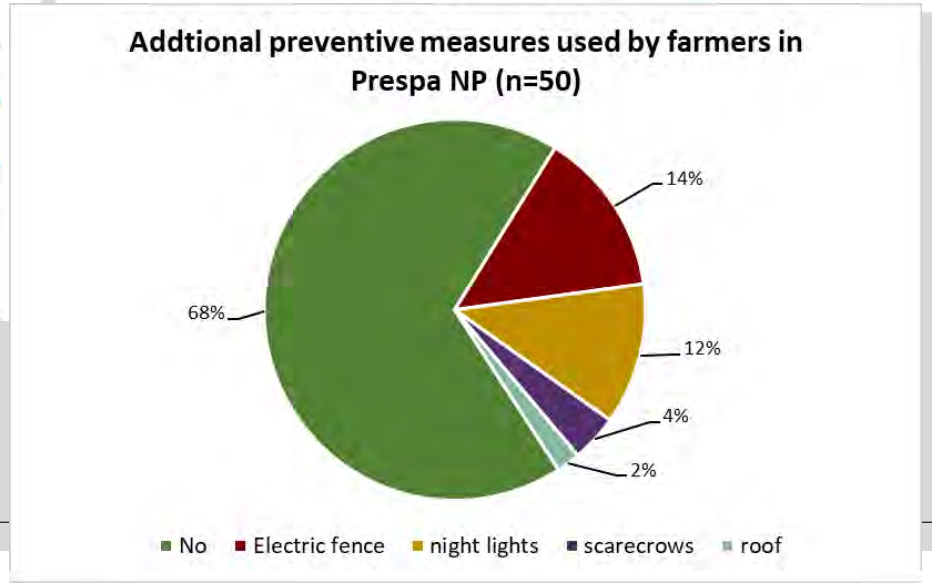
Action A1: Main Tasks

Task 2: semi- structured questionnaire results processing (survey covered an 11 year period 2010_21).

- Prespa National park: data on preventive measures (LGDs) and husbandry practices







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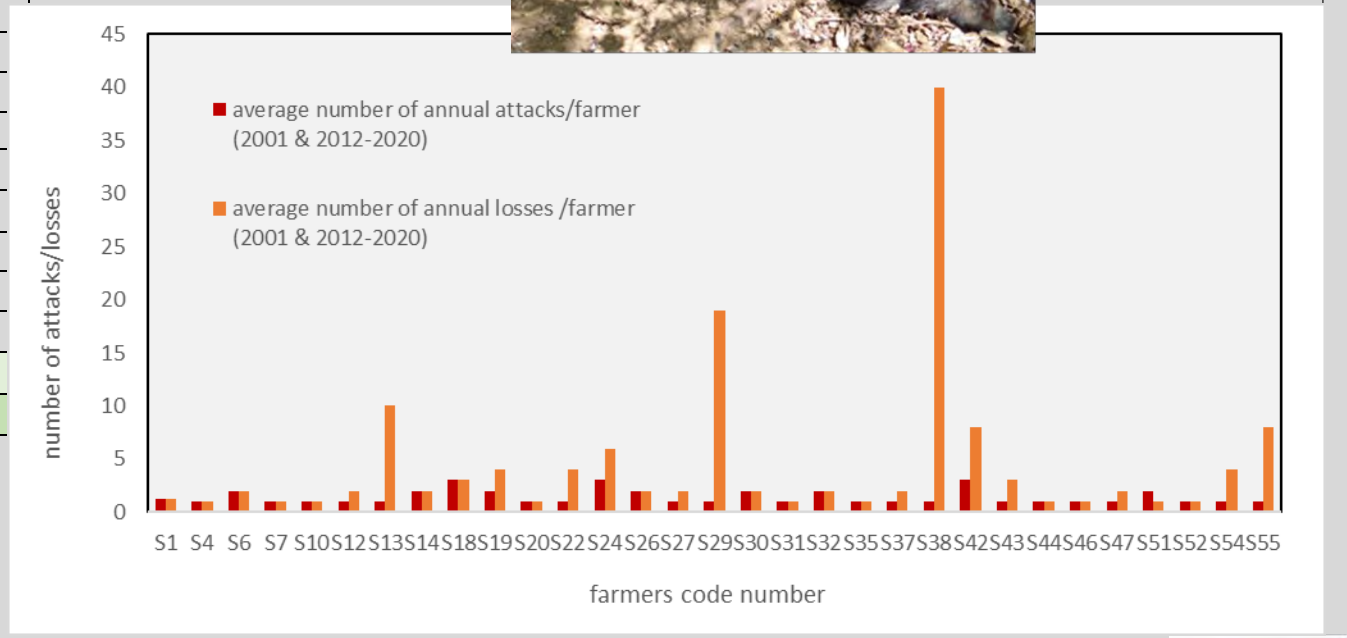
Action A1: Main Tasks

Task 2: semi- structured questionnaire results processing (survey covered a 20 year period 2001_20).

- Rodopi National park: Data on Bear attacks

	Total number of bear attacks		Total losses	
years	Livestock raisers	beekeepers	Livestock	beehives
2001	1		1	
2012	1		1	
2013	1		1	
2014	3		3	
2015	2		5	
2016	2	1	14	4
2017	2	4	2	25
2018	14	2	37	26
2019	8	3	33	40
2020	18	5	69	18
Σύνολο	52	15	166	113
GD total	**67**		**279**	



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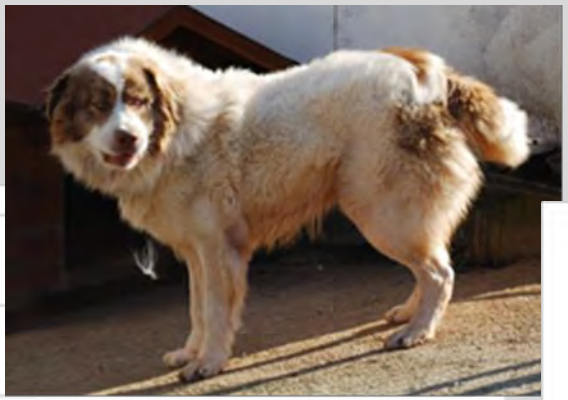
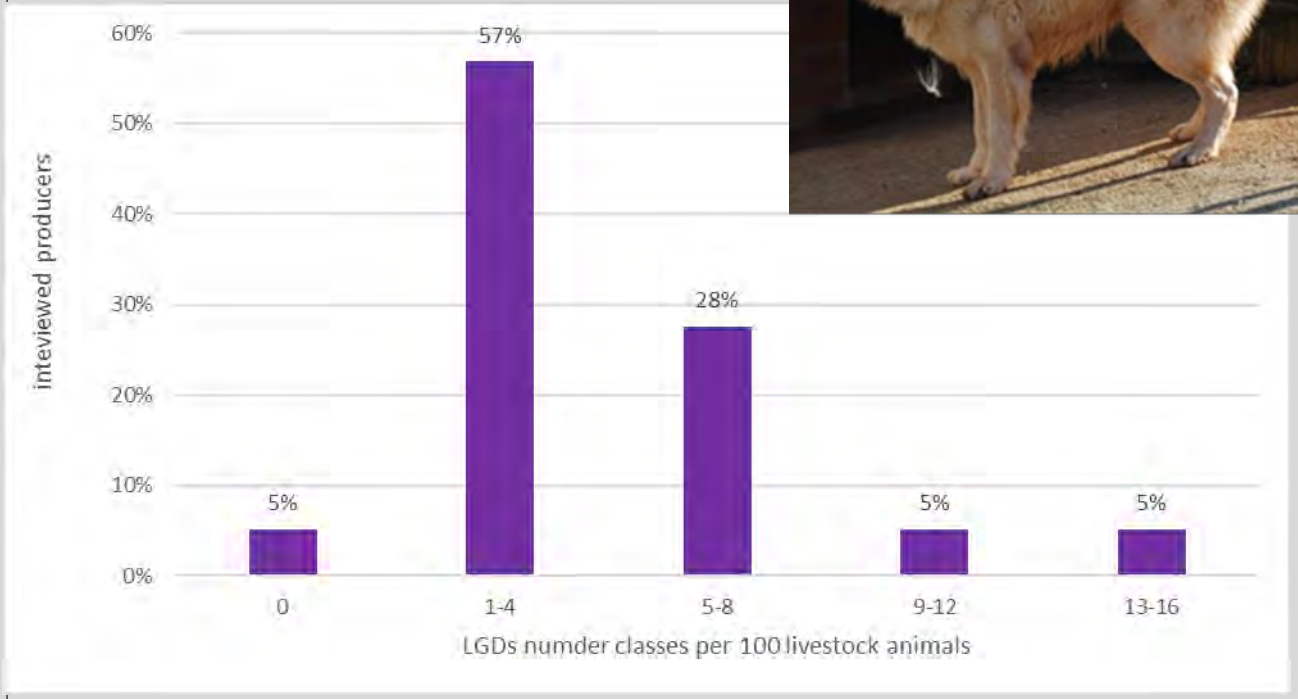
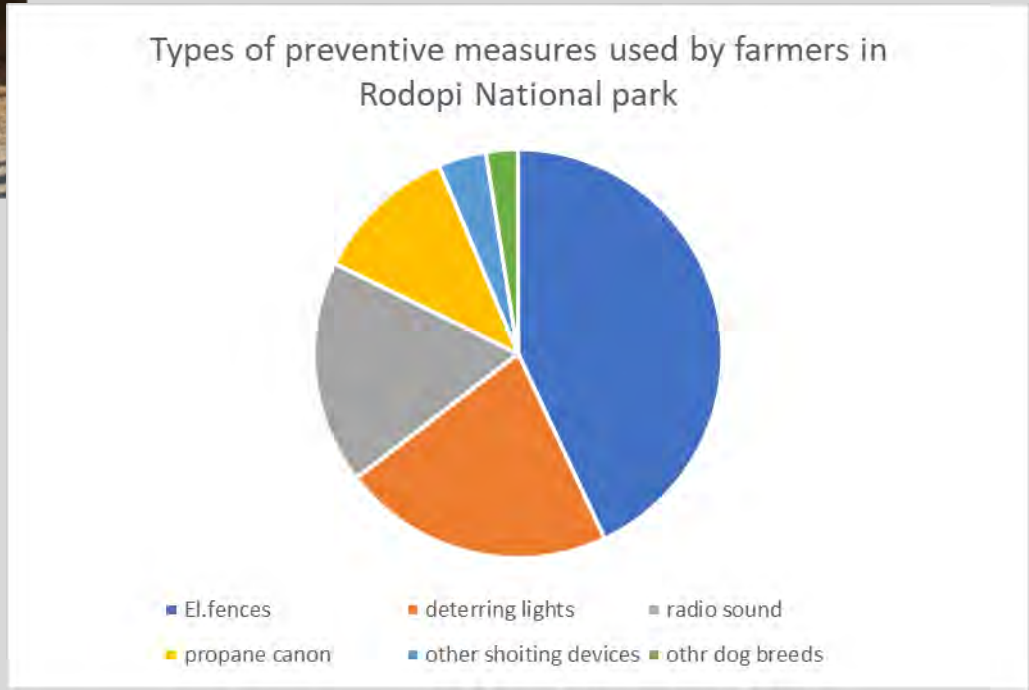
Action A1: Main Tasks

Task 2: semi- structured questionnaire results processing (survey covered an 11 year period 2010_21).

- Rodopi park: data on preventive measures (LGDs) and others







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Action A1: Main Tasks

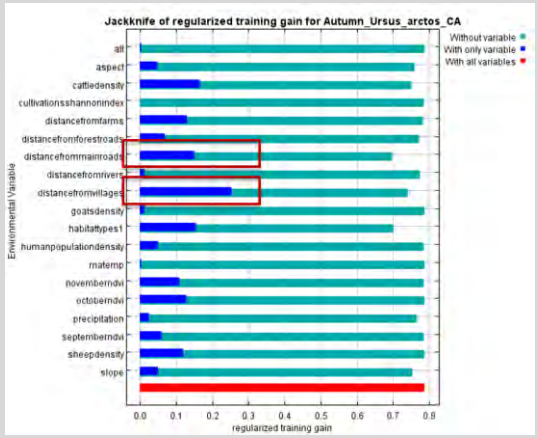
Task 3: Statistical Modelling and mapping: Maximum Entropy (MaxEnt) modeling was selected because of its multiple advantages a) requires presence-only data, b) utilises both continuous and categorical data and c) includes efficient deterministic algorithms and mathematical definitions (Phillips et al., 2006).

Steps:

Brown bear (*Ursus arctos*) damages + data from questionnaires were used in Maxent modelling to predict and model the bears conflict areas distribution

The environmental parameters were correlated with the locations of brown bear damages by identifying the distribution of maximum similarity, so that the expected value of each environmental variable matched its empirical average, determined by the locations of the known points.

The Jackknife (AUC) procedure was used to reduce the number of environmental variables to only those that showed a substantial influence on the model



The logistic output and mapping by season was used for the interpretation of the results which assessed the probability of presence of a conflict area with a range of values from 0 to 1.

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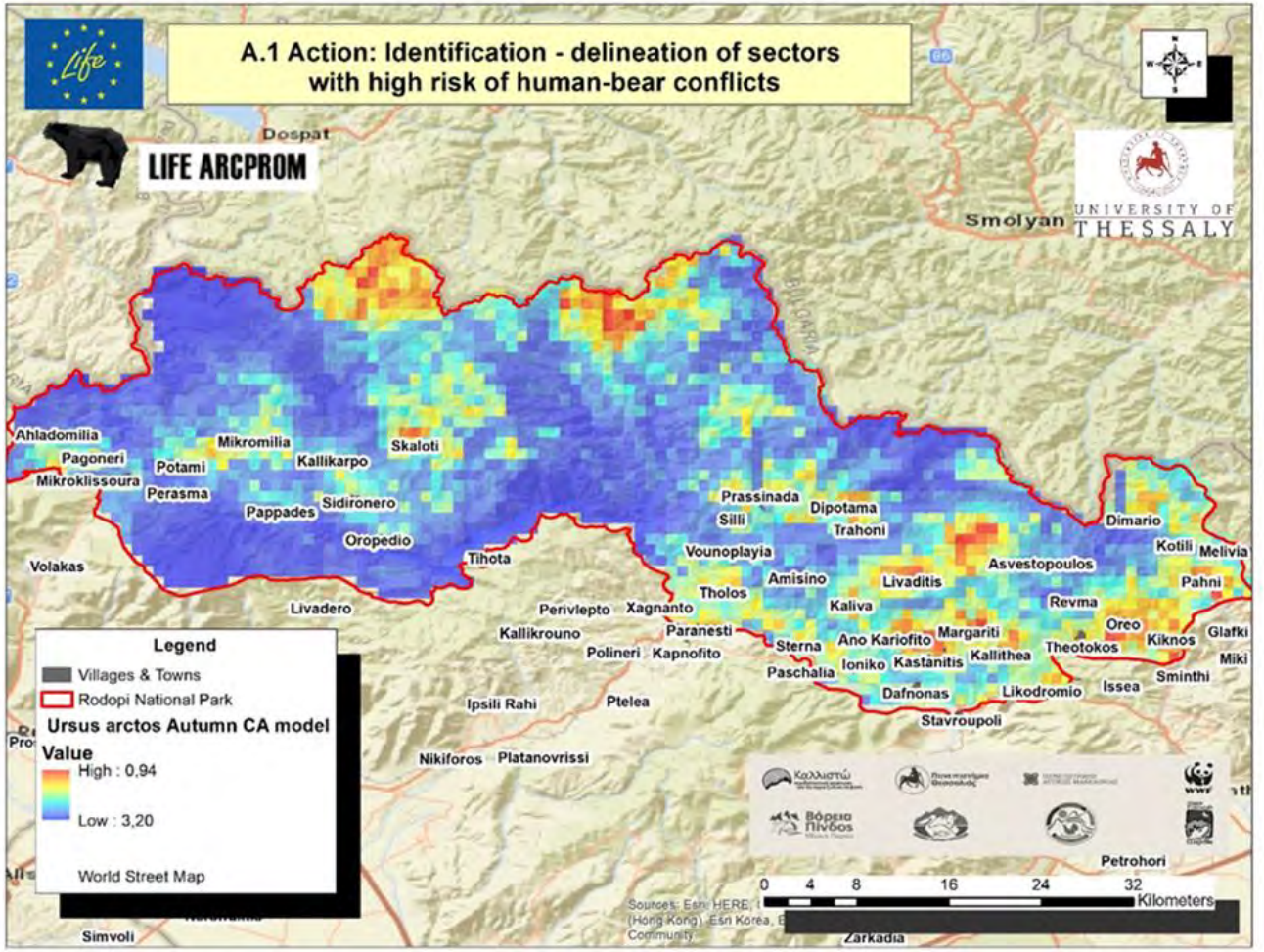
Action A1: Main Tasks

Task 3: Modelling and Mapping results – Rodopi National park (i.e. autumn season)

Variable	Percent contribution	Permutation importance
Distance from villages	23.9	16.4
Habitat types1	20.3	9.5
Distance from main roads	12.4	9
Cattle density	10.3	21.4
Distance from farms	7.5	0
precipitation	7.5	13
November ndvi	4.2	4
aspect	3.5	7.5
Distance from forest roads	3.1	3.2
slope	2.2	10.6
October ndvi	1.9	1
Distance from rivers	1.7	0
September ndvi	1.1	0.7
Human population density	0.3	3.3
Cultivations shannon index	0.1	0.3
matemp	0	0.3
sheepdensity	0	0
goatsdensity	0	0
alt	0	0



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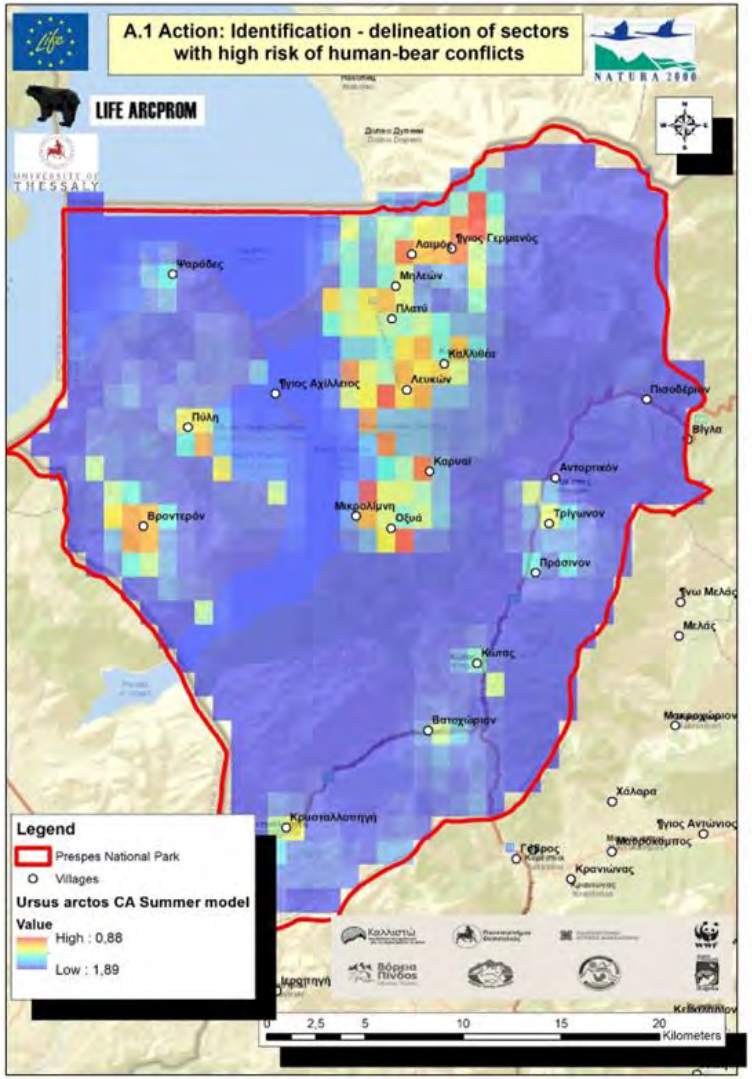
Action A1: Main Tasks

Task 3: Modelling and Mapping results – Prespa National park (i.e. summer season)

Variable	Percent contribution	Permutation importance
Distance from farms	50.2	20.2
Forest roads	23.7	47.9
Habitat types1	16.3	16.6
Habitat types_	5.2	6.5
Human population density	2.1	0.9
Distance from rivers	1.4	5
June ndvi	0.8	0
alt	0.2	2
August ndvi	0.1	0.1
Goat den	0	0
Main roads dist	0	0.5
Villages distance	0	0.2
matemp	0	0
Sheep den	0	0
Cattle den	0	0
July ndvi	0	0



Conclusions

- GIS modelling in both National parks showed that habitat types, distance from road network (forest and paved roads), cattle density and distance from livestock farms are the most influencing factors in the identification of human - brown bear conflict sectors.
- Bears prefer areas located on the boundaries of different habitat types (ecotones), and especially in the gaps between the forest and open habitat areas (such as grassland and agricultural crops)
- bear's preference for forest habitat types in Rodopi National Park can be attributed to the availability and to seasonal (spring, summer, autumn) food resources associated with the presence of continuous dense forests associated to understore shrubs and greens (blueberries and grasses).

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Synergies of A1 with other project actions

Action code and main topic	A1 Contribution
C1. Stakeholder consultation and involvement	Individuation of stakeholders to be actually involved in the platform. Proactive approach, not only applies to project areas where bear range expansion is ongoing but also to those areas where the range is stable but still affected by some variables (e.g. habitat loss/degradation).
C3. Operation of anti-poison units	Individuation of the areas where poison baits could affect bear conservation to a greater extent (e.g. areas with female presence).
C5. Operation Of Bear Emergency Teams	Choice of the areas where to focus this activity in relation to highest probability of bear-human interactions/conflict
C7. Preventive measures (bear proof garbage bins & Electric fences)	Choice of the areas where to focus this activity in relation to highest probability of bear-human interactions/conflict

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Acknowledgments:

Field work

- **Data collection**:
- (a) from questionnaires: Petros Agorastos (field technician), Gounari Eleni (field technician), Grigoriadou Elpida (MSc Biologist – Environmental Management), Konidari Vasiliki (field technician), Kotsaki Irini (field technician), Papazekou Maria (MSc Biologist).
- **Data entry**:
- (a) from questionnaires: Grigoriadou Elpida (MSc Biologist-Environmental Management), Papazekou Maria (MSc Biologist)
- **Analysis, data processing:**
- (a) from questionnaires: Grigoriadou Elpida (MSc Biologist-Environmental Management),, Papazekou Maria (MSc biologist), (b) Processing in GIS**: Giannakopoulos Alexios** (Forester, PhD), Grigoriadou Elpida (MSc Biologist-Environmental Management) (c) other data sources: Rodopi Mountain Range NP Management Body
- **Thematic layers for GeoData Base/Statistical analyses** : **Giannakopoulos Alexios** (Forester, PhD)UTH

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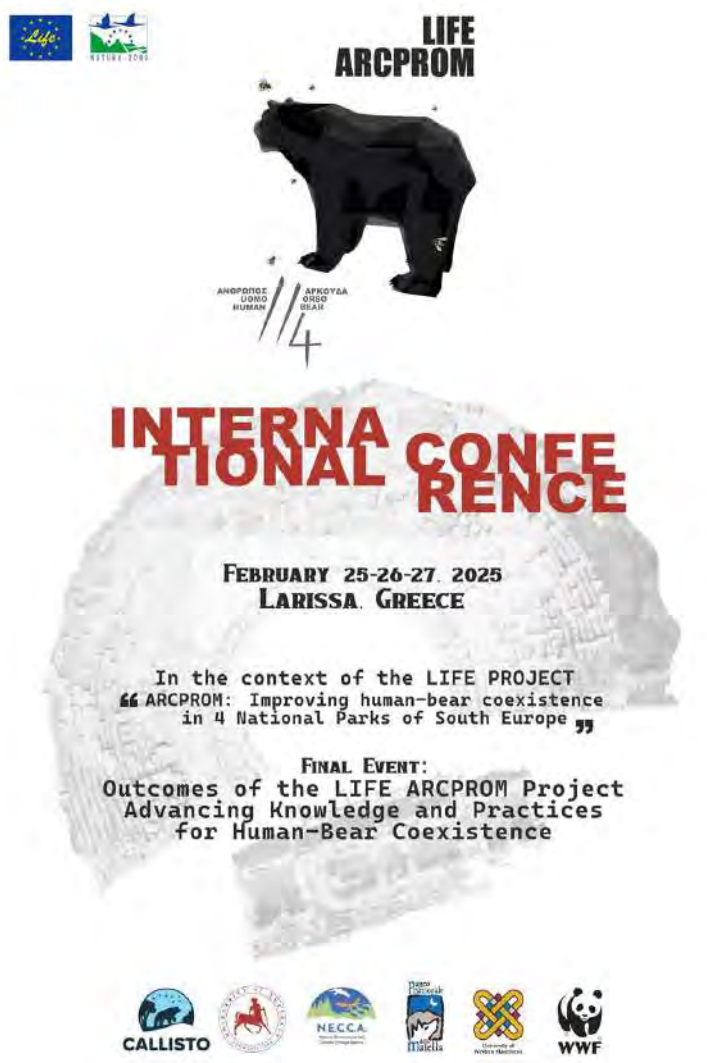
Thank you for your
attention!



SESSION 3 12:15-13:15

The Bear Friendly labelling strategy within the Project and the entrepreneur's challenges

RESPECT
FOR WILD LIFE
& BIODIVERSITY

Νέο Σήμα για την προστασία της άγριας ζωής & της βιοποικιλότητας

ΜΑΙΡΗ ΣΠΕΝΤΖΟΥ

UNIVERSITY OF THESSALY

Βιοποικιλότητα & Άγρια Ζωή:

- Η **βιοποικιλότητα** αναφέρεται σε όλη την ποικιλία των μορφών της ζωής: σε φυτά, ζώα, μικροοργανισμούς, τα γονίδια που περιέχουν και τα οικοσυστήματα που σχηματίζουν.

- Ο όρος **Άγρια Ζωή** αναφέρεται στους ζωντανούς οργανισμούς που δεν είναι με κανένα τρόπο τεχνητοί ή εξημερωμένοι και ζουν στο φυσικό τους οικότοπο. Η άγρια ζωή μπορεί να αναφέρεται στη χλωρίδα (φυτά) αλλά κυρίως αναφέρεται στην πανίδα (ζώα).

Προστασία άγριας ζωής & βιοποικιλότητας:

Η βιοποικιλότητα **μειώνεται** με ανησυχητικό ρυθμό τα τελευταία χρόνια, με την **καταστροφή** της άγριας ζωής μεταξύ των σημαντικότερων απειλών.

Η **προστασία** της άγριας ζωής και της βιοποικιλότητας είναι ένας από τους μεγαλύτερους στόχους της ανθρωπότητας όχι μόνο για τη διατήρηση της ανθρώπινης ζωής αλλά και για κοινωνικούς, οικονομικούς και πολιτικούς λόγους.

Δημιουργία ειδικού σήματος:

Τα φιλικά προς το περιβάλλον σήματα σε προϊόντα ή υπηρεσίες ενθαρρύνουν την κατανάλωση των σχετικών προϊόντων ή υπηρεσιών και έχουν θετικό αντίκτυπο στους καταναλωτές.

Η ιδέα πίσω από ένα σήμα προστασίας βιοποικιλότητας και άγριας ζωής είναι να δώσει στους παραγωγούς/επιχειρήσεις **κίνητρα** βάσει της ζήτησης των προϊόντων/υπηρεσιών τους να υιοθετήσουν πιο βιώσιμες και φιλικές προς το περιβάλλον μεθόδους παραγωγής και υπηρεσίες που θα συμβάλουν στη διατήρηση της βιοποικιλότητας και στην αρμονική συνύπαρξη ανθρώπου-άγριας ζωής.

Σήμα για την προστασία της άγριας ζωής και της βιοποικιλότητας

Μεθοδολογία δημιουργίας του σήματος:

Ποιοτική Έρευνα:

- Βιβλιογραφική ανασκόπηση
- Αναγνώριση περιοχών με έντονη περιβαλλοντική σημασία όπως η Πίνδος, οι Πρέσπες, η Ροδόπη
- Διοργάνωση αρχικών παρουσιάσεων ευαισθητοποίησης
- Επιτόπιες επισκέψεις σε επιχειρήσεις και φορείς
- Πιλοτική εφαρμογή

Ποσοτική Έρευνα:

- Δομημένα ερωτηματολόγια σε επιχειρήσεις
- Στατιστική ανάλυση αξιολόγησης επίδρασης του σήματος

Αποτελέσματα σχεδιασμού:

Συλλογή στοιχείων-αποτελέσματα

- Οι τοπικοί φορείς υπογράμμισαν τη **σημασία της προστασίας** συγκεκριμένων βιοτόπων
- Οι επιχειρήσεις εξέφρασαν ενδιαφέρον για τη χρήση του σήματος ως μέσου **ενίσχυσης της φήμης τους** και **διαφοροποίησης των προϊόντων τους** στην αγορά
- Εκφράστηκαν ανησυχίες για **περίπλοκες διαδικασίες** απονομής που μπορεί να αποτελέσουν εμπόδιο για τη συμμετοχή των ενδιαφερόμενων φορέων
- **Ανάγκη διαφάνειας**, **αξιοπιστίας** και **απλότητας** στις διαδικασίες
- Ανάγκη **χρήσης τεχνολογικών εργαλείων** όπως πληροφοριακών συστημάτων, η οποία θεωρήθηκε κρίσιμη για τη διαφάνεια και την αποτελεσματικότητα της διαδικασίας απονομής

Σήμα «Respect®»:

RESPECT
FOR WILD LIFE
& BIODIVERSITY

RESPECT
FOR WILD LIFE
& BIODIVERSITY

- Περιγραφή (οπτικό και λεκτικό μέρος)
- Συμβολισμός σήματος
- Κατοχύρωση σήματος σε εθνικό επίπεδο

Έγγραφα:

Τα έγγραφα που περιγράφουν τις απαιτήσεις για την απονομή του Σήματος RESPECT® είναι:

- **Προδιαγραφή** για την απονομή του Σήματος προστασίας της άγριας ζωής και της βιοποικιλότητας
- **Ερωτηματολόγιο** προδιαγραφής
- **Κατευθυντήρια Οδηγία** για την απονομή του Σήματος
- **Κανονισμός χρήσης** του **Σήματος**
- **Οδηγός χρήσης** Σήματος

Προδιαγραφή:

Τα κριτήρια για την απονομή του σήματος προστασίας άγριας ζωής και βιοποικιλότητας (RESPECT®) περιλαμβάνονται στην **Προδιαγραφή** που έχει εκδοθεί από το Πανεπιστήμιο Θεσσαλίας.

Η προδιαγραφή περιγράφει τις **απαιτήσεις** ως προς τις οποίες πρέπει να συμμορφώνονται οι επιχειρήσεις, προκειμένου να διαθέτουν/παρέχουν στην αγορά προϊόντα/υπηρεσίες με το Σήμα Προστασίας Άγριας ζωής και Βιοποικιλότητας.

Κριτήρια απονομής:

Οι απαιτήσεις της προδιαγραφής βασίζονται:

- στην τήρηση **μέτρων**, **μεθόδων** και **πρακτικών** φιλικών προς την άγρια ζωή και τη διατήρηση της βιοποικιλότητας
- στην **αποφυγή παραγόντων μόλυνσης/ρύπανσης** του περιβάλλοντος και **υποβάθμισης** του **οικοσυστήματος** της περιοχής παραγωγής των προϊόντων
- στην **εφαρμογή δραστηριοτήτων επωφελών** για την άγρια πανίδα και χλωρίδα.

Πληροφοριακό σύστημα:

http://respect-label.gr/

Η απονομή του σήματος στα παραγόμενα προϊόντα, υλοποιείται μέσω της χρήσης **σύγχρονου πληροφοριακού συστήματος** όπου τεκμηριώνεται η επιλογή δράσεων και η εφαρμογή των σχετικών απαιτήσεων.

Οι απαιτήσεις παρουσιάζονται με μορφή **ερωτηματολογίου** χρησιμοποιώντας ψηφιακές λειτουργίες που διευκολύνουν τις ανάγκες καταχώρησης δεδομένων εφαρμογής των προδιαγεγραμμένων απαιτήσεων.

Στάδια διαδικασίας:

Τα στάδια που ακολουθούνται περιλαμβάνουν:

- ✓ την **εγγραφή** της επιχείρησης ως **χρήστη** του πληροφοριακού συστήματος
- ✓ την **υποβολή αίτησης** που περιλαμβάνει τη συμπλήρωση ερωτηματολογίου των απαιτήσεων απονομής και την καταχώρηση σχετικών τεκμηρίων εφαρμογής
- ✓ την **αξιολόγηση της αίτησης** από το Φορέα Απονομής προς τη συμμόρφωση της επιχείρησης με τις προβλεπόμενες απαιτήσεις μέσω βαθμολόγησης των απαιτούμενων κριτηρίων
- ✓ την **απόφαση απονομής** που περιλαμβάνει την έκδοση βεβαίωσης απονομής του Σήματος και τη δυνατότητα χρήσης αυτού στα προϊόντα/υπηρεσίες
- ✓ την **επιτήρηση** της **συνεχούς συμμόρφωσης** με τις προβλεπόμενες απαιτήσεις.

Παραδείγματα δράσεων:

4.3.3 Η επιχείρηση διαθέτει σύστημα ειδοποίησης και μέτρα αποτροπής σε περίπτωση προσέγγισης άγριων ζώων;

Επιλέξτε ένα ή περισσότερα *

- [ ] φωτισμός
- [ ] συσκευές θορύβου
- [ ] κάμερες παρακολούθησης χώρων
- [x] ζώα φύλαξης
- [ ] φωτοκύτταρα για ανίχνευση άγριων ζώων σε επικίνδυνα σημεία
- [x] συναγερμός που καλύπτει περιβάλλοντα χώρο
- [x] ενημέρωση Φορέα Απονομής (Πανεπιστήμιο Θεσσαλίας) και αρμοδίων υπηρεσιών σε περίπτωση εμφάνισης άγριων ζώων
- [ ] ηλεκτροφόροι φράκτες
- [ ] ειδικοί κάδοι απορριμμάτων για την αποτροπή προσέγγισης άγριων ζώων
- [ ] άλλη δράση

Εισάγετε τεκμήρια για τα παραπάνω επιλεγμένα μέτρα και δράσεις *

πχ αποδεικτικά αγοράς σχετικών υλικών, φωτογραφίες εγκατάστασης κλπ

Παρουσίαση - ΜΑΙΡΗ ΣΠΕΝΤΖΟΥ

Παραδείγματα δράσεων:

4.3.5-4.3.6 α) Η επιχείρηση εξασφαλίζει την τήρηση μέτρων για τη διασφάλιση της προστασίας του περιβάλλοντος στο οποίο λαμβάνουν χώρα οι παραγωγικές ή λειτουργικές της δραστηριότητες και της αποφυγής μεθόδων ή πρακτικών υποβάθμισης ή μόλυνσης ή ρύπανσης του φυσικού οικοσυστήματος και των παραγόμενων προϊόντων; β) Η επιχείρηση επιλέγει δράσεις ή προληπτικά μέτρα που συμβάλλουν στην προστασία της άγριας ζωής και της βιοποικιλότητας, με οφέλη τόσο για το φυσικό περιβάλλον όσο και για την οικονομική της βιωσιμότητα;

Επιλογή Δράσεων - Μέτρων *

- [ ] τοποθέτηση κάδων απορριμμάτων που δεν επιτρέπουν την πρόσβαση σε άγρια ζώα
- [ ] περίφραξη χώρου συλλογής των σκουπιδιών/αποβλήτων
- [x] διατήρηση πρασίνου/βιοποικιλότητας σε περιβάλλοντα χώρο
- [x] δημιουργία φυτοφρακτών
- [ ] κλειδωμένη αποθήκη ζωοτροφών/φαρμάκων και άλλων ειδών που δύναται να προσελκύσουν άγρια ζώα
- [ ] εφαρμογή βιολογικής γεωργίας (πιστοποίηση)
- [ ] εφαρμογή Ολοκληρωμένης Διαχείρισης (AGRO 2 πιστοποίηση)
- [ ] εφαρμογη κανόνων συστήματος περιβαλλοντικής διαχείρισης (πιστοποίηση πχ ISO 14000, AGRO 9)
- [ ] εφαρμογή μέτρων βιώσιμης διαχείρισης ή απόκατάστασης του εδάφους
- [ ] εφαρμογή μέτρων για τη βιώσιμη διαχείριση του νερού
- [ ] διαχείριση αποβλήτων με τρόπο που δεν επιβαρρύνει το περιβάλλον

Πιλοτική εφαρμογή:

Αξιολόγηση εφαρμογής προδιαγραφής RESPECT:

- ✓ Παρατηρήθηκαν **δυσκολίες** όπως στη συγκέντρωση όλων των απαραίτητων τεκμηρίων, στην εξοικείωση με τη χρήση ηλεκτρονικών διαδικασιών, στην αυτόματη βαθμολογία με βάση τα συμπληρωμένα στοιχεία σε σύγκριση με τη βαθμολογία του αξιολογητή κ.α.
- ✓ Παρουσιάστηκαν **προκλήσεις** όπως η προβολή και επικοινωνία των προϊόντων με το νέο σήμα, η εκπαίδευση του προσωπικού, κόστος δράσεων προώθησης (marketing) κ.α.

Σήμα «Respect®»:

- Η πρωτοβουλία RESPECT® δίνει τη δυνατότητα σε **επιχειρήσεις** να συμβάλλουν με τις δράσεις τους στη διατήρηση της άγριας ζωής και της βιοποικιλότητας.
- Θέτοντας ειδικές απαιτήσεις ως προς την προστασία της άγριας ζωής και της βιοποικιλότητας, το Σήμα RESPECT® βοηθά τους **καταναλωτές** να επιλέγουν προϊόντα και υπηρεσίες που ταιριάζουν με τις περιβαλλοντικές αξίες τους.
- Το Σήμα RESPECT® **εγγυάται** την εφαρμογή δράσεων που επιτρέπουν στους ανθρώπους, το περιβάλλον και την άγρια ζωή να συνυπάρχουν και να ευδοκιμούν.

Στόχοι του Σήματος:

Το Σήμα RESPECT® στοχεύει στην υποστήριξη της **βιώσιμης τοπικής ανάπτυξης** που συμβιώνει, προστατεύει και διατηρεί την άγρια ζωή και βιοποικιλότητα.

Το Σήμα αυτό σχεδιάστηκε για να “**βραβεύει**” επιχειρήσεις με περιβαλλοντική πολιτική που μέσω των μέτρων και δράσεων κατά την παραγωγή των προϊόντων ή την παροχή των υπηρεσιών τους συμβάλλουν στην καλύτερη **συνύπαρξη** μεταξύ άγριας ζωής, περιβάλλοντος και ανθρώπων.

Πού εφαρμόζεται:

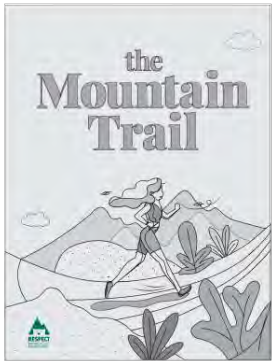
Η προδιαγραφή δύναται να εφαρμοστεί στην παραγωγή **προϊόντων** καθώς και σε **υπηρεσίες** αγροτουρισμού, φιλοξενίας (ξενοδοχεία), δραστηριοτήτων αναψυχής κ.α.

Το Σήμα τοποθετείται:
α) επί της **επισήμανσης** των προϊόντων της επιχείρησης που εφαρμόζει την παρούσα προδιαγραφή
β) επί έντυπου ή ηλεκτρονικού **διαφημιστικού υλικού** ή σε αναρτημένη **πινακίδα** εντός των χώρων της εγκατάστασης σε επιχειρήσεις παροχής υπηρεσιών (πχ ξενοδοχεία), δηλώνοντας ότι τα προϊόντα/υπηρεσίες τηρούν τις προδιαγεγραμμένες απαιτήσεις.

Φορέας Απονομής:

Το «**Πανεπιστήμιο Θεσσαλίας-Τμήμα Κτηνιατρικής**», είναι ο αρμόδιος φορέας για την απονομή του Σήματος Προστασίας Άγριας Ζωής και Βιοποικιλότητας

Παραδείγματα:



Οφέλη:

- Η υλοποίηση μέτρων και δράσεων που συμβάλλουν στη **διατήρηση** του **φυσικού περιβάλλοντος** και στη βέλτιστη **συνύπαρξη** ανθρώπου-άγριας ζωής.
- Η **ευαισθητοποίηση** του **καταναλωτικού κοινού** στην προστασία της άγριας ζωής και της βιοποικιλότητας.
- Η υποστήριξη της **βιώσιμης τοπικής ανάπτυξης**.
- Η **ενίσχυση** της **ανταγωνιστικότητας** των προϊόντων & υπηρεσιών στα οποία έχει απονεμηθεί το Σήμα.
- Η ανάδειξη της **περιβαλλοντικής εταιρικής ευθύνης** των επιχειρήσεων που εντάσσονται στην πρωτοβουλία RESPECT®.
- Η **εγγυημένη πληροφόρηση** του καταναλωτή μέσω της **αξιοπιστίας** του συστήματος απονομής.

VIDEO

RESPECT
FOR WILD LIFE
& BIODIVERSITY

Σας ευχαριστώ πολύ !

UNIVERSITY OF
THESSALY

ΜΑΙΡΗ ΣΠΕΝΤΖΟΥ

THE BEAR FRIENDLY LABEL IN THE MAIELLA NATIONAL PARK

A tool to promote coexistence and preserve the ecosystem

Presented by: Giovanna Di Domenico - Maiella National Park

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE APENNINE BROWN BEAR

RED LIST

CRITICALLY ENDANGERED CR

Ursus arctos marsicanus

~ 50 bears in 2014

Area: ~ 5.000 km²

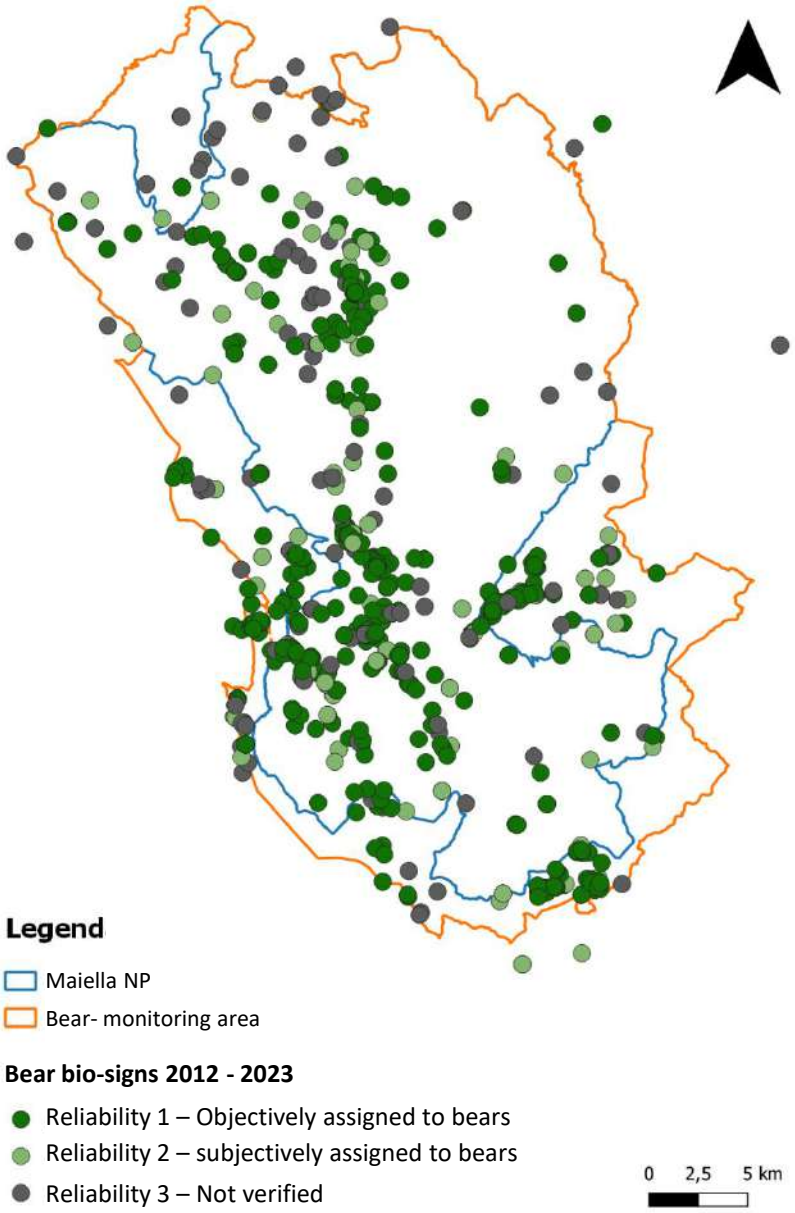
International
Appendix I CITES
Annex II Berne Convention 1979
Annex II and IV Habitats Direcvtive 92/43
National
Law 157/92
Annex B and D D.P.R. 357/97

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE SITUATION IN MNP

Bear biosigns



1996 – 2011
106 Bear bio-signs
(63 Reliability 1 in 2001-2011)

2012-2023
1.016 Bear bio-signs
(899 Reliability 1 or 2)

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE SITUATION IN MNP

©Theochari Thelxiopi – University of Western Macedonia, Greece

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE LIFE ARCPROM PROJECT

Lifearcprom.uowm.gr

Callisto

University of Western Macedonia

WWF

Northen Pindos National Park

PRESPA NATIONAL PARK

Parco Nazionale della Maiella

A 2 YEARS LONG PRELIMINARY PHASE

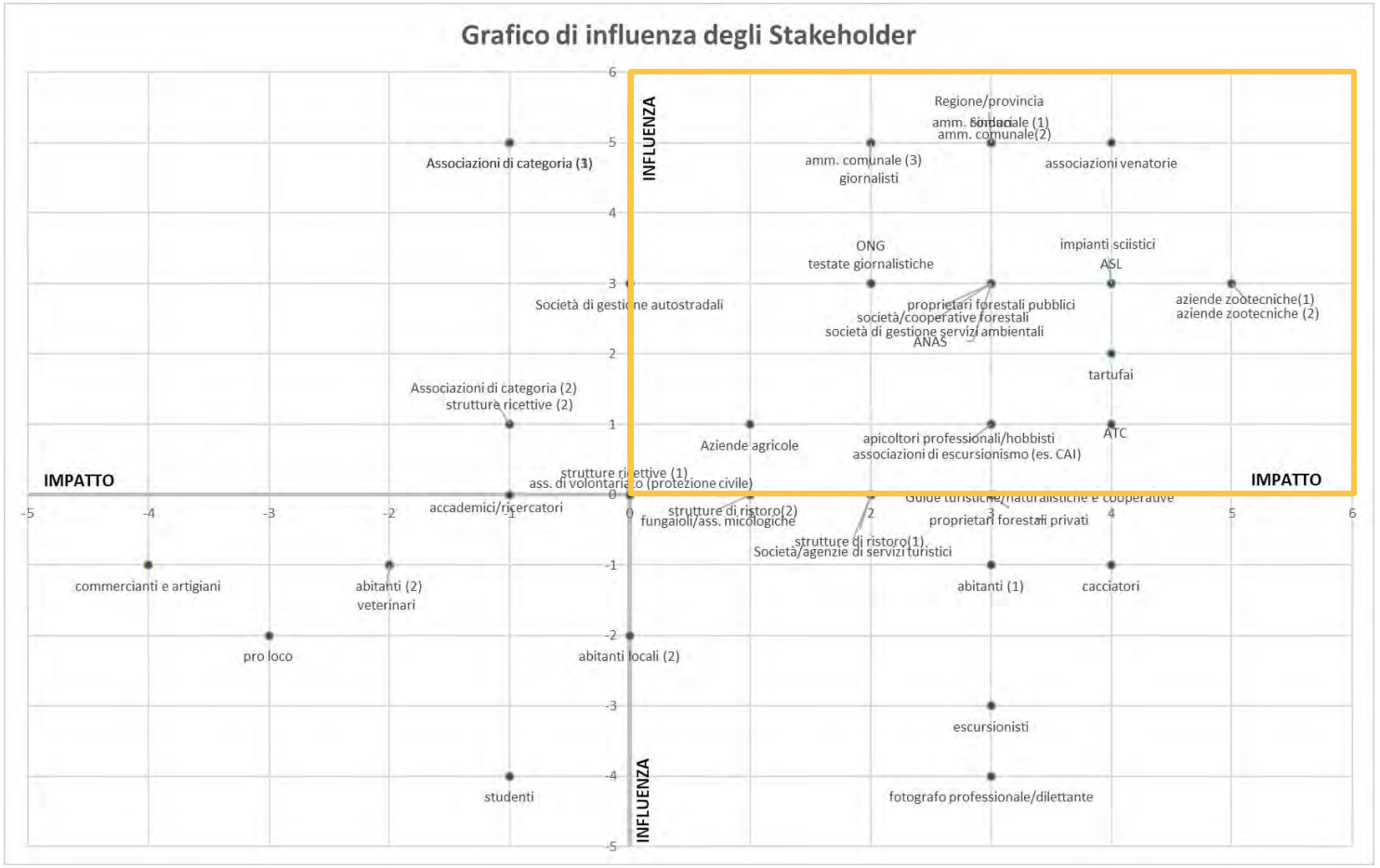
BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

Who are the stakeholders that fit our project goal?

How much are they effective?



BEAR FRIENDLY

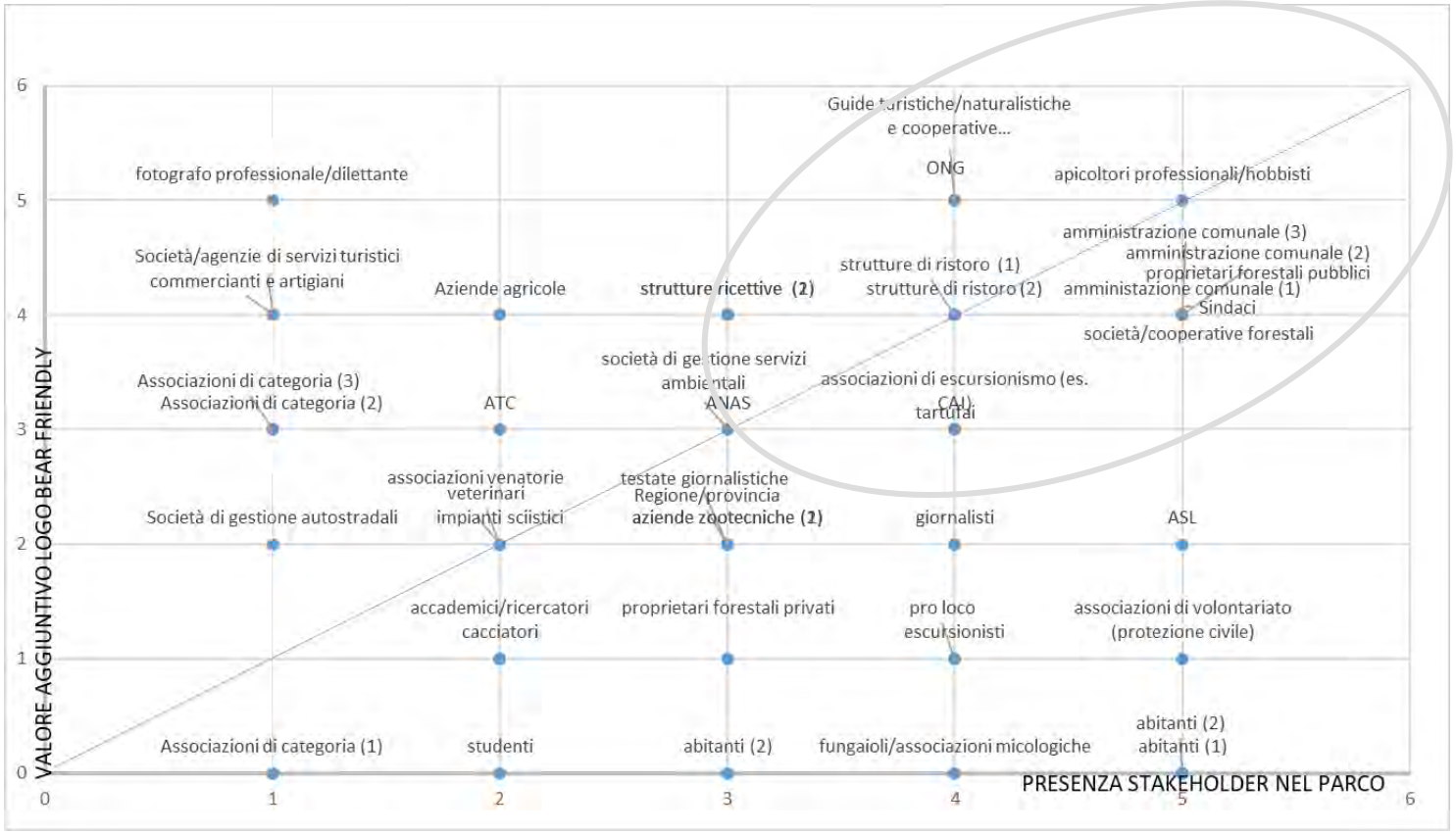
PARCO NAZIONALE DELLA MAIELLA

A 2 YEARS LONG PRELIMINARY PHASE

Who would benefit the most from the BF label?

Who would value the most the BF label?

THE BEAR FRIENDLY LABEL



BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

A 2 YEARS LONG PRELIMINARY PHASE

WWF

What could be the value of the Apennine brown bear?

THE BEAR FRIENDLY LABEL

Valore pubblicitario dell'orso marsicano nei principali quotidiani e canali televisivi nazionali

Relazione Finale 28 luglio 2020

Consulenza svolta nell'ambito dell'azione A3, Progetto LIFE ArcPROM
LIFE18 NAT/GR/000768 ArcPROM
Incarico di WWF Italia CUP H83C19000170006

Clara Tattoni

RESEARCH ARTICLE

Check for updates

Not only seeds: a cultural ecosystem service provided by the Apennine brown bear

Clara Tattoni[a,b], Marco Galaverni[c], Antonio Pollutri[c], Damiano G. Preatoni[a], Adriano Martinoli[a], and Jorge E. Araña[b]

[a]Dipartimento di Scienze Teoriche ed Applicate - Guido Tosi Research Group, Università degli Studi dell'Insubria, Varese, Italy; [b]Departamento de Análisis Económico Aplicado, Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain; [c]WWF Italia, Roma, Italy

ABSTRACT

The unequal distribution of the costs and benefits of living with wildlife is one of the causes of human-carnivore conflicts. The existence of large carnivores is valued globally, but the costs of damages and management impacts human residents. The Apennine brown bear is endemic of central Italy and, besides its ecological value, it can attract tourists in search of nature and wilderness. The Advertising Value Equivalent of the bears' appearances in the national newspaper and on television from 2015 to 2020 was used to calculate the economic value of this flagship species as a destination image. The 11 million Euro of Advertising Value Equivalent estimated largely exceeded the amount of reimbursements sustained by the Park to manage this carnivore in the same period. This evaluation of cultural value could be used to highlight the economic benefits provided by the bear and contribute to the discussions with managers and stakeholders.

KEYWORDS

Advertising value equivalent; destination image; sentiment analysis; traditional media; Ursus arctos marsicanus

Introduction

The coexistence between people and large carnivores is a complex issue, and the conservation objectives for species such as bears are intertwined with the different interests of people who share the same space with them. In many cases, the decline of large carnivores was caused by conflicts with local residents, even if habitat loss and fragmentation contributed to reducing the number of animals (Macdonald, 2001). Most human-carnivore conflicts can also be viewed as the unequal distribution of the costs and benefits that predators bring at the local, national, or global scale (Nelson, 2009). Many large carnivores like bears are charismatic, flagship species (Clucas et al., 2008) whose existence is valued by people at national and global scales for cultural, esthetic, or spiritual reasons; however, this value has no market price (Macdonald, 2001). At the local level instead, carnivores can cause damage and losses to economic activities and so the acceptance of their presence varies across countries depending on cultural and socio-economic factors (Linnell et al., 2000).

The effective communication of the benefits provided by large carnivores is a key to increase acceptance (Slagle et al., 2013), more effective than conveying simple biological information (Glikman et al., 2012). The benefits are often presented in terms of Ecosystem

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

A 2 YEARS LONG PRELIMINARY PHASE

THE BEAR FRIENDLY LABEL

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

THE KEY FEATURES OF THE PATH

1. ACTIVE INVOLVEMENT OF POTENTIAL BEFICIARIES

PARTICIPATORY APPROACH

2. ECOSYSTEM APPROACH

Convention on Biological Diversity

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

#1 ACTIVE PARTICIPATION OF POTENTIAL BENEFICIARIES

(Act I)

To draft the final version of the regulation

New rules added!

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

#2 ECOSYSTEM APPROACH

Protection from bear damages

Favour impollination

Breed the authochtonous bee (*Apis mellifera ligustica*)

A MORE FUNCTIONAL ECOSYSTEM = A BETTER HABITAT FOR BEARS

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

#2 ECOSYSTEM APPROACH

Organic cultivation

Local agricultural varieties

Low use of plant protection products *(National Action Plan for the Sustainable Use of Plant Protectoin Products)*

Certified practices to protect biodiversity and ecosystems

Adhere to specific project of MNP

A MORE FUNCTIONAL ECOSYSTEM = A BETTER HABITAT FOR BEARS

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

27 PRODUCERS GRANTED IN 2022 AND 2023

16 Beekeepers, 10 Agricultural farmers & 1 Beekeeper/Agricultural farmer

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

> 70 Bear Friendly products

THE BEAR FRIENDLY LABEL

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

TRAINING OF BF PRODUCERS

THE BEAR FRIENDLY LABEL

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BEAR FRIENDLY LABEL

TRAINING OF BF PRODUCERS

#1 ACTIVE PARTICIPATION OF POTENTIAL BENEFICIARIES

(Act II)

To draft the promotion plan

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

FINAL EVALUATION

TO SUM UP

- **Innovative Ecosystem approach**
- **Represents the identity of the producers most environmentally sensitive.**
- **Gives to consumers the opportunity to choose products that support ecosystems and wildlife, particularly Bear, protection.**
- **Helps MNP and WWF spread the knowledge on the Apennine brown bear and on the things to do to help its preservation.**
- **The bear is a marketing resource in a respectful way.**
- **Favors the acceptance of bears by people, concretely helping bear preservation.**
- **Helps preserve biodiversity.**

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

STAY TUNED!

THE FUTURE OF THE LABEL

LIFE ARCPROM

Coordinator: *Antonio Antonucci*

Worked in the BF project:
Giovanna Di Domenico, Marco Di Santo, Rossella Ferretti, Stefania Monaco, John Forcone, Dino D'Alessandro.

Coordinator: *Antonio Pollutri*

Worked in the BF project:
Franco Ferroni, Carol Sinisi, Clara Tattoni, Lucia Orecchini.

THE PROMOTION OF THE BEAR FRIENDLY LABEL IN THE MAIELLA NATIONAL PARK

Present and future perspectives

Presented by: Giovanna Di Domenico - Maiella National Park

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE BF LABEL NUMBERS

27 PRODUCERS GRANTED IN 2022 AND 2023

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BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

> 70 Bear Friendly products

THE BF LABEL NUMBERS

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

FORESEEN IN THE LIFE ARCPROM PROJECT:

General leaflet production

Promotion during 30 touristic events

THE PROMOTION PLANNED

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

FORESEEN IN THE LIFE ARCPROM PROJECT:

General leaflet production - achieved

Promotion during 30 touristic events

THE PROMOTION PLANNED

BEAR FRIENDLY

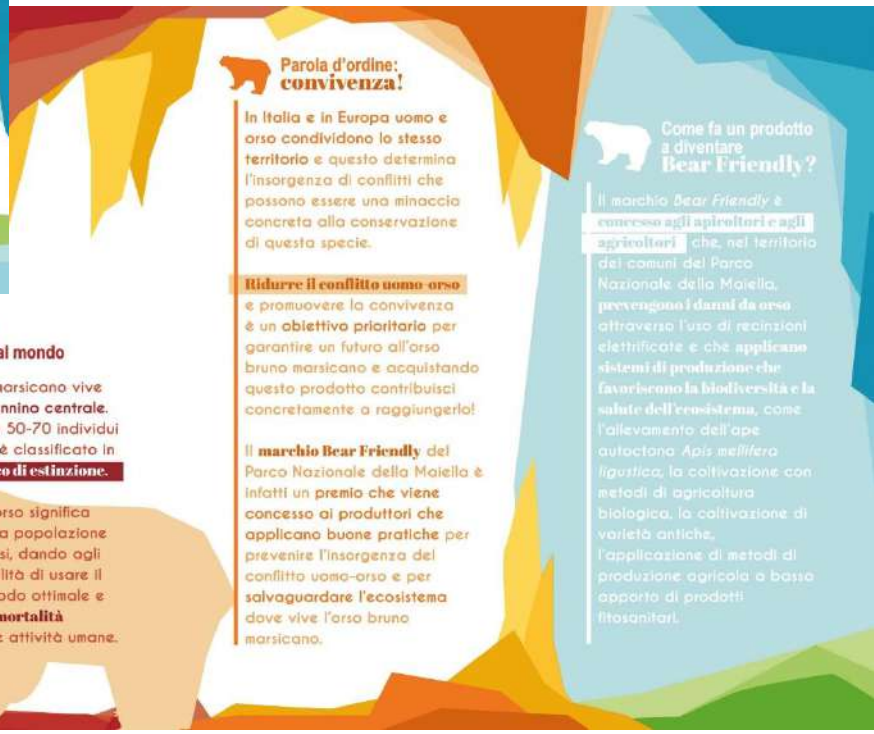
PARCO NAZIONALE DELLA MAIELLA

FORESEEN IN THE LIFE ARCPROM PROJECT:

General leaflet production - achieved

Promotion during 30 touristic events - ?

THE PROMOTION IMPLEMENTED



BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE PROMOTION IMPLEMENTED

Promotion during 30 touristic events

Is this the proper promotion tool for us?

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE PROMOTION IMPLEMENTED

Promotion during 30 touristic events

Is this the proper promotion tool for us?

LET'S FIND IT OUT!

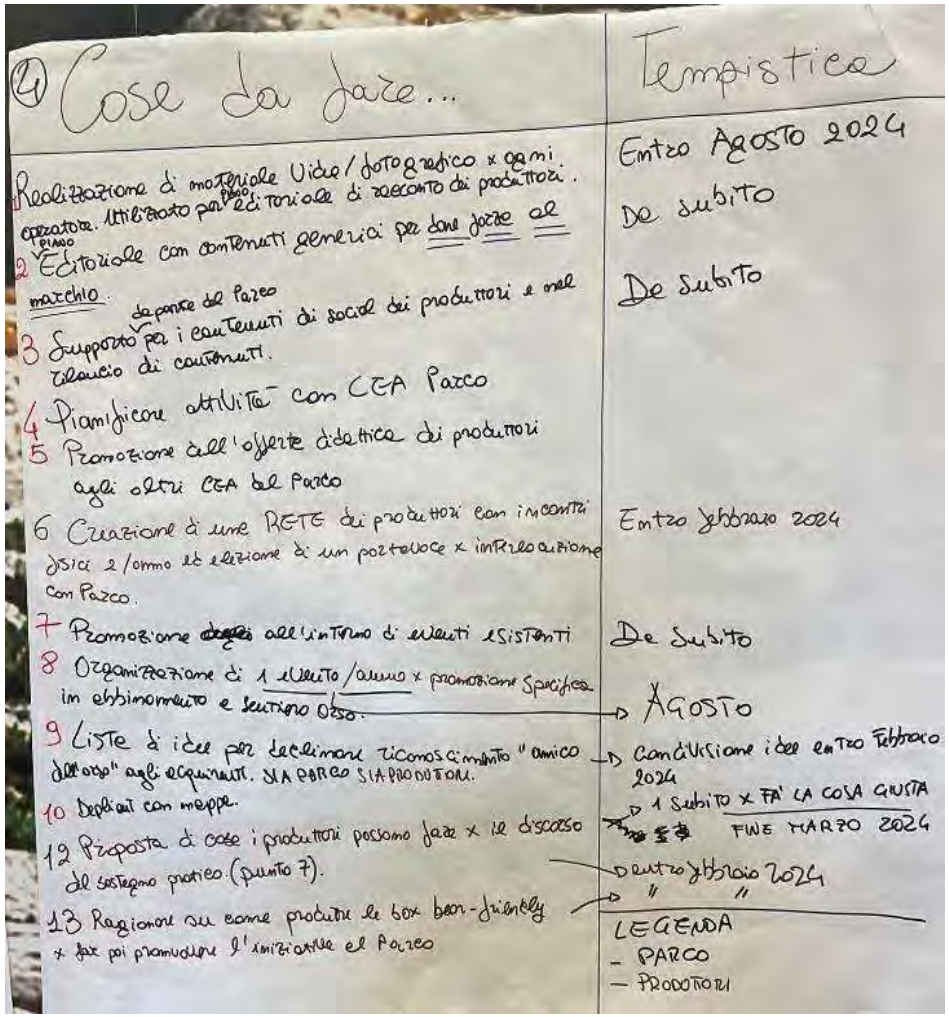
BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

Promotion during 30 touristic events

THE PROMOTION IMPLEMENTED

Is this the proper promotion tool for us?



12 ACTIONS

TASK	N ACTIONS
Production of promotion material (foto, video, leaflet…)	2
Contents and collaboration for the promotion on social media	2
Promotion to guides and educators	2
Collaboration among producers to coordinate and promote ideas	4
Promotion during events	2

PRESENT

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE PROMOTION OF THE BF LABEL

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

FUTURE PERSPECTIVES

THE PROMOTION OF THE BF LABEL

TASK	N ACTIONS
Production of promotion material (foto, video, leaflet…)	2
Contents and collaboration for the promotion on social media	2
Promotion to guides and educators	2
Collaboration among producers to coordinate and promote ideas	4
Promotion during events	2

Immediate

Mid-term

BF boxes

Prizes to frequent buyers

Network of bf-related activities

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

THE PROMOTION OF THE BF LABEL

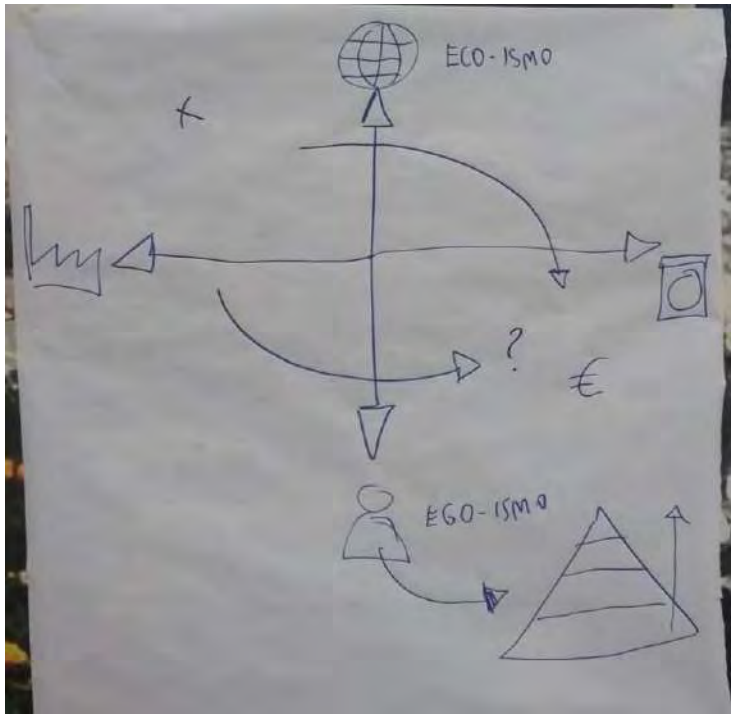
FUTURE PERSPECTIVES

What is the BF label?

What do we want it to be?

Who are the potential buyers?

What the BF label is not?



Always bear in mind that the BF label is a tool to promote bear preservation.

This general goal has to drive any marketing decision.

BEAR FRIENDLY

PARCO NAZIONALE DELLA MAIELLA

FUTURE PERSPECTIVES

The BF label is a tool to promote bear preservation.

This general goal has to drive any marketing decision.

Include other categories as potential granter

Include the tourism sector in a healthy responsible way (e.g. no wildlife watching)

Involve unusual categories (e.g. handcrafting)

Adjust the promotion plan if the social context changes

....

THANK YOU

LIFE ARCPROM

Coordinator: *Antonio Antonucci*

Worked in the BF project:
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