LIFE AMYBEAR (LIFE15 NAT/GR/001108):

Action C1. Stakeholder consultation and involvement

Questionnaire report

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Contents

English summary

Questionnaire data in Action C1 will deliver quantitative evidence for justifying the qualitative findings of Action A1 (Stakeholder analysis) and to enrich qualitative findings from the workshops undertaken in Action C1. In addition, the quantitative evidence presented in this report will comprise the level of reference for Action D1 (Follow-up surveys on stakeholder perceptions and behavior). The questionnaire was developed by taking into account the results of Action A1 and the analysis of minutes of the workshops held in Action C1. This instrument was administered to participants in the workshops which took place in November 2019 in Amyntaio and Florina. Further, it was also administered by the Municipality of Amyntaio, by the Stock-Breeders' Association of Amyntaio, and by the Farmers' Association of Amyntaio. The final sample included 150 respondents classified in four different subsamples: (1) Residents involved in primary sector activities (20.0%); residents in Amyntaio (29.3%); employees of the Forest Service (18.7%); and residents in Florina (32.0%). Data analysis revealed a series of important findings which need to be taken into account for scheduling and implementing future outreach initiatives in the study area as well as in the frame of stakeholder consultation and involvement. Social groups occupied in primary sector activities together with hunters comprised a wide cluster of stakeholders with strong ties in terms of interaction and trust. Number of bears in the region and interventions in the road network for all subsamples, as well as Bear Emergency Teams for residents occupied in the primary sector and residents in Amyntaio, are the information/knowledge items which need to be especially pronounced in future communication campaigns. Questionnaire data also indicated that outreach in the case of employees of the Forest Service should be tailored to individual needs rather than be planned and implemented as group-based. Concerning respondent attitudes, the two main damage prevention methods, namely, electric fences and livestock guarding dogs were endorsed as effective. Another finding in line with the aims of LIFE AMYBEAR was that respondents condemned the use of illegal poisoned baits. However, paperwork as a counter-motive in claiming compensation from damage caused by bears was also widespread in the sample. Perception of threat by bears and consideration of bear number and trend were also salient. The report includes evidence that the re-introduction narrative was widely used in the project area and that it was accompanied by relatively increased perceived threat and reluctance to tolerate damage caused by bears. On the contrary, development opportunities linked to bear presence were negatively correlated with perceived threat and positively correlated with tolerating damage caused by bears as well as condemning the use of poisoned baits. These effects influenced respondent attitudes towards bear number and trend in the region. For instance, perceived threat and reluctance to tolerate damage, primarily, as well as the re-introduction narrative secondarily, led to rejection of current bear number and trend. On the other hand, development opportunities and condemning poisoned baits led to more tolerance for current bear number and trend. It seems that there are two major priorities in terms of psycho-social determinants for tolerance towards bears. The first and most important priority is to address perceived threat and the second priority is to build on the negative disposition of the entire sample towards the use of poisoned baits. Development opportunities were connected to tolerance for bears only in the case of the subsample with residents in Florina, which also needs to be taken into account, especially for actions focusing on bear-friendly products and ecotourism development. All respondent subsamples underestimated actual consensus for stakeholder consultation and collaboration for bear conservation, which again, needs to be a focus for future interventions. Indeed, it was shown that negative intention in this regard was linked to increased errors in consensus estimates, while these errors were the most significant predictors of negative intention.

Περίληψη στα ελληνικά

Τα δεδομένα από το ερωτηματολόγιο αναμένεται να συνεισφέρουν ποσοτικές ενδείξεις για την ενίσχυση των ποιοτικών δεδομένων που έχουν προκύψει στη Δράση Α1 καθώς και των δεδομένων από τις συναντήσεις συντονισμού/εργαστήρια στη Δράση C1. Επιπρόσθετα, τα ποσοτικά στοιχεία που παρουσιάζονται στην παρούσα αναφορά θα αποτελέσουν τη βάση σύγκρισης για τη Δράση D1 (Παρακολούθηση αντιλήψεων και συμπεριφοράς των κοινωνικών εταίρων) που θα ακολουθήσει. Το ερωτηματολόγιο αναπτύχθηκε λαμβάνοντας υπόψη τα αποτελέσματα της Δράσης Α1 και την ανάλυση των πρακτικών των συναντήσεων συντονισμού/εργαστηρίων της Δράσης C1. Το ερωτηματολόγιο διανεμήθηκε στους συμμετέχοντες στις συναντήσεις συντονισμού/εργαστήρια που πραγματοποιήθηκαν τον Νοέμβριο του 2019 στην περιοχή του έργου. Ακόμη, διακινήθηκε από τον Δήμο Αμυνταίου, τον Κτηνοτροφικό Σύλλογο Αμυνταίου, και τον Αγροτικό Σύλλογο Αμυνταίου. Το τελικό δείγμα περιλάμβανε 150 ερωτηματολόγια από κατοίκους του Δήμου Αμυνταίου που απασχολούνται στον πρωτογενή τομέα (20.0%), άλλους κατοίκους του Δήμου Αμυνταίου (29.3%), εργαζόμενους στη Διεύθυνση Δασών Φλώρινας (18.7%), και κατοίκους του Δήμου Φλώρινας (32.0%). Η ανάλυση των δεδομένων ανέδειξε μια σειρά από σημαντικά ευρήματα που πρέπει να ληφθούν υπόψη στον σχεδιασμό και την υλοποίηση μελλοντικών πρωτοβουλιών στην περιοχή του έργου αναφορικά με την εμπλοκή και διαβούλευση των κοινωνικών εταίρων. Οι κοινωνικές ομάδες που απασχολούνται στον πρωτογενή τομέα παρουσίασαν μεταξύ τους αλλά και με την κοινωνική ομάδα των κυνηγών ένα ευρύτερο σύνολο με στενές σχέσεις διαντίδρασης και εμπιστοσύνης. Ο αριθμός των αρκούδων στην περιοχή και οι επεμβάσεις στο οδικό δίκτυο για όλες τις ομάδες των ερωτώμενων, καθώς και οι Ομάδες Άμεσης Επέμβασης για τους απασχολούμενους στον πρωτογενή τομέα και τους κατοίκους του Δήμου Αμυνταίου πρέπει να έχουν προτεραιότητα σε δράσεις ενημέρωσης. Ακόμη, η ενημέρωση των εργαζόμενων στη Διεύθυνση Δασών πρέπει να εξατομικευτεί για να στοχεύσει ατομικές ανάγκες των εργαζόμενων. Αναφορικά με τις στάσεις των ερωτώμενων, οι δύο βασικές μέθοδοι αποφυγής ζημιών, δηλαδή οι ηλεκτροφόρες περιφράξεις και οι σκύλοι φύλαξης κοπαδιών έτυχαν ευρείας αποδοχής ως αποτελεσματικές μέθοδοι. Ένα ακόμη εύρημα συμβατό με τους στόχους του προγράμματος LIFE AMYBEAR ήταν ότι οι ερωτώμενοι καταδίκασαν τη χρήση δηλητηριασμένων δολωμάτων. Ωστόσο, η γραφειοκρατία δηλώθηκε ως σημαντικό αντικίνητρο για τη διεκδίκηση αποζημιώσεων. Η εκτιμούμενη απειλή από την αρκούδα αλλά και ο προβληματισμός για τον αριθμό και την τάση του πληθυσμού της αρκούδας εκφράστηκαν επίσης έντονα στις αποκρίσεις των ερωτώμενων. Η αφήγηση περί απελευθέρωσης αρκούδων φάνηκε και αυτή να είναι διαδεδομένη. Μάλιστα, η συγκεκριμένη αφήγηση συσχετίστηκε σημαντικά με την εκτιμούμενη απειλή και τη μη αποδοχή ζημιών από αρκούδα. Αντίθετα, οι ερωτώμενοι που βλέπουν αναπτυξιακές δυνατότητες από την παρουσία της αρκούδας στην περιοχή του έργου είχαν χαμηλότερη εκτίμηση απειλής και μεγαλύτερη αποδοχή ζημιών από αρκούδα. Οι συσχετίσεις αυτές εκφράστηκαν και αναφορικά με τις στάσεις των ερωτώμενων για τον αριθμό των αρκούδων και την τάση του πληθυσμού της αρκούδας στην περιοχή του έργου. Συγκεκριμένα, η εκτιμούμενη απειλή και η μη αποδοχή ζημιών από αρκούδα πρώτιστα, καθώς και η αφήγηση απελευθέρωσης αρκούδων, δευτερευόντως, ήταν σημαντικοί παράγοντες για τη μη αποδοχή των υφιστάμενων δεδομένων ως προς τον αριθμό των αρκούδων στην περιοχή και την τάση του πληθυσμού του είδους. Από την άλλη πλευρά, η σύνδεση αναπτυξιακών δυνατοτήτων με την παρουσία του είδους στην περιοχή και η καταδίκη της χρήσης δηλητηριασμένων δολωμάτων ήταν παράγοντες που ευνόησαν την αποδοχή του υφιστάμενου αριθμού των αρκούδων. Δύο προτεραιότητες προκύπτουν ως προς τα κοινωνικο-ψυχολογικά θέματα όπως αυτά προέκυψαν από την ανάλυση των δεδομένων του ερωτηματολογίου. Η πρώτη και σημαντικότερη προτεραιότητα είναι η αντιμετώπιση της εκτιμούμενης απειλής από την αρκούδα, ενώ η δεύτερη προτεραιότητα είναι η αξιοποίηση της ευρείας καταδίκης της

χρήσης δηλητηριασμένων δολωμάτων. Οι αναπτυξιακές δυνατότητες που απορρέουν από την παρουσία της αρκούδας στην περιοχή του έργου εντοπίστηκαν κυρίως στην ομάδα των ερωτώμενων από τον Δήμο Φλώρινας, οπότε οι σχετικές παρεμβάσεις οφείλουν να κατευθυνθούν αναλόγως, κυρίως ως προς την πιστοποίηση προϊόντων και υπηρεσιών αλλά και την τουριστική κίνηση. Όλες οι ομάδες των ερωτώμενων υποεκτίμησαν σημαντικά την πραγματικά καταγεγραμμένη συναίνεση για πρωτοβουλίες διαβούλευσης των κοινωνικών εταίρων αλλά και προγράμματα προστασίας της αρκούδας, γεγονός που πρέπει να συνεκτιμηθεί σε μελλοντικές πρωτοβουλίες στην περιοχή του έργου. Μάλιστα, η αρνητική δήλωση για πρόθεση συμμετοχής σε μια υποτιθέμενη πρωτοβουλία διαβούλευσης και σε ένα υποτιθέμενο πρόγραμμα προστασίας της αρκούδας συσχετίστηκε σημαντικά με αυξημένα σφάλματα στην εκτίμηση της σχετικής συναίνεσης, ενώ τα σφάλματα αυτά ήταν σημαντικοί παράγοντες πρόβλεψης της πρόθεσης των ερωτώμενων.

1. Introduction

Questionnaire data were gathered and analysed by means of the instrument used in Action C1 (Stakeholder consultation and involvement). The aim of questionnaire data is twofold. First, they will offer quantitative evidence to support the major qualitative findings of Action A1 (Stakeholder analysis) as well as complement qualitative findings during the workshops held in Action C1. Second, they will serve as a reference base for monitoring stakeholder positioning throughout the project within the frame of Action D1 (Follow-up surveys on stakeholder perceptions and behavior).

2. Methods

2.1 Instrument

The questionnaire has been developed on the basis of the input of Action A1 (Stakeholder analysis). It was finalized after an analysis of the minutes of the workshops which took place in Action C1 (Stakeholder consultation and involvement). All project partners reviewed the instrument and provided their comments and remarks before the final version of the questionnaire was prepared. The questionnaire is attached in this report as an Appendix (in Greek).

2.2 Sample selection and data collection

The questionnaire was completed by participants in the workshops held in the project area in the first half of November 2018. Further, the questionnaire was administered by the Municipality of Amyntaio, by the Stock-Breeders' Association of Amyntaio, and by the Farmers' Association of Amyntaio. The participation in data collection was voluntary and all participants were guaranteed anonymity. The core aim of sample selection and data collection was not to provide a representative account of all local residents within the project area. Rather, the main intention was to concentrate on respondents highly involved in bear conservation and management, which was denoted not only by stakeholder group but also by participation in Action C1 (participation in workshops, completion of the questionnaire).

3. Results

3.1 Sample characteristics

The sample included 150 respondents who were grouped in four sub-samples: (1) Residents of the Municipality of Amyntaio involved in primary sector activities (20.0%); other residents in the Municipality of Amyntaio apart from those involved in primary sector activities (29.3%); employees of the Forest Service (18.7%); and residents in the Municipality of Florina (32.0%). In the latter sub-sample, there were no respondents included who were involved in primary sector activities. About one third of the sample were females (32.67%). Representation of females was lesser pronounced among residents of the Municipality of Amyntaio involved in primary sector activities (6.9%; Likelihood ratio χ^2 = 10.65; p < 0.05). Age, education, and income did not significantly differ between subsamples. Mean age of respondents was 48 years (min = 18 years; max = 80 years). The majority of respondents had graduated from secondary education (55.0%), one-third had a university degree (33.6%), while 11.4% had graduated from primary education. Mean income was 1011.3 Euro (min = 100 Euro; max = 5000 Euro).

3.2 Self-reported knowledge items concerning actions in the frame of LIFE AMYBEAR

Respondents were requested to record their self-reported knowledge across a series of items concerning actions in the frame of LIFE AMYBEAR (Tables 1-9). Overall, respondents were more knowledgeable for items referring to actions in LIFE AMYBEAR which have developed more (e.g., number of bears, Bear Emergency Teams, interventions in the road network, and electric fences) and less knowledgeable for items referring to actions which have not yet fully developed (e.g., anti-poison first aid kit, bear-proof garbage bins, bear-friendly products/services, and the diffusion of tourist flows). For the latter items, more than half of all subsamples stated that their knowledge was not sufficient.

Number of bears in the region and interventions in the road network for all subsamples, as well as Bear Emergency Teams for residents occupied in the primary sector and residents in Amyntaio, are the items which need to be especially pronounced in future communication campaigns.

Residents of Florina recorded relatively lower percentages of "sufficient" self-reported knowledge across items compared to residents in Amyntaio, which may already indicate some effect of diffusion of knowledge and information concerning the project among residents in Amyntaio. The same is valid for employees of the Forest Service in the case of Bear Emergency Teams, for which more than half of the subsample stated that their knowledge was sufficient (highest percentage for this code among sub-samples). Across items, employees of the Forest Service recorded relatively increased self-reported knowledge, while respondents involved in primary sector activities recorded relatively decreased knowledge. However, standard deviation of "sufficient" self-reported knowledge was highest for employees of the Forest Service. In this case, there seem to be varying needs of targeted communication campaigns, especially with regard to knowledge items which have not yet developed fully as actions in the frame of LIFE AMYBEAR (e.g., anti-poison first aid kit; bear-proof garbage bins; bear-friendly products/services; diffusion of tourist flows).

Correlations between items revealed a pattern of covariance for damage prevention methods, namely, electric fences and livestock guarding dogs (Spearman's rho = 0.52, p < 0.001). The same was valid for items referring to dogs, namely, livestock guarding dogs and the anti-poison first aid kit (Spearman's rho = 0.53, p < 0.001).

Table 1. Self-reported knowledge for number of bears in the region

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	57.1%	39.3%	3.6%
Residents in the Municipality of Amyntaio	25.6%	51.3%	23.1%
Employees of the Forest Service	33.3%	40.7%	25.9%
Residents in the Municipality of Florina	33.3%	62.2%	4.4%

Note: Likelihood ratio χ^2 = 18.04, p < 0.01.

Table 2. Self-reported knowledge for Bear Emergency Teams

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	46.4%	50.0%	3.6%
Residents in the Municipality of Amyntaio	34.2%	47.4%	18.4%
Employees of the Forest Service	18.5%	29.6%	51.9%
Residents in the Municipality of Florina	51.1%	35.6%	13.3%

Note: Likelihood ratio χ^2 = 24.32, p < 0.001.

Table 3. Self-reported knowledge for interventions in the road network

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	35.7%	57.1%	7.1%
Residents in the Municipality of Amyntaio	44.7%	39.5%	15.8%
Employees of the Forest Service	40.7%	37.0%	22.2%
Residents in the Municipality of Florina	42.2%	44.4%	13.3%

Note: Likelihood ratio χ^2 = 4.17, non-significant.

Table 4. Self-reported knowledge for electric fences

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	50.0%	35.7%	14.3%
Residents in the Municipality of Amyntaio	42.1%	31.6%	26.3%
Employees of the Forest Service	48.1%	33.3%	18.5%
Residents in the Municipality of Florina	51.1%	40.0%	8.9%

Note: Likelihood ratio χ^2 = 4.78, non-significant.

Table 5. Self-reported knowledge for livestock guarding dogs

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	42.9%	35.7%	21.4%
Residents in the Municipality of Amyntaio	52.6%	26.3%	21.1%
Employees of the Forest Service	55.6%	25.9%	18.5%
Residents in the Municipality of Florina	66.7%	22.2%	11.1%

Note: Likelihood ratio χ^2 = 4.73, non-significant.

Table 6. Self-reported knowledge for anti-poison first aid kit

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	57.1%	25.0%	17.9%
Residents in the Municipality of Amyntaio	57.9%	21.1%	21.1%
Employees of the Forest Service	74.1%	25.9%	0.0%
Residents in the Municipality of Florina	73.3%	20.0%	6.7%

Note: Likelihood ratio χ^2 = 12.27, non-significant.

Table 7. Self-reported knowledge for bear-proof garbage bins

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	57.1%	28.6%	14.3%
Residents in the Municipality of Amyntaio	52.6%	28.9%	18.4%
Employees of the Forest Service	63.0%	18.5%	18.5%
Residents in the Municipality of Florina	82.2%	15.6%	2.2%

Note: Likelihood ratio χ^2 = 12.96, p < 0.05.

Table 8. Self-reported knowledge for bear-friendly products/services

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	58.6%	31.0%	6.9%
Residents in the Municipality of Amyntaio	57.1%	19.0%	14.3%
Employees of the Forest Service	74.1%	18.5%	7.4%
Residents in the Municipality of Florina	73.9%	19.6%	2.2%

Note: Likelihood ratio χ^2 = 7.14, non-significant.

Table 9. Self-reported knowledge for diffusion of tourist flows

	My knowledge is not sufficient	I know some things but I wish to learn more	My knowledge is sufficient
Respondents involved in primary sector activities	53.6%	39.3%	7.1%
Residents in the Municipality of Amyntaio	52.6%	34.2%	13.2%
Employees of the Forest Service	70.4%	29.6%	0.0%
Residents in the Municipality of Florina	53.3%	37.8%	8.9%

Note: Likelihood ratio χ^2 = 7.00, non-significant.

3.3 Stakeholder interaction and trust

Responses for stakeholder interaction and trust are reported in Tables 10 and 11, respectively. Respondents were asked to record with which social actors they discuss issues about bears and whom they trust when discussing issues about bears. A first major finding is that respondent subsamples interacted and trusted more their own group. Percentages for discussion about the bear were highest among respondents involved in primary sector activities for farmers, stock breeders, and bee keepers (Table 10). The same was valid for employees of the Forest Service. Overall, farmers, stock breeders, and bee keepers together with hunters received the highest percentages among social actors for interaction and trust when it comes to the bear issue. For the entire sample, a cluster analysis showed that these same groups were strongly linked in participant responses both in terms of interaction (Figure 1) as well as in terms of trust (Figure 2). All these findings indicate the strong interrelation of the above four groups as far as social interaction in the study area and trust among stakeholders are concerned.

Table 10. Discussion between stakeholders

	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Likelihood ratio χ^2
Representatives in local authorities	40.7%	45.0%	33.3%	26.1%	3.77ns
Farmers	96.3%	80.0%	92.6%	71.7%	10.66*
Stock breeders	88.9%	92.5%	92.6%	80.4%	3.65ns
Bee keepers	81.5%	90.0%	85.2%	71.7%	5.08ns
Employees of the Forest Service	33.3%	35.0%	92.6%	65.2%	32.38***
Hunters	77.8%	75.0%	88.9%	80.4%	2.21ns
Residents occupied in tourism	25.9%	27.5%	29.6%	30.4%	0.21ns
Visitors	37.0%	42.5%	77.8%	56.5%	11.89**
Members of environmental NGOs	25.9%	35.0%	51.9%	47.8%	5.45ns

Note: Questionnaire item: "Do you ever discuss issues referring to bears with any of the following social actors?"; ns = non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 11. Trust between stakeholders

	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Likelihood ratio χ^2
Representatives in local authorities	11.1%	35.0%	14.8%	22.2%	6.58ns
Farmers	55.6%	72.5%	66.7%	52.2%	4.50ns
Stock breeders	66.7%	72.5%	70.4%	60.9%	1.47ns
Bee keepers	55.6%	80.0%	77.8%	55.6%	8.93*
Employees of the Forest Service	18.5%	47.5%	85.2%	60.0%	27.66***
Hunters	40.7%	62.5%	48.1%	55.6%	3.47ns
Residents occupied in tourism	11.1%	30.8%	7.4%	31.8%	10.24*
Visitors	7.4%	33.3%	33.3%	30.4%	8.26*
Members of environmental NGOs	18.5%	41.0%	51.9%	42.2%	7.38ns

Note: Questionnaire item: "How much do you trust the following social actors when discussing with them about bears?"; ns = non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
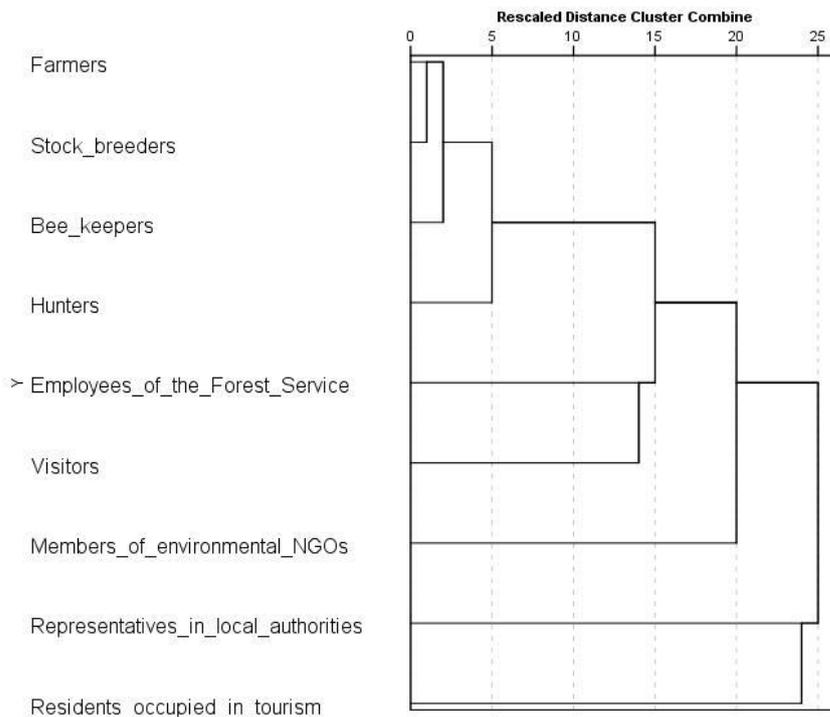
Figure 1. Cluster analysis of social actors for discussion about issues referring to the bear (Hierarchical cluster analysis; between-groups linkage cluster method; dice measure).
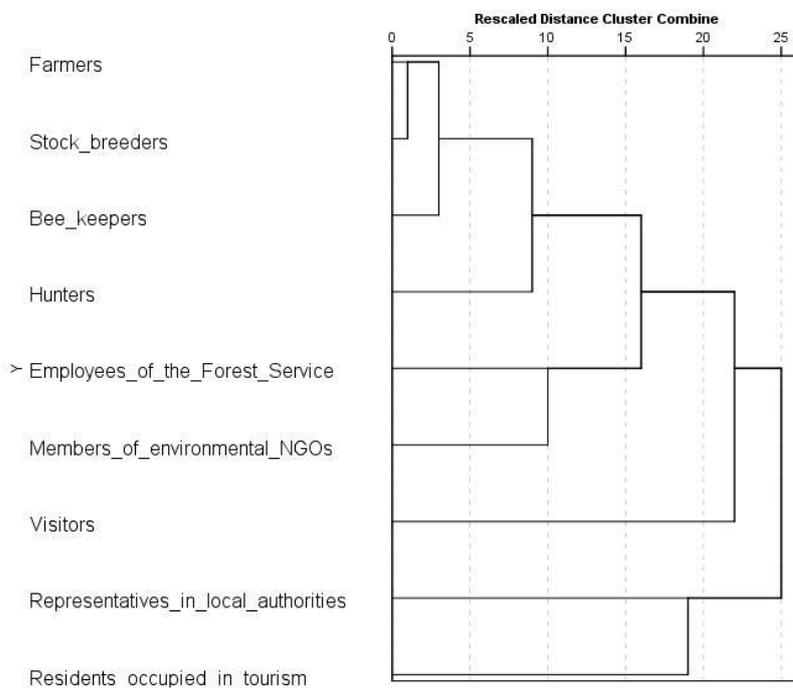

Figure 2. Cluster analysis of social actors for trust about issues referring to the bear (Hierarchical cluster analysis; between-groups linkage cluster method; dice measure).

3.4 Scale of respondent attitudes

Questionnaire items

Participants were asked to provide their responses across 26 questionnaire items rated along a 5-point Likert scale. Average responses for each subsample are presented in Table 12. Overall, there were average values which showed unanimous and substantial convergence with the aims of LIFE AMYBEAR, for instance, perceived effectiveness of damage prevention methods (Item 6: "Those who use electric fences suffer less damage from bears"; Item 9: "Good dogs may be effective in protecting livestock from bears"). However, there was also general agreement with Item 2, which highlighted a widespread counter-motive for claiming compensation, namely, paperwork ("There is lot of paperwork for claiming compensation after being damaged by bears"). Many items signifying risk perception scored quite high, for instance, use of illegal poisoned baits (Item 11: "Illegal poisoned baits may cause very significant damage"), bears approaching human settlements (Item 21: "Threat from bears for local residents is quite high, even within villages"), and traffic accidents (Item 22: "Threat for traffic accidents with bears is high in the road network of the region"). A last group of items with relatively increased average related to perceived trends for individual bears or their population (Item 15: "Bears are today more accustomed to people as compared to the past"; Item 16: "Bear are today different from past specimen"; Item 18: "The number of bears is steadily increasing in the region in the last years").

Table 12. Average values for each respondent subsample per questionnaire item

	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Kruskal-Wallis Chi-square
1. No damage caused by bears is tolerable by local residents	0.21	0.10	0.11	0.04	0.41
2. There is lot of paperwork for claiming compensation after being damaged by bears	1.00	0.73	0.70	0.80	1.21
3. Local residents do not claim compensation from damage they suffered from bears	0.10	0.13	-0.04	0.04	1.09
4. Electric fences protect producers effectively from bears	0.34	0.50	0.52	0.31	1.17
5. Electric fences cannot deter bears from causing damage	-0.31	-0.13	0.11	-0.20	2.72
6. Those who use electric fences suffer less damage from bears	0.59	0.80	0.78	0.51	2.77
7. There are good dogs in the region for guarding livestock	0.34	0.20	-0.15	-0.17	7.25
8. Local residents cooperate for keeping good dogs in the region	0.00	-0.10	-0.15	-0.18	0.93
9. Good dogs may be effective in protecting livestock from bears	0.66	0.53	0.78	0.33	4.95
10. There are many people who still use illegal poisoned baits in the region	0.17	0.25	0.41	0.29	0.82
11. Illegal poisoned baits may cause very significant damage	1.03	1.15	1.22	1.20	1.17
12. Nobody refers incidents of llegal poisoned baits to competent authorities	0.17	0.25	0.22	0.29	0.21
13. Bears cause much threat to hunters in the region	-0.07	-0.18	0.59	0.11	7.72
14. Hunters adapt their practices to bear presence	0.08	0.22	0.04	0.10	0.50
15. Bears are today more accustomed to people as compared to the past	0.80	0.73	1.07	0.82	2.62
16. Bears are today different from past specimen	0.72	0.53	0.67	0.64	3.21
17. There are some people who systematically release bears in the region	0.08	-0.07	-0.37	-0.29	4.59
18. The number of bears is steadily increasing in the region in the last years	0.72	0.63	0.89	0.69	0.56
19. The bears in the region should not increase above their current number	0.60	0.37	0.37	0.16	2.97
20. Bears today are more than the region can sustain	0.48	0.27	0.63	0.36	2.54
21. Threat from bears for local residents is quite high, even within villages	0.52	0.68	1.00	0.40	5.53
22. Threat for traffic accidents with bears is high in the road network of the region	1.24	0.80	1.19	1.07	4.44
23. Visitors in the area face significant threat from bear presence	0.12	-0.20	0.52	-0.20	10.49*
24. Bear presence may amplify the tourist flow in the area	0.32	0.44	0.26	0.47	1.23
25. Bear presence may utilized for increasing the added value of agricultural products	-0.12	0.15	-0.15	0.11	3.64
26. Bear presence may offer substantial development opportunities in the area	0.16	0.29	0.15	0.60	6.87

Note: ns = non-significant; * p < 0.05.

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Concerning differences between subsamples, the only significant difference was found for Item 23 (Visitors in the area face significant threat from bear presence) (Kruskal-Wallis Chi-square = 10.49, p < 0.05), where employees of the Forest Service presented significantly higher mean value than residents in Amyntaio (Mann-Whitney Z = -2.73, p < 0.01) and residents in Florina (Mann-Whitney Z = -2.85, p < 0.01). There were several other significant differences when subsamples were compared in pair of two, and which all engaged employees of the Forest Service. For instance, employees of the Forest Service had significantly higher means than respondents employed in the primary sector and residents in Florina for Item 21 (Threat from bears for local residents is quite high, even within villages; Mann-Whitney Z = -2.11, p < 0.05; and Mann-Whitney Z = -2.03, p < 0.05, respectively) and they had significantly lower means that residents in Florina for Item 26 (Bear presence may offer substantial development opportunities in the area; Mann-Whitney Z = -2.34, p < 0.05). In addition, employees of the Forest Service had significantly higher mean value than respondents occupied in the primary sector and residents in Amyntaio for Item 13 (Bears cause much threat to hunters in the region; Mann-Whitney Z = -2.38, p < 0.05; and Mann-Whitney Z = -2.72, p < 0.05, respectively). Finally, employees of the Forest Service had a significantly lower average value than respondents occupied in the primary sector for Item 7 (There are good dogs in the region for guarding livestock; Mann-Whitney Z = -1.98, p < 0.05). It should be underlined that there were no significant differences between respondents occupied in primary sector activities and residents in Amyntaio, on the one hand, as well as residents in Amyntaio and residents in Florina, on the other.

Factors
Factor analysis revealed a subset of items (17 out of 26 items) grouped in seven factors (Table 13), seven dimensions of quite coherent responses of participants. Factor 1 referred to development opportunities associated to bears (Item 24: "Bear presence may amplify the tourist flow in the area"; Item 25: "Bear presence may utilized for increasing the added value of agricultural products"; Item 26: "Bear presence may offer substantial development opportunities in the area"), while Factor 2 addressed perceived threat from bears (Item 21: "Threat from bears for local residents is quite high, even within villages"; Item 22: "Threat for traffic accidents with bears is high in the road network of the region"; Item 23: "Visitors in the area face significant threat from bear presence"). Factors 3 (Item 4: "Electric fences protect producers effectively from bears"; Item 6: "Those who use electric fences suffer less damage from bears") and 5 (Item 7: "There are good dogs in the region for guarding livestock"; Item 8: "Local residents cooperate for keeping good dogs in the region") referred to damage prevention measures (electric fences and livestock guarding dogs, respectively), while Factor 4 provided evidence that the re-introduction narrative is widely used in the project area (Item 15: "Bears are today more accustomed to people as compared to the past"; Item 16: "Bears are today different from past specimen"; Item 17: "There are some people who systematically release bears in the region"). Factor 6 addressed the reaction of local people after damage caused by bears (Item 1: "No damage caused by bears is tolerable by local residents"; Item 2: "There is lot of paperwork for claiming compensation after being damaged by bears") and Factor 7 referred to the use of poisoned baits (Item 10: "There are many people who still use illegal poisoned baits in the region"; Item 11: "Illegal poisoned baits may cause very significant damage"). The only significant difference across subsamples was found for Factor 7 on perceived threat (Table 14; Kruskal-Wallis Chi-square = 4.21, p < 0.05), with employees of the Forest Service having significantly higher scores than residents in Amyntaio (Mann-Whitney Z = -2.49, p < 0.05) and residents in Florina (Mann-Whitney Z = -2.46, p < 0.05). As has been observed for separate items, there were no significant differences between respondents occupied in primary sector activities and residents in Amyntaio, as well as residents in Amyntaio and residents in Florina.

Table 13. Factor loadings and Cronbach's alpha values

	Factor 1 (15.00)	Factor 2 (12.57)	Factor 3 (10.89)	Factor 4 (10.14)	Factor 5 (9.77)	Factor 6 (8.12)	Factor 7 (7.56)	Cronbach's alpha
1. No damage caused by bears is tolerable by local residents						0.75		0.51
2. There is lot of paperwork for claiming compensation after being damaged by bears						0.82		
4. Electric fences protect producers effectively from bears			0.85					0.76
6. Those who use electric fences suffer less damage from bears			0.86					
7. There are good dogs in the region for guarding livestock					0.74			0.60
8. Local residents cooperate for keeping good dogs in the region					0.83			
10. There are many people who still use illegal poisoned baits in the region							0.90	0.50
11. Illegal poisoned baits may cause very significant damage							0.62	
15. Bears are today more accustomed to people as compared to the past				0.67				0.51
16. Bears are today different from past specimen				0.83				
17. There are some people who systematically release bears in the region				0.58				
21. Threat from bears for local residents is quite high, even within villages		0.77						0.76
22. Threat for traffic accidents with bears is high in the road network of the region		0.83						
23. Visitors in the area face significant threat from bear presence		0.78						
24. Bear presence may amplify the tourist flow in the area	0.80							0.83
25. Bear presence may utilized for increasing the added value of agricultural products	0.86							
26. Bear presence may offer substantial development opportunities in the area	0.84							

Note: Percentage of variance explained is presented in parenthesis in the first row; cumulative percentage of variance explained = 74.05; Kaiser-Meyer-Olkin measure of sampling adequacy = 0.64, p < 0.001.

Table 14. Factor scores across subsamples

	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Kruskal-Wallis Chi-square
Factor 1: Development opportunities	0.36	0.88	0.26	1.16	0.56ns
Factor 2: Perceived threat	1.88	1.29	2.70	1.27	2.23*
Factor 3: Electric fences	0.93	1.30	1.30	0.84	4.21ns
Factor 4: Re-introduction narrative	1.60	1.17	1.37	1.18	0.83ns
Factor 5: Livestock guarding dogs	0.34	0.10	-0.30	-0.38	2.26ns
Factor 6: Damage	1.21	0.82	0.81	0.84	8.32ns
Factor 7: Poisoned baits	1.21	1.41	1.63	1.45	4.70ns

Note: ns = non-significant; * $p < 0.05$.

Correlations between factors are presented in Table 15. Most significant correlations were observed for Factor 2 on perceived threat. For instance, perceived threat (Factor 2) was positively correlated with the re-introduction narrative (Factor 4; Spearman's rho = 0.22, $p < 0.01$) and damage (i.e., reluctance to tolerate damage caused by bears or claim compensation for damage caused by bears, Factor 6; Spearman's rho = 0.37, $p < 0.001$).

Table 15. Factor correlations

	Factor 2: Perceived threat	Factor 3: Electric fences	Factor 4: Re-introduction narrative	Factor 5: Livestock guarding dogs	Factor 6: Damage	Factor 7: Poisoned baits
Factor 1: Development opportunities	-0.30***	-0.15ns	-0.07ns	-0.02ns	-0.21*	0.19*
Factor 2: Perceived threat		0.06ns	0.22**	0.02ns	0.37***	-0.19*
Factor 3: Electric fences			0.10ns	0.01ns	0.08ns	0.12ns
Factor 4: Re-introduction narrative				-0.11ns	0.24**	-0.08ns
Factor 5: Livestock guarding dogs					0.01ns	-0.06ns
Factor 6: Damage						-0.15ns

Note: Spearman's rho correlations are displayed; ns = non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

In addition, perceived threat (Factor 2) was negatively correlated with poisoned baits (i.e., a negative attitude towards the use of poisoned baits in the region, Factor 7; Spearman's rho = -0.19, $p < 0.05$). This means that the more the perceived threat, the less the inclination of

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respondents to condemn the use of poisoned baits. The last correlation of Factor 2 on perceived threat was with development opportunities (Factor 1; Spearman's rho = -0.30, p < 0.001) and that was another negative correlation. This finding implied that the more the perceived threat the less the development opportunities that respondents associated with bears. Development opportunities (Factor 1) was negatively correlated with reluctance to tolerate damage or claim compensation for damage caused by bears (Factor 6; Spearman's rho = -0.21, p < 0.05) and positively correlated with condemning poisoned baits (Factor 7; Spearman's rho = 0.19, p < 0.05). A last significant correlation in Table 15 was observed between the re-introduction narrative (Factor 4) and reluctance to tolerate damage or claim compensation for damage caused by bears (Factor 6; Spearman's rho = 0.24, p < 0.01). It should be noted that factor scores for damage prevention measures (electric fences in Factor 3 and livestock guarding dogs in Factor 5) did not significantly correlate with any other factor.

Items on bear numbers

A last correlational analysis was performed for two items reflecting the attitudes of respondents towards bear numbers in the region (Item 19: "The bears in the region should not increase above their current number"; Item 20: "Bears today are more than the region can sustain"). Participant responses for these two items were correlated with factor scores for all factors (Tables 16 and 17). Development opportunities (Factor 1) were significantly and negatively correlated for both items 19 and 20 only in the case of residents of Florina. Namely, those who sought development opportunities in relation to bear presence in the area were more tolerant to increasing bar numbers. This finding reflects a potential controversy and polarization in attitudes for those who seek opportunities associated with bears (and who may not object an increase in bear numbers), on the one hand, and those who do not, on the other. Another finding associated with this subsample was the positive correlation of the re-introduction narrative (Factor 4) with both items only for residents in Florina (Tables 16 and 17). As was formerly also reported, electric fences (Factor 3) and livestock guarding dogs (Factor 5) were not correlated to attitudes towards bear numbers. This indicates that the most significant damage prevention methods do not have an effect on these attitudes of subsamples.

Table 16. Spearman's rho correlations between Item 19 ("The bears in the region should not increase above their current number") and factor scores

	Respondents involved in primary sector	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina
Factor 1: Development opportunities	-.347ns	-.173ns	-.077ns	-.542***
Factor 2: Perceived threat	.416*	.307ns	.224ns	.690***
Factor 3: Electric fences	.122ns	.261ns	.340ns	.114ns
Factor 4: Re-introduction narrative	.165	-.073	.196	.371*
Factor 5: Livestock guarding dogs	.135ns	-.101ns	.223ns	-.235ns
Factor 6: Damage	.456*	.229ns	.461*	.609***
Factor 7: Poisoned baits	-.495*	-.332*	-.419*	-.218ns

Note: ns = non-significant; * p < 0.05; ** p < 0.01; *** p < 0.001.

Reluctance to tolerate damage caused by bears or reluctance to claim compensation for this type of damage (Factor 6) was another factor which was singled out with significant positive correlations for respondents employed in the primary sector in the case of item 19 (Table 16) and for employees of the Forest Service and residents in Florina for both items 19 and 20 (Tables 16 and 17). Less tolerance to damage was linked to less tolerance for bear numbers. Condemning poisoned baits (Factor 7) was correlated attitudes towards bear numbers and this was especially pronounced for subsamples in the case of item 19 (Table 16). Correlation coefficients were here all negative, implying that a distancing from the use of poisoned baits was accompanied with more tolerance for bear numbers. Perceived threat (Factor 2) revealed strong correlations with attitudes towards bear numbers, especially for item 20 (Table 17), where correlations were significant for all subsamples.

Table 17. Spearman's rho correlations between Item 20 ("Bears today are more than the region can sustain") and factor scores

	Respondents involved in primary sector	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina
Factor 1: Development opportunities	-.309ns	-.284ns	-.367ns	-.339*
Factor 2: Perceived threat	.610**	.627***	.573**	.648***
Factor 3: Electric fences	.033ns	.300ns	.365ns	.232ns
Factor 4: Re-introduction narrative	.135ns	.050ns	.358ns	.465**
Factor 5: Livestock guarding dogs	-.081ns	-.107ns	.014ns	.042ns
Factor 6: Damage	.353ns	.244ns	.632***	.620***
Factor 7: Poisoned baits	-.345ns	-.467**	-.087ns	-.154ns

Note: ns = non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

A multinomial logistic regression for items 19 ("The bears in the region should not increase above their current number") and 20 ("Bears today are more than the region can sustain") was performed using all questionnaire items (main effects; stepwise entry method). Both models presented adequate fit indices: For Item 19 (-2Log likelihood = 94.20, $p < 0.001$; Nagelkerke Pseudo R Square = 0.69; percentage of cases correctly classified = 76.2%), tolerance to bear numbers decreased with Factor 2 on perceived threat (-2 Log Likelihood of Reduced Model = 151.63, Chi-square = 57.43, $p < 0.001$), for males as compared to females (-2 Log Likelihood of Reduced Model = 102.61, Chi-square = 8.40, $p < 0.05$), and for primary or secondary education level as compared to higher education (-2 Log Likelihood of Reduced Model = 120.80, Chi-square = 26.60, $p < .001$).

For item 20 (-2Log likelihood = 73.70, $p < 0.001$; Nagelkerke Pseudo R Square = 0.79; percentage of cases correctly classified = 81.0%), tolerance to bear numbers decreased with perceived threat (-2 Log Likelihood of Reduced Model = 148.91, Chi-square = 75.21, $p < 0.001$), for respondents who discussed with bee keepers (-2 Log Likelihood of Reduced Model = 91.46, Chi-square = 17.76, $p < 0.001$), for respondents who did not trust members of environmental non-governmental members (-2 Log Likelihood of Reduced Model = 82.28, Chi-square = 8.58, $p < 0.05$), and for older respondents (over 51 years) as compared to respondents under 50 years (-2 Log Likelihood of Reduced Model = 85.16, Chi-square = 11.46, $p < 0.05$).

3.5 Word associations

Respondents were requested to list the first five words that come in their mind for the stimulus term "bear". Word associations are listed in order of decreasing frequency in Table 18. There were 30 associations included, which surpassed a threshold of 5 iterations in the total sample. We can observe some negative connotations in the first half of the list ("Fear"; "Danger"; "Damage"; "Dangerous") but most associations in this half are descriptive of the species itself ("Wild"; "Strength"; "Animal"; "Big"; "Brown") or its biotope ("Mountain", "Nature"). A same pattern of negative connotations ("Accident"; "Attack;" "Terror"; "Panic"; "Disaster") and descriptives (e.g., "Forest"; "Mammal") can also be observed in the second half of the list. There were also three positive connotations: "Beauty"; "Protection"; "Admiration".

Table 18. Word associations in order of decreasing frequency.

Word associations	Total frequency	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Likelihood ratio chi-square
Fear	32.8%	43.5%	33.3%	42.3%	20.0%	5.41ns
Arcturos	23.4%	13.0%	25.6%	26.9%	25.0%	1.90ns
Wild	22.7%	30.4%	7.7%	30.8%	27.5%	8.41*
Nymfaio	13.3%	4.3%	23.1%	11.5%	10.0%	5.31ns
Danger	12.5%	4.3%	2.6%	19.2%	22.5%	10.82*
Strength	11.7%	17.4%	7.7%	3.8%	17.5%	4.51ns
Animal	11.7%	17.4%	12.8%	7.7%	10.0%	1.26ns
Big	11.7%	21.7%	2.6%	19.2%	10.0%	7.64ns
Beauty	11.7%	4.3%	15.4%	23.1%	5.0%	6.80ns
Damage	10.9%	8.7%	7.7%	11.5%	15.0%	1.22ns
Mountain	10.9%	8.7%	10.3%	0.0%	20.0%	8.96*
Dangerous	10.9%	4.3%	7.7%	19.2%	12.5%	3.40ns
Brown	10.9%	0.0%	7.7%	7.7%	22.5%	10.47*
Nature	10.9%	4.3%	10.3%	7.7%	17.5%	3.15ns
Forest	9.4%	13.0%	10.3%	0.0%	12.5%	5.90ns
Honey	9.4%	8.7%	2.6%	3.8%	20.0%	8.25*
Mammal	8.6%	13.0%	2.6%	7.7%	12.5%	3.66ns
Protection	8.6%	0.0%	12.8%	11.5%	7.5%	5.24ns
Accident	7.8%	0.0%	7.7%	3.8%	15.0%	6.74ns
Attack	7.8%	4.3%	5.1%	11.5%	10.0%	1.58ns
Terror	7.0%	4.3%	12.8%	0.0%	7.5%	5.73ns
Admiration	6.3%	4.3%	5.1%	15.4%	2.5%	7.17ns
Panic	6.3%	8.7%	0.0%	23.1%	0.0%	18.17***
Cubs	5.5%	8.7%	5.1%	3.8%	5.0%	0.57ns
Hunter	4.7%	17.4%	5.1%	0.0%	0.0%	11.41*
Disaster	3.9%	4.3%	10.3%	0.0%	0.0%	8.21*
Awe	3.9%	0.0%	5.1%	7.7%	2.5%	3.00ns
Volume	3.9%	0.0%	5.1%	3.8%	5.0%	2.09ns
Environment	3.9%	0.0%	5.1%	0.0%	7.5%	5.14ns
Food	3.9%	0.0%	2.6%	7.7%	5.0%	2.94ns

Note: ns = non-significant; * p < 0.05; ** p < 0.01; *** p < 0.001.

Cluster analysis was employed to examine the linkages between associations for each subsample (Figures 3-6; between-groups linkage cluster method; dice measure for binary variables). In Figure 3, which presented the narrative reconstruction of the representation of "bear" for residents occupied in primary sector activities, there were no positive connotations included, while there was a separate cluster of negative associations formed (last cluster on the bottom of the tree: "Damage"; "Fear"; "Panic").

In Figure 4 with the dendrogram for residents in Amyntaio, there were two discrete clusters of associations with negative connotations. The first was comprised by the terms "Dangerous"; "Disaster"; "Accident", which refer to the threat of traffic accidents in an urban or semi-urban landscape. The second cluster with negative connotations included the terms "Attack", "Fear", "Hunter", which addressed the odds of suffering an attack by a bear while hunting. Positive connotations coexisted with negative ones in two mixed clusters. The first included the terms "Animal"; "Protection"; "Forest"; "Damage"; Environment", and the second included the terms "Awe"; "Terror"; "Admiration"; "Beauty".

Mixed clusters of associations with both positive and negative connotations were the norm in the dendrogram of employees of the Forest Service (Figure 5). The first mixed cluster involved the associations "Animal"; "Protection"; "Wild"; "Dangerous". Another cluster was formed by the terms "Admiration", "Panic"; "Fear"; "Danger"; "Awe". The last mixed cluster in this case included the terms "Damage"; "Nymfaio"; "Attack"; "Arcturos"; "Beauty"; "Nature".

Figure 6 presents the dendrogram for residents in Florina. Here we have a separate arrangement of negative and positive connotations in two discrete clusters for each case. Specifically, the first cluster with negative connotations included the terms "Volume"; "Fear"; "Terror"; and second cluster the terms "Damage"; "Danger"; "Attack". With regard to positive connotations, the first cluster involved the associations "Animal"; "Environment"; "Protection"; and the second involved the associations "Cubs"; "Nature"; "Honey"; "Beauty".
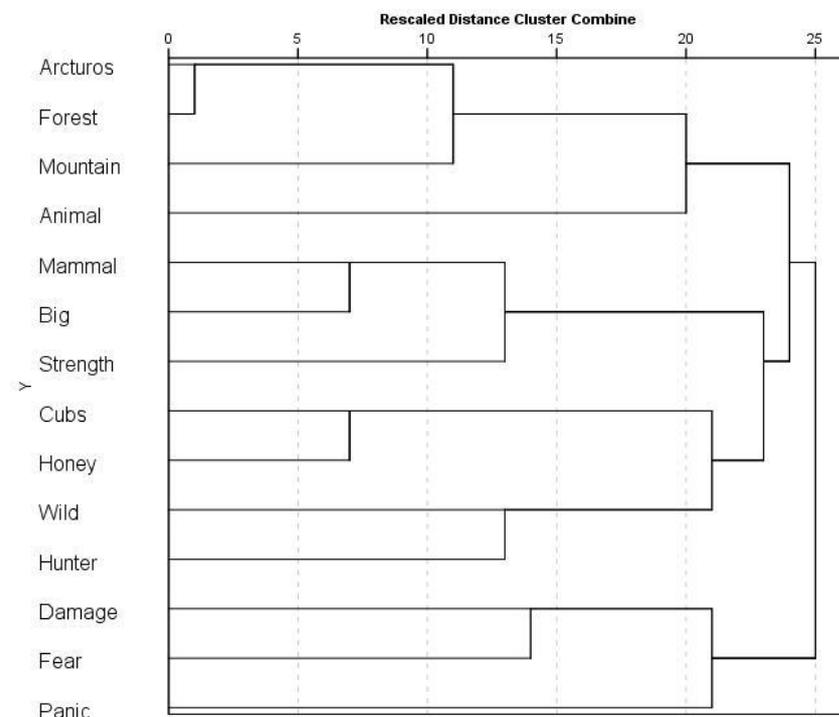

Figure 3. Narrative reconstruction of the representation of "bear" for residents of the project area involved in primary sector activities
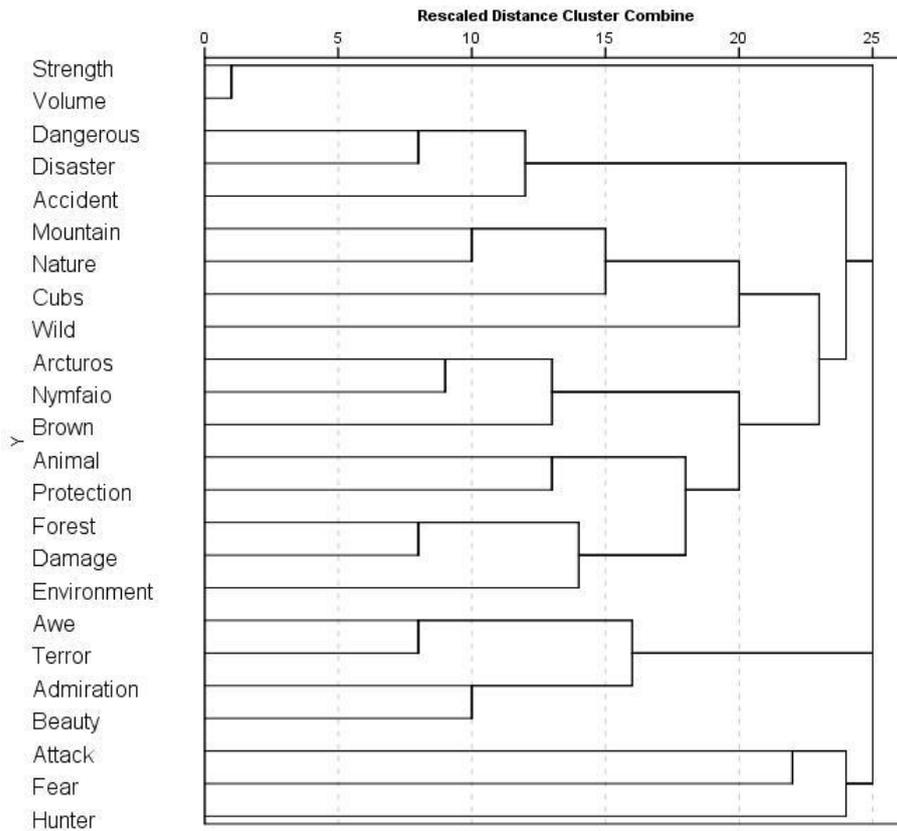
Figure 4. Narrative reconstruction of the representation of "bear" for residents of Amyntaio
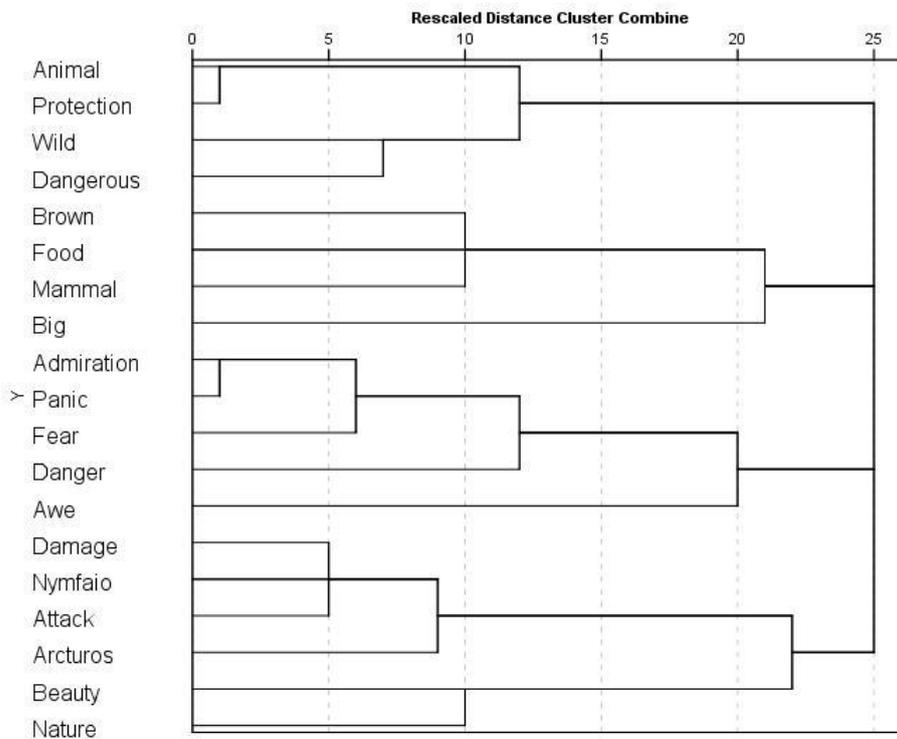

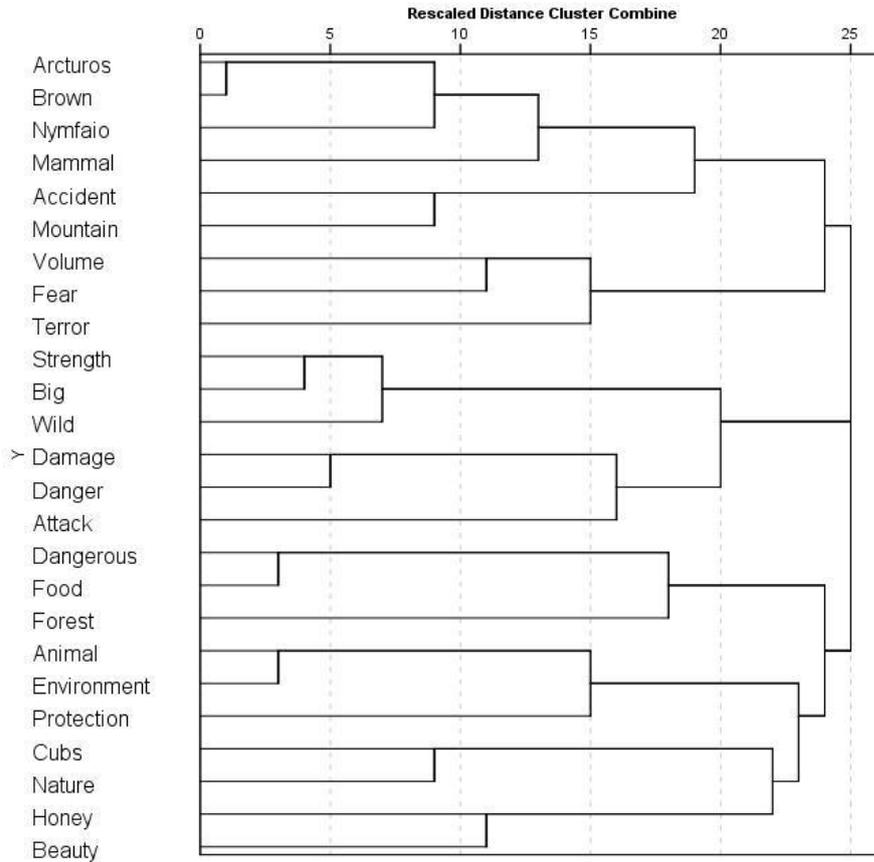Figure 5. Narrative reconstruction of the representation of "bear" for employees of the Forest Service

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Figure 6. Narrative reconstruction of the representation of "bear" for residents of Florina

3.6 Actual consensus and consensus estimates

Respondents were asked if they were willing to participate in two hypothetical events, namely, a stakeholder meeting in the region focusing on the bear and a programme on bear protection. Apart from their intention, respondents were also asked to provide an estimate of the percentage of local residents who would reply affirmatively to both these intention items. From the responses of participants we estimated actual consensus as well as consensus estimates, which were derived as a deviation of respondent estimates from actual estimates.

Actual consensus for both items is presented in Table 19. Percentages were quite high and amounted to 88.0% of the total sample for the "Stakeholder meeting on the bear" and 74.6% of the total sample for the "Bear protection programme". In the first item, there was no significant difference between subsamples, while actual consensus dropped significantly in the case of respondents occupied in primary sector activities for the second item (Likelihood ratio chi-square = 17.72, $p < 0.01$). It should be noted that respondents who were willing to take part in the stakeholder meeting were highly probable to also take part in the bear protection programme (Likelihood ratio chi-square = 22.89, $p < 0.01$; Cramer's V = 0.43, $p < 0.001$). The same trend was observed for each subsample separately.

Consensus estimates for both items are presented in Table 20. Since consensus estimates (percentage deviation from actual consensus) had negative signs, respondents underestimated actual consensus, and this reached over 50%. Differences in consensus estimates between subsamples were not significant. In addition, consensus estimates correlated significantly between the two items (Spearman's rho = 0.73, $p < 0.001$) and the same finding was validated for each subsample separately.

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Table 19. Actual consensus

	Total sample	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Likelihood ratio chi-square
Stakeholder meeting on the bear	88.0%	86.2%	87.5%	96.3%	84.8%	2.85ns
Bear protection programme	74.6%	51.7%	70.0%	96.3%	80.4%	17.72**

Note: ns = non-significant; * p < 0.05; ** p < 0.01; *** p < 0.001.

Table 20. Consensus estimates

	Total sample	Respondents involved in primary sector activities	Residents in the Municipality of Amyntaio	Employees of the Forest Service	Residents in the Municipality of Florina	Kruskal-Wallis chi-square
Stakeholder meeting on the bear	-50.45	-49.63	-54.33	-50.51	-47.63	1.16ns
Bear protection programme	-50.61	-59.48	-53.20	-47.87	-43.91	3.77ns

Note: Percentage deviation from actual consensus presented; ns = non-significant; * p < 0.05; ** p < 0.01; *** p < 0.001.

Another analysis was performed to investigate differences in consensus estimates between respondents who stated positive and negative intention, namely, those who were willing to take part in the event described by the items in the questionnaires and those who did not. The results of this analysis are presented in Table 21. We can see that for both items, those who would be willing to engage in the events underestimated actual consensus considerably less than those who would not be willing to participate. The same effect was observed for each subsample separately.

Table 21. Consensus estimates for respondents with positive and negative intention

	Negative intention	Positive intention	Mann-Whitney Z
Stakeholder meeting on the bear	-84.41	-46.24	-4.86***
Bear protection programme	-72.26	-44.22	-4.02***

Note: Percentage deviation from actual consensus presented; ns = non-significant; * p < 0.05; ** p < 0.01; *** p < 0.001.

When calculating errors in consensus estimates as absolute values, positive intention in for both items was linked to significantly smaller errors (Table 22).

Table 22. Absolute values of consensus estimates for respondents with positive and negative intention

	Negative intention	Positive intention	Mann-Whitney Z
Stakeholder meeting on the bear	84.40	47.24	-4.86***
Bear protection programme	72.26	48.02	-3.86***

Note: Absolute values of errors in consensus estimates presented; ns = non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

A logistic regression (forward stepwise method) was performed for both items to identify significant determinants of intention to take part in the hypothesized stakeholder meeting and the bear protection programme. Both models presented adequate fit indices: For the item on the stakeholder meeting (Nagelkerke R Square = 0.69; Hosmer and Lemeshow Chi-Square = 6.60, non-significant; percentage of cases correctly classified = 96.4%), significant determinants were the absolute error in consensus estimates (Change in -2Log likelihood if variable removed = 35.26, $p < 0.001$), self-reported knowledge for livestock guarding dogs (Change in -2Log likelihood if variable removed = 8.57, $p < 0.01$), discussion with employees of the Forest Service (Change in -2Log likelihood if variable removed = 5.20, $p < 0.05$), trust for farmers (Change in -2Log likelihood if variable removed = 9.08, $p < 0.01$), and the questionnaire attitude item 15 ("Bears are today more accustomed to people as compared to the past") (Change in -2Log likelihood if variable removed = 20.09, $p < 0.001$).

For the item on the bear protection programme (Nagelkerke R Square = 0.74; Hosmer and Lemeshow Chi-Square = 6.83, non-significant; percentage of cases correctly classified = 94.0%), significant determinants were the absolute error in consensus estimates (Change in -2Log likelihood if variable removed = 44.93, $p < 0.001$), self-reported knowledge for livestock guarding dogs (Change in -2Log likelihood if variable removed = 20.73, $p < 0.001$), self-reported knowledge for interventions in the road network (Change in -2Log likelihood if variable removed = 5.53, $p < 0.05$), discussion with bee keepers (Change in -2Log likelihood if variable removed = 9.08, $p < 0.01$), trust for hunters (Change in -2Log likelihood if variable removed = 15.05, $p < 0.001$), and subsample membership (Change in -2Log likelihood if variable removed = 31.11, $p < 0.001$).

It should be highlighted that in both models, the absolute error in consensus estimates was singled out as the first independent variable in the forward stepwise method, which reflected the importance of that determinant of respondent intentions. In addition, parameter estimates for this variable were negative, which reflected that error in consensus estimates decreases the odds of positive intention.

4. Discussion of the main findings and implications for stakeholder consultation and involvement

4.1 Information-knowledge needs for future initiatives in the project area

Number of bears in the region and interventions in the road network for all subsamples, as well as Bear Emergency Teams for residents occupied in the primary sector and residents in Amyntaio, are the information/knowledge items which need to be especially pronounced in

future communication campaigns. Although employees of the Forest Service showed relatively increased levels of self-reported knowledge, there seem to be varying needs of targeted communication campaigns for this subsample (increased standard deviation), especially with regard to knowledge items which have not yet developed fully as actions in the frame of LIFE AMYBEAR (e.g., anti-poison first aid kit; bear-proof garbage bins; bear-friendly products/services; diffusion of tourist flows). This means that outreach in the case of employees of the Forest Service should be tailored to individual needs rather than be planned and implemented as group-based.

4.2 Respondent attitudes

A major finding with regard to respondent attitudes was an endorsement of the effectiveness of damage prevention methods (electric fences and livestock guarding dogs). Another important finding was that respondents seemed to condemn the use of poisoned baits. At the same time, however, there was widespread salience of paperwork as a counter-motive for claiming compensation for damage caused by bears. Perception of threat by bears was also highlighted in several items (e.g., bears approaching human settlements; bears engaged in traffic accidents) together with a consideration of bear numbers and trends. This constellation of attitudes may on the one hand reveal a considerable convergence with main aims within the frame of LIFE AMYBEAR (e.g., damage prevention methods; targeting the use of poisoned baits) but also underlines the difficulty in addressing threats associated with bear presence across a series of topics (perceived threat; tolerance to damage caused by bears; tolerance for current bears number and trend).

Employees of the Forest Service scored significantly higher than the other subsamples for several items on perceived threat from bears. This may reflect the responsibility of the Forest Service in addressing these types of threats as well as the fact that employees of the Forest Service may be much more informed on incidents of that kind. This finding needs to be taken into account for future outreach interventions in terms of offering concrete examples of good practice in dealing with analogous incidents to employees of the Forest Service. The mixed clusters with negative and positive connotations of employees of the Forest Service in their association reservoir further stressed the contradistinction of their mandate to their increased perceived threat.

There was valid evidence that the re-introduction narrative was widely used in the project area across subsamples (Factor 4 comprised by the following items: Item 15: "Bears are today more accustomed to people as compared to the past"; Item 16: "Bears are today different from past specimen"; Item 17: "There are some people who systematically release bears in the region"). This aspect needs to inform future initiatives in terms of outreach and stakeholder consultation. The re-introduction narrative was accompanied by increased perceived threat from bears and reluctance to tolerate damage caused by bears. Given that perceived threat was also highly correlated to reluctance to tolerate damage, these three factors seem to display considerable covariation in respondent attitudes (re-introduction narrative; perceived threat; reluctance to tolerate damage). On the other hand, endorsing development opportunities related to bear presence was negatively associated to perceived threat and positively related to tolerating damage caused by bears as well as condemning the use of poisoned baits. Development opportunities and taking distance from the use of poisoned baits seem to form another solid conglomerate of respondent attitudes, which seem to contrast the former group of the re-introduction narrative, perceived threat, and intolerance to damage caused by bears.

These effects mirrored the influence of factors on respondent attitudes towards bear number and trend. Perceived threat and reluctance to tolerate damage, primarily, as well as the re-introduction narrative secondarily, led to rejection of current bear number and trend. On the other hand, development opportunities and condemning poisoned baits

led to more tolerance for current bear number and trend. It seems that there are two major priorities in terms of psycho-social determinants for tolerance towards bears. The first and most important priority is to address perceived threat and the second priority is to build on the negative disposition of the entire sample towards the use of poisoned baits. Development opportunities were connected to tolerance for bears only in the case of the subsample with residents in Florina, which also needs to be taken into account, especially for actions focusing on bear-friendly products and ecotourism development.

4.3 Interaction and trust between stakeholders

An insightful effect was revealed by the multinomial regression analysis on perceived capacity of the region for hosting bears (Item 20: ("Bears today are more than the region can sustain"), where lack of trust to members of environmental non-governmental organizations featured as a significant determinant. This finding is crucial for any outreach initiative undertaken by environmental NGOs in the project area and needs to be incorporated in scheduling and implementing outreach campaigns as well as structuring stakeholder consultation and involvement. On the other hand, farmers, stock breeders, and bee keepers together with hunters presented the strongest ties among social actors for both interaction and trust when it came to the bear issue.

4.4 Actual consensus and consensus estimates

Actual consensus for participation of respondents employed in the primary sector in a hypothetical bear protection programme was significantly lower than actual consensus displayed by the other subsamples. The reluctant and ambivalent position of residents occupied in the primary sector was further marked by the absence of any positive connotation in their word associations with the stimulus term "bear". However, actual consensus among respondents employed in the primary sector for taking part in a hypothetical bear protection programme was still over half of their subsample. In addition, all respondent subsamples underestimated actual consensus for stakeholder consultation and collaboration for bear conservation. Indeed, it was shown that negative intention was linked to increased errors in consensus estimates, while these errors were the most significant predictors of negative intention. It is expected that future initiatives for stakeholder consultation and involvement will offer multifarious opportunities for interaction among stakeholders so that actual consensus becomes more intelligible for participants. Indeed, initiatives of that kind need to be scheduled exactly to take advantage of collaborative action and calls for building on the actual consensus in the project area, which considerably outweighs the much more conservative consensus estimates of respondents. Since information/knowledge motives (e.g., learning more about livestock guarding dogs), social interaction and trust among various stakeholder groups all featured among significant determinants of actual consensus, these parameters also need to be incorporated in scheduling and executing future initiatives.

5. APPENDIX. Questionnaire (in Greek)

Αξιότιμε Κύριε/Αξιότιμη Κυρία,

Το ερωτηματολόγιο που έχετε παραλάβει διανέμεται στο πλαίσιο της Δράσης C1 (Διαβούλευση και συμμετοχή των ενδιαφερόμενων μερών) του προγράμματος LIFE AMYBEAR (LIFE15 NAT/GR/001108, http://www.lifeamybear.eu/). Το πρόγραμμα επικεντρώνεται σε δράσεις βελτίωσης της αλληλεπίδρασης ανθρώπου – καφέ αρκούδας (*Ursus arctos*) και υλοποιείται από μια κοινοπραξία εταίρων που συγκροτείται από την Αποκεντρωμένη Διοίκηση Ηπείρου – Δυτικής Μακεδονίας, το Δήμο Αμυνταίου, την Περιβαλλοντική Οργάνωση για την Άγρια Ζωή και τη Φύση – ΚΑΛΛΙΣΤΩ και την εταιρεία Lever Σύμβουλοι Ανάπτυξης.

Το ερωτηματολόγιο περιλαμβάνει ερωτήσεις που αναφέρονται στις απόψεις των κατοίκων των τοπικών κοινωνιών για μια σειρά από ζητήματα που εστιάζονται στην αρκούδα. Η συμπλήρωση του ερωτηματολογίου είναι εθελοντική και ανώνυμη, ενώ ο χρόνος που θα απαιτηθεί είναι περίπου 10 λεπτά. Σας παρακαλούμε να αφιερώσετε το χρόνο αυτόν για να δηλώσετε ελεύθερα τις απόψεις σας σε όλες τις ερωτήσεις. Ο στόχος μας είναι να αποτυπώσουμε όσο το δυνατόν αποτελεσματικότερα την υφιστάμενη κατάσταση. Οι απαντήσεις σας, μαζί με εκείνες άλλων κατοίκων στην ευρύτερη περιοχή, θα μας δώσουν πολύτιμα δεδομένα σε μια σειρά θεμάτων.

Μετά την ανάλυση των δεδομένων, στα οποία θα έχουν πρόσβαση μόνο τα μέλη της Ομάδας Έργου, για ερευνητικούς και επιστημονικούς σκοπούς, με υπεύθυνο τον Συντονιστή της Δράσης C1, θα μπορέσετε να έχετε πρόσβαση στα αποτελέσματα μέσα από το αντίστοιχο παραδοτέο της δράσης C1 (Διαβούλευση και συμμετοχή των ενδιαφερόμενων μερών).

Σας ευχαριστούμε θερμά για τη συνεργασία και παραμένουμε στη διάθεσή σας για κάθε σχετική πληροφορία.

Με τιμή,
Τάσος Χοβαρδάς

Δρ. Περιβαλλοντικής Κοινωνιολογίας/Περιβαλλοντικής Εκπαίδευσης
Συντονιστής Δράσης C1 – Διαβούλευση και συμμετοχή των ενδιαφερόμενων μερών
Ηλεκτρονική Διεύθυνση: hovardas@ucy.ac.cy
Ομάδα Έργου LIFE AMYBEAR LIFE15 NAT/GR/001108

Παρακαλούμε καταγράψτε τις πρώτες πέντε λέξεις που σας έρχονται στο νου, όταν ακούτε τον όρο «αρκούδα» (παρακαλούμε δώστε μια μόνο λέξη σε κάθε γραμμή)

1_____

2_____

3_____

4_____

5_____

Πως θα χαρακτηρίζατε την πληροφόρηση/γνώση σας σχετικά με τα παρακάτω θέματα:	Η πληροφόρηση/ γνώση μου είναι ελλιπής	Γνωρίζω μερικά πράγματα αλλά θα ήθελα να μάθω περισσότερα	Η πληροφόρηση/ γνώση μου είναι επαρκής
Τον αριθμό των αρκούδων (πληθυσμός αρκούδας) στην ευρύτερη περιοχή			
Την Ομάδα Άμεσης Επέμβασης για την αντιμετώπιση έκτακτων περιστατικών με αρκούδες			
Τις παρεμβάσεις που σχεδιάζονται στο οδικό δίκτυο για την αποφυγή ατυχημάτων με αρκούδα			
Τη σχεδιαζόμενη διανομή ηλεκτροφόρων περιφράξεων για την αποφυγή ζημιών από αρκούδες			
Τη σχεδιαζόμενη διανομή σκύλων φύλαξης κοπαδιών για την αποφυγή ζημιών από αρκούδες			
Το σχεδιασμό διανομής κυτίου πρώτων βοηθειών για δηλητηριασμένα σκυλιά			
Τη σχεδιαζόμενη εγκατάσταση κάδων απορριμμάτων μη ανοιγόμενων από την αρκούδα			
Το σχεδιασμό για πιστοποίηση προϊόντων φιλικών προς την αρκούδα			
Το σχεδιασμό για τη διάχυση της τουριστικής κίνησης με αναφορά στην αρκούδα			

Συζητάτε ποτέ ζητήματα για την αρκούδα με κάποιους από τους παρακάτω;	Ναι	Όχι
Αιρετοί εκπρόσωποι της τοπικής αυτοδιοίκησης		
Αγρότες		
Κτηνοτρόφοι		
Μελισσοκόμοι		
Δασολόγοι/δασικοί υπάλληλοι		
Κυνηγοί		
Επιχειρηματίες/απασχολούμενοι στον τουρισμό		
Επισκέπτες της περιοχής		
Οικολόγοι/μέλη περιβαλλοντικών οργανώσεων		

Πόσο εμπιστεύεστε τους παρακάτω όταν συζητάτε μαζί τους για την αρκούδα;	Λίγο	Πολύ
Αιρετοί εκπρόσωποι της τοπικής αυτοδιοίκησης		
Αγρότες		
Κτηνοτρόφοι		
Μελισσοκόμοι		
Δασολόγοι/δασικοί υπάλληλοι		
Κυνηγοί		
Επιχειρηματίες/απασχολούμενοι στον τουρισμό		
Επισκέπτες της περιοχής		
Οικολόγοι/μέλη περιβαλλοντικών οργανώσεων		

Διαφωνείτε ή συμφωνείτε με τα παρακάτω;	Διαφωνώ ριζικά	Διαφωνώ	Ούτε διαφωνώ/ ούτε συμφωνώ	Συμφωνώ	Συμφωνώ απόλυτα
Καμία ζημιά από αρκούδα δεν είναι ανεκτή από τους κατοίκους της περιοχής					
Υπάρχει πολλή γραφειοκρατία για να ζητήσει κανείς αποζημίωση για ζημιά από αρκούδα					
Οι κάτοικοι της περιοχής δε διεκδικούν αποζημιώσεις για τις ζημιές που έχουν από αρκούδα					
Οι ηλεκτροφόρες περιφράξεις προστατεύουν αποτελεσματικά τους παραγωγούς από την αρκούδα					
Οι ηλεκτροφόρες περιφράξεις δεν μπορούν να αποτρέψουν την αρκούδα να κάνει ζημιά					
Όσοι χρησιμοποιούν ηλεκτροφόρες περιφράξεις έχουν λιγότερες ζημιές από αρκούδα					
Στην περιοχή υπάρχουν καλά σκυλιά για τη φύλαξη των κτηνοτροφικών ζώων					
Οι κάτοικοι συνεργάζονται μεταξύ τους για να διατηρήσουν τα καλά σκυλιά στην περιοχή					
Τα καλά σκυλιά μπορεί να είναι αποτελεσματικά στην προστασία των κτηνοτροφικών ζώων από την αρκούδα					
Πολλοί χρησιμοποιούν ακόμη δηλητηριασμένα δολώματα (φόλες) στην περιοχή					
Τα δηλητηριασμένα δολώματα (φόλες) μπορεί να προκαλέσουν πολύ σοβαρές ζημιές					
Κανείς δεν απευθύνεται στις αρμόδιες αρχές για το θέμα των δηλητηριασμένων δολωμάτων (φόλες)					
Οι αρκούδες δημιουργούν πολλούς κινδύνους για τους κυνηγούς της ευρύτερης περιοχής					

Διαφωνείτε ή συμφωνείτε με τα παρακάτω;	Διαφωνώ ριζικά	Διαφωνώ	Ούτε διαφωνώ/ ούτε συμφωνώ	Συμφωνώ	Συμφωνώ απόλυτα
Οι κυνηγοί προσαρμόζουν τις τακτικές τους σύμφωνα με την παρουσία της αρκούδας					
Οι αρκούδες είναι σήμερα πιο εξοικειωμένες με τους ανθρώπους συγκριτικά με το παρελθόν					
Οι αρκούδες σήμερα είναι διαφορετικές από εκείνες που υπήρχαν παλαιότερα στην περιοχή					
Υπάρχουν κάποιοι που απελευθερώνουν συστηματικά αρκούδες στην ευρύτερη περιοχή					
Ο αριθμός των αρκούδων αυξάνει συνεχώς τα τελευταία χρόνια στην περιοχή					
Οι αρκούδες στην περιοχή δεν πρέπει να αυξηθούν πάνω από τον σημερινό τους αριθμό					
Οι αρκούδες είναι σήμερα περισσότερες από αυτές που μπορεί να φιλοξενήσει η περιοχή					
Ο κίνδυνος για τους κατοίκους της περιοχής από την αρκούδα είναι μεγάλος, ακόμη και μέσα σε χωριά					
Ο κίνδυνος για τροχαία ατυχήματα με την αρκούδα είναι μεγάλος στο οδικό δίκτυο της περιοχής					
Οι επισκέπτες της περιοχής διατρέχουν σημαντικό κίνδυνο από την παρουσία της αρκούδας					
Η παρουσία της αρκούδας μπορεί να ενισχύσει την τουριστική κίνηση στην περιοχή					
Η παρουσία της αρκούδας μπορεί να αξιοποιηθεί για την αύξηση της προστιθέμενης αξίας των αγροτικών προϊόντων					
Η παρουσία της αρκούδας μπορεί να δώσει σημαντικές δυνατότητες ανάπτυξης στην περιοχή					

Θα λέγατε «ναι» ή «όχι»:

'Θα συμμετείχα σε μια συνάντηση φορέων της περιοχής για την αρκούδα'

Ναι ☐   Όχι ☐

Πόσοι κάτοικοι της ευρύτερης περιοχής πιστεύετε ότι θα έλεγαν **«ναι»** στην ερώτηση αυτή; (ποσοστό 0-100%)

Ποσοστό (0-100%) ☐

Θα λέγατε «ναι» ή «όχι»:

'Θα συμμετείχα σε ένα πρόγραμμα για την προστασία της αρκούδας'

Ναι ☐   Όχι ☐

Πόσοι κάτοικοι της ευρύτερης περιοχής πιστεύετε ότι θα έλεγαν **«ναι»** στην ερώτηση αυτή; (ποσοστό 0-100%)

Ποσοστό (0-100%) ☐

Δημογραφικά και άλλα στοιχεία

Μόνιμη κατοικία (Δήμος) _____

Φύλο   Άντρας ☐   Γυναίκα ☐

Ηλικία _____

Εκπαίδευση _____

Επάγγελμα _____

Μέσο μηνιαίο εισόδημα _____

Παρακαλούμε σχολιάστε οτιδήποτε σχετικά με το ερωτηματολόγιο ή τα θέματα του ερωτηματολογίου

☐