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Beyond standard wildlife management: a pathway to encompass human dimension findings in wild boar management

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Abstract Around the Regional Nature Reserve Nazzano-Tevere-Farfa in Central Italy, wild boar ecological and economic impacts have increased over the last decade, creating the need for an integrated wildlife management approach. Since 2006, park authorities have used an average of 17 % of the yearly protected area budget for compensation and 5 % for preventive measures. Additionally, 14 wild boar/km^2 were culled in 2009. While the management tools used in the protected area were effective in reducing the species' impacts, they did not decrease human-wild boar controversies. To understand the reasons behind such conflicts, user opinions toward the wildlife management approaches used (i.e., preventive measures, compensation, capture, and removal) and planned (i.e., culls) in Nazzano-Tevere-Farfa were explored. Face-to-face interviews were carried out with the general public ($n=288$), hunters ($n=57$), and farmers ($n=107$) in 2009–2010. Differences in attitudes toward preventive measures ($\chi^2(8)=40.35$, $p<.001$), compensation ($\chi^2(8)=34.11$, $p<.001$), capture and removal ($\chi^2(8)=98.23$, $p<.001$), and culls ($\chi^2(8)=77.10$, $p<.001$) were highlighted by Chi-square analysis. The Potential for Conflict Index showed that, overall, park users supported preventive measures and compensation, but not capture and removal and culls. Workshops organized with hunters and farmers in 2010 highlighted that park

authorities had not considered user expectations when planning wild boar management. If decision makers want to address conflicts, they need to go beyond standard management by tailoring their practices to the specific social context in which they work. Effective management is not only about reducing impacts, it is also about listening to people living with wildlife.

Keywords Human dimension · Integrated management · Italy · Lack of public involvement · Protected areas · Wild boar

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Introduction

Across European countries, wild boar (*Sus scrofa*) populations have increased and expanded their home range in the last century (Sáez-Royuela and Telleriá 1986; Apollonio et al. 2010; Putman et al. 2011; Massei et al. 2014). Expanding wild boar populations have caused rising conflicts as the species has started degrading natural environments, impacting other wildlife populations, and damaging human livelihoods and belongings (Groot Bruinderink and Hazebroek 1996; Schley and Roper 2003; Massei and Genov 2004; Schley et al. 2008; Barrios-Garcia and Ballari 2012). Wild boar have become a problematic species requiring management which is difficult to implement as the species finds shelter during the hunting season inside protected areas (e.g., "reserve effect") where year-round hunting is not allowed (Tolon et al. 2009; Rosell et al. 2011; Massei et al. 2011). To address complex wild boar management challenges in protected areas—damages caused to ecosystems, other wildlife species, and agriculture; vehicle collisions; disease transmissions—integrated management approaches have been used (Monaco et al. 2010; Massei et al. 2011). Integrated wildlife management, also described in the literature as integrated wildlife damage management and/or

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integrated pest management, consists of the use of a combination of methods to prevent and reduce wildlife damages (USDA U.S. Department of Agriculture 2002; Bodenchuk 2007). In the case of wild boar, park authorities have often concurrently carried out standard management approaches, such as preventive methods (e.g., electric fences, heavy wire, artificial feeding, repellents), compensation for damages, and control (e.g., capture and removal, culling) of wild boar, to reduce the impact of the species in and around protected areas (Monaco et al. 2010; Rosell et al. 2011).

As wild boar populations have expanded across Italy, human dimension studies have also; the main theme of these studies has been to understand the attitudes of the general public or interest groups toward wild boar and its management, especially in and around protected areas (Panchetti 2003; Frassanito 2005; Rulli and Savini 2008; Carnevali and Scacco 2009; Pontuale 2009; Frank and Bath 2012). Despite human-wild boar conflicts in Italy being recognized as more sociopolitical than biological in nature (Carnevali and Scacco 2009; Monaco et al. 2010; Frank and Bath 2012), human dimension efforts have remained single-case studies providing overviews of wildlife and its management with limited engagement of local communities in decision-making processes (Glikman and Frank 2011). While the necessity to include people in wild boar management has been widely recognized, the partial on the ground involvement of local communities in wildlife issues has often resulted in a decrease in public trust and in an increase in hostility between park users and park authorities (Glikman and Frank 2011; Frank and Bath 2012).

To start a dialog and set the foundation for collaborative work between protected areas and local communities, a facilitated human dimension decision-making project was initiated by the Regional Park Agency of Lazio Region (ARP) and the Memorial University of Newfoundland (Canada). A case study area, the Regional Nature Reserve Nazzano-Tevere-Farfa (RNR-NTF), was selected. While the integrated management approach used in RNR-NTF was effective in reducing wild boar ecological and economic impacts, controversies between local residents, wild boar, and the protected area continued to escalate. This contradictory situation made RNR-NTF the ideal location in which to explore residents' attitudes toward the application of integrated management tools. Compensation, preventive methods, and wild boar capture and removal have been simultaneously applied since 2006 in the protected area (ARP 2010). An average of 17 % of the yearly protected area budget (over 40.000 €) was allocated to compensate residents for damages caused by the growing and expanding wild boar population in the RNR-NTF between 2006 and 2009. In the same period, an average of 5 % of the yearly protected area budget (over 12.000 €) was allocated to provide preventive measures to farmers. To further reduce the impact on agricultural land and to protect the natural ecosystem inside the protected area, 14 wild boar/km² were trapped

and removed in 2009 from the protected area by park rangers. Trapping and removing are the only wild boar population control method applied by park authorities in RNR-NTF. Nevertheless, interest is growing in applying culling with rifles within the protected area's boundaries, making this tool another management option to be considered while exploring park user attitudes. To explore the opinions of park users (i.e., general public, hunters, farmers) living or working in and around the protected area regarding wild boar management, attitudes toward preventive measures, compensation, and wild boar population control were explored in RNR-NTF. The hypotheses underlying this study are as follows:

H1: the general public, hunters, and farmers will hold dissimilar views on what should be done to efficiently manage wild boar in the protected area based on their personal interest toward the species;

H2: the lack of involvement of the general public, hunters, and farmers in wild boar decision-making processes will lead to an escalation of conflict over the integrated management tools used in RNR-NTF.

Study site

The RNR-NTF is situated between the provinces of Rieti and Rome (Central Italy) and covers a surface of 7.07 km². The rivers Farfa and Tevere cover 1.11 km² of the RNR-NTF, which is a Ramsar international wetland site for migratory bird protection (D'Antoni and Lugari 2005). The natural landscape of the protected area includes a mosaic of wetland, reeds, forests, and cultivated fields. It is bounded by four villages: Nazzano (1251 residents), Torrita Tiberina (932 residents), Filacciano (502 residents), and Montopoli di Sabina (4242 residents) (ISTAT 2004). No residents live inside the RNR-NTF. Despite being surrounded by a landscape with dense human population, this protected area supports a rich avian fauna. Protecting birds is the primary conservation goal of this area, which is currently undermined by wild boar impacts on habitats and by this species predation on several birds' nests (Bertolino et al. 2010).

Methods

Survey design and data collection

Close-ended questionnaires were administered through face-to-face interviews to people living around the RNR-NTF protected area in 2009. The general public, hunters, and farmers were identified as user groups within the study area. The participating hunters were local and included both wild boar and non-wild boar hunters. Farmers were defined as people farming an agricultural plot of any size in and around the

protected area. Local participants without any particular interest or relationship toward the species were defined as the general public.

Interviews were conducted in Nazzano, Torrita Tiberina, Filacciano, and Montopoli di Sabina due to the proximity of these communities to the reserve. The appropriate sample size for each community within the territory of RNR-NTF (Sheskin 1985; Hall and Hall 1996; Vaske 2008; Warner 2008) was calculated from the most recent national census at the time of the study (ISTAT 2004). A total of 534 residents were contacted, and 420 of them agreed to participate in the survey, for an overall response rate of 75 %. Having a sample size of at least 400 participants allows for results with an accuracy level of 95 % (Sheskin 1985; Vaske 2008).

To make sure that the survey sample included hunters and farmers interested in and affected by wild boar management, additional interviews were conducted in 2010 at two workshops organized by the protected area. One workshop was tailored to farmer organizations and farmers impacted by wild boar; the other was organized for the hunter groups operating in the area. Posters advertising a workshop on wild boar impacts and management in RNR-NTF were displayed at farmers' organization headquarters and hunter clubs. Participation in the workshop was voluntary. The 6 farmers and 26 hunters who participated in the workshop were asked to self-complete the same survey instrument administered to people living around the protected area in 2009 before the start of the meeting. All workshop participants agreed to take part to the survey, allowing for the collection of an additional 32 questionnaires. As the questionnaires used to collect data in 2009 and 2010 were the same, the general survey and workshop survey were combined for data analysis.

From the 452 interviews conducted between 2009 and 2010, 288 were from members of the general public, 57 from hunters, and 107 from farmers. The number of hunters and farmers participating in the survey were a result of random selection and the workshop attendance. Attitudes toward wild boar management approaches were explored among the three categories of park users living around the protected area. Specifically, park users indicated on a five-point Likert-type scale their level of opposition (-2) or support (2) toward the following: (a) preventive measures; (b) compensation; (c) capture and removal; and (d) culling of wild boar inside the protected area.

During each workshop, data on wild boar management (i.e., population numbers, compensation and preventive methods, and capture and removal numbers) and on the HD survey carried out in 2009 were shared with participants. A follow-up meeting was organized with hunters who expressed interest in further discussing the integrated wild boar management approach applied in RNR-NTF. A note taker recorded discussions during the two workshops and the follow-up meeting. The qualitative data were instrumental in the interpretation of the quantitative data obtained through the interviews, as well as helping to identify conflicts between farmers, hunters, and park authorities over wild boar and its management. Qualitative data helped characterize wild boar management issues and in build "a complex, holistic word picture that explains or interprets detailed views of participants" (Creswell 1998).

Data analysis

A Chi-square was performed to examine if differences in attitudes toward wild boar management tools were present between the general public, hunters, and farmers in RNR-NTF. To take into account possible large sample size effects, Cramér's V measures were reported for each comparison. For these analyses, V was considered as a "minimal" relationship with values of 0.1, as a "typical" relationship with values of 0.30, and as a "substantial" relationship with values of 0.50 and over (Vaske 2008). All analyses were carried out using the software SPSS version 20 (SPSS 2012).

The preferences displayed by users over wild boar management tools were further explored with the second generation of the Potential for Conflict Index (PCI$_2$), a graphic technique that enables researchers to facilitate the understanding and applicability of human dimension findings (Manfredo et al. 2003; Vaske et al. 2006, 2010; Vaske 2008). The PCI$_2$ conveys information about the dispersion and the central tendency distribution of data in a bubble. The size of the bubble represents the dispersion of the data and displays the degree of potential conflict over the acceptability of a specific action (e.g., how acceptable it is to cull wild boar). The values for PCI$_2$ range from 0 to 1, where 0 indicates no conflict and 1 indicates maximum conflict. Thus, the bigger the bubble, the more potential conflict there is over a specific issue within a user group. The mean, or central tendency distribution of the data, is plotted on the Y-axis or neutral point of a rating scale. Depending on participants' response to a proposed management action, the bubble will be situated above the Y-axis, if the action is supported, or below it, if the management approach is opposed (Vaske et al. 2006, 2010; Vaske 2008). To calculate the PCI$_2$ values and test differences between actual PCI$_2$ values, we used the software available at http://warnercnr. colostate.edu/~jerryv/PCI2/index.htm.

Results

Significant differences in attitudes toward preventive measures, compensation, capture and removal, and wild boar culling were found between the three user groups (Table 1). Differences between the groups were not due to the sample size.

The PCI$_2$ index was used for each group across the wild boar management approaches explored with the Chi square

Table 1 Chi square statistic and effect size index for attitudes toward wild boar management tools between the general public, farmers, and hunters in RNR-NTF

Item	$\chi 2$	df	p value	Cramer's V
Preventive measures	40.35	8	<.001	0.213
Compensation	34.11	8	<.001	0.165
Capture and removal	98.23	8	<.001	0.334
Culling	77.10	8	<.001	0.295

statistic (Fig. 1). The general public ($PCI_2=0.16$) and farmers ($PCI_2=0.17$) supported the idea of providing preventive measures as a management tool. Despite being in favor of this management approach, hunters were less homogenous in their responses and less supportive than the other two groups of providing fences and other materials to reduce wild boar impacts ($PCI_2=0.37$). The PCI_2 values for preventive methods were significantly different between hunters and the general public ($d=2.30$, $p<0.05$) and hunters and farmers ($d=2.02$, $p<0.05$). A similar pattern is repeated regarding compensation; with the general public ($PCI_2=0.17$) and farmers ($PCI_2=0.22$) in favor, while hunters ($PCI_2=0.33$) were less in consensus oversupporting compensation for wild boar damage. Nevertheless, the PCI_2 values for this management option are not significantly different between the three groups. Differences between park users became more evident when exploring attitudes toward the wild boar population control methods currently used (i.e., capture and removal) and those being proposed (i.e., culling) for the protected area. The general public was quite divided in opinion when considering tools that envisioned the killing of the species, as shown by the high degree of conflict over the acceptability of these specific management actions. Nevertheless, capture and

removal ($PCI_2=0.37$), with a bubble above the neutral axis, was slightly less controversial than culling wild boar ($PCI_2=0.39$) for the general public. Despite being less homogenous than for previous management tools, farmers did support both capture and removal ($PCI_2=0.25$) and culling ($PCI_2=0.36$) of wild boar in RNR-NTF. Hunters instead expressed higher degrees of internal conflict toward capture and removal ($PCI_2=0.61$) and for culling ($PCI_2=0.61$) of wild boar. The large size of the bubble representing both wild boar population control methods highlights that hunters are less cohesive as a group in their attitudes about this topic. The PCI_2 values for capture and release were significantly different between all three groups, the general public and farmers ($d=2.31$, $p<0.05$), farmers and hunters ($d=4.58$, $p<0.05$), and the general public and hunters ($d=3.61$, $p<0.05$). For culling, significant differences were found between hunters and the general public ($d=3.41$, $p<0.05$) and hunters and farmers ($d=3.40$, $p<0.05$).

Qualitative data were collected during all phases of the HD project (i.e., face-to-face interviews, workshops, and the follow-up meeting). Based on these data, we identified park users' gap in knowledge, as well as expectations toward RNR-NTF (see summary Table 2).

Discussion

Over the study period, extensive wild boar population control by park rangers led to a reduction in the wild boar population density and to a decrease in ecological and economic impacts in and around RNR-NTF. Compensation payments, when supplied by the protected area to eligible individuals, covered 100 % of the damages caused by wildlife to human belongings (ARP 2010). More regional investment was made available to provide preventive measures to farmers inside the park. Attitudes of residents

Fig. 1 Potential for Conflict Index (PCI_2) for the general public, farmers, and hunters on attitudes toward wild boar management tools. Scores near each bubble represent the PCI_2 value
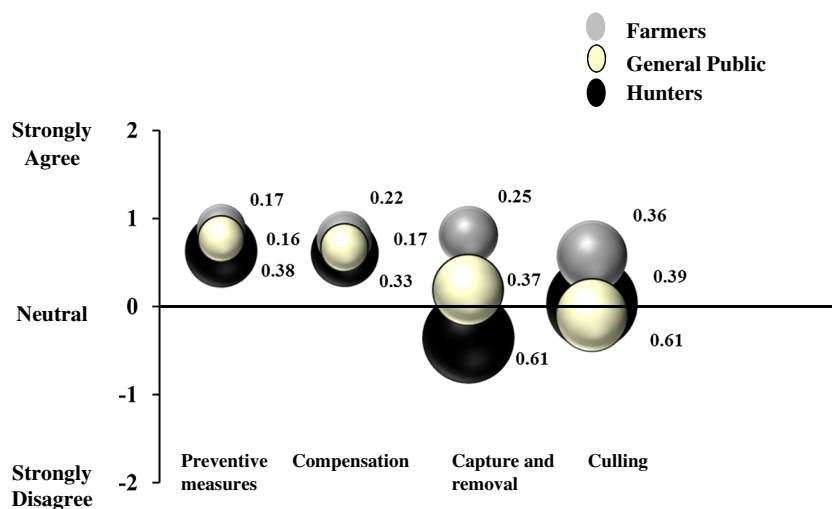
Table 2 Summary of qualitative data collected through face-to face interviews, workshops, and a follow-up meeting from the public, farmers, and hunters in RNR-NTF

Park users	Gap in knowledge, necessities, and expectations
General public, Farmers, Hunters	• Lack of knowledge about RNR-NTF conservation goals • Lack of knowledge of wild boar ecological impacts on migratory and resident birds • Lack of knowledge about wild boar management activities carried out inside RNR-NTF • Lack of trust toward park authorities
Farmers	• Time to obtain compensation/preventive measures too long • Regulations that explain how to obtain compensation/preventive methods unclear and difficult to access • Damage assessments procedure unclear • Not sure who should be in charge of maintaining in operation the preventive measures (i.e., electric fences) provided by the protected area • Need for support to maintain in operation the preventive measures provided by the protected areas
Hunters	• Lack of transparency on the wild boar population control activities carried out inside the protected area (i.e., number of animals removed per control session, sex ratio, age structure) • Willingness to support protected area by installing and maintaining preventive measures offered to farmers, assisting in wild boar monitoring, and carrying out the culling inside the protected area

toward integrated wild boar management were documented. The general public, farmers and hunters held different attitudes toward wild boar management tools depending upon their interest toward the species (H1). While the general public was in favor of providing preventive measures and compensation for wild boar damages, they did not like approaches that directly impacted wild boar numbers. Existence value, animal rights, and mistrust about how the protected area would carry out wild boar population control inside RNR-NTF are some of the reasons behind such opposition. Hostility toward using culling with rifles for wildlife control inside protected areas also explains why the general public is against wild boar population control. Farmers, the group most impacted by wild boar damages, supported all management tools as long as the approaches selected reduced wild boar economic impacts on agricultural land. Despite having a less homogeneous opinion as a group about how the species should be managed inside RNR-NTF, hunters were supportive of providing preventive measures and compensation. However, reducing the density of the species inside the protected area represented a controversial topic for this group since these practices subtract game from hunters and affect their ability to hunt wild boar in the areas surrounding the protected area. The PCI_2 offers a better understanding to managers of consensus and diversity in opinions within and between groups. This analytical tool offers the ability to go beyond just documenting opinions toward the integrated management options; it allows practitioners to understand that conflict about wild boar management is ahead when a large numbers of individuals within a user group holds different views about how to manage this species (e.g., hunters). This widely used and validated visual technique further highlights which management approaches are perceived as more controversial (e.g., wild boar population control) than others (e.g.,

preventive measures). By testing differences between PCI_2 values, it becomes clear that consensus is missing within and between groups regarding wild boar population control. The PCI_2 results obtained through this study offer insights on the different interests park users hold toward wild boar. Such an understanding is instrumental in determining the capacity in which user groups can be involved in supporting and implementing integrated management approaches and wildlife decision-making.

Using integrated wildlife management tools and documenting peoples' attitudes toward a species are, however, not enough to really tackle human–wildlife conflicts. Acts of vandalism toward protected area infrastructure (e.g., damage to park ranger vehicles), sabotage of wild boar population control activities, threats toward park rangers, and media debates over the species have escalated since 2010, suggesting that the current approach is not working to reduce conflict with park users. Standard integrated management, such as preventive measures, compensation, and wild boar population control, can be successful in reducing the species economic and ecological impacts. Nevertheless, social conflicts can persist and increase if local communities' interests and expectations are not considered while implementing integrated management approaches (H2). We believe that conflicts in RNR-NTF could have been better addressed if the protected area would have embedded the human dimension findings of the present study in their wild boar management mandate.

By listening to local residents, park authorities would have realized that most of the controversies in the area are not about wild boar per se. For example, some of the issues related to wild boar mentioned by farmers during the 2010 meeting were the lack of clarity on how to access and benefit from compensation and preventive measures, how the

damage assessment process was carried out, and the extreme slowness of obtaining repayment once park authorities had assessed a damage event. Based on this knowledge, park authorities should provide technical support and guidelines that clarify compensation/preventive method eligibility criteria, assessments, and procedures. It is important for guidelines to include information on farmers' responsibilities and duties in maintaining preventive measures in operation once obtained. In addition, making the repayment process quicker should be a priority for the protected area, as letting individuals wait for 1–2 years before getting their compensation causes loss of trust between affected residents and the park authorities.

Hunters clearly expressed their frustration about the lack of information on the wild boar population control activities carried out inside the protected area and the number of animals being culled per control session. A participant of the workshop stressed that "the cages used to capture wild boar in the reserve are against animal rights laws" (personal comment from a hunter). Yet, the trapping devices used in RNR-NTF are the ones ratified by the national wild boar management guidelines (Monaco et al. 2010). Mistrust toward the protected area authorities and the lack of transparency around how wild boar are managed are the main reasons behind hunters' negative attitudes toward the species management and the protected area. The workshop and follow-up meeting with hunters were instrumental in showing how this group can represent a source of help and insight for the protected area. Hunters are willing to support managers in providing preventive measures to farmers, assisting in wild boar monitoring, and carrying out the cull inside the protected area. Future research should focus on understanding how to enhance park users' responsibilities and commitment toward the protected area through active engagement in decision-making processes (e.g., participate in meetings) and contribution to wild boar management (e.g., maintain electric fences, participate in wild boar monitoring). Keeping the public interested and engaged over time is necessary to foster support toward integrated wild boar management, thus reducing conflict toward wildlife.

Tailored communication messages should be provided to the general public, farmers, and hunters through the protected area Web site, social media (e.g., facebook, local media), and other educational means (e.g., pamphlet, posters in local bars). It is necessary to clarify to all park users that the primary goal of RNR-NTF is protecting resident and migratory birds. As wild boar causes significant ecological impacts to such species' nests (Bertolino et al. 2010), it is mandatory for park authorities to control the wild boar population. Another key message to provide to park users is the rationale behind selecting specific management techniques to control wildlife species. For example, explaining that a cull using rifles inside RNR-NTF is unsafe due to the limited geographical extension of the protected area is key to address current conflicts. Another topic to be discussed in the communication campaign is wild boar population control sessions. Clarifying how many animals are removed from the area per wild boar control session is necessary to start a dialog with local residents and to set the foundation for future collaborative work between the protected area and the public.

Recommendations for management approaches

Management approaches that focus on the physical impact of species on nature and people have often represented a constraint to the efficient management of wildlife (Messmer 2000, 2009; Mascia et al. 2003; Treves and Bruskotter 2014). By not considering that people attribute different, and often contrasting, emotional, mental, spiritual, social, cultural, and economic values and interest to a species (Woodroffe et al. 2005; Decker et al. 2012), managers have often applied approaches that have raised controversy between the public and wildlife (Green et al. 1997; Siemer et al. 2004; Bronner 2008; Dandy et al. 2011). For example, tensions over wild boar in and around protected areas have frequently become worse as managers have not recognized that this species can be perceived as ecologically important for wolf conservation (Meriggi and Lovari 1996; Apollonio et al. 2004), as a "pest" that causes considerable damages (Putman et al. 2011; Massei et al. 2011), and as an important game species (Tsachalidis and Hadjisterkotis 2008; Toïgo et al. 2008; Scillitani et al. 2010)—all at the same time. As long as decision makers are not open to listening to people and integrating communities' expectations into their management mandates, conflicts with wildlife will escalate. To avoid fostering negative attitudes toward species and protected areas, it is necessary to understand the social context (e.g., the socio-cultural characteristics) in which human–wildlife interactions occur. Such an understanding is key to implement and tailor standard wildlife management approaches to specific social contexts, especially when controversial tools such as wildlife population control are needed. Different human dimension approaches, such as interviews, public meetings, and focus groups, can be used to better characterize the social context in which wildlife management and conservation occur. Taking advantage of the knowledge generated through those approaches can make the difference between designing a generic management plan versus an integrated socio-ecological approach that considers both standard management tools and public interests.

Another powerful outcome offered by human dimension studies is the documentation of false beliefs and gaps in knowledge, often key drivers of human–human conflicts about wildlife. Such cognitive conflicts can be addressed

through enhancing transparency, sharing information, and providing communication material to the interested public. Choosing the "wrong" messenger or communication tool to share wild boar management and human dimension findings may lead to public rejection and enhanced conflicts. We suggest that further research explores which is the best tool (e.g., social media, local newspaper), what are the most appropriate communication strategies (e.g., pamphlets, webpage, public meetings), and who is the most accredited subject (e.g., regional park authorities, scientists, local politicians) to share such key information with park users. Only with the support of local communities on how to manage wildlife in and around protected areas will decision makers decrease conflict and consequently manage species more efficiently. An integrated approach that considers the biophysical and social aspects of wildlife management will not only clarify the tasks of the protected area and the responsibilities of local communities toward wildlife and the protected area, it will also foster long-term partnerships between residents and park authorities as species management will be based on shared information, participation, trust, and positive attitudes.

Conclusions

Many of the wild boar issues detected in RNR-NTF, such as damages to agricultural crops, wild boar-vehicle collisions, conflicts with hunters over species management, and lack of public involvement, are shared with other protected areas within Italy (Monaco et al. 2010) and other countries, at least in Europe (Rosell et al. 2011). The wild boar management implications suggested for this protected area can be beneficially applied to other contexts and parks. A better integration of wild boar management with facilitated human dimension approaches to design shared wildlife management plans can represent an innovative way to look at human-wild boar conflicts in and around protected areas. The application of a visual display to characterize areas of disagreement and commonality within and between park user groups is pertinent for other species, topics, and geographical locations, making this approach transferable to broader contexts. Future research should focus on better integrating human dimension data with standard management tools in order to address underlying conflicts and controversies over wildlife management and conservation. Such an approach can help in recognizing and applying tools that are supported and accepted by a larger section of society and are thus less controversial and conflict generating.

At a time when human settlements are expanding more and more into natural areas, and interactions between human and wildlife are becoming increasingly common (Woodroffe 2000; Jenkins and Keal 2004; Woodroffe et al. 2005), park managers need to go beyond standard wildlife management and move toward approaches that better encompass local communities (Jacobson and Duff 1998;

Manfredo et al. 2009). Indeed, conservation strategies today may succeed or fail, not because of poorly developed biological science, but due to the lack of a true integration of peoples' values toward wild species in wildlife management (Jacobson and Duff 1998; Mascia et al. 2003). If a wildlife manager's goal is to work toward a more wildlife-tolerant society, projects that embody species conservation and local community engagement in an equal way are desperately needed. As a matter of fact, wildlife management is not only about species, but also about people and their willingness to tolerate and coexist with wildlife.

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