Bear management in Greece as a 'problem orientation' policy issue: A Q-methodology approach

Botetzagias Iosif and Kotlida Evaggelia

AUTHORS INFO

Iosif Botetzagias* is an Associate Professor in the Department of Environment, University of the Aegean, Greece.

Evaggelia Kotlida is an undergraduate student in the Department of Environment, University of the Aegean, Greece. The data for this article originates from her research for her undergraduate thesis.

*_email_: iosif@aegean.gr

ABSTRACT

In this research we examine the existing stakeholders' views on brown bear's (_Ursus arctos_) management in northern Greece, by combining the formal structure of the 'problem orientation' framework for analysis with Q-methodology, a semi-quantitative method developed specifically to study human subjectivity. We identify three distinct viewpoints, or factors, concerning both the characteristics and causes of the bear 'problem' as well as the characteristics of the preferred management alternatives: one guided by the wish to conserve the local bear population, a second prioritizing the local primary sector producers' (i.e. farmers' and herders') welfare and a third one allowing for the lethal management of a damaging –and not-endangered- species. Besides the national-specific relevance of its findings, the methodological format of this research offers a replicable framework for analysis in other national contexts and/or wildlife management

1. Introduction

Europe's bear population (Ursus arctos arctos) is increasing throughout much of the continent (Chapron et al. 2014; LCIE 2018), not least because of the species' protected status through international treaties and EU legislation such as the Bern and the CITES Conventions and the Habitats EU (92/43/EEC) Directive. This increase is likely to intensify long existing 'human vs. bear' conflicts, which stem primarily from the damages bears cause on crops and livestock as well as from the occasional attacks on humans (cf. Can, D'Cruze, Garshelis, Beecham and

Macdonald 2014). Since economic loss has been the main cause of the local primary sector producers' grievances relating to their co-existence with the bear, as well as other large carnivores, introducing compensation schemes for wildlife-caused damages has been popular amongst policy makers and advocated by conservationists (cf. Can et al. 2014; Nyhus Fischer, Madden and Osofsky 2003). Nevertheless, the compensation option is not without problems and challenges. In a recent review article, Nyhus (2016) lists a number of 'Common challenges associated with compensation schemes include[ing] … the difficulty of verifying the cause of damage; slow, cumbersome, or insufficient payment; moral hazard (e.g., farmers may have little incentive to protect livestock if they can obtain economic compensation for depredation); high transaction costs; and problems of trust and transparency' (pp.158-159)'. Accordingly, a variety of approaches have been suggested, and used, in addressing the human-bear conflict, which go beyond the post-hoc compensation schemes. Usually these come in the context of a comprehensive human-bear conflict management plan, including measures relating to local communities' property protection and compensation, habitats' conservation and bears' population control (cf. Can et al 2014; Nyhus 2016).

Notwithstanding the particularities of these new, bear management plans, all authors stress the importance of stakeholders' engagement in developing and applying them (Can et al. 2014; Nyhus 2016) not least because long-term protection of large carnivores depends on their acceptance, or at least 'tolerance' (Bruskotter & Wilson 2014), by the public in general and the local (i.e. affected) communities in particular. Nowadays there exists a virtual consensus amongst researchers and practitioners that predator conservation and management should not stem from strict scientific concerns alone, but it should also include broader societal concerns (Redpath et al. 2017). The emphasis is on the 'collaborative governance' of human-predators' conflicts (i.e. an 'arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus oriented and deliberative and that aims to make or implement public policy or manage public programs or assets' (Ansell and Gash 2008, p.544)), since such an approach is likely to lead to 'psychological ownership [of the process and the ensuing management plan], enhanced trust, learning, and better social outcomes' (Redpath et al. 2017, p.2157).

Accordingly, the first step in 'mapping' and/or 'managing' human-wildlife conflicts (Redpath et al. 2013), is to identify the various stakeholders' attitudes, positions, goals and preferred actions-to-be-taken regarding the particular conflict. In other words, 'Relevant stakeholders **need to be analysed** and represented **systematically**' (Reed 2008, p.2422). In this paper we undertake a systematic analysis of stakeholders' views

concerning bear management in northern Greece, more particularly in the area of Grevena, which is situated in the core of Greece's western (and larger) bear population habitat. We are interested in understanding the different local stakeholders' views concerning the current situation/management of the bear population, the necessity of a new management plan as well as what such a management plan should prioritize and how it should operate in practice.

To the best of our knowledge, no available research has been undertaken on this issue, thus the findings of our analysis would be of obvious use to Greek planners and decision makers, especially since the current bear management plan is considered suboptimal and in need of revision (see next section). We also consider our research to be of interest to the greater community of academics/practitioners interested in human-bear conflict/coexistence, not simply because it adds to our general knowledge but rather because of the way we address the topic. In particular, on the one hand we consider the existing human-bear tensions (and ultimately the selection of a management plan to deal with it) as a policy issue, thus we employ a formal 'policy sciences framework' (Wallace and Clark 2014) to guide our analysis. More particularly we employ the 'problem orientation' component of the policy sciences framework (Lasswell 1971), 'a method for determining and undertaking procedural (and substantial) rationality by "mapping" the content of a subject to be addressed' (Wallace and Clark, 2014, p.140). On the other hand, we

systematically analyze the various stakeholders' views on that policy issue by employing an analytical tool developed explicitly for the study of human subjectivity, Q-methodology (henceforth Q), which 'brings together the transparency of a structured quantitative procedure with the depth of understanding of a qualitative approach' (Zabala et al. 2018).

Thus, by combining the formal structure of the 'problem orientation' framework for analysis (Lasswell 1971) with the analytical vigor of Q (Brown et al. 2007), we are able to get a clear understanding of the various bear-management viewpoints present in the local population; of which stakeholders ascribe to which viewpoint; as well as, on which aspects these alternative viewpoints differ from one another. While Q has been recently 'gaining traction in conservation' research (Zabala et al. 2018), and there exists a small, yet growing, body of research which has employed Q for informing/evaluating future/current policy-making regarding human-large carnivore conflict/management -e.g. Norwegian stakeholders' views on justice and fairness pertaining to large carnivore management in Norway (Jacobsen and Linnell 2016); institutional stakeholders' views on jaguars' (*Panthera onca*) survival in Brazil (Bredin, Linnell et al. 2015); stakeholders' different viewpoints relating to perceived and actual trade-offs related to Norwegian wildlife management (Bredin, Lindhjem et al. 2015); stakeholders' appraisal of a grey wolf recovery management plan in WA, USA (Mazur and Asah 2013);

conservation professionals' viewpoints on tiger conservation in India (Rastogi et al. 2013); and views on how to reduce human–carnivore conflict on Namibian livestock farms (Rust 2017)-, only three studies have to date coupled the analytical vigor of Q and the 'policy sciences' framework for understanding human-large predators' conflict and management, yet none of those was conducted in Europe and/or dealt with the brown bear's management: Mattson et al. (2006), on large carnivore –including bear- conservation in the Rocky Mountains, USA, as well as Rutherford et al. (2009) and Chamberlain et al (2012), regarding grizzly bear conservation in Banff National Park, Canada.

Our paper develops as follows. In the next section we present the current state of bear management in Greece. We continue by presenting the theoretical framework of our analysis (the 'problem orientation' perspective) and the methodology employed (Q-methodology). We identify three major viewpoints concerning bear management in the area. One advocating a management approach whose primary aim is to promote the bear conservation, a second prioritizing the local primary sectors producers' (i.e. farmers' and herders') interests, and a third viewpoint which endorses the selective killing of bears as a 'natural' way of dealing with a damaging and non-endangered species. In the concluding section we discuss the implications of our findings for bear management and conservation in Greece.

2. Bear management in Greece

Brown bears have been present in Greece since pre-classical antiquity while in the 17th century, bear distribution extended throughout the mainland -reaching all the way south to Peloponnese (Arcturos 1999). Today, after ages of habitat encroachment and hunting –the latter being outlawed only a few decades ago- by humans, the bear presence in Greece consists of two small populations with no spatial communication, in the remote, northern areas of the country, at the Pindos and Rodopi Mountain Ranges (Karamanlidis et al. 2015, p.11).

Thanks to its protected status under Greek law –which does not allow their hunting, possession or capture-, Greece's bear population has been recovering/increasing and it currently measures approximately 450 individuals (Karamanlidis et al. 2015), an over three-fold increase since the 1950s (cf. Chapron et al. 2014, based on Couturiers' (1954) estimate which was nevertheless criticized as too low (see Curry-Lindhall 1972, p.75)). This recovery has resulted in more bears, and in more of them drifting out of their traditional habitats in north-western Greece as well as in increased encounters with humans (Karamanlidis et al., 2008; 2015). In a parallel development, more damages on livestock by bears, and in more areas, have been occurring, reaching an average annual damage of €738 per bear, for the species' western range (Karamanlidis et al. 2011, p.145). As a matter of fact, the mean annual number of damage claims by this

particular Greek bear population has been the third highest in Europe overall, and the second highest for livestock damages in particular (Bautista et al. 2017, p.284).

Similar to other countries, Greek authorities mainly rely on a compensation scheme for addressing human-bear conflicts, with farmers being compensated for bear-related damages through the Hellenic Agricultural Insurance Agency (ELGA), a semi-public body funded chiefly though the farmers' obligatory insurance fees (Karamanlidis et al. 2011). A farmer is required to report within 48 hours the incident and file a compensation claim –while paying the accompanying fee- to ELGA. Then, the agency's inspectors will verify whether the damage, which should exceed a minimum 5% threshold of total crop value or two units of livestock, had indeed been caused by a bear and decide on whether the damage should be compensated by an amount decided by ELGA at the beginning of each year (per agricultural/livestock category) and fixed throughout the country (Karamanlidis et al. 2011).

Nevertheless, the existing framework for dealing with human-bear conflicts in Greece is considered suboptimal. Even regarding its most important component, the current compensation mechanism, past research has revealed that farmers are dissatisfied both with its perceived complexity and the 'low' amounts of compensation allocated (for bear-related damages, see Garidi (2004), cited in Karamanlidis et al. (2011); for wolf-related damages, see

Theodorakea and von Essen (2016)). Greece has lacked a comprehensive human-bear conflict management/action plan (Can et al. 2014; Karamanlidis et al. 2015), yet its establishment is becoming all the more pressing and necessary, since the rising number of bears is likely to increase the challenges facing the existing scheme.

3. Bear management as a 'policy problem'

Stakeholders rarely –if ever- completely agree when it comes to bear management. This is hardly surprising if one considers that 'Human relationships with wildlife are shaped by a wide range of social and psychological considerations, including diverse cultural and emotional experiences, economics, governance, and stakeholder engagement' while 'Human–wildlife conflict may also involve human–human conflicts among different stakeholder groups and include variations in perceived threats to lifestyles, values, and worldviews' (Nyhus 2016, p.153).

While a number of social sciences' approaches are relevant in understanding (and managing) people's attitudes, concerns and/or grievances around nature conservation and management (Bennett et al. 2017), in cases of 'controversies' the policy sciences' approach is particularly appropriate since it 'breaks down policy processes into discrete components, allowing precise diagnosis of what's going wrong and enabling interventions to be designed by integrating relevant information about all

dimensions of the problem at hand' (Bennett et al. 2017, p.101). In this research we are interested in the 'problem orientation' (Lasswell 1971), or the 'problem definition' (Weiss 1989), component of the policy process. According to Weiss (1989), 'Problem definition is widely regarded as the first stage of the policy cycle, a stage that lays fundamental groundwork for the ensuing struggle over the construction of useful policy alternatives, authoritative adoption of a policy choice, implementation, and assessment. Definition in this sense is not merely a label for a set of facts and perceptions. It is a package of ideas that includes at least implicitly an account of the causes and consequences of some circumstances that are deemed undesirable, and a theory about how a problem may be alleviated' (p.97). In similar vein, Lasswell (1971) views the 'problem orientation' constituent part of the policy process as a way of starting to address an issue by understanding the different actors' perceptions of what constitutes the 'problem'; what caused it; how it is likely to developed if unchecked; what a desirable, future situation would be; and, what should be done in order to achieve this alternative end-situation.

Accordingly, in this research, in order to elicit the stakeholders' holistic viewpoints regarding their understanding and preferred managing option of the 'bear problem', we prompted them to consider the bear-management policy issue through a 'problem orientation' lens. More specifically, stakeholders were invited (see next section) to undertake five 'intellectual tasks'

(Lasswell 1971, p.39) concerning bear-management in their area:

• *Goal clarification*: what future states are to be realized as far as possible?

• *Trend description*: To what extent have past and recent events approximated the preferred terminal states? What discrepancies are there? How great are they?

• *Analysis of conditions*: What factors have contributed to the direction and magnitude of the trends described?

• *Projection of developments*: If current policies are continued, what is the probable future of goal realizations or discrepancies?

• *Invention, evaluation, and selection of alternatives*: What intermediate objectives and strategies will optimize the realization of preferred goals?

4. Using Q-methodology for understanding views on bears

Q-methodology, originally developed by William Stephenson in 1935 (Brown 1980), is explicitly concerned with the measurement of subjectivity. In typical quantitative (or so-called 'R-methodology') research, researchers usually ask questions on a given topic and record the subjects' responses. Q-methodology, on the contrary, is not interested in recording the frequency, acceptance, endorsement and so on of this or that *particular opinion* but rather aims to demonstrate and understand, holistically, the *set of opinions* on a given topic, thus it is 'a

qualitative systematic and rigorously quantitative means for examining human subjectivity' (Bohner and Wänke 2002, p.7). In the words of Brown et al. (2007), 'Q-methodology seeks to understand how individuals think (i.e., the structure of their thoughts) about the research topic of interest. R-methodology identifies the structure of opinion or attitudes in a population [...] whereas R-methodology is intended for the "objective" analysis of research issues, Q-methodology is designed to study subjectivity' (p.726). In the following subsections the distinctiveness of a Q-method research will be made more explicit as we explain the structure and implementation of our own Q-study.

4.1. Mapping the "concourse"

In order to systematically map the various viewpoints around an issue in the context of a Q-methodology study, first one needs to compile a list of statements which are relevant to topic of interest, as they lay in the 'concourse' of the issue. According to Brown (1993), the 'concourse' refers to 'the flow of communicability surrounding any topic… [and it derives from] the ordinary conversation, commentary, and discourse of everyday life' (p.94). Thus in summer 2016, we approached a number of relevant stakeholders in the area of study, asking them to be interviewed under conditions of anonymity concerning the "bear issue" in their area. A total of 21 individuals were initially approached and all agreed to be interviewed, including State (Ministry of Agriculture),

regional and local government officials, local ELGA (Hellenic Agricultural Insurance Agency), environmental NGOs (bear-related) as well as the local/regional Hunting Association representatives, game-keepers, agriculturists, farmers, herders, beekeepers, lumberjacks and local hotel owners. These stakeholders' categories represent, to the best of our knowledge, all the major local perspectives on the issue, including individuals involved in the decision-making about, protection of, and/or management of the bears' issue as well as individuals whose welfare and/or daily experiences is related to the species.

As explained in the previous section, we aimed to study stakeholders' views on bear management through a 'problem orientation' scheme (Lasswell 1971), an approach which acknowledges that a situation is 'problematic' to an individual depending on his/her own, subjective, values, beliefs and experiences and tries to elicit their personal viewpoints on it by encouraging individuals to think of the current situation in terms of the issue's current status; causes; trends; future developments; preferred alternatives; and, measures/actions needed to ameliorate the current situation and/or achieve the preferred alternative. Thus, we conducted semi-structured interviews, in which we asked our interviewees to express freely their opinion and views to the following prompting questions: 'What is the current status of the current bear-humans' co-existence in your area? How much are you satisfied by this co-existence status? What is the status of the bear

management in your area? How much are you satisfied by this co-existence status?' (*Trends*); 'Which factors contributed and/or led to the current bear status? …to the current co-existence status? …to the current management status?' (*Conditions*); 'If things stay as they are, how do you think that the situation will develop?' (*Projections*); 'What should be the goals for human-bear coexistence in the future? (Goals); and, finally 'What should be done in order to improve the current situation? …to reduce the problems? … to improve the bear management?' (*Alternatives*). All interviews were conducted in person by the second author, at the interviewee's office or home. They lasted between twenty to forty five minutes, were recorded and later transcribed, thus offering us the 'concourse' around the issue.

4.2 Defining the Q-sample

The next step in the Q-study is to derive the Q-sample, that is the set of statements originating from the concourse which will then be presented to the study's participants for 'sorting' (see next subsection). The statements in the Q-sample should cover all main aspects of the issue under investigation which were brought up/mentioned in the concourse, no matter whether (or not) it seems 'valid', 'sensible', 'feasible' and so on to the researcher: it is the respondents themselves who will determine all these aspects, in their subjective evaluation of the statements as a whole.

Thus, the transcripts of the interviews were read by the authors, for extracting statements relating to each of the five tasks of the 'problem orientation' approach presented earlier. The initially extracted (subsets of) statements were then re-read and compared with one another in terms of similarities, and this clearing process resulted in 67 'heterogeneous' statements (i.e. each one encapsulating a rather distinctive/unique point, view or opinion), which constitute this study's Q-sort. The number of the Q-sort statements falls within the limits suggested in the literature (i.e. 60 to 90 statements, as suggested by Watts and Stenner (2012, p. 61)) and each of them pertains to one 'problem orientation' task (see Supplementary Material, Tables X1 and X2).

4.3 Selecting the P-set

The next step is selecting the 'P-set', i.e. the participants who will subsequently sort the Q-sort statements. This selection is decisively 'non-random': the aim is to strategically pick participants who are likely to have a particular, unique, or pivotal view on the subject (Watts and Stenner 2012, pp.70-71), in order to collect as diverse a set of opinions as possible. For our study, the P-set consisted of the stakeholder-interviewees. Of the original 21 interviewees, four declined to further participate in our study: the representative of the State Ministry of Agriculture, a game-keeper, a game-keeper and a ENGO-representative. Nevertheless, the remaining 17 individuals who agreed to further participate in our study, cover all relevant stake-holder categories (elected officials, administrative/State personnel, pressure/interests

groups' representatives, and individual stakeholders whose livehood is affected by the bears): four farmers; two herders; one beekeeper; one lumberjack; two hotel owners; one agriculturalist; one ENGO representative; one elected official in the local government; one elected official in the regional government; and one representative by the regional Hunting association, the Forests' Agency, and the Hellenic Agricultural Insurance Agency (ELGA), respectively. These 17 individuals comprise this study's P-set.

4.4 Q-sorting

The P-set participants were presented, by the second author, with a stack of 67 printed and laminated statements of the Q-set and they were asked to 'Q-sort' them. That means to rank-order each statement on a 11-point scale (ranging from "−5: strongly disagree" to "+5: strongly agree") according to the prompt question (in Greek): '*To which extent do you agree/disagree with X statement concerning the human-bear co-existence in your area?*'. Participants were given verbal and written instructions concerning the Q-sorting task, and they were restricted in the number of items they could place in each Likert-scale category. This 'forced-entry' approach, which results in a U-shaped distribution with less statements in the extreme positions of the scale, is argued to encourage participants to (more) carefully consider their relative (dis-) agreement on a single statement versus all other. It is important to note that the '0' point in the Q-sort

does not necessarily means neutrality or indifference towards a particular statement but it 'operates as a meaningful hub or centre from and around which positive and negative salience, the meaning of the Q-sort and the variability of the distribution, *distend*' (Watts and Stenner 2012, p.79).

Each participant was presented with a Q-sort board spread on a table, with the prompt question printed at the top and followed by a grid with numbers indicating the number of statements which could be placed in each column. The participants were allowed to relocate freely the statements as many times as they wished before reaching their final distribution, and they could ask questions concerning the sorting process but not the 'meaning' of the statements. The Q-sorting by the participants lasted between 35 to 55 minutes, and the resulting Q-sorts were recorded and photographed for further analysis. The 17 Q-sorts were analysed using PQMethod 2.35 software (Schmolck 2014). Unlike Chamberlain et al. (2012) and Rutherford et al. (2009), we do not distinguish between 'problems' and 'solutions' factor-results since we are interested in uncovering (and comparing/studying) complete 'problem orientation' viewpoints on the issue. We performed principal components analysis on the correlation matrix of the respondents' Q-sorts, and the resulting factors were further rotated using Varimax rotation. The ensuing, rotated factor matrix was Q-analysed, a procedure through which the 'factor arrays' are computed. Each 'factor array' represents the ideal

Q-sort of a hypothetical respondent, who in effect would demonstrate 'perfect agreement', or a loading of 1, on that particular factor (Van Exel and Graaf 2005). Thus, the resulting factors represent holistic points of views, and each respondent's 'loading' on every factor indicates his level of agreement with this particular factor/viewpoint. A respondent's loading on a factor is statistically 'significant' when it is sufficiently high to assume that a relationship exists between the respondent and the particular factor, and it is 'pure' if it loads significantly on only one factor.

As a starting step, we extracted eight factors, the maximum option available by the PQMethod 2.35 software for Q-sets exceeding 36 statements (Watts and Stenner 2012, pp.105–106). That solution had to be rejected since, after performing a principal components analysis, it was found that two of the eight factors had an Eigenvalue lower than 1.00 –and this was also the reason for rejecting the 7-factor solution. The 6-factor solution, albeit having Eigenvalues > 1.00, had also to be rejected since three of the factors fell short of the 'standard requirement [..] that an interpretable Q methodological factor must ordinarily have at least two Q sorts that load significantly upon it alone' (Watts and Stenner 2005, p.81), the reason being that such 'pure' loadings 'exemplify the shared item pattern or configuration that is characteristic of that factor' (op.cit.). This was also the case for (the rejection of) the 5-factor and the 4-factor solutions. Thus, a three-factor solution containing 3, 7 and 3, 'pure'

respondent loadings respectively was determined to be the most appropriate solution (see Table 1) . 'Pure' respondent loadings to a given factor are those which its loading to any *other* factor does not exceed the 0.3152 threshold (calculated through the formula: 2.58*(1/√(number of statements in Q set), see Watts and Stenner (2012, p.107)). This three-factor solution accounts for 39% of the variance.

5. Results

Table 1: Respondents' loadings on factors (grayed area denoting a 'pure' loading sort) after Varimax rotation

	Respondent	Factors		
		I	II	III
1	Farmer1	0.1308	0.2858	0.3944
2	Farmer2	-0.2697	0.4615	0.0192
3	Farmer3	0.1142	0.5346	-0.2796
4	Farmer4	0.3603	0.3100	0.6350
5	Agriculturalist	-0.1334	0.3745	0.2899
6	Regional government	0.7097	0.1615	0.1719
7	Forest Agency	0.2537	-0.2214	0.5207
8	Local government	-0.1962	-0.0544	0.6513
9	ELGA	0.7122	0.1468	0.0896
10	Environmental NGO	0.6782	0.0000	-0.0025
11	Hunters' Association	0.2739	0.5576	-0.0795
12	Herder 2	-0.0376	0.6213	-0.0777
13	Herder 1	0.0214	0.4395	0.1849
14	Beekeeper	-0.2247	0.1615	0.0922
15	Hotel owner1	0.4163	-0.1791	0.5319
16	Hotel owner2	0.1268	0.5155	0.1743
17	Lumberjack	-0.2659	0.3962	0.5505
"Pure" loadings		3	7	3
Explained variance %		13	13	13

5.1 Factor I: Prioritizing bear conservation

Factor 1 accounts for 13% of the variance in our sample and is defined by 3 Q-sorts/individuals (Table 1): the representatives of the Regional government; ELGA; and, an environmental NGO –specializing on bear protection. The distinguishing and the most (dis-)agreed upon statements relating to this Factor are shown in Table 2.

For Factor 1, bears are not such a big problem or threat. One the one hand, they are not particularly damaging to animal stock (compared to the wolf for example) (Statement 7, Table 2) or to crops -but rather to beehives- (St.8), while sometimes producers simply exaggerate the damages suffered by bears in order to get extra compensation (St.28). On the other hand, bears are dangerous only when provoked or while defending their cubs (St.4). Far from (more) bears being "freed by the ecologists" -as the wild-talk rumors would have it- (St.10), this large predator is rather an endangered species (St.3), not least because of the encroachment of their habitat by humans which has led to confrontations with (and damages to) human (property) (St.6). The fact that the existing compensation scheme is sub-optimal, not covering capital losses and/or forgone profits (St.16), does not make the situation any better. What should be done, then? Factor 1 is adamantly against the lethal management of bears, either in the form of selective culling (St.40) or even in the case of the single, repetitive destructive individual (St.39) It seems that in this Factor's view, the bears have an *ipso facto* right to live and roam in the area, even if that is at odds with human economic considerations (St.39 yet also St.53 – showing least disagreement on the "right" of the bears to eat a part of the production and no compensation to be given for that part). For Factor 1, the most effective way for minimizing these losses is the prevention of the bear-related damages –with compensation scoring a second-best (St.20). One cannot but note that the "prevention" approach has been the bear-protecting NGOs favorite tactic, and actually this Factor views favorably the NGOs' engagement in bear management: far from being a self-serving mechanism (St.14), the relevant NGOs have, through their activities, improved the way people perceive bears (St.15), facts which seem to legitimize their access into (State-coordinated) bear-management (St.56).

5.2 Factor II: Prioritizing local producers' well-being

Factor 2 accounts for 13% of the variance in our sample and is defined by 7 Q-sorts/individuals (Table 1): two farmers, two herders, one hotel owner, a representative of the regional hunters' association and an agriculturalist. In this Factor's view, the local community finds its interests squeezed between the bears' survival/protection and the Greek state's indifference to the problems the species causes (St.29). Tensions run high- and taking all into account it is quite surprising that the cases of locals' 'taking-the-law-into-their-own-hands' (and intentionally killing bears) have been so few (St.25).Who is to be blamed for this

Table 2: Factor 1 *"Prioritizing bear conservation"* distinguishing and most (dis-)agreeing with statements (-5 to +5 scale)	Factors' scores		
STATEMENTS	**I**	**II**	**III**
Most agreeing			
7 The bear does not cause mass and big damage to a herd, in comparison to the wolf for example. At most she will kill two or three animals.	5**	0	-2
10 The claim that the ecologists release bears into the wild is a hoax and coffee-shop small talk	5**	-1	-3
20 Compensating is a management tool, yet not the most effective one. It is better to prevent bear-related damage than to compensate it	5*	0	4
16 ELGA compensates for the yearly production but not for the trees that the bear may have destroyed. It compensates for the damaged beehive, but not for the honey. Compensation is not objective, it does not cover 100% of what was lost.	4**	0	-1
4 A bear is dangerous only if you provoke her or when they are with their baby- then they are aggressive. If they are alone they will not hurt you.	4*	-5	3
17 I don't want that the bear causes me any trouble and thus ending up to ELGA. Cause my damage will be greater than the compensation from ELGA. Since, if the bear kills ten of my sheep during springtime, the period I am milking, or in the autumn, when the animals are pregnant, ELGA will not compensate me for the forgone milk or lambs.	4	4	-1
24 You should not shoot to kill a bear, unless you are in defence.	4	3	-2
Most disagreeing			
39 If a bear constantly causes damages, it should be killed.	-5**	-1	2
40 Due to the large number of bears in certain areas, there the selective hunting of bears should be allowed in order to control their numbers	-5*	-3	-3
38 If the number of bears increases even further, those in excess should either be taken to zoos or to be sent to the countries which wish to re-introduce the species	-5	0	-4
35 They must make a place, to find an area, and there to protect the bears, to have them there. And if any [bear] gets out of that area, to drug her and take her back	-4	-5	-5
36 The Forest Agency, the clubs, the NGOs and others, should cultivate some acres of corn, so that the bears may feed themselves and to go and stay there.	-4	-5	-3
41 We may contain the bears, to keep them away from villages, road and cultivations with a system of audio waves, using transmitters, without wires and fences	-4	-4	-3
45 NGOs do not offer anything more than the State on the bear issue. They are not necessary	-4	2	-2

26 Sometimes bears get killed by accident, by hunters ambushing the wild boar, since the silhouette, the appearance, of the two animals are quite similar if you see them in a glimpse, and hunters confuse the two [animals]	-4	-4	-2
Other distinguishing statements			
6 Nowadays the places in which the bear may live on her own, undisturbed, are limited- and this changes her behavior, both towards humans and towards the cultivations.	3**	-4	-1
8 The biggest damage by bears is inflicted on the beehives, rather than on the cultivations or the herds.	3**	-2	-4
15 The NGOs' activities relating to education, research, new information, have helped the people seeing the bear in a different, more positive, way.	3**	-3	1
28 Sometimes, producers try to present a bigger damages to what has actually occurred, in order to get the maximum of ELGA's compensation	3*	1	0
49 The animal herders and the producers should be 100% subsidized for the measures they take for protecting themselves from the bear, e.g. for buying electric fencing.	1**	5	-1
2 What "many" bears means is relevant, it differs from one person to another. For someone 100 bears are many, for another five bears are many	1**	-2	5
57 We must have a clear, updated and institutionalized Action Plan for the Bear, with a time frame for the next 5-10 years. We must know the condition of the bears' population, what are its trends, what are the problems it faces and how can we deal with them, to monitor the results of our actions	1*	-1	4
21 As things are now, there is not really an agency which truly deals with addressing the problems caused by the bears	0**	4	3
31 The damages that the bear causes to the producers do not have a negative impact on how the animal is perceived by the country folk. They are part of husbandry and agriculture.	0**	-3	-4
27 If people are not meaningfully compensated for damages caused by the bear, then they will see it as an enemy, as a threat to their crops and production, and then they will shoot to kill	0*	-2	4
29 You have to choose between, your survival, the bear's survival and a state which does not pay attention	0*	2	-3
23 There are many measures for the bear's management, yet they exist only on paper and they are not implemented since there exist neither the operational/institutional framework nor the necessary economic resources.	-1**	2	2
48 The NGOs should inform more the people about the bear, its life, its needs, about everything concerning the bear, and not to present her as a museum exhibit	-1**	3	3
67 I think that nature regulates on itself the bear population. We should not intervene in nature but leave her regulate things on her own.	-1*	-3	5
54 The use of preventive measures by the producers should be incorporated in the compensation system of ELGA. I mean, the producer should be compensated if the bear caused damage while and besides the producer taking the necessary preventive measures, e.g. having established an electric fencing.	-2*	5	-4
56 The Greek State should not be influenced by the views of many NGOs which most times operate as animal welfare groups rather than managing bodies	-3*	3	4

3 I do not think the bear is an endangered species	-3**	1	5
14 NGOs have become a mechanism for satisfying their own views and goals and they do not take into account the society and those affected by the bear	-3**	3	1
53 The bear should have the right to eat a percentage of the crops, of the produce, lets say 10%, and no compensation should be given for that damage	-3**	-4	-5

*: Statement is statistically significant at the 0.05 level; **: … at the 0.01 level

Table 3: Factor 2 *"Prioritizing local producers' well-being"* distinguishing and most (dis-)agreeing with statements (-5 to +5 scale)	Factors' scores		
STATEMENTS	**I**	**II**	**III**
Most agreeing			
49 The animal herders and the producers should be 100% subsidized for the measures they take for protecting themselves from the bear, e.g. for buying electric fencing.	1	5**	-1
54 The use of preventive measures by the producers should be incorporated in the compensation system of ELGA. I mean, the producer should be compensated if the bear caused damage while and besides the producer taking the necessary preventive measures, e.g. having established an electric fencing.	-2	5**	-4
60 The cost of the measures for protecting the bear should be taken on by the Greek State	-1	5**	-1
52 ELGA's compensation should cover in full the real value of the damage caused by the bear	2	4*	1
44 Everyone dealing with the bear, and the NGOs like Arcturos and the rest, should become one organization, one agency, so that you may know to whom you should appeal. Currently you are sent from pillar to post.	1	4*	1
43 The NGOs which are dealing with the bear should not operate autonomously as they do now; rather there should be some control and a connection with the public services in order for the measures taken to be more effective, both for the bears and for the producers	2	4	3
17 I don't want that the bear causes me any trouble and thus ending up to ELGA. Cause my damage will be greater than the compensation from ELGA. Since, if the bear kills ten of my sheep during springtime, the period I am milking, or in the autumn, when the animals are pregnant, ELGA will not compensate me for the forgone milk or lambs.	4	4	-1
21 As things are now, there is not really an agency which truly deals with addressing the problems caused by the bears	0	4	3
Most disagreeing			
4 A bear is dangerous only if you provoke her or when they are with their baby- then they are aggressive. If they are alone they will not hurt you.	4	-5**	3
35 They must make a place, to find an area, and there to protect the bears, to have them there. And if any [bear] gets out of that area, to drug her and take her back	-4	-5	-5

36 The Forest Agency, the clubs, the NGOs and others, should cultivate some acres of corn, so that the bears may feed themselves and to go and stay there.	-4	-5	-3
6 Nowadays the places in which the bear may live on her own, undisturbed, are limited- and this changes her behavior, both towards humans and towards the cultivations.	3	-4**	-1
51 One solution for protecting the bear is to say to one farmer, 'I will pay you that much money in order to cultivate your field with whatever the bears eat and not collect your produce. Leave it for the bears to eat'	-3	-4	-5
53 The bear should have the right to eat a percentage of the crops, of the produce, lets say 10%, and no compensation should be given for that damage	-3	-4	-5
26 Sometimes bears get killed by accident, by hunters ambushing the wild boar, since the silhouette, the appearance, of the two animals are quite similar if you see them in a glimpse, and hunters confuse the two [animals]	-4	-4	-2
41 We may contain the bears, to keep them away from villages, road and cultivations with a system of audio waves, using transmitters, without wires and fences	-4	-4	-3
Other distinguishing statements			
14 NGOs have become a mechanism for satisfying their own views and goals and they do not take into account the society and those affected by the bear	-3	3**	1
58 We must find simpler and more flexible ways to compensate all, even the smallest, bear-related damages.	-2	3**	-2
45 NGOs do not offer anything more than the State on the bear issue. They are not necessary	-4	2**	-2
22 The main problem with compensation is the bureaucracy. It is very hard for a herder, especially an elderly one, to do all the necessary procedures required for the compensation. It seems like a mountain to him!	0	2*	0
25 If you consider the existing tensions and rivalries as well as the damages bears cause, the cases of taking-the-law-into-one's-hand are very few, the cases when someone deliberately kills a bear.	-2	2*	0
29 You have to choose between, your survival, the bear's survival and a state which does not pay attention	0	2*	-3
3 I do not think the bear is an endangered species	-3	1**	5
61 To improve the bear management, the Greek State must provide more financial resources	-2	1**	-2
7 The bear does not cause mass and big damage to a herd, in comparison to the wolf for example. At most she will kill two or three animals.	5	0**	-2
20 Compensating is a management tool, yet not the most effective one. It is better to prevent bear-related damage than to compensate it	5	0**	4
38 If the number of bears increases even further, those in excess should either be taken to zoos or to be sent to the countries which wish to re-introduce the species	-5	0**	-4
64 People in the countryside should be informed about what the "ecologists" do and what they really want to achieve	2	0*	2
16 ELGA compensates for the yearly production but not for the trees that the bear may have destroyed. It compensates for the damaged beehive, but not for the honey. Compensation is not objective, it does not cover 100% of what was lost.	4	0*	-1

10 The claim that the ecologists release bears into the wild is a hoax and coffee-shop small talk	5	-1**	-3
39 If a bear constantly causes damages, it should be killed.	-5	-1**	2
57 We must have a clear, updated and institutionalized Action Plan for the Bear, with a time frame for the next 5-10 years. We must know the condition of the bears' population, what are its trends, what are the problems it faces and how can we deal with them, to monitor the results of our actions	1	-1*	4
2 What "many" bears means is relevant, it differs from one person to another. For someone 100 bears are many, for another five bears are many	1	-2**	5
33 We must understand that the bears are a blessing for our area. The bears are an attraction for the people, for the tourists	2	-2**	3
66 The bear is a treasure, it is wealth for us, and we must make the best of it as they do in other countries	1	-2**	1
8 The biggest damage by bears is inflicted on the beehives, rather on the cultivations or the herds.	3	-2*	-4
27 If people are not meaningfully compensated for damages caused by the bear, then they will see it as an enemy, as a threat to their crops and production, and then they will shoot to kill	0	-2*	4
12 Humans are mainly to be blamed for the problems with bears. Because it is man who change the bear's vital space, who broke up her habitat, for example by highways, so now the bear cannot but enter into man's area and causes problems to humans	4	-3**	3
15 The NGOs' activities relating to education, research, new information, have helped the people seeing the bear in a different, more positive, way.	3	-3*	1
67 I think that nature regulates on itself the bear population. We should not intervene in nature but leave her regulate things on her own.	-1	-3*	5

*: Statement is statistically significant at the 0.05 level; **: … at the 0.01 level

problematic situation? Contrary to Factor 1, in Factor's 2 view the current problems are *not* related to the (local) society's activities disturbing and encroaching the bears' habitat (Sts.6&12). Rather, the fault lies with actors *external* to the local community. For a start, with bears themselves, which far from being an asset for -or a touristic attraction of - the area (Sts. 66 &33), are rather a danger- and *not* only when they are provoked and/or defending their young (St.4). Environmental NGOs also share part of the blame, since they are self-serving and don't care for those (i.e. the local producers) affected by the bears (St.14), they have failed to positively alter the locals' views on the bear (St.15), and they are quite simply redundant and unnecessary for bear management (St.45). Finally, the Greek State, whose compensating scheme for bear-related damages is too cumbersome and bureaucratic (St.22). Therefore an "intervention" is required in order to regulate the bear problem (St.67). In accordance to its blame-attributions, this Factor sees the solution as originating from outside the local community. If the bears are to be protected then it is the Greek State who should pay that bill (St.60). The local producers should be compensated for the full/real value of bear-related damages (Sts.52&58) *only* if they have implemented preventive/protective measures against the bear (St.54) -yet they should be subsidized for any protective measures they may have to take (St. 49). These subsidies/compensations should be managed by a (arguably new and) more efficient (St.58) and centralized/unitary body (St.44), in which even the (otherwise 'unnecessary' (St.45)) bear-protecting NGOS should participate, 'so that you may know to whom you should appeal' (St.44). Nevertheless, despite this Factor's rather negative view on bears and its strong emphasis on compensation/subsidization, it is worth noting that Factor 2 does not foresee an increase in illegal killings if not 'appropriate' compensation is offered (St.27).

5.3 Factor III: Accepting/allowing the selective killing of damaging individuals of a non-endangered species

Factor 3 accounts for 13% of the variance in our sample and is defined by 3 Q-sorts/individuals (Table 1): one representative of the local government and the local Forest Agency respectively, and a farmer.

Factor 3 believes that bears cause substantial damages to the local area (Sts.9&7), the biggest damaged inflicted on the beehives, rather than on the cultivations or the herds (St.8). In this factor's view the bears are not naturally aggressive - they become a danger only when provoked/defending themselves (St.4)- and what constitutes "too many bears" in one area is a subjective evaluation- (St.2, see also Sts.6 & 11). The bear-related damages follow from the species' natural behavior: 'whatever measures' one may take, the 'bears will

continue to cause damage to human cultivations [..] it is something normal, it is in their nature' (St.42), and that is why Factor 3 is dismissive concerning the effectiveness of any measures intending to keep the bears away from human property, either through complimentary feeding (St.51) or through their (enforced) relocation in designated areas (St.35&37). The current situation is one of tension between those harmed by the bear and those who support the species too much (St.30), while the latter's litigation actions –aiming at protecting the species- have only added to the bears' negative perception by the locals (St.34, see also St.31).

The way of dealing with the bear problem is a long term, 'clear, updated and institutionalized Action Plan for the Bear', monitoring both the species' condition as well as assessing the effectiveness of human actions (St.57). What should these 'actions' be? While this Factor does prioritize bear-related damages' 'prevention' over 'compensation' (St.20), the latter is (and arguably should remain) of significant importance. Producers should be compensated for their losses *even if* they have not taken the 'necessary preventive measures' (St.54), while Factor 3 is the least dismissive of the *existing* (ELGA) compensation scheme (see Sts.59, 17, 49, 16 & 19). Furthermore, in this factor's view, lack of 'meaningful compensation' will result in people 'see[ing the bear] as an enemy [..] and then they will shoot to kill' (St.27, see also St.53). For Factor 3, in stark contrast with the other two Factors, killing bears is not a taboo. Bears 'are not

an endangered species' (St.3), not least because 'the ecologists release them in the wild' (St.10). Thus, one should be allowed to kill a bear also if it is causing repetitively damages (St.39) – *not* only when in defense (St.24). It is under this light that one should read Factor's 3 strong endorsement of the view that we should 'let nature regulate itself the bear population' (St.67). This is not a plight for humans treading lightly upon the earth -as Deep Ecology would have us do- but rather a call for allowing things to develop 'naturally', as they (had and) are supposed to develop. This is why Factor 3 does *not* see the situation as an impossible trilemma of having 'to choose between, your survival, the bear's survival and a state which does not pay attention' (St.29). On the one hand, it is 'natural' (and it should stay that way) for bears to roam free in the area (see St.38) and occasionally raid human crops/animals (St.42). On the other hands, humans should be allowed to defend themselves, even lethally, against such trespasses (St.39). Thus, for Factor 3, bear management should not be influenced by the bear-loving NGOs (See St. 56), while it is important to introduce 'environmental education courses at schools, so tomorrow's citizens will respect the bear and **assess it in the right way**' (St.63, our emphasis) – i.e. in what Factor 3 considers "right".

5.4 Consensus statements

Finally, there exist a number of 'consensus statements', i.e. statements that do not distinguish between any pair of factors at the 0.05 significance level, which are presented in Table 5.

Table 4: Factor 3 *"Accepting/allowing the selective killing of damaging individuals of a non-endangered species"* distinguishing and most (dis-)agreeing with statements (-5 to +5 scale)	Factors' scores		
STATEMENTS	**I**	**II**	**III**
Most agreeing			
2 What "many" bears means is relevant, it differs from one person to another. For someone 100 bears are many, for another five bears are many	1	-2	5**
3 I do not think the bear is an endangered species	-3	1	5**
67 I think that nature regulates on itself the bear population. We should not intervene in nature but leave her regulate things on her own.	-1	-3	5**
27 If people are not meaningfully compensated for damages caused by the bear, then they will see it as an enemy, as a threat to their crops and production, and then they will shoot to kill	0	-2	4**
57 We must have a clear, updated and institutionalized Action Plan for the Bear, with a time frame for the next 5-10 years. We must know the condition of the bears' population, what are its trends, what are the problems it faces and how can we deal with them, to monitor the results of our actions	1	-1	4*
20 Compensating is a management tool, yet not the most effective one. It is better to prevent bear-related damage than to compensate it	5	0	4*
63 What is needed are environmental education courses at schools, so tomorrow's citizens will respect the bear and assess it in the right way	1	-1	4*
56 The Greek State should not be influenced by the views of many NGOs which most times operate as animal welfare groups rather than managing bodies	-3	3	4
Most disagreeing			
51 One solution for protecting the bear is to say to one farmer, 'I will pay you that much money in order to cultivate your field with whatever the bears eat and not collect your produce. Leave it for the bears to eat'	-3	-4	-5*
35 They must make a place, to find an area, and there to protect the bears, to have them there. And if any [bear] gets out of that area, to drug her and take her back	-4	-5	-5*
53 The bear should have the right to eat a percentage of the crops, of the produce, lets say 10%, and no compensation should be given for that damage	-3	-4	-5
54 The use of preventive measures by the producers should be incorporated in the compensation system of ELGA. I mean, the producer should be compensated if the bear caused damage while and besides the producer taking the necessary preventive measures, e.g. having established an electric fencing.	-2	5	-4*
8 The biggest damage by bears is inflicted on the beehives, rather on the cultivations or the herds.	3	-2	-4*

37 Zones should be demarcated: the bear to have her own habitat, the humans to have their own space	-1	-1	-4*
31 The damages that the bear causes to the producers do not have a negative impact on how the animal is perceived by the country folk. They are part of husbandry and agriculture.	0	-3	-4
38 If the number of bears increases even further, those in excess should either be taken to zoos or to be sent to the countries which wish to re-introduce the species	-5	0	-4
Other distinguishing statements			
4 A bear is dangerous only if you provoke her or when they are with their baby- then they are aggressive. If they are alone they will not hurt you.	4	-5	3*
34 The appeals to the courts concerning the bears' living [in our area] - which led to new planning for roads, to projects being delayed, to projects losing their funding- all these have created a negative image for the bear	-2	-1	2**
39 If a bear constantly causes damages, it should be killed.	-5	-1	2**
42 Whatever measures we take the bears will continue to cause damages to human cultivations. It is something normal, it is in their nature, they do it because it suits them	-1	-1	2**
30 There are tensions between those who are injured by the bear and those who support too much the bear.	0	0	2*
14 NGOs have become a mechanism for satisfying their own views and goals and they do not take into account the society and those affected by the bear	-3	3	1**
15 The NGOs' activities relating to education, research, new information, have helped the people seeing the bear in a different, more positive, way.	3	-3	1*
5 The bear feeds both from the wild nature and from human cultivations. Some years- due to the weather, the rainfall and so on- the fruit that the bear will find in nature are enough, thus she will not turn that much to human cultivations. Some other years [the wild fruits] are not enough, and then the bear will do more damage.	3	2	0**
59 ELGA should remain a public insurance agency of the producers. We should not move towards a private insurance framework for producers concerning wildlife-related damages, as it starts happening in the rest of Europe	-3	-3	0**
6 Nowadays the places in which the bear may live on her own, undisturbed, are limited- and this changes her behavior, both towards humans and towards the cultivations.	3	-4	-1**
11 The bear population has increased because people have abandoned the countryside, there are no human activities up in the mountains, thus the bear got a bigger habitat.	3	3	-1**
17 I don't want that the bear causes me any trouble and thus ending up to ELGA. Cause my damage will be greater than the compensation from ELGA. Since, if the bear kills ten of my sheep during springtime, the period I am milking, or in the autumn, when the animals are pregnant, ELGA will not compensate me for the forgone milk or lambs.	4	4	-1**
49 The animal herders and the producers should be 100% subsidized for the measures they take for protecting themselves from the bear, e.g. for buying electric fencing.	1	5	-1**
16 ELGA compensates for the yearly production but not for the trees that the bear may have destroyed. It compensates for the damaged beehive, but not for the honey. Compensation is not objective, it does not cover 100% of what was lost.	4	0	-1*

7 The bear does not cause mass and big damage to a herd, in comparison to the wolf for example. At most she will kill two or three animals.	5	0	-2**
19 ELGA asks you for a huge installation of protective measures, for example to put electric fencing, yet it does not subsidize the installation costs for the farmers, just for the beekeepers	2	1	-2**
24 You should not shoot to kill a bear, unless you are in defence.	4	3	-2**
26 Sometimes bears get killed by accident, by hunters ambushing the wild boar, since the silhouette, the appearance, of the two animals are quite similar if you see them in a glimpse, and hunters confuse the two [animals]	-4	-4	-2**
10 The claim that the ecologists release bears into the wild is a hoax and coffee-shop small talk	5	-1	-3**
29 You have to choose between, your survival, the bear's survival and a state which does not pay attention	0	2	-3**
9 The bear-related damages in our area are quite limited	-1	-2	-3*

*: Statement is statistically significant at the 0.05 level; **: … at the 0.01 level

Table 5: Consensus statements[†]	Factors' scores		
STATEMENTS	I	II	III
18 Surely the bears are to be blamed for the damages. Yet some of these damages could have been dealt with more effectively, and for this not happening it is the farmers' fault as well as ELGA's compensation system [fault] which does not operate in the right direction.	2	2	1
32 It is not that people are afraid of penalties and the law, and thus they don't kill the bears. Rather humans think of the bear as a rare and, to an extent, noble animal- so if they don't suffer great damages they will hardly raise their guns to the bear.	1	1	1
41 We may contain the bears, to keep them away from villages, road and cultivations with a system of audio waves, using transmitters, without wires and fences	-4	-4	-3
47 The NGOs which support the bear should find a different formula of support, cause their appeals to the courts creates a bad image for the bear	-1	1	0
50 Even those actions which are indirectly related to be protected against the bear should be subsidized. For example, there exist small stabling facilities which have no electricity. Thus, we should subsidize the purchase of small photovoltaic units by the herders, so that they may produce electricity and be able to install some electric fencing	0	1	-1

† Not statistically significant differences at the 0.05 level between any two pair of factors

Besides the overall rejection of the claim that bears can be kept away through audio waves (St. 41) and the 'mixed' (i.e. given negative to positive scores) views concerning, on the one hand, the net benefit of the bear-protecting ENGOs' use of litigation (St.47) and, on the other hand, the subsidization of even indirect protection measures (St. 50), two consensus statements suggest that there may exist ways of bridging the different perspectives. Thus, all factors agree –to a similar extent- that some of the bear-related damages could have been dealt with more effectively by changing the (existing) farmers' ways and the compensation system (St. 18). Also, there is agreement across factors that bears are spared not so much out of fear for the penalties of the law but rather because people acknowledge their precarious/noble status, so 'if they [i.e. the people] don't suffer great damages they will hardly raise their guns to the bear' (St. 32).

6. Conclusion and Policy Implications

As Clark, Rutherford, & Mattson (2014) argue, 'Carnivore conservation is plagued by wicked problems', that is 'complex problems involving high uncertainty, diverse conflicting goals and values, irreversibility, and uniqueness' (p.11). In this paper we examined the 'diverse conflicting goals and values' relating to brown bear management in northern Greece. We did so by examining the bear-management issue through a 'problem orientation' framework for analysis

(Lasswell 1971), an approach which aims at tackling a 'problematic' situation by understanding the different actors' perception of what constitutes the 'problem', what caused it, how it is likely to developed if unchecked, what a desirable, future situation would be, and what should be done in order to achieve this desired end. And we elicited the different viewpoints present amongst the stakeholders regarding this 'problem' by employing Q-methodology, a quantitatively thorough and qualitatively informed analytical tool whose main contribution 'is that it can make clear the context of conflict over a policy issue. It can make transparent to all participants in deliberation the bases for the conflict, including the different perspectives (beliefs and interests) of contending groups and their different understanding of the nature of the policy problem and its preferred solution.' (Durning 2006, pp.601–602).

Our analysis returned three main factors, or discourses, combining perceptions, circumstances, causes, consequences, aspirations, goals and courses-of-action relating to the bear issue. As they have been discussed in detail in the preceding sections, in Table 6 we offer a summarizing overview.

Our results reveal two important default lines relating to the 'problem orientation' question of bear management in northern Greece. The first default line is between Factor 3 and the other two

Table 6: Summary of the three Factors' 'problem orientation' aspects regarding human-bear coexistence and management

'PROBLEM ORIENTATION' aspects	Factor 1	Factor 2	Factor 3
TRENDS: What is the current status of the current bear-humans' co-existence in your area? How much satisfied are you by this co-existence status? What is the status of the bear management in your area? How much satisfied are you by this co-existence status?	• Bears are endangered • Bears not particularly damaging • Sometimes producers report exaggerated damages to get more compensation • Current compensation system does not cover real value of damages	• *'You have to choose between, your survival, the bear's survival and a state which does not pay attention'* • Locals exhibiting self-restrain despite the damages they suffer • Current compensation system too bureaucratic	• Bears are **NOT** endangered • "Too many" bears is a matter of opinion • Bears cause substantial damage to all primary-production domains • Tensions exist between different stakeholders • *'You **DON'T** have to choose between, your survival, the bear's survival and a state which does not pay attention'* • Current compensation system not that bad/inadequate
CONDITIONS: Which factors contributed and/or led to the current bear status? …to the current co-existence status? …to the current management status?	• Bear are dangerous only in defense • Bears '**NOT** freed by the ecologists' • Habitat encroachment leads to damages/conflicts • ENGOs have played a positive role in bear management	• Bears are naturally dangerous • Habitat encroachment is **NOT** the reason for the damages and conflicts • Many places exist where the bear can live undisturbed • ENGOs care more for themselves and the bears than for the locals	• Bears are dangerous only in defense • Bears are 'freed by the ecologists' • Bear damages is a natural thing to occur • ENGOs' actions have **NOT** helped in improving the bear's image in the area

		• ENGOs'actions have **NOT** helped in improving the bear's image in the area	
PROJECTIONS: If things stay as they are, how do you think that the situation will develop?	• Bear population will (and should be allowed to) develop naturally	• Active intervention is needed • Illegal killings will **NOT** rise even in the absence of 'appropriate' compensation	• Illegal killings will rise in the absence of 'appropriate' compensation
GOALS: What should be the goals for human-bear coexistence in the future? *and* **ALTERNATIVES**: What should be done in order to improve the current situation? …to reduce the problems? … to improve the bear management?	• **NO** selective culling of bears • **NO** killing of damaging individual bear(s) • Prioritize preventive measures over compensation • ENGOs should be involved in bear management	• Bears are/will **NOT** be a (touristic) attraction/asset for the area • Bear protection's costs should be borne by the Greek state • Cost of preventive measures should be subsidized • Compensate damages **only if** preventive measures are taken • Damages should be compensated at their full value • Create a new, integrated, managing authority • ENGOs are redundant in bear management	• Bears will continue to cause damages no matter what we do • Complimentary feeding is useless • Against bear enclosement • Kill the damaging individual bear(s) • Prioritize preventive measures over compensation • Compensate damages **even if no** preventive measures are taken • Let things develop "naturally" • Learn to assess the bears in the "right" way

Factors. For Factor 3, bears are a non-endangered species, whose natural characteristics mean that, now and then, it will cause damages to human property no matter what you do. This is the 'natural' way of things- and all 'natural' ways of dealing with it should be allowed: prevention, compensation and the use of a shotgun. And it is this Factor's endorsement of the lethal control option that sets it most fundamentally apart from Factors 1 and 2.

The second default line runs between Factors 1 and 2, and it relates to what Bruskotter and Wilson (2014) conclude that may be a pivotal issue on large carnivore management: 'efforts to promote tolerance of carnivores can be enhanced by a focus on the benefits— ecological and otherwise—that people derive from these species. Ultimately, the benefits we perceive—not the risks—may determine where 'the wild things' will be' (p.163). As it is clear from Table 6, Factor 2 sees very few benefits in the existence of bears in the area, and they consider themselves to be at the losing side in this human-bear conflict. Factor 1 and 2 viewpoints seem to be the polar antithesis of one another- save the lethal management of the species. For Factor 1 bears are endangered and dangerous only when threatened; for Factor 2 they are naturally dangerous and of no (potential) economic use at all- in fact they are threatening the local producers' survival. For Factor 1 the problems caused by bears are due to human activities which are encroaching the bears' habitats- a view rejected by Factor 2 who instead

considers that there are many places where the bears may live happily- and without bothering/interfering with people. For Factor 1, ENGOS active in bear protection have played a positive role, and thus should be involved, in the species' management– for Factor 2 they are self-serving and redundant. Factor 1 acknowledges that the compensations currently offered for bear-related damages are sub-optimal -yet it also highlights' the users occasional manipulation of the system. On the contrary, for Factor 2 the local producers are the victims here, and they should be compensated for the full and real value of their losses. The only point of convergence, apart from their mutual rejection of lethal control, is that both Factors agree on the importance of prevention over compensation. Yet even here we find differences concerning the implementation: while Factor 2 is adamant that preventive measures taken by the producers should be fully subsidized, Factor 1 does not have a strong opinion on the matter.

That said, our results also suggest that there exists some common ground, on which the long-term species' management and conservation may be founded. As it is follows from the consensus statement #32 (Table 5) –and corroborated by the Factors' overall discourses- bears are not considered a 'vermin' which should be eradicated. It is not the law which saves them at the end of the day, but rather that 'humans think of the bear as a rare and, to an extent, noble animal- **so if they don't suffer great damages**

they will hardly raise their guns to the bear' (our emphasis). This brings us to the second important point, again highlighted through the consensus statements, dealing with and/or minimizing the damages suffered by the local primary producers. All factors agree to the same extent that these damages could be dealt with more effectively *yet* 'for this not happening it is the farmers' fault as well as ELGA's compensation system [fault] which does not operate in the right direction' (St. 18, Table 5). What are then the necessary changes, which would reduce the damages' magnitude and enhance the chances of the species' conservation? As it follows from Table 6, despite their many differences, the three Factors' viewpoints share some points: First, the current compensation system is too bureaucratic and inadequate since it does not cover the real value of bear related damages (St. 52)- thus it has to be changed. Second, this change should include a prioritization of prevention over compensation (St. 20)- and arguably a similar re-prioritization of expenditure may provide the funds necessary for *subsidizing* prevention measures (as Factor 2 strongly insists on occuring). Third, the bears' "issue" should be entrusted to a unitary authority, which will deal with all aspects of the issue -from protection to management to compensation. As it stands now, these tasks are championed, allocated and/or performed by different actors. It is quite telling that, despite the grievances the various stakeholder have on each other (e.g. Sts 10, 14, 15, 28, 45, 56), all Factors agree on the necessity of a single authority (Sts. 43 & 44), one which will include all (and opposing) interests, in order to stop being 'sent from pillar to post' when experiencing a problem with bears.

We started this paper by pointing out the predominance of a 'damage-compensation' approach in bear management and the need of its revision- in the face of its various identified shortcomings. We argued that such a revision would have greater chances of success if its format is going to be decided through a collaborative negotiation process, and to this end we embark on a systematic review of stakeholders' views on bear management in northern Greece. Our results suggest that the stakeholders' existing 'realities' differ drastically- not least concerning the crucial issues of the magnitude of the 'bear problem' and its causes; what level of bear-related damages should be compensated; who should bear the cost of prevention measures; and, how should the latter relate to the former-, making the negotiation of a new, mutually-agreed-upon, bear-management plan for this area no easy task indeed. Yet this paper's contribution towards such a goal is not insignificant. As Reed et al. (2009) rightly point out, 'Stakeholder analysis in itself does not create this platform for negotiation, but can be used as a tool to contribute to this negotiation or learning between stakeholders. In this way, stakeholder analysis can facilitate a ''constructivist'' approach to stakeholder participation, which recognizes multiple perspectives of the 'truth', where 'reality' is socially constructed' (pp.1935–1936). As we demonstrated in this paper, there are

many 'realities' concerning bear-management in Greece, and the species' survival in the 21st century rests on finding a viable and working compromise between them all. A difficult task yet, as our results show, not an impossible one.

References

Ansell C. and Gash A. (2008), Collaborative Governance in Theory and Practice. Journal of Public Administration Research and Theory, 18(4): 543–571. https://doi.org/10.1093/jopart/mum032

Arcturos (1999). Conservation of brown bear and its habitat in Greece. Retrieved from:http://www2.nina.no/lcie_new/pdf/63501186 0119597221_ARCTUROS_Bear_conservation.pdf

Bautista C., Naves J., Revilla E., Fernández N., Albrecht J., Scharf A. K., … and Selva N. (2017), *Patterns and correlates of claims for brown bear damage on a continental scale.* Journal of Applied Ecology, 54(1):282–292. https://doi.org/10.1111/1365-2664.12708

Bennett N. J., Roth R., Klain S. C., Chan K., Christie P., Clark D. A., … and Wyborn C. (2017), *Conservation social science: Understanding and integrating human dimensions to improve conservation*. Biological Conservation, 205:93–108. https://doi.org/10.1016/j.biocon.2016.10.006

Bohner G. and Wänke M. (2002), *Attitudes and attitude change*. Hove: London

Bredin Y.K., Lindhjem H., van Dijk J. and Linnell J.D.C. (2015). *Mapping value plurality towards ecosystem services in the case of Norwegian wildlife management: A Q analysis*. Ecological Economics, 118:198–206. https://doi.org/10.1016/j.ecolecon.2015.07.005

Bredin Y.K., Linnell J.D.C., Silveira L., Tôrres N.M., Jácomo A.A. and Swenson J.E. (2015), *Institutional stakeholders' views on jaguar conservation issues in central Brazil*. Global Ecology and Conservation, 3:814–823. https://doi.org/10.1016/j.gecco.2015.04.010

Brown S.R. (1980), *Political Subjectivity: Applications of Q methodology in political science*. New Haven, Yale University Press.

Brown S.R.(1993), *A Primer on Q Methodology*. Operant Subjectivity, 16(3/4):91–138. Retrieved from: https://www.researchgate.net/profile/Steven_R_Brown/publication/244998835_A_Primer_on_Q_Methodology/links/54749d440cf2778985abeb8e/A-Primer-on-Q-Methodology.pdf

Brown S.R., Durning D. and Selden S.C. (2007), 'Q-methodology', in Miller G.J. and Yang K. (eds) *Handbook of Research Methods in Public Administration, Second Edition* (2nd edition), pp. 721–764). Boca Raton, CRC Press.

Bruskotter J. T. and Wilson R.S. (2014), *Determining Where the Wild Things will be: Using Psychological Theory to Find Tolerance for Large Carnivores*. Conservation Letters, 7(3):158–165. https://doi.org/10.1111/conl.12072

Can Ö.E., D'Cruze N., Garshelis D.L., Beecham J., and Macdonald D.W. (2014), *Resolving Human-Bear Conflict: A Global Survey of Countries, Experts, and Key Factors*. Conservation Letters, 7(6):501–513. https://doi.org/10.1111/conl.12117

Chamberlain E.C., Rutherford M.B. and Gibeau M.L. (2012), *Human Perspectives and Conservation of Grizzly Bears in Banff National Park, Canada*. Conservation Biology, 26(3):420–431.https://doi.org/10.1111/j.1523-1739.2012.01856.x

Chapron G., Kaczensky P., Linnell J.D.C., von Arx M. von Huber D., Andrén H., … and Boitani L. (2014), *Recovery of large carnivores in Europe's modern human-dominated landscapes*. Science, 346(6216):1517–1519. https://doi.org/10.1126/science.1257553

Clark S.G., Rutherford M.B. and Mattson D.J. (2014), 'Large Carnivores, People and Governance', in Clark S.G. and Rutherford M.B. (eds), *Large Carnivore Conservation: Integrating Science and Policy in the North American West* (pp. 1–28). Chicago, University of Chicago Press.

Couturier M.A.J. (1954), *L'Ours Brun: Ursus arctos L*. Grenoble, Editions B. Arthaud.

Curry-Lindahl K. (1972), 'The Brown Bear (Ursus arctos) in Europe: Decline, Present Distribution, Biology and Ecology', in *Bears: Their Biology and Management,* Vol. 2: A Selection of Papers from the Second International Conference on Bear Research and Management, Calgary, Alberta, Canada, 6-9 November 1970. IUCN Publications New Series no. 23 (1972), pp. 74-80.

Durning D. (2006), 'Using Q-methodology to Resolve Conflicts and Find Solutions to Contentious Policy Issues', in Ahmad R. (ed.), *The Role of Public Admnistration in Building a Harmonious Society* (pp. 601–620). Asian Development Bank. Retrieved from http://unpan1.un.org/intradoc/groups/public/documents/unpan/unpan025048.pdf

Jacobsen K.S. and Linnell J.D.C. (2016), *Perceptions of environmental justice and the conflict surrounding large carnivore management in Norway — Implications for conflict management*. Biological Conservation, 203(Supplement C):197–206. https://doi.org/10.1016/j.biocon.2016.08.041

Karamanlidis A.A., de Gabriel Hernando M., Krambokoukis L. and Gimenez O. (2015), *Evidence of a large carnivore population recovery: Counting bears in Greece*. Journal for Nature Conservation, 27(Supplement C):10–17. https://doi.org/10.1016/j.jnc.2015.06.002

Karamanlidis A.A., Sanopoulos A., Georgiadis L. and Zedrosser A. (2011), *Structural and economic aspects of human-bear conflicts in Greece*. Ursus, 22(2):141–151. https://doi.org/10.2192/URSUS-D-10-00016.1

Lasswell H. D. (1971), *A Pre-View of Policy Sciences*. Elsevier, New York.

LCIE-Large Carnivore Initiative for Europe (15 June 2018) 'Brown Bear'. Retrieved from: http://www.lcie.org/Large-carnivores/Brown-bear

Mattson D.J., Byrd K.L., Rutherford M.B., Brown S.R. and Clark T.W. (2006), *Finding common ground in large carnivore conservation: mapping contending perspectives*. Environmental Science & Policy, 9(4):392–405.

https://doi.org/10.1016/j.envsci.2006.01.005

Mazur K.E. and Asah S.T. (2013), *Clarifying standpoints in the gray wolf recovery conflict: Procuring management and policy forethought*. Biological Conservation, 167:79–89. https://doi.org/10.1016/j.biocon.2013.07.017

Nyhus P., Fischer H., Madden F. and Osofsky S. (2003), *Taking the Bite out of Wildlife Damage: The Challenges of Wildlife Compensation Schemes.* Conservation in Practice, 4(2):37–43. https://doi.org/10.1111/j.1526-4629.2003.tb00061.x

Nyhus P. J. (2016), *Human–Wildlife Conflict and Coexistence.* Annual Review of Environment and Resources, 41:143-171. https://dx.doi.org/10.1146/annurev-environ-110615-085634

Rastogi A., Hickey G.M., Badola R. and Hussain S.A. (2013), *Diverging viewpoints on tiger conservation: A Q-method study and survey of conservation professionals in India*. Biological Conservation, 161(Supplement C):182–192. https://doi.org/10.1016/j.biocon.2013.03.013

Redpath S.M., Linnell J.D.C., Festa-Bianchet M., Boitani L., Bunnefeld N., Dickman A., … and Milner-Gulland E.J. (2017), *Don't forget to look down – collaborative approaches to predator conservation*. Biological Reviews, 92(4):2157–2163. https://doi.org/10.1111/brv.12326

Redpath S.M., Young J., Evely A., Adams W.M., Sutherland W.J., Whitehouse A., … and

Gutiérrez, R. J. (2013), *Understanding and managing conservation conflicts*. Trends in Ecology & Evolution, 28(2):100–109. https://doi.org/10.1016/j.tree.2012.08.021

Reed M.S. (2008), *Stakeholder participation for environmental management: A literature review*. Biological Conservation, 141(10):2417–2431. https://doi.org/10.1016/j.biocon.2008.07.014

Reed M.S., Graves A., Dandy N., Posthumus H., Hubacek K., Morris J., … and Stringer L.C. (2009), *Who's in and why? A typology of stakeholder analysis methods for natural resource management*. Journal of Environmental Management, 90(5):1933–1949. https://doi.org/10.1016/j.jenvman.2009.01.001

Rust N.A. (2017), *Can stakeholders agree on how to reduce human–carnivore conflict on Namibian livestock farms? A novel Q-methodology and Delphi exercise*. Oryx, 51(2):339–346. https://doi.org/10.1017/S0030605315001179

Rutherford M.B., Gibeau M.L., Clark S.G. and Chamberlain E.C. (2009), *Interdisciplinary problem solving workshops for grizzly bear conservation in Banff National Park, Canada*. Policy Sciences, 42(2):163–187. https://doi.org/10.1007/s11077-009-9075-5

Theodorakea I.T. and von Essen E. (2016), *Who let the wolves out? Narratives, rumors and social representations of the wolf in Greece*. Environmental Sociology, 2(1):29–40.

https://doi.org/10.1080/23251042.2015.1119349

Van Exel J. and Graaf G. (2005),. *Q Methodology: A Sneak Preview*. Retrieved from: http://sites.nd.edu/lapseylab/files/2014/10/vanExel.pdf

Wallace R.L. and Clark S.G. (2014), *Convergent Evolution in the Interest of Integrative Problem Solving: Connecting the Policy Sciences and Interdisciplinary Studies*. Issues in Interdisciplinary Studies, 32:134–169. Retrieved from: https://eric.ed.gov/?id=EJ1117906

Watts S. and Stenner P. (2005), *Doing Q methodology: theory, method and interpretation*. Qualitative Research in Psychology, 2(1):67–91. https://doi.org/10.1191/1478088705qp022oa

Watts S. and Stenner P. (2012). *Doing Q Methodological Research: Theory, Method & Interpretation*. London, SAGE.

Weiss J.A. (1989), *The powers of problem definition: The case of government paperwork*. Policy Sciences, 22(2):97–121. https://doi.org/10.1007/BF00141381

Zabala A., Sandbrook C. and Mukherjee N. (2018), *When and how to use Q methodology to understand perspectives in conservation research*. Conservation Biology, 32(5):1185-1194. https://doi.org/10.1111/cobi.13123

SUPPLEMENTARY MATERIAL

Table X1: 'Problem orientation' tasks and corresponding statements for the bear issue in Northern Greece

'Problem orientation' tasks	Corresponding statements (#)
Trend description: To what extent have past and recent events approximated the preferred terminal states? What discrepancies are there? How great are they?	1, 2, 3, 7, 8, 9, 16, 21, 22, 25, 26, 28, 29, 30, 31, 32
Analysis of conditions: What factors have conditioned the direction and magnitude of the trends described?	4, 5, 6, 10, 11, 12, 13, 14, 15, 18, 19, 23, 34
Projection of developments: If current policies are continued, what is the probable future of goal realizations or discrepancies?	27, 34, 38, 47,65
Goal clarification: what future states are to be realized as far as possible in the social process?	17, 33, 37, 42, 45, 55, 66, 67
Invention, evaluation, and selection of alternatives: What intermediate objectives and strategies will optimize the realization of preferred goals?	20, 24, 35, 36, 38, 39, 40, 41, 43, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64

Table X2 : Factor arrays of statements per factor ("−5: least agree" to "+5: most agree")

STATEMENTS	Factors		
	I	**II**	**III**
1 The bear's population increase has created problems concerning their co-existence with humans, problems which were not present 20 years ago	2	1	0
2 What "many" bears means is relevant, it differs from one person to another. For someone 100 bears are many, for another five bears are many	1	-2	5
3 I do not think the bear is an endangered species	-3	1	5
4 A bear is dangerous only if you provoke her or when they are with their baby- then they are aggressive. If they are alone they will not hurt you.	4	-5	3
5 The bear feeds both from the wild nature and from human cultivations. Some years- due to the weather, the rainfall and so on- the fruit that the bear will find in nature are enough, thus she will not turn that much to human cultivations. Some other years [the wild fruits] are not enough, and then the bear will do more damage.	3	2	0
6 Nowadays the places in which the bear may live on her own, undisturbed, are limited- and this changes her behavior, both towards humans and towards the cultivations.	3	-4	-1
7 The bear does not cause mass and big damage to a herd, in comparison to the wolf for example. At most she will kill two or three animals.	5	0	-2
8 The biggest damage by bears is inflicted on the beehives, rather on the cultivations or the herds.	3	-2	-4
9 The bear-related damages in our area are quite limited	-1	-2	-3
10 The claim that the ecologists release bears into the wild is a hoax and coffee-shop small talk	5	-1	-3
11 The bear population has increased because people have abandoned the countryside, there are no human activities up in the mountains, thus the bear got a bigger habitat.	3	3	-1
12 Humans are mainly to be blamed for the problems with bears. Because it is man who change the bear's vital space, who broke up her habitat, for example by highways, so now the bear cannot but enter into man's area and causes problems to humans	4	-3	3
13 The NGOs play with people's feelings because they present the bear as a poor wretched animal, while this is not the case. The bear is the strongest animal of Greek fauna and she can defend herself, she has no need for help.	-2	0	0

14 NGOs have become a mechanism for satisfying their own views and goals and they do not take into account the society and those affected by the bear	-3	3	1
15 The NGOs' activities relating to education, research, new information, have helped the people seeing the bear in a different, more positive, way.	3	-3	1
16 ELGA compensates for the yearly production but not for the trees that the bear may have destroyed. It compensates for the damaged beehive, but not for the honey. Compensation is not objective, it does not cover 100% of what was lost.	4	0	-1
17 I don't want that the bear causes me any trouble and thus ending up to ELGA. Cause my damage will be greater than the compensation from ELGA. Since, if the bear kills ten of my sheep during springtime, the period I am milking, or in the autumn, when the animals are pregnant, ELGA will not compensate me for the forgone milk or lambs.	4	4	-1
18 Surely the bears are to be blamed for the damages. Yet some of these damages could have been dealt with more effectively, and for this not happening it is the farmers' fault as well as ELGA's compensation system [fault] which does not operate in the right direction.	2	2	1
19 ELGA asks you for a huge installation of protective measures, for example to put electric fencing, yet it does not subsidize the installation costs for the farmers, just for the beekeepers	2	1	-2
20 Compensating is a management tool, yet not the most effective one. It is better to prevent bear-related damage than to compensate it	5	0	4
21 As things are now, there is not really an agency which truly deals with addressing the problems caused by the bears	0	4	3
22 The main problem with compensation is the bureaucracy. It is very hard for a herder, especially an elderly one, to do all the necessary procedures required for the compensation. It seems like a mountain to him!	0	2	0
23 There are many measures for the bear's management, yet they exist only on paper and they are not implemented since there exist neither the operational/institutional framework nor the necessary economic resources.	-1	2	2
24 You should not shoot to kill a bear, unless you are in defence.	4	3	-2
25 If you consider the existing tensions and rivalries as well as the damages bears cause, the cases of taking-the-law-into-one's-hand are very few, the cases when someone deliberately kills a bear.	-2	2	0
26 Sometimes bears get killed by accident, by hunters ambushing the wild boar, since the silhouette, the appearance, of the two animals are quite similar if you see them in a glimpse, and hunters confuse the two [animals]	-4	-4	-2
27 If people are not meaningfully compensated for damages caused by the bear, then they will see it as an enemy, as a threat to their crops and production, and then they will shoot to kill	0	-2	4

28 Sometimes, producers try to present a bigger damages to what has actually occurred, in order to get the maximum of ELGA's compensation	3	1	0
29 You have to choose between, your survival, the bear's survival and a state which does not pay attention	0	2	-3
30 There are tensions between those who are injured by the bear and those who support too much the bear.	0	0	2
31 The damages that the bear causes to the producers do not have a negative impact on how the animal is perceived by the country folk. They are part of husbandry and agriculture.	0	-3	-4
32 It is not that people are afraid of penalties and the law, and thus they don't kill the bears. Rather humans think of the bear as a rare and, to an extent, noble animal- so if they don't suffer great damages they will hardly raise their guns to the bear.	1	1	1
33 We must understand that the bears are a blessing for our area. The bears are an attraction for the people, for the tourists	2	-2	3
34 The appeals to the courts concerning the bears' living [in our area] - which led to new planning for roads, to projects being delayed, to projects losing their funding- all these have created a negative image for the bear	-2	-1	2
35 They must make a place, to find an area, and there to protect the bears, to have them there. And if any [bear] gets out of that area, to drug her and take her back	-4	-5	-5
36 The Forest Agency, the clubs, the NGOs and others, should cultivate some acres of corn, so that the bears may feed themselves and to go and stay there.	-4	-5	-3
37 Zones should be demarcated: the bear to have her own habitat, the humans to have their own space	-1	-1	-4
38 If the number of bears increases even further, those in excess should either be taken to zoos or to be sent to the countries which wish to re-introduce the species	-5	0	-4
39 If a bear constantly causes damages, it should be killed.	-5	-1	2
40 Due to the large number of bears in certain areas, there the selective hunting of bears should be allowed in order to control their numbers	-5	-3	-3
41 We may contain the bears, to keep them away from villages, road and cultivations with a system of audio waves, using transmitters, without wires and fences	-4	-4	-3
42 Whatever measures we take the bears will continue to cause damages to human cultivations. It is something normal, it is in their nature, they do it because it suits them	-1	-1	2
43 The NGOs which are dealing with the bear should not operate autonomously as they do now; rather there should be some control and a connection with the public services in order for the measures taken to be more effective, both for the bears and for the producers	2	4	3

44 Everyone dealing with the bear, and the NGOs like Arcturos and the rest, should become one organization, one agency, so that you may know to whom you should appeal. Currently you are sent from pillar to post.	1	4	1
45 NGOs do not offer anything more than the State on the bear issue. They are not necessary	-4	2	-2
46 If a bear causes damages to cultivations or animals which are not insured with ELGA, then the NGOs should compensate the producers. They get all this money for the bear!	-2	-1	0
47 The NGOs which support the bear should find a different formula of support, cause their appeals to the courts creates a bad image for the bear	-1	1	0
48 The NGOs should inform more the people about the bear, its life, its needs, about everything concerning the bear, and not to present her as a museum exhibit	-1	3	3
49 The animal herders and the producers should be 100% subsidized for the measures they take for protecting themselves from the bear, e.g. for buying electric fencing.	1	5	-1
50 Even those actions which are indirectly related to be protected against the bear should be subsidized. For example, there exist small stabling facilities which have no electricity. Thus, we should subsidize the purchase of small photovoltaic units by the herders, so that they may produce electricity and be able to install some electric fencing	0	1	-1
51 One solution for protecting the bear is to say to one farmer, 'I will pay you that much money in order to cultivate your field with whatever the bears eat and not collect your produce. Leave it for the bears to eat'	-3	-4	-5
52 ELGA's compensation should cover in full the real value of the damage caused by the bear	2	4	1
53 The bear should have the right to eat a percentage of the crops, of the produce, lets say 10%, and no compensation should be given for that damage	-3	-4	-5
54 The use of preventive measures by the producers should be incorporated in the compensation system of ELGA. I mean, the producer should be compensated if the bear caused damage while and besides the producer taking the necessary preventive measures, e.g. having established an electric fencing.	-2	5	-4
55 The Greek State should implement in practice, even with small steps, one by one, all these that it had legislated on paper	1	0	2
56 The Greek State should not be influenced by the views of many NGOs which most times operate as animal welfare groups rather than managing bodies	-3	3	4
57 We must have a clear, updated and institutionalized Action Plan for the Bear, with a time frame for the next 5-10 years. We must know the condition of the bears' population, what are its trends, what are the problems it faces and how can we deal with them, to monitor the results of our actions	1	-1	4
58 We must find simpler and more flexible ways to compensate all, even the smallest, bear-related damages.	-2	3	-2

59 ELGA should remain a public insurance agency of the producers. We should not move towards a private insurance framework for producers concerning wildlife-related damages, as it starts happening in the rest of Europe	-3	-3	0
60 The cost of the measures for protecting the bear should be taken on by the Greek State	-1	5	-1
61 To improve the bear management, the Greek State must provide more financial resources	-2	1	-2
62 A more active environmental education on the possibilities of a peaceful co-existence of humans and wild fauna, such as the bear, is needed.	0	0	1
63 What is needed are environmental education courses at schools, so tomorrow's citizens will respect the bear and assess it in the right way	1	-1	4
64 People in the countryside should be informed about what the "ecologists" do and what they really want to achieve	2	0	2
65 The same way we co-exist today with the bear, we will co-exist in the future… we will not have any particular problems	0	-2	1
66 The bear is a treasure, it is wealth for us, and we must make the best of it as they do in other countries	1	-2	1
67 I think that nature regulates on itself the bear population. We should not intervene in nature but leave her regulate things on her own.	-1	-3	5

Table X3: Correlations between Factors' scores

FACTORS	1	2	3
1	1.0000		
2	0.1294	1.0000	
3	0.2513	0.1698	1.000