A thesis submitted to the Department of Environmental Sciences and Policy of Central European University in part fulfilment of the Degree of Master of Science

Mapping the Conflict of Raptor Conservation and Recreational Shooting in the Batumi Bottleneck, Georgia



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ABSTRACT OF THESIS submitted by: Anna SÁNDOR

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Illegal resource use is an increasing global problem that threatens biodiversity and often leads to conservation conflicts between affected parties. Such a conflict is emerging in the Batumi Bottleneck, the Republic of Georgia, where every autumn more than one million birds of prey funnel above a handful of villages. This spectacle attracts not only birdwatchers and ornithologists from all around the world, but also local people with shotguns. The tradition of autumn hunting of raptors—which is illegal according to the relevant legislation—has long been a widespread practice in the region, but our understanding of its role as a social activity is still limited, and there is no appropriate policy and practice in place to manage the situation.

As a first step towards a mutually acceptable resolution, the present thesis explores the context of this conflict through the identification of the affected stakeholders and the mapping of their values and goals associated with raptors migrating in the bottleneck.

The results show these values are multifaceted and range on a broad scale from seeing them as a mere food source to appreciating their existence and beauty. While most of the parties are on common ground and consider the shooting unacceptable, they show different preferences about the solution, ranging from no intervention to immediate strict enforcement. It was also found that the most urgent issues to be dealt with are the lack of awareness of the situation; the potential loss of species; and the risk of the escalation of the conflict.

Keywords: illegal resource use, bird migration, birds of prey, illegal hunting, local traditions, conservation conflict, conflict mapping, conflict resolution, Republic of Georgia, Batumi Bottleneck

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CHAPTER 1. INTRODUCTION

Illegal exploitation of natural resources is an increasing global problem that threatens biodiversity (Gavin *et al.* 2010; Solomon *et al.* 2015) and leads to conservation conflicts between groups of people who associate different values with the resource in question (Redpath *et al.* 2013). These values are determined by different cultural and social factors (Virtanen 2003): wildlife is often valued for providing resources, or for its very existence (Robinson 2005), but conflicts also often arise when a species has direct negative effect on human livelihood (Dickman 2010).

Such conflicts are best managed through the understanding of attitudes, beliefs, and values associated with the conflict species, and the related activities (Redpath *et al.* 2013). The mapping of the relevant stakeholders is of key importance in providing grounds for future negotiations and finding appropriate solutions. Taking into account the related attitudes and values is crucial before any management decisions can be taken in order to avoid the escalation of the conflict (Redpath *et al.* 2013).

1.1. Problem Statement

An emerging human-human conservation conflict is perceptible in the Batumi Bottleneck, in the Autonomous Republic of Ajara, Georgia, where more than one million birds of prey migrate over a handful of villages along the eastern coast of the Black Sea (Verhelst *et al.* 2011), many being shot by local hunters in autumn (van Maanen *et al.* 2001).

Shooting of migratory birds, though it is a popular pastime activity in many places (Bauer and Herr 2004; Hirschfeld and Heyd 2005; Fenech 1992; Giordano *et al.* 1998), is forbidden under international agreements signed by Georgia, and raptors are protected according to the national legislation as well, but enforcement is practically non-existent (Pantel and Arabuli 2014).

According to previous studies, the range of estimated casualties is very large (from 1,500 up to 18,000 individuals per year [van Maanen *et al.* 2001; Jansen 2013; SABUKO unpubl.]), and an increase in the number of shots recorded at the migration count stations likely indicates a growing hunting pressure. This worrisome trend has yet unknown consequences for certain vulnerable species like the pallid harrier (*Circus macrourus*) or the greater spotted eagle (*Clanga clanga*), of which

more than 1% of their estimated world population migrates through the bottleneck (Verhelst *et al.* 2011).

Local and international NGOs monitoring migration and hunting activities have recently become increasingly present in the region, and a growing number of foreign people are visiting these villages every autumn to enjoy the phenomena of the migration, which forecasts a potential conflict between conservationists, governmental bodies, and local people. As a first step towards a mutually acceptable resolution, the present thesis explores this emerging conflict through the identification of the affected stakeholders and the mapping of their values, positions and goals associated with raptors migrating in the bottleneck.

1.2. Aims

The aim of this thesis is to understand how conservation, governmental and local community entities perceive shooting of protected birds of prey in the Batumi Bottleneck.

This aim is achieved through a 2-step partial conflict mapping with the help of the conceptual framework by Redpath *et al.* (2013). The first step is identifying the stakeholders affected by illegal shooting; the second is to map their values and positions regarding the shooting through in-depth interviews.

The primary aim of this research is to generate a basis for mutual understanding of motivations both behind conservation actions and the shooting activity, and thus to identify potential directions towards conflict management.

1.3. Research Question and Objectives

The thesis aims to answer how affected stakeholders perceive shooting of migratory raptors in the Batumi Bottleneck.

The objectives of the thesis are to identify the various stakeholders involved in the humanhuman conflict over migratory birds of prey, and to understand their beliefs and opinions towards:

- birds of prey and their shooting;
- the problems discerned around the shooting; and

• the potential solutions of the conflict and the associated risks.

A further objective was to gain in-depth understanding of the hunters' stated motivations for shooting, including, but not restricted to, the following key points:

- How do they select the birds to shoot?
- Can they distinguish the species apart?
- How important is shooting a part of their lives?
- What is their opinion on the hunting legislation and its enforcement?
- What is their opinion on bird watching tourism?
- What is their opinion on the importance of Georgia for bird migration?

1.4. Outline

Chapter 1 presented the research question and the aims and objectives of the thesis. Chapter 2 presents an overview of the literature on conservation conflicts, avian migration, conservation of birds of prey, the relevant legislative framework, and the values and attitudes towards wildlife. It introduces the relevant legislation, and explains the present situation of raptor shooting in the Batumi Bottleneck. Chapter 3 reviews the methods used in the research; Chapter 4 provides an overview of the key stakeholders, and the results gained during the research. Chapter 5 discusses the main findings of the study; Chapter 6 presents answers to the research question, and recommendations on the further steps in mapping and managing the human-human conflict over migratory birds of prey in Georgia.

CHAPTER 2. LITERATURE REVIEW

2.1. Biodiversity Conservation: Global Context

The term "biodiversity", coined during the 1980s, can refer to "the sum total of all biotic variation from the level of genes to ecosystems" (Purvis and Hector 2000), or, according to the Convention on Biological Diversity (CBD) "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (UN 1992). Although the history of biodiversity conservation is complex and goes far back in time (Jepson 2015), humanity is currently witnessing a rapid loss of species (Rockström *et al.* 2009) due to habitat loss and degradation, over-exploitation, the presence of invasive species, human disturbance, pollution, natural disasters, diseases and changes to natural dynamics (Baillie *et al.* 2004).

2.1.1. Biodiversity Conservation in Georgia

The Republic of Georgia covers 69,494 km² in the South Caucasus. It is bordered by the Black Sea to the west; Russia and the Greater Caucasus Mountains to the north; Azerbaijan to the southeast; and Armenia, Turkey, and the Lesser Caucasus to the south. The ecological importance of the country, belonging to the Caucasus eco-region, has been internationally recognized as one of 34 biodiversity "hotspots" (Myers *et al.* 2000). Almost 9% of the country's territory falls under the protected areas system with 14 Strict Nature Reserves, 11 National Parks, 19 Managed Reserves, 41 Natural Monuments and 2 Protected Landscapes (MENRPG 2015).

Though Georgia has high levels of endemism and biodiversity, it is seriously threatened by habitat loss and the unsustainable use of biological resources. The main reasons identified are poverty; unawareness of the values of biodiversity and its significance; inadequate policies; legislative gaps; and lack of resources for on-the-ground conservation and law enforcement (MENRPG 2015).

2.2. Conflicts in Biodiversity Conservation

Though the biodiversity conservation principles in the CBD include social considerations for the use of biological diversity (UN 1992), conflicts among hunters (and other 'users' of natural

resources) and conservationists are widespread in all aspects of conservation today (Araujo and Rahbek 2007; Balmford *et al.* 2001; Dickman 2010; Redpath *et al.* 2013). Conservation conflicts can also represent social conflicts (Dickman 2010), as this is often the case when biodiversity conservation directly influences people's livelihoods (Henle *et al.* 2008; Wilcox and Donlan 2007).

The most common conflicts arise from 'problem animals' and the different values associated with them (Woodroffe *et al.* 2005; Anthony and Bellinger 2007). While stakeholders can gain benefits from wildlife, they also experience direct and indirect costs, e.g. fatalities and injuries, predation on livestock and game, crop-raiding and transmission of diseases (Thirgood *et al.* 2005). Over-exploitation of resources can be a typical problem in resource-dependent rural communities (Anthony and Bellinger 2007; Mehta and Kellert 1998), where certain protected fauna elements form an important part of the diet or contribute to the maintenance of socio-cultural norms (Anthony and Bellinger 2007). This can put natural resources under pressure, which necessitates the mitigation of the conflict through interventions such as translocation, scaring/fencing off or reducing populations (Thirgood *et al.* 2005), the selective lethal removal of animals (Treves and Naughton-Treves 2005) or through realigning economic incentives and compensation schemes (Nyhus *et al.* 2005).

A special case of over-exploitation occurs when the prey is considered a common-pool resource (Faysse 2005), and it is so abundant that resource users do not consider the long-term effects of their actions (Newell 1988).

2.2.1. Human-Wildlife Conflicts

Conflicts between humans and wildlife that endanger people's livelihoods or pose risk to life are one of the most widespread problems conservationists face today (Dickman 2010). These issues give rise to the management of certain predators that prey upon game species (Thirgood and Redpath 2008; Treves and Karanth 2003), or protected species that destroy crops (Choudhury 2004; Omondi *et al.* 2004). In case of human-wildlife conflicts parties have fundamentally different values associated with the wildlife in question: bio-centrists emphasise the intrinsic value of wildlife, while anthropocentrists focus on the costs and benefits ('use value') (Virtanen 2003). To address the multifaceted aspects of the conflict complex and adaptive mitigation strategies are needed (Madden 2004).

2.2.2. Human-Human Conflicts

According to the definition by Redpath *et al.* (2013), conservation conflicts can occur between humans over a natural resource when "two or more parties with strongly held opinions clash over conservation objectives and when one party is perceived to assert its interests at the expense of another". These conflicts can emerge over the use of land, or over a species of conservation concern, and their nature is usually cross-disciplinary that requires a complex approach from the natural and social sciences (Hill 2004; Redpath *et al.* 2013).

Disenfranchisement is a typical human-human conflict involving the exclusion of local people from the use of protected lands or from the benefits gained using traditional ecological knowledge (Maikhuri *et al.* 2000; Gezon 1997) which mostly affects the poorest of the society (Githiru 2007; Schwartz 2002).

Human-human conflicts are also associated with different views on the values of wildlife and nonhuman life (Anderson 2004), and hunting especially is a topic that raises hot debates among advocates of animal welfare and conservationists, and among conservationists themselves (Leader-Williams 2009).

2.2.3. Studying Illegal Behaviours and Non-Compliance with Conservation Rules

Although several techniques and methods exist for monitoring and measuring illegal use of natural resources, it is difficult to obtain empirical data on rule-breaking behaviour in conservation due to the sensitive nature of the activity (Gavin *et al.* 2010; St John *et al.* 2010; Nuno *et al.* 2013; Nuno and St John 2014; Solomon *et al.* 2015). Direct questioning often leads to high levels of biases due to the unwillingness to respond, or the participants' wish to appear socially acceptable (social desirability bias), which need to be incorporated in the study design as a known weakness of such techniques (Nuno and St John 2014). Nevertheless, these methods can help to monitor illegal behaviours in order to understand specific details about the non-compliance, which fosters the development of more effective intervention approaches (Solomon *et al.* 2015; Salafsky *et al.* 2001).

2.2.4. The Role of Local Communities in Conservation

The important role communities play in biodiversity conservation is acknowledged by community-based conservation strategies, but some scholars (e.g. Berkes 2007) highlight that this blueprint approach lacks the understanding of different stakeholders' multiple objectives on multiple levels. It is also argued that conservation management entirely in the command of one of the stakeholders will not work effectively (Berkes 2007; Ostrom and Nagendra 2006).

Berkes (2007) suggests that "biodiversity conservation can be treated as a (...) multilevel commons problem", where the social systems involved are not only the communities, but also local and international institutions with multilevel structure. The recognition of all the stakeholders' different objectives can lead to mutually acceptable solutions, and assures that neither the participatory nature of conservation management, nor the exclusive top-down decision-making impairs conservation goals (Berkes 2007, 2004; Ostrom and Nagendra 2006; Redpath *et al.* 2013). These goals can also be served by the local ecological knowledge built up by communities, which can be a valuable complementary data source regarding species ecology and migratory populations (Gilchrist *et al.* 2005).

2.2.4.1. Local Communities in the Batumi Bottleneck

The socioeconomic situation of the local communities living in the villages in the coastal mountainous regions of Ajara is characterised by sometimes extreme poverty with little perspectives of change. The unemployment rate in Ajara is 22.1%, the second highest in the country after the 29.6% in the capital, Tbilisi; and it has been continuously growing since 1990 (Kvaratskhelia and Mukbaniani 2011). These are likely underestimated values, as Tbilisi and Ajara are the two fastest growing economically active regions which are relatively well developed compared to other regions with lower unemployment rates (Kvaratskhelia and Mukbaniani 2011).

The local communities are considered to be important stakeholders in the conflict around the conservation of migratory birds of prey, because the shooting of all raptor species and the trapping of Eurasian sparrowhawks (*Accipiter nisus*) for falconry is a widespread practice rooted in the local customs (van Maanen *et al.* 2001). Considering the poor economic situation and high unemployment rates in these villages it is crucial to understand what role shooting and trapping plays in the livelihood of local people.

2.2.5. Redpath et al. (2013)'s Conceptual Framework

The complexity of conservation conflicts requires an interdisciplinary approach of natural sciences, social sciences and humanities, as well as the involvement of all affected stakeholders as only this can lead to a mutually acceptable management solution that is not imposed on any of the parties (Redpath *et al.* 2013).

This thesis utilizes the conceptual framework by Redpath *et al.* (2013; Figure 1), developed to help the effective management of a human-human conflict. According to this framework, management is preceded by a thorough mapping of the conflict using social and ecological science approaches and stakeholder processes to effectively involve all parties, and understand the complex nature of the conflict in a wider context.



Figure 1. Conceptual framework for the management of conservation conflicts. Adapted from Redpath *et al.* (2013).

Mapping is followed by management in cases where stakeholders are willing to negotiate with each other. Management includes the co-operative identification, implementation and testing of possible solutions and trade-offs, which forms the basis for adaptive management (Redpath *et al.* 2013).

2.2.5.1. Identifying Stakeholders

The conflict mapping starts with identifying the stakeholders involved in the conflict. This is an important step in conflict resolution, because an early engagement provides opportunities for all the parties to express their opinion, which can contribute to mutually acceptable quality outcomes (Redpath *et al.* 2013).

2.2.5.2. Mapping Stakeholder Values, Attitudes, Goals and Positions

Perceptions and attitudes towards wildlife are often based on personal and societal experiences, cultural norms, expectations and beliefs, which are important influencing factors in conservation conflicts (Dickman 2010): for instance, the widespread belief that raptors prey on livestock ("chicken hawks" or "duck hawks"), thus they are harmful and need to be controlled (Bildstein 2006). Conflict resolution often fails to achieve the desired results on the long term due to misinterpretation of the parties' attitudes (Dickman 2010). The aim of the mapping of stakeholder values, attitudes, goals and positions is to understand these attitudes and to identify barriers that would prevent effective management (Redpath *et al.* 2013).

2.2.5.3. Managing the Conflict

The mapping part should end with a wider understanding of the conflict from economic, ecological and social aspects, taking into account the relevant national and international legislation as a wider socio-political context (Redpath *et al.* 2013). The prerequisite of successful management is the mutual willingness of stakeholders to discuss the potential solutions with the other parties: which may result in a win-win outcome, where all sides can benefit from the solution (Redpath *et al.* 2013). If this is not the case, the result is either win-lose (one party is silenced), or lose-lose, where the conflict remains ongoing, and none of the parties are satisfied (Redpath *et al.* 2013). Furthermore, for a durable resolution, it is essential to develop an interdisciplinary approach that integrates natural and social sciences to monitor stakeholder engagement and the effectivity of the strategic decisions (White and Ward 2011).

2.3. Legislative Framework

Besides the national legislation, there are three major binding international treaties signed and ratified by Georgia that are governing the protection of biodiversity, birds, and their habitats, and which are relevant to the conflict in question.

2.3.1. Convention on Biological Diversity

The Convention on Biological Diversity (CBD) is a multilateral binding agreement covering the use and conservation of biodiversity; it entered into force in 1993. Its 3 main objectives are the conservation of biological diversity, the sustainable use of the components of biological diversity, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources (UN 1992).

Georgia is party to the Convention since 1994. The National Biodiversity Strategy and Action Plan (NBSAP) approved in 2005 states that it aims the conservation of biodiversity through several strategic goals, but it does not mention anything specific to the Batumi Bottleneck, except acknowledges that "hundreds of individuals of predatory bird, representing 27 species, pass through a migratory bottleneck over the Georgian coast, near the resort town of Batumi, during the spring and autumn migrations" (Government of Georgia 2005, 15). The next NBSAP for the period of 2014-2020, on the other hand, does not mention Batumi at all (Government of Georgia 2014).

2.3.2. Bern Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) is binding international legal instrument adopted by the Council of Europe in 1979. The aim of the convention is to conserve wild flora and fauna and their natural habitats, and to regulate species conservation by restricting the exploitation and taking of species from the wild. It also commits member states to protect habitats, with special attention to endangered and vulnerable species (Council of Europe 1979).

Georgia signed and ratified the Bern Convention in 2009, which entered into force 2010 with reservations. Appendix II of the Convention lists the strictly protected fauna species, including the common crane (*Grus grus*), and all species of birds of prey. Appendix IV of the Convention lists

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the prohibited means and methods of killing, capture and other forms of exploitation, including live animals used as decoys which are blind or mutilated, tape recorders, artificial light sources, nets, and traps. Article 22 of the Convention allows the states to make reservations regarding certain species and/or certain methods of killing, capture and other exploitation (Council of Europe 1979), and Georgia reserved the right not to apply provisions of Article 6 in respect to certain Appendix II species (e.g. Eurasian sparrowhawk, northern goshawk *Accipiter gentilis*, Eurasian buzzard *Buteo buteo*, and bee-eater *Merops apiaster*). Furthermore, Georgia allows the purposeful and specific use of snares and traps for mammals for scientific purposes, or in cases "where this is related to removal of particular problematic species from the nature" (Council of Europe 2009).

2.3.3. Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), or the Bonn Convention, aims to conserve terrestrial, marine and avian migratory species (UN 1979), and requires the parties to acknowledge the importance of conservation of migratory species, and to take all the necessary steps to conserve such species and their habitat (UN 1979). The CMS Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MoU) recognises the particular vulnerability, poor conservation status and declining trends of raptors migrating through narrow bottlenecks in high concentrations (UN 2008).

The general aim of the Raptors MoU is to "promote internationally coordinated actions to achieve and maintain the favourable conservation status of migratory birds of prey throughout their range in the African-Eurasian region and to reverse their decline when and where appropriate" (UN 2008).

Georgia is party to the Bonn Convention since 2000, and a Range State to the Raptors MoU. The Range State status means that migratory species pass or spend part of their lives in that particular country, and parties that are Range States to Appendix I species are obliged to afford these species strict protection (UN 2008).

2.3.4. National Legislation

The 'Fifth national report to the United Nations Convention on Biological Diversity' (MENRPG 2015, 36) summarises the main goal of the national legislation, which is the "fulfilment of obligations undertaken under the European Union Association Agreement and facilitation of harmonization with European environmental policy and strategies." In this document, Georgia also recognises its obligations undertaken in the Bern Convention regarding the conservation of ecosystems and habitats, and repeatedly accentuates its willingness to harmonise the national legislation with EU Directives. It also states that the "improvement of effectiveness of hunting and fishery management" is also a major aim "to ensure sustainable use of fauna resources".

The "Order №95 from the Ministry of Environment and Natural Resources Minister", published in 2013, specifies the hunting season for each game species and the daily quotas, and lists the legal hunting methods (MENRPG 2013), while the development of a strategy for sustainable hunting and the adoption of changes to the hunters' certification system is proposed by the relevant governmental bodies (MENRPG 2015).

The NBSAP 2005 (Government of Georgia 2005) identified gaps in the legislation and practice, for instance the process of obtaining hunting licence for migratory birds was considered complicated and bureaucratic, which prevented many hunters from buying licences; the legislation did not address trapping of migratory birds for falconry, neither the role of hunting as a part of local customs and traditions; and the awareness of hunting regulations was extremely low among the hunters. The NBSAP 2015 states that "A national sustainable hunting strategy needs to be developed with the participation of all stakeholders. This strategy should determine such issues as the assessment of resources, wise use of game species and control of illegal hunting. Management plans need to be elaborated for game species as an important prerequisite of sustainable hunting." (Government of Georgia 2014, 26). Based on these documents and the review of the national legislation, it is assumed that the goal of developing a strategy for the sustainable use of wildlife has not happened yet, and the framework necessary to protect migratory raptors is not present in Georgia.

2.4. The Phenomenon of Bird Migration

Migration is an important life history trait of some two-thirds of the more than 10,000 bird species living on this planet (Csörgő 2008; IUCN 2015). Most migratory birds undertake this hazardous journey twice a year between their northern breeding grounds and southern wintering places (Newton and Brockie 2008). Most diurnal species, especially broad-winged soaring migrants

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(storks, cranes, and raptors), use well-known, long-established flyways along geographical barriers, also known as "leading lines"— large water bodies, high mountain ranges—the birds are reluctant to cross due to the lack of thermal updrafts (Ferguson-Lees and Christie 2001; Bildstein 2006). Many species migrate along one of the five largest known migratory routes on the planet (Figure 2): 1. Trans-American Flyway; 2. Western European-West African Flyway; 3. Eurasian-East African Flyway; 4. East Asian Continental Flyway; and 5. East Asian Oceanic Flyway (Zalles and Bildstein 2000).

The flight strategy of each species is different: while some, normally diurnal, birds like passerines and songbirds choose to travel at night. Soaring species that depend on favourable weather conditions, like many broad-winged raptors, fly during the day to take advantage of updrafts of hot air thus saving energy *en route* (Kerlinger 1989; Bildstein 2006; Newton and Brockie 2008). Sometimes these journeys cover vast distances, typically along a predominantly north-south axis (Newton and Brockie 2008).



Figure 2. Main flyways used by soaring birds. 1. Trans-American Flyway; 2. Western European-West African Flyway; 3. Eurasian-East African Flyway; 4. East Asian Continental Flyway; 5. East Asian Oceanic Flyway. Major bottlenecks and watch sites: B – Bosphorus, BM – Bab el Mandeb, BP – Belen Pass, E – Eilat, F – Falsterbo, G – Gibraltar, H – Hawk Mountain, K – Kenting, M – Messina Strait, P – Panama, S – Suez, T – Corpus Christi, V – Veracruz. Batumi is indicated by the red arrow. Modified from Zalles and Bildstein (2000).

Geographical features can also create narrow corridors, so-called "bottlenecks", where migratory birds concentrate in high numbers because they are trying to avoid water bodies wider than 25 km (Figure 2) (Bildstein 2006). This water avoiding behaviour is best seen at places such as Veracruz River of Raptors in south-eastern Mexico, where 4–6 million migrants pass each autumn. It is the world's largest known concentration of migratory raptors (Ruelas Inzunza *et al.* 2000, Bildstein 2006). In the European-African migration system such bottlenecks include the Strait of Messina between Sicily and Italy; the Strait of Gibraltar, where sometimes thousands of birds are waiting for favourable winds to cross the 14-km-wide sea channel to Africa (Bildstein 2006); and the Batumi Bottleneck in the Republic of Georgia (Andrews *et al.* 1977; Verhelst *et al.* 2011), which is the focus of this study.

2.4.1. Bird Migration Studies

Although humans have always been intrigued by bird migration, only speculative explanations existed for its phenomenon until modern techniques were developed. The systematic study of bird migration started in 1899 when H. C. C. Mortensen, a Danish teacher and ornithologist, first applied aluminium rings to common starlings (*Sturnus vulgaris*) for scientific purposes (Preuss 2001). This capture-recapture method is still widely used all over the world to reveal migratory routes and wintering grounds of migratory birds.

Other study methods include the surveying of breeding and wintering populations, radarornithology, moon-watching¹, using satellite telemetry, stable isotopes, and systematic counts in bottlenecks during the migration season (Liechti 1995; Bildstein 2006).

2.4.2. A Flyway for Raptors: the Batumi Bottleneck

The Batumi Bottleneck is a migration corridor between the Black Sea and the Lesser Caucasus mountains that reaches its narrowest point (ca. 4 km) near the city of Batumi (Figure 3). Migrants arrive from the north of the bottleneck on a broad front above the Kolkheti lowlands after passing the Greater Caucasus; while further south they either continue along the coast or use a more

¹ Observing and counting of migratory birds flying in front of the full moon.

inland route (Verhelst *et al.* 2011; Andrews *et al.* 1997). The Bottleneck is located on the Eastern Black Sea route of the Mediterranean/Black Sea Flyway (Eurasian-East African Flyway system), in the Autonomous Republic of Ajara, in the Republic of Georgia (Verhelst *et al.* 2011, Jansen 2013).

The majority of the flight is made up by three superflocking² long-distance migrants: honey buzzards (*Pernis apivorus*, 50%), steppe buzzards (*Buteo buteo vulpinus*, 40%), and black kites (*Milvus migrans*, 10%). Thirty-five raptor species have been documented in Batumi, with peculiarities like the oriental honey buzzard (*Pernis ptilorhynchus*, 25 individuals in 2014). The migration is characterised by two peaks: the honey buzzard peak early September, and the steppe buzzard peak at the end of the month (Jansen 2013).



Figure 3. The Batumi Bottleneck is marked with yellow; the darker green represents lower elevations. (Esri 2015; Data source: Natural Earth 2015; ASTER GDEM 2015).

² Superflocking migrants tend to form groups of hundreds to tens of thousands that remain together for some time during the migration (Bildstein 2006, 75).

Depending on the weather conditions birds can fly very low, often just a few meters over the counters, which makes the flight very spectacular, and the birds easy to see and identify (Verhelst *et al.* 2011; BRC 2015a). These low-flying birds also provide easy targets for local hunters, who take advantage of the seemingly abundant prey (Jansen 2013).

2.4.2.1. Non-Profit Organisations Working on Bird Conservation in the Batumi Bottleneck

Batumi Raptor Count (BRC)

Although it was known that heavy bird migration occurs along the eastern coast of the Black Sea, there have been very few studies conducted on the migration in Georgia (Abuladze 1994; Abuladze *et al.* 2000; van Maanen *et al.* 2001) and in the northern parts of Turkey (Andrews *et al.* 1977; Beaman 1977; Bijlsma 1987) until recently. Scattered monitoring of migrating raptors in the western parts of the Georgia started as early as 1976 (Abuladze 2012), but a systematic study showed the importance of the Batumi Bottleneck as a as the most important migratory flyway of birds of prey in the Western Palearctic only in 2008, when the BRC organised its first migration monitoring, and counted more than 800,000 birds in two months (Verhelst *et al.* 2011). Since then the Batumi Raptor Count systematic monitoring has been organised annually from the middle of August till the middle of October, with the help of hundreds of Georgian and international counters and volunteers. Since 2012 more than 1 million raptors have been tallied every autumn (BRC 2015a). The main aim of the project is the full-season monitoring with a clear focus on high quality counts to achieve a decent quantification of all species of migratory birds of prey (BRC 2015b).

SABUKO - Society for Nature Conservation

SABUKO³, an international nature conservation NGO working in the Republic of Georgia, was founded in 2014 through the merger of the Georgian Centre for Conservation of Wildlife (GCCW) and the BRC. Its mission is to promote the conservation of birds and their habitats in the region, to increase the valuation of nature by the public and to encourage the sustainable use of

³ SABUKO is the acronym of the Georgian 'Sazogadoeba Bunebis Konservatsiistvis' (Society for Nature Conservation).

natural resources (SABUKO 2015). In practice this mission is built on three pillars: 1) The BRC project is responsible for the systematic migration monitoring, while the Hunting Monitoring Team is developing the long-term monitoring protocol of the hunting pressure at the time of the writing of the present paper (Jansen pers.comm.). 2) The development of eco-tourism and homestaynetwork is co-ordinated by SABUKO's tourism branch 'Batumi Birding', from where 70% of the profit flows into the conservation work of SABUKO and the BRC. Batumi Birding closely cooperates with the Department of Tourism and Resorts (Berdzenishvili pers.comm.). The 'Batumi Birding Festival' has been organised annually since 2012 with guest speakers and lectures on migration and raptor identification, attracting more and more interested, international audience. 3) Environmental education and awareness-raising has been in the main focus of BRC and SABUKO since the beginnings. Summer student camps, lectures, field trips and interactive programmes are organised every year for local primary school children and university students with the help of Georgian teachers and volunteers (Vansteelant pers.comm.).

2.5. Conservation of Birds of Prey

Birds are well-known, easy-to-observe and taxonomically a well-described group of animals of high public interest. Although their conservation has a long history, they are still threatened by many factors including habitat loss and degradation, hunting and other forms of over-exploitation (Audubon 2015; Baillie *et al.* 2004; Bildstein *et al.* 1998).

Diurnal birds of prey are apex predators with a complex history: they have been considered pest species and persecuted indiscriminately by hunters (Bildstein 2006), the widespread use of organochlorine pesticides decimated their numbers in the 1940s and 1960s (Newton 1988; Poole 1989), and they are still the targets of direct (Stroud 2003; Horváth *et al.* 2011) and indirect poisoning (Wiemeyer *et al.* 1989), as well as shooting and trapping (van Maanen *et al.* 2001) in many countries. This caused, and still causes, the rapid shrinkage of their populations, and threatened several species with extinction (Bildstein 2006), which birds of prey are especially vulnerable to for several reasons:

 Their population sizes are generally small, which, paired with their secretive nature, makes them not only difficult to study, but also more prone to extinction (Stroud 2003; Shaffer 1981);

- Their densities are naturally low like that of most predators (Stroud 2003; Colinvaux 1993);
- There are many K-selected species among raptors, which means that their low reproduction rates allow them to poorly compensate for unexpected losses in the populations (Miller and Spoolman 2009). Larger bodied birds of prey need up to 4 years to reach maturity and to produce new offspring, which makes them especially vulnerable (Newton 1979);
- Changes in land use cause destruction and fragmentation of their habitats further exacerbating other risk factors (Stroud 2003);
- Bioaccumulation of pollutants affects apex predators high on the food web, sometimes 10,000 times more than primary producers (Kelly *et al.* 2007);
- The ecology of migratory raptors is very complex compared to that of sedentary species, as they are affected by environmental conditions in their breeding and wintering grounds, as well as on the areas through which their migratory route lies (Bildstein 2006);
- Migratory raptors often congregate *en route*, which makes high number of them exposed to environmental and human threats (Bildstein 2006);
- Long-distance, narrow-front migrants⁴ face special risks during their movements: human-induced or natural problems in a single location can affect, in the worst case, the entire world population (Bildstein 2006). In case of rare raptors, persecution can have fatal consequences on the species, because the smaller the populations the less capacity they have to adapt to rapid environmental changes (Bildstein 2006). The pallid harrier, migrating in Batumi, is classified as near threatened due to its worldwide declining population (BirdLife 2013b). Large-bodied, soaring birds are particularly vulnerable to shooting, because they provide easy targets, especially when the weather conditions make their passage predictable (Bildstein *et al.* 1993).

⁴ Narrow-front migrants deviate from their initial direction in order to avoid/use certain geographic features. This usually results in highly concentrated movements of birds (Bildstein 2006).

2.6. Shooting and Trapping of Birds

In this thesis, the term 'trapping' is used for catching birds with various techniques, which results in the taking of the birds from the wild populations.

Shooting and trapping of birds is a popular, legal, and traditional pastime activity in many parts of the world (Bauer and Herr 2004; Hirschfeld and Heyd 2005). In Malta, where thousands of birds migrate, including 24 species of raptors from at least 48 countries (Sammut and Bonavia 2004), spring hunting is still legal according to national legislation (BirdLife Malta 2015). Malta is the only country in the European Union that allows recreational spring hunting despite the regulations of the Birds Directive, which gives Malta two derogations allowing people to hunt turtle doves and quail in the spring, under strictly supervised conditions (BirdLife Malta 2014). The strength of the Maltese hunting lobby (Briguglio 2014), and the deeply rooted passion for shooting birds (Fenech 1992) is well visible in the referendum held in spring 2015 that rejected proposals to ban spring hunting. Cyprus is another infamous spot for migratory birds: hundreds of thousands of birds are killed every year using non-selective trapping methods like mist nets and lime-sticks (BirdLife Cyprus 2014).

2.6.1. Raptor Shooting

Shooting of birds of prey can be traced back a long time, when most birds were considered pest species feeding on birds and game (Bildstein 2006). This put all raptors at risk, because shooters were often unwilling or unable to distinguish between species (Broun 1949). In some places conservation efforts resulted in the cessation of bird shooting, as at Hawk Mountain (USA), where the world's first sanctuary for birds of prey was founded in 1934 (Broun 1949). Although ring recovery rates showed a significant decline in Europe (Saurola 1985), raptor shooting is still a worrisome conservation problem in many places, e.g. in Sicily, or in the Straits of Messina, where conservationists have been working on the protection of migrants since 1981 (Giordano 1991; Giordano *et al.* 1998).

2.6.2. Raptor Shooting in the Batumi Bottleneck

The term "illegal shooting" is used in the present thesis in the sense of persecution of species not listed as legal game species in the Georgian hunting legislation and/or listed under the Bern Convention Appendix I or II; and/or under Bonn Convention Appendix I or II. Illegality

arising from not possessing valid hunting and/or gun licences, and illegal trading of species listed in the Appendices of CITES are not in the scope of the present study.

The tradition of autumn hunting of raptors has long been prevalent in the coastal regions of Ajara (van Maanen *et al.* 2001), but the scale, impacts and drivers of the shooting are still poorly understood (Jansen 2013). The systematic migration counts conducted by the BRC with the help of volunteering counters are complemented with recording the number of shots heard from the count station since 2010, and the identification and recording of the killed and injured birds since 2012.

According to previous studies, the range of the estimated casualties is very wide [1,500-3000 individuals (van Maanen *et al.* 2001); and 8-10,000 individuals (Jansen 2013), and 5,500-18,000 individuals (SABUKO unpubl.)], however, an increase of the number of shots recorded at the migration count stations indicates a likely increase in hunting pressure.

A recent study (Jansen 2013) used a probabilistic distribution model to predict the geographical distribution of potential hunting spots, and identified possible 'hot spots' based on the orientation, slope and vegetation of the hills in the Bottleneck. Jansen's study (2013) gives a scientific estimate of the number of shot birds, and attempts to profile the hunters as well. It fills an important gap in the knowledge regarding the scale of the shooting in the Batumi Bottleneck, and contributes to the 3rd step in the conflict mapping framework used in the present thesis (Figure 1).

2.6.3. Review of Illegal Killing, Trapping and Trade of Wild Birds in the Mediterranean and in Georgia

Currently, BirdLife International is processing the data collected under the "Review of Illegal Killing, Trapping and Trade of Wild Birds in the Mediterranean" project in 2014 (BirdLife 2014). This project aimed to compile existing and new information on the best locations for illegal killing of migratory birds, on the practices used by hunters and trappers, as well as on the number of casualties on species level. Besides the 26 BirdLife Partners from the Mediterranean region, SABUKO participated in the project as a BirdLife Partner from Georgia. This scientific review is the first comprehensive quantitative Pan-Mediterranean situation analysis of the scope and scale of illegal killing of birds (BirdLife 2014), the results of which will be published later this year.

2.7. Valuing Wildlife: Attitudes, Values, and Behaviour

Wildlife plays an important role in human life, either, for example, as source of food or aesthetic pleasure. The way people relate themselves to wildlife depends on several factors, including their socioeconomic background, their beliefs and opinions, and the values they attribute to nature and its creatures. According to Perlman and Adelson (1997) the term "values" refers to two meanings: one to the underlying belief system and preferences people associate with wildlife, and the second to the economic aspect of biodiversity, e.g. its use or existence value. The first meaning describes an internal attitude towards wildlife shaped by family background, the community, and external factors; while the second meaning refers to what worth wildlife has for an individual, how important it is for him or her (Perlman and Adelson 1997). It is important to distinguish between these two meanings to understand people's relations towards wildlife and their motivations to protect or use it, but it is equally important to recognise that values in the second sense can change depending on the individual's current state of being (e.g. hunger or satiety), or lifestyle (Perlman and Adelson 1997). For example, people might appreciate the sight and sound of bee-eaters, but if they start an apiary, the worth associated with these birds will change at once. This idea leads to the socalled interactionist perspective that "integrates biologically innate tendencies and environmentally learned responses" (Manfredo 2008, 36). This means that the attention towards living things is innate, but the choice of behaviour is learnt, e.g. throwing stones at birds or feeding them, or admiring birds for their beauty or shooting them for the pot⁵ is a decision based on external influencing factors from the society or immediate surroundings.

Kellert (1993) described nine values that characterise the different dimensions of human relationships to nature (Table 1). These values can be interpreted as the human "experience" of nature, and can be used to understand the different motivations and emotions behind the individuals' actual behaviour.

⁵ For eating what they shoot.

Value	Description/Characteristics
Utilitarian	The physical benefits of nature are considered a basis for human life.
Naturalistic	Satisfaction is derived from direct contact with nature.
Ecologistic-Scientific	The urge to understand nature through empirical study.
Aesthetic	The beauty of the natural world is a powerful impact.
Symbolic	Nature reflects and facilitates human language and thoughts.
Humanistic	Emotional attachment, the feeling of "love" for nature.
Moralistic	The feeling of ethical responsibility for nature.
Dominionistic	A desire to master and control the natural world.
Negativistic	Fear and aversion, alienation from the "ugly" nature (insects etc.)

Table 1. The nine human relationships to nature. Adapted from Kellert (1993).

2.7.1. Attitude Change

Heberlein (2012) further refines these definitions and notes that attitudes and values are not the same thing: attitudes are based on values and beliefs, which can be different from behaviour: the individual's visible action. While behaviour is relatively easy to influence with tools like advertising, policies, or incentives, attitudes are most likely to change based on direct personal experience or through "structural fixes" that "change the social environment that influences what people do" (Heberlein 2012, 6). Heberlein uses the term "norms" for behaviours that describe *what should be done*, and considers them crucial in attitude change.

2.7.2. Recreational Hunting

This thesis uses recreational hunting or sport hunting in the sense defined by Leader-Williams (2009, 11): "hunting where the hunter or hunters pursue their quarry for recreation or pleasure. The enjoyment of recreational hunters arises from the social and cultural norms associated with the hunt and from the sporting contest that occurs between the hunter and the quarry, which need not necessarily include killing the quarry." Recreational hunting is not limited to legal game species: similar, or intensified, enjoyment is associated with pursuing species under legal protection, as illegal activities can appeal as a challenge (Letcher 2000). Though the two groups often overlap, sport hunters and professional hunters are distinguished in many cultures (Hambly 1934): in contrast with the recreational ambitions of the first group, professional hunters give their life to and earn their living from hunting.

Hunting, especially recreational hunting raises several ethical questions from philosophers with strong animal welfare and animal rights views, and from advocates in environmental ethics and in sustainability (Dickson 2009; Leader-Williams 2009), while several scientists emphasize the financial importance, management, conservation, safety and socioeconomic benefits of recreational and trophy hunting (Loveridge *et al.* 2007). These opinions seem to be very difficult, if not impossible, to consolidate with moral positions (List 2004), however one has to acknowledge that sport hunting has ancient roots in certain cultures and it has formed a significant part of human history (Soma and Sukhee 2014; Wakefield 2012; Adams 2009).

2.7.2.1. The Ethics of Recreational Hunting

The author of this thesis draws a distinction between 'ethical' hunting and 'legal' hunting: legal hunting can be unethical (for example, hunters who do not observe the ethical constraints and codes of conduct defined outside of the legal regulation in certain hunting cultures [McCorquodale 1997; Bauer and Herr 2004]), while illegal hunting—illegal according to the strict letter of the law—can, to a certain point, respect the unwritten ethical frameworks prevailing in the given community. Certainly, the ethical code is very culturally contingent, and ranges from traditions and rules describing the different aspects of the hunt to the rituals of worshipping and thanksgiving after (McCorquodale 1997; Bauer and Herr 2004).

Ethics is an integral part of hunting traditions (McCorquodale 1997; Békés 2003), which requires that ethical hunting is characterised by perseverance, courage, moderation, and discipline (List 2004). Hunting ethics develop these values with a profound respect for nature and wildlife (Széchenyi 1961; List 2004).

Debates about the ethics of sport hunting often considers the attitudes and motives of hunters, and objects that hunters "have fun" in killing (Dickson 2009). Critiques hold that delight and satisfaction should not be what hunters feel, but remorse and regret, when taking the life of an animal (Dickson 2009). Others say that hunters do not find delight in the killing and suffering *per se*, but in the activity of chasing, outwitting and pursuing the prey (Scruton 1998). This distinction,

however, is not accepted by those who see intrinsic value in animals and their existence (Heeger and Brom 2001).

In at least one aspect sport hunting can often be considered fairer than professional hunting for management reasons: sport hunters emphasize the importance of the 'fair chase' even if the prey is not pursued in the end (McCorquodale 1997), while professional hunters often keep the wildlife and forest management plans in mind when 'culling' and 'control the numbers'.

2.8. Ecotourism and Birdwatching Tourism

The common definitions of ecotourism and birdwatching express the main aim of these activities: to observe nature and wildlife in its undisturbed habitat.

One of the first definitions of ecotourism was coined by Ceballos-Lascurain (1987):

"Travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas."

According to TIES (2015), ecotourism is "responsible travel to natural areas that conserves the environment and improves the well-being of local people".

The term "birdwatching" is used in the present paper according to the definition by Sekercioglu (2002): "the act of observing and identifying birds in their native habitats".

Birdwatching is a growingly popular mean of valuing wildlife: it was recognised as the fastest growing recreational activity as early as 1979 (Harrison 1979). It involves millions of people around the globe (Kellert 1985; Cordell and Herbert 2002), who are mostly educated and committed people motivated to travel to pursue their hobby (Sekercioglu 2002). There is a significant economic potential in avitourism: the revenue created by birdwatchers can help creating incentives for conservation on a local level; it can contribute to the livelihood of local communities; and thus it can serve as an environmental awareness raising tool in educating locals about the value of biodiversity (Sekercioglu 2002; Steven *et al.* 2013).

While birdwatching tourism can bring the potential benefits listed above, it can have drawbacks as well, for example a sudden increase in tourism pressure can raise negative attitudes from locals (Haukeland 1984), especially from those who are not directly involved in the socioeconomic benefits entailed.

2.8.1. Birdwatching Tourism in the Batumi Bottleneck

Ecotourism is a rapidly growing sector in Georgia, as it is shown by the number of visitors in the protected areas, which increased 54 times over the period of 2007-2014 (MENRPG 2015). On the other hand, there has been no study conducted on the development of birdwatching tourism in the Batumi Bottleneck to the present day, but, considering the uniqueness of the place, significant interest from the international birder community is expected in the near future (Green 2012; Menzie 2012).



Figure 4. The growth of tourism-related revenues between 2012-2014. Data source: Department of Tourism and Resorts of Ajara A. R.

Figure 4 shows the development of tourism since 2012 represented by the number of overnight stays; overnight fees; other revenue; and the total revenue from tourism in Ajara. The Department of Tourism and Resources of Ajara considers 2012 a milestone in ecotourism in the region, as this was the first year of the annual international 'Batumi Birding Festival', a week dedicated for bird watching and raptor migration that attracts more and more visitors every year.

The rapid growth in the total revenue from overnight stays is considered partly due to the growing international reputation of Georgia as a unique bird watching destination (Kaikatsishvili pers.comm.).

2.9. Synopsis

Chapter 2 shows the global context of biodiversity conservation in Georgia with a focus on raptor conservation, and introduces the problem of conservation conflicts concerning protected migratory species threatened by environmental and human factors. Chapter 2 demonstrates that these conflicts many times arise from by inadequate legislative framework and enforcement practice, but also from the stakeholders' different values associated with wildlife. These values form the basis of attitudes towards nature, and often shape individual behaviour.

Illegal shooting and trapping of migratory raptors in autumn is a widespread practice in the Batumi Bottleneck, mostly attributed to the lack of enforcement and the low awareness of regulations among the local community. The shooting is often promoted as a part of hunting traditions and an important custom in the coastal villages of Ajara, but some recent studies suggested that it is closer to a free-time activity than to tradition or to subsistence hunting. Although some speculations exist on the role of shooting in the local communities, our understanding of its drivers and importance is still limited, and so is our conception of the beliefs and opinions of the different stakeholders implicated in the conflict.

The present situation on the Batumi Bottleneck with the growing number of tourists, and the NGOs monitoring the migration and the hunting activity forecasts the potential escalation of the conflict in question, which might be exacerbated by hastily developed, top-down management approaches imposed on one or more parties.

This thesis aims to fill the gap revealed here in the understanding of the elements of the present conflict in the Batumi Bottleneck through identifying the relevant stakeholders, and mapping their beliefs, opinions, and goals related to the conflict. This knowledge is hoped to foster a future dialogue between the stakeholders, which is crucial for finding and adopting the appropriate management practices.

This thesis aims to provide the first step towards a mutually acceptable, durable resolution of the conflict in question.

CHAPTER 3. METHODOLOGY

The study involved an in-depth exploration and mapping of the conflict over migratory birds of prey in the Batumi Bottleneck, the Republic of Georgia. Both primary and secondary data collection methods were used to fulfil the aims and objectives of the thesis (see Section 1.2 and 1.3).

3.1. Ethical Considerations

As the study involved human subjects, the following ethical considerations had to be observed during the field work and the writing of the thesis according to the Ethical Research Guidelines (CEU 2012):

a) Potential hazards and risks for the participants.

No hazards were involved in the study for the participants. A potential risk was the exposure of illegal behaviour, i.e. the shooting of legally protected birds, however, to the best of the author's knowledge, this activity has already been known by the authorities.

b) Potential benefits for the participants.

An expected benefit from the research is a mutual understanding of motivations behind conservation actions, and behind the shooting activity.

c) Ensuring informed consent.

The author informed the participants about the nature of the study; asked their consent for being interviewed and for recording the interview; and explained the anonymous use of the collected data.

d) Coercion.

There was no coercion of any kind involved in recruiting and interviewing the participants.

e) Deception.

Deception was used during the interviews with hunters. The respondents were asked to tell the local names of the species shown on coloured photographs, instead of asking them to identify the species. The aim of the deception was make them feel at ease with the task given, and not to put them under the pressure of "being tested".
f) Securing confidentiality and anonymity.

All data has been and will be kept confidentially and used anonymously. Raw data will not be given to third parties.

g) Data protection and storage requirements of confidential data.

The researcher has been storing and will store all data on a password protected notebook and an external drive.

h) Future use of the data beyond the scope of the thesis.

The collected and aggregated data might be used for publishing the results of the study, or might be used by SABUKO for conducting further research.

i) Dissemination of findings.

The data from Phase I of the study was collected under the co-ordination of the author on behalf of SABUKO. This data can be used by co-researchers affiliated with SABUKO. The data collected during Phase II of the study through in-depth interviews are to be used solely by the author, but findings might be used by others.

j) Ensuring ethical considerations as the project proceeds.

The anonymity of the respondents has been and will be kept confidential in all cases. Photos were taken with prior consent, and faces were covered when using the pictures.

In case of the interviews with officials from governmental and non-governmental organisations, permission was requested and granted to use the respondents' name as they represented the approach and views of the given institution, not their personal opinion.

3.2. Study Area

The project was restricted to an approximately 60-km-long and 15-km-wide coastal line, which roughly covers the Batumi Bottleneck (Verhelst *et al.* 2011; Figure 5). The study area lies in the Autonomous Republic of Ajara, in the south-western part of the Republic of Georgia.

3.3. Methods

The primary data collection happened in two phases: 'Phase I' was conducted during the autumn hunting season in 2014, while 'Phase II' in May 2015. The objective of these two field work periods was to add to the knowledge from the secondary sources, and to gain a better understanding on the components and details of the conflict.



Figure 5. The study area marked with orange. (Data source: Esri 2015; Natural Earth 2015; ASTER GDEM 2015).

3.3.1. Phase I

Phase I was conducted between 13 August and 12 September 2014, in the Batumi Bottleneck. The 31-day-long field work was undertaken by a team of 4 international and Georgian members, in participation with and under the co-ordination of the author of the present thesis. The work was funded by Disney Worldwide Conservation Fund, and initiated by SABUKO. The aim of Phase I was to examine the geographical extent and the scale of illegal shooting in the Batumi Bottleneck, as well as to collect data on the hunters' motivation for shooting. The resulting data is referred to as 'SABUKO unpubl.' throughout the present thesis.

3.3.1.1. Questionnaires with Hunters

The first part of Phase I included short interviews with hunters in the form of anonymous questionnaires, targeting their hunting habits, and their knowledge on hunting legislation. The villages visited were previously identified as potential shooting hotspots (Jansen 2013). The hunters were identified based on being engaged in hunting activity, and were asked if they were willing to answer questions regarding hunting habits and traditions. The research was introduced to them prior to presenting the questionnaire, and respondents were assured their answers would be kept confidential (Appendix 1). In all cases the questions were read for them by the surveyor, and their answers were recorded on the printed questionnaire sheets (Appendix 2 and 3). The interpretation of the questions and the answers was conducted with the help of a translator.



Figure 6. Villages in the Batumi Bottleneck, where questionnaires were filled in with hunters during Phase I. (Esri 2015; Data source: Natural Earth 2015; ASTER GDEM 2015).

The questionnaire consisted of a mixture of closed and open-ended questions, and it began with questions regarding the name of the village, the number of inhabitants/families, the respondent's age, religion, nationality, occupation, education, and the length of time he had been living in the village, which was followed by a series of questions around hunting habits and knowledge on hunting legislation. The questions aimed to understand whether hunting generally was more of a tradition or more of a sport for the respondent; how many days he was spending with hunting; how many birds he was shooting in a season; and what his views were on raptor shooting. The questionnaire touched upon general hunting habits in order to make the inquiring less incriminating for the respondent, and to avoid the appearance of looking for illegal activities. The word 'illegal' was avoided in all cases.

If there were any follow-up questions regarding topics not included in the questionnaire, but mentioned by the hunter during the interview, separate notes were taken.

A total of 43 questionnaires were completed face-to-face with hunters in 29 villages (Figure 6).

3.3.1.2. Systematic Monitoring

The villages visited during the second part of Phase I were previously identified as shooting 'hot spots' by Jansen (2013): the location, the elevation, and the orientation of the ridges in these villages were shown to be the most suitable for shooting.

The observation points were selected to provide a good overview on the village and the identified hunting spots. The locations were approached by two observers equipped with binoculars, telescopes, cameras, and a field guide to the identification of birds of prey. All data were recorded on printed monitoring sheets (Appendix 4). The data recorded included the date, the start and end time of observation, weather data (wind speed, precipitation, cloud cover), migration data (intensity, altitude), hunting effort (total number of hunters seen, total number of shots heard), as well as trapping effort (total number of trappers/hides seen). To avoid double counting, the minimum number of hunters/trappers/hides was recorded.

The intensity of migration was noted on a scale from 0 to 5, where 0 was no visible migration/very low intensity (less than 10 birds/hour) and 5 was very high intensity

(~10,000 birds/hour). The altitude of migration was recorded on a scale from 0 to 5 from very low (0) to very high (5).

The wind and precipitation were recorded on a 5-step scale from no wind to gale, and dry to constant rain. The cloud cover was recorded according to the proportion of the sky covered by clouds on a 5-step scale from 0-25% to 76-100% (overcast).



Figure 7. Villages in the Batumi Bottleneck, where hunting effort was monitored during Phase I. (Esri 2015; Data source: Natural Earth 2015; ASTER GDEM 2015).

The shot and injured birds were counted and recorded on the monitoring sheet. They were also sexed, aged and identified to species level whenever possible. If this detailed identification was not possible, the data was recorded on a group-level (Harriers, Accipiters, Falcons, Eagles, and MUID for Medium Unidentified Raptor). Bird remains were also counted, sexed, aged, identified, and recorded using the same method. A total of 159 hours and 5 minutes were spent with systematic observation in 14 villages (Figure 7).

3.3.2. Phase II

Phase II was undertaken between 5 and 26 May 2015, in the Batumi Bottleneck. It included the identification of the relevant stakeholders implicated in the conflict, and the completion of semistructured interviews with members of the major identified parties.

3.3.2.1. Identification of Affected Stakeholders

The stakeholders were considered affected if any of the following aspects were relevant to them:

a) involved in the shooting of migratory raptors (participating in the shooting or in the utilisation of the meat, or considering raptor shooting a part of autumn customs);

b) involved in the conservation of migratory raptors (working in avian conservation, or in bird watching tourism developing around the phenomena of bird migration in the Batumi Bottleneck).

3.3.2.2. Semi-Structured Interviews with the Stakeholders

A total of 17 in-depth interviews, ranging from 30 minutes to 1 hour, were conducted during the 3 weeks of field work with:

- the Head of the Directorate of Environment and Natural Resources of Autonomous Republic of Ajara;
- the Head of Ajara Service at the Department of Environmental Supervision;
- the Head of Tourism Product and Service Division at the Department of Tourism and Resorts of Ajara,
- the director of SABUKO;
- the co-ordinator of SABUKO's Hunting Monitoring Team; and
- local hunters (N=12).

Most participants approved the recording of the interviews. In case the respondent refused to be recorded, written notes were taken during the interview.

The selection of the respondents from the hunters was carried out using a snowball sampling method in two ways: either the hunter was known from Phase I, and thus was approached as an acquaintance based on that knowledge; or the first person met in the village was asked to point out a hunter he or she knew. If the person approached did not confirm, was not at home, or was unwilling to participate in the interview, the procedure was started again.

Government officials and representatives of the conservation NGO were chosen based on their status/role at the given institution, and contacted via email or telephone for an appointment. The interviews were conducted in person or via Skype.

In the beginning of each interview a short introduction was given about the author of the present thesis and the study. In case of hunters, the respondent was assured about the anonymity of his answers, while in case of government officials and the representatives of the conservation NGO their permission was asked for using their names together with their official opinion. In all cases their permission were asked for recording.

Twenty-eight potential hunters were approached in 5 villages purposefully selected based on previous studies (Jansen 2013; SABUKO unpubl.; Figure 8), of which 12 (42.9%) people refused to participate in the interview. This high non-response rate requires some thoughts.

First and foremost, this is at least the third year, when local people encounter foreigners looking for hunters in these villages. This might give rise to certain concerns, especially from those who are aware of the illegal nature of their activity. Secondly, the older generation likely remembers the times back in the Soviet Union, thus they refrain from engaging in open conversation with strangers about sensitive topics.

At the end of the interviews with the hunters, they were shown 24 colour pictures of bird species (Appendix 6) and asked to tell us how they would call the birds in the picture. To make them feel at ease with the task, and not to put them under the pressure, they were assured that it was the local names that were interesting for the study.



Figure 8. Villages in the Batumi Bottleneck, where in-depth interviews were conducted with hunters during Phase II. (Esri 2015; Data source: Natural Earth 2015; ASTER GDEM 2015).

3.4. Data Analysis

The data collected during 'Phase I – Systematic Monitoring' were analysed against the results of the questionnaires and the semi-structured interviews to see how the field observations support or disagree with the data resulting from the latter two.

⁽Phase II - Identification of the Relevant Stakeholders' was analysed according to the criteria defined under Section 3.3.2.1.

The data collected through the questionnaires and the semi-structured interviews were synthesised and analysed in an integrated manner, using the conceptual framework presented in Section 2.2.4. During the analysis, the key ideas relevant for answering the research question and the objectives (Section 1.3) were collected, interpreted, and classified according the following groups: Values, Attitudes, Goals and Positions (Redpath *et al.* 2013).

Based on this grouping it was found that all the interviewed stakeholders, except the local hunter community, represented an anti-shooting view to various extent, which required to have a deeper understanding of the positions of the hunters, as they seemed to be going against the positions of the other parties. Thus, in case of hunters, a more detailed mapping of the stated motivations, the opinions around the importance and role of hunting, on the current legislation, and on Georgia as a tourism destination was performed. Furthermore, the hunters' ability to distinguish between species was also assessed, and the list of the stated targeted species was compared against the results of the systematic monitoring.

3.5. Limitations

One of the major limitations of the study was the language barrier. Though a university student, majoring in English at Batumi Shota Rustaveli University, was helping with translation during the interviews and their transcription, it is likely that not speaking Georgian resulted in an impaired understanding of the respondents' message. Probably this was felt by the respondents, as several times they circumvent the translation and changed to Russian spoken by the author of the thesis, when they wanted to make a point.

Another major limitation was the number of stakeholders interviewed. Most hunters were not home during the time of the field work in May, as this is the time when many local people go and work in Turkey. Officials at the approached governmental bodies were hardly available for and/or interested in being interviewed, despite the repeated attempts to contact them for an appointment. Excuses included "lack of time", but it is supposed that they might have considered the interviews inconvenient.

The inclusion of more stakeholders (for example hunters' and falconers' association, rangers, tourists, and volunteers) would have resulted in a more detailed, comprehensive picture on the conflict and on the difficulties of monitoring and enforcement on the ground, but they could not be reached at the time of the study.

There are further limitations inherent in the studied conflict: the respondents' answers may have been biased or moderated due to the sensitivity of the subject, and some hunters may have been unwilling to participate in the interview due to the awareness of the illegal nature of the activity in question. This is shown by a recent change in hunters' behaviour: Jansen (2013) mentions the easiness of detecting the presence of hunters by the discarded wings and body parts at the shooting spot. This is often not the case anymore: many hunters take home the birds as a whole, presumably because they are aware of the increased attention towards the shooting. The author tried to overcome this difficulty with developing rapport at the beginning of each interview, which was often possible speaking a little Georgian, and being a hunter herself.

The interviews with governmental representatives also might resulted in biased data due to the inconvenience of taking responsibility for not enforcing the relevant legislation.

The shooting itself is hard to monitor as well: it happens in highly unpredictable, opportunistic manner linked to suitable weather conditions on the peak migration days, as well as to the hunters' available free time. The shooting spots are generally located on hardly accessible mountaintops, thus by the time the observer reaches the top, the hunters are gone or the shooting has stopped.

Lastly it is important to note two further limitations: the method of semi-structured interviews is not suitable to create standardised results and to extrapolate from the responses, and secondly, one year of monitoring is insufficient to see the trends in the hunting effort.

The limitations pointed out above were accounted for in the interpretation of the study: all results presented in Chapter 4 are contributions to seeing the context of this particular conflict, and not to draw generalised conclusions.

3.6. Synopsis

Chapter 3 introduces the study area and the two major phases of the study, as well as it explains the methods used for the data collection and analysis. During 'Phase I' questionnaires were filled out with hunters, aiming to collect demographic data and information on hunting practice, knowledge about legislation, and the stated drivers behind the shooting. A systematic monitoring was also conducted, during which data was taken regarding the observed hunting effort, the species targeted, as well as the migration and weather characteristics. During 'Phase II' the identification of the relevant stakeholders was carried out, which was followed by semi-structured interviews with those identified parties who were accessible and/or willing to participate in the interview.

The impaired understanding of the respondents' message due to the language barrier, and the accessibility and the willingness of the stakeholders were the major limitations during the study, which had to be taken into account in the interpretation of the results.

The four subparts of the data collection and the different methods used required a comprehensive synthesis of the results, which is presented in Chapter 4.

CHAPTER 4. RESULTS

This chapter is divided into two main sections according to the two phases of the data collection. The first section gives an overview of the results of the hunters' questionnaires regarding the socio-demographic characteristics, hunting habits and conservation issues raised, and of the systematic monitoring of migration and hunting/trapping efforts. The second section presents the list and introduction of the identified stakeholders affected in the conflict, as well as the key findings of the semi-structured interviews with the various stakeholders.

4.1. Phase I

4.1.1. Questionnaires with Hunters

4.1.1.1. Socio-Demographic Characteristics

All respondents were male (N=43), between the age of 17 and 73 (mean=39, SD=15). The educational background of the respondents was primary school (20), university (12), professional education (5), and PhD (1) (5 NA). Sixteen respondents (37%) were unemployed, 7 had temporary works in the village or in town, 10 were regularly employed, and 3 retired (7 NA). One respondent was a forest ranger before having retired. The majority of the respondents (76%) have been living in the same village all their lives, 4 for more than 10 years (5 NA). All respondents (100%) identified themselves as hunters (4 as both hunters and falconers).

The respondents estimated the number of hunters in their village from 2 to 30% of the inhabitants. In three villages 'all capable men' were considered to be hunters.

Nineteen respondents perceived that only local hunters were in their villages, while 2 said that 'falconers come here from Turkey', 'some come from Tbilisi, Kutaisi/Guria, Batumi'. Other opinions were that 'hunters used to come from abroad, but not anymore', 'outsiders come only exceptionally, sometimes from other villages', and 'outsiders come mostly for bear hunting'.

4.1.1.2. Hunting Habits

The claimed best season for hunting was winter (8), September (6), September-October (3), autumn (3), September-March (2), August-September (2), August-October (1), and October (1) (17 NA).

Thirty-seven respondents (6 NA) said that spring is a no-hunting period which they observe. Three respondents claimed that in spring 'birds are pregnant' / 'go to breed', thus it would be unethical to shoot them then.

The frequency of hunting ranged from 1 day in a season (2) to every day (14), mostly 'depending on the weather'. Nine respondents said they prefer hunting alone, 21 hunt more often in groups of 2-10 people, 13 respondents did not have preference. Most (67%) use either their own or their hunting partners' dog for searching and retrieving the quarry.

All hunters use shotguns of 12 or 16 calibre, single or double barrel. Seven respondents buy cartridges, 13 sometimes buy / sometimes make them, and 11 only make them at home (12 NA).

Fourteen respondents (33%) do not shoot raptors (one because of 'being in a national park', another because 'they are not edible'), 5 only shoots raptors if they provide easy target, while for 22 (51%), the main target is raptors (2 NA). Other often targeted species are quail (*Coturnix coturnix*), blackbird (*Turdus merula*), golden oriole (*Oriolus oriolus*), bee-eater, wood pigeon (*Columba palumbus*), woodcock (*Scolopax rusticola*), and different unspecified species of ducks.

Eighteen hunters (41%) shoot for the pot, while 6 of them do not eat what they shoot (19 NA). One hunter said he would give the birds away. Five of them take the birds home as a whole, and 14 cuts the wings on the spot (24 NA).

The claimed maximum number of shot birds on a good day ranged from 1-2 (2) to 40-50 (2). The most frequent answer was 10-15 birds (4). One respondent said "a lot", another told us that it was possible to shoot 'as much as a 100 raptors a decade ago'.

4.1.1.3. Drivers of Hunting

The main claimed reason for hunting was 'fun' (33, 77%), while 4 hunters said they would mainly shoot for the pot (5 NA). The second reason listed was food (12), sport (3), pest control (3),

adrenalin (1), business (1), and hobby (1). Pest control was mentioned by bee-keepers, who shoot bee-eaters to protect their hives.

All respondents defined hunting as mainly 'sport', 'hobby' or 'fun', but also as tradition, while 2 of them said explicitly 'this is not a tradition, only shooting'/ 'just amusement'. Three respondents expressed their view that bird shooting is not 'real hunting': they considered bear hunting as 'real hunting'. Two respondents said that it was young people who were more involved in intensive shooting ('young people are killing everything that moves').

4.1.1.4. Conservation Issues

Twenty-eight respondents (65%) do notice migration, whilst 7 respondents do not (8 NA). With 4 exceptions all of those who notice migration experience a decrease in the number of birds year by year.

Twenty-five respondents (58%) claimed they were aware of the legal and illegal species and were obeying these regulations. One stated 'it is young hunters who do not follow rules', and another said he knew the illegal species, but 'do not care' and shoots them anyway. One hunter said he knew people who 'got into trouble' because of shooting more than allowed, but never because of shooting raptors. Another opinion was that 'young people hunt as a hobby', but this hobby could be substitutable with another past-time activity.

4.1.2. Systematic Monitoring

A total of 14 villages was visited, and 159 hours and 5 minutes were spent with systematic observation of weather conditions, migration intensity and altitude, as well as hunting and trapping effort (Appendix 7-11). During this time at least 223 hunters were observed (average 16 hunters/village), and minimum 2044 shots were heard (average 12 shots/hour). Minimum 8 trappers and 33 hides were observed in 5 villages (average 1.6 trappers and 6.6 hides/village).

Table 2 includes the days when more than 50 shots were recorded (12 days). These days were characterised by no wind (8) or light breeze (4). 5 days with 0-25%, 3 days with 26-50%, 2 days 51-75% and 2 days with 76-100% cloud cover. The precipitation ranged from zero (8 days), to (occasional) light rain (3) to showers (1).

The two days with the highest count of shots (512 shots in Sakhalvasho, 31 Aug 2014; 241 shots in Zeda Achkva, 23 Sept 2014) were characterised by moderately cloudy calm weather with no wind, no or occasional, light precipitation.

Village	Date	Wind	Cloud cover (%)	Precipitation	Shots heard
Zeda Achkva	29/08/2014	No wind	76-100	Showers	89
Sakhalvasho	31/08/2014	No wind	26-50	Light rain	512
Sakhalvasho	01/09/2014	Light breeze	0-25	Dry	40+
Sakhalvasho	02/09/2014	Light breeze	26-50	Dry	50
Zeda Achkva	09/09/2014	Light breeze	51-75	Light rain	64
Zeda Sameba	09/09/2014	Light breeze	51-75	Dry	67
Dagva	14/09/2014	No wind	0-25	Dry	70
Zeda Sameba	17/09/2014	No wind	76-100	Light rain	51
Sakhalvasho	18/09/2014	No wind	0-25	Dry	66
Sakhalvasho	19/09/2014	Light breeze	26-50	Dry	60
Sakhalvasho	22/09/2014	No wind	0-25	Dry	99
Sakhalvasho	23/09/2014	No wind	0-25	Dry	65
Zeda Achkva	23/09/2014	No wind	0-25	Dry	241
TOTAL					1434

Table 2. Weather characteristics on days with more than 50 shots recorded.

Table 3. Distribution of bird species most often found affected by the shooting.

	Honey Buzzard	Mon/ Pal ⁶	Steppe Buzzard	Marsh Harrier	Black Kite	Booted Eagle	Short- toed Eagle	Eurasian Sparrow hawk	TOTAL
Shot	157	31	22	9	8	4	1	0	241
Injured	4	1	4	2	3	0	0	1	15
TOTAL	161	32	26	11	11	4	1	1	256

⁶ Mon/Pal refers to Montagu's and pallid harriers. They are listed in one group because often it is difficult to safely distinguish them in the field.

Table 3 shows the eight bird species seen shot, found dead or injured most often during the monitoring. The majority of the affected birds are honey buzzards (62.9%), and Montagu's and pallid harriers aggregated (12.5%). The high proportion of the honey buzzards can be explained by the fact that they are one of the most abundant species, but it is interesting to see that the shot/injured steppe buzzards only amount to 10.2%, while being almost equally numerous (BRC 2015a). The high percentage of the three harrier species (16.8% in total) is also consistent with their abundance; still it raises some questions as they are relatively small-bodied raptors that manoeuvre better than the broad-winged, bigger species. On the other hand, eagles are large-bodied, slow birds that provide easy target, but their migration might peaks later than the timing of the monitoring, which can explain their absence from Table 3.

4.2. Phase II

4.2.1. Overview of the Key Stakeholders Implicated in the Conflict

A total of 6 main stakeholders involved in the conflict were identified:

- Governmental bodies responsible for environment and nature conservation legislation:
 - Directorate of Environment and Natural Resources of Autonomous Republic of Ajara;
- 2. Governmental bodies responsible for the enforcement of environmental and nature conservation legislation:
 - o Department of Environmental Supervision;
- 3. Governmental bodies responsible for ecotourism and birdwatching tourism:
 - o Department of Tourism and Resorts of Ajara;
- 4. Non-governmental conservation organizations in the region:
 - SABUKO Society for Nature Conservation;
- 5. Organisations for the representation of interests of hunters:
 - o Hunters' Association;
- 6. Local communities participating in the shooting or other form of taking of migratory birds.

4.2.2. Values, Attitudes, Goals, and Positions of the Key Stakeholders

4.2.2.1. Directorate of Environment and Natural Resources of Autonomous Republic of Ajara:

"Nature needs a better future in Georgia" /Head of the Directorate/

The Directorate of Environment and Natural Resources of Autonomous Republic of Ajara directly answers to the government of Ajara. Its main mission is to promote integrated environmental monitoring and sustainable use of natural resources in the region. They co-operate with various governmental and non-governmental organizations on national and international level to reach their primary aims, including biodiversity conservation and public awareness-raising of environmental problems (Government of Ajara 2012).

The main role of the Directorate is to control and enforce the implementation of the relevant legislation—especially to protect forests, biodiversity, and prevent illegal dumping—with the help of the Environmental Supervision Department. The most widespread problems that the directorate faces are illegal logging (581 cases between 2013 and 2015), hunting (34 cases), and dumping (30 cases)

The Directorate has a clear approach towards raptor shooting: they consider it not acceptable; therefore they hope for significant, strict changes in the legislation and around the issuing of the hunting licences, as well as in the present practice of enforcement. (These decisions are the within the scope of the Georgian Ministry of Environment.) At the moment they find it problematic to control illegal hunting sites because by the time they reach these sites usually located on hardly accessible mountaintops the hunters are gone, and because of the limited available resources in terms of manpower and technology (cars, communication devices), which points out the need for the right tools, both in terms of policy and equipment.

The Directorate identified "too cheap licence" as an underlying problem: the issuing of the licences costs 11 GEL (approximately 4.4 EUR as of 1 July 2015) to be paid in a bank. The licence "requires no knowledge" about the legislation, species, or safety issues, which is unsustainable on the long term according to the Directorate.

4.2.2.2. Department of Environmental Supervision

The Department of Environmental Supervision controls law enforcement in the Ajara region. The department includes two branches: the operational department and the monitoring group; the latter patrols and checks potential illegal activities. The department employs 35 rangers, who have 7 cars at their disposal, which the department considers insufficient to control all the sites. For this reason bird shooting is especially problematic, because hunters disappear by the time the rangers could reach the shooting spots.

The Department sees raptor shooting one of the major problems in Ajara together with illegal logging, trapping, or dumping. They find the hunting license too cheap and too easily accessible; and expressed difficulties with the enforcement of hunting legislation mostly due to the lack of manpower or resources.

The identified underlying problem is twofold: one is the very cheap price of the licence, and the easiness of acquiring it; and the other is that people do not follow regulations, and the consequences of illegal activities are often not perceived as deterrent. Two exceptions from this are the fine for an unregistered gun and for bear shooting (500 GEL/199 EUR, and 50,000 GEL/19,866 EUR as of 1 July 2015, respectively). These fines are quite high compared to the gross national income per capita of approximately 3200 EUR in 2012 (UNSD 2015).

The Department sees the solution in stricter regulations and enforcement, and regular patrolling in the villages during the autumn migration season.

4.2.2.3. Department of Tourism and Resorts of Ajara

According to their website, the Department of Tourism and Resorts of Ajara Autonomous Republic supports tourism development in the Ajara region by promoting it as an attractive tourist destination on national and international levels. Their goals include awareness-raising among local population and stakeholders involved in tourism.

The Department finds it very important that Georgia appeared on the world map of birdwatching destinations. Tourism, especially ecotourism and birdwatching, is progressing and developing rapidly in the country, but the country's appeal is negatively affected by the shooting, which thus harms the tourism sector. According to the position of the Department, better rules and enforcement practices are necessary to prevent shooting at least during the tourism season. To achieve this and to solve the problem on the long-run, a co-operation is needed with the Directorate of Environment and Natural Resources, and other governmental and non-governmental organisations.

4.2.2.4. SABUKO – Society for Nature Conservation

"Georgia is a unique place in the world, where birdwatching tourism could develop to be an important economic factor." / Coordinator of SABUKO's Hunting Monitoring Team/

According to the standpoint of SABUKO hunting is a very serious problem that impacts species conservation, and affects ecotourism negatively by creating a scary, unpleasant atmosphere shocking for visitors. Hunting is not a tradition, though at some platforms it is promoted as it was one. The NGO sees the root of the problem in the poor economic situation in the villages ("poverty forces people to hunt"), and considers it unacceptable on the long-term, but highlights the importance of a continued non-confrontational approach.

SABUKO sees the root of the problem in hunters' unawareness of regulations, and also in the fact that governmental bodies were unwilling to recognise this issue as a real problem. Discussions with these entities have just recently opened up.

Both SABUKO and its migration monitoring project, BRC, have a clear nonconfrontational, non-repressive community-based conservation approach that considers the indiscriminate hunting of migratory birds in the region as a symptom of deep-rooted socioeconomic problems rampant in Georgia. Consequently, their aim is to work with, rather than against, communities in order to achieve mutually beneficial goals. Furthermore, the opinion of the BRC is that "the existing Georgian law should be enforced both regarding the hunting and trapping of birds for falconry" through informing local and general public on raptor migration ecology and on the global importance of the Batumi Bottleneck (BRC 2015b).

SABUKO believes that the solution is in co-operation, not in confrontation or rapid action. Environmental education and awareness-raising is the main tools through which SABUKO wants to spread the message about legislation and species conservation issues amongst hunters. The organisation realises that this way the problem needs a long time to solve, but finds such an approach more effective on the long run. The first step in this co-operation is to establish collaboration methods with the relevant governmental bodies to find a way to minimise the shooting.

The co-ordinator of SABUKO's Hunting Monitoring Team (HMT) sees illegal shooting of birds as one of the main conservations problems in Georgia. Endangered species like pallid and Montagu's harriers concentrate in high numbers in a small place in the bottleneck, which makes them very vulnerable to shooting. He adds, "many hunters cannot distinguish between species, meaning that despite they say that eagles are rare and they should not be shot, when a lesser spotted eagle (*Clanga pomarina*) comes, they do not recognise it as being an eagle, but call it a 'big raptor' and shoot it''.

The appeal of the place as a tourism destination is also decreased by the shooting, as tourist are complaining about being afraid, and being shocked by what they see. It is also advised to them not to go birding in the nearby Chorokhi river mouth early in the morning, because "it is like a war zone: hunters are in every bush shooting at everything that moves".

The underlying problem he identified is that governmental bodies are largely unaware of the shooting, which this is a double-edged situation: it is also a risk that authorities intervene too soon, too directly, or too strictly as soon as they acknowledge its existence.

He believes that the shooting, in most cases, is not subsistence hunting, but amusement and sport like birdwatching itself, to which unemployment ("too much free time") and social factors ("bonding with friends") contribute. He adds that it is important to maintain a good relationship with local communities.

The co-ordinator of the HMT sees the solution in close co-operation with the Directorate of Environment and Natural Resources and the Department of Tourism and Resorts. He emphasizes that it is important to not to force locals into anything, but make them understand the value, and make them proud about the uniqueness of this place. He adds that "some hunters are already ashamed about what they are doing", which is reinforced by two of the interviews with hunters.

The objective interpretation of shooting data is very important, because sensationalising with the use of shocking pictures could be harmful for the good relationship with local communities. Lobbying with the help of the broad public is possible based on well-founded data. The short term realistic goal of the HMT is to reduce illegal hunting, not to eliminate it completely. It is possible to consider options for sustainable hunting of certain species (honey buzzard or steppe buzzard) in case it is scientifically proven that this would have no harmful effect on the species in question on the long term. These potential derogations would need strict quotas, proper legislation and effective control.

4.2.2.5. Local Hunters

Local communities are not a homogenous group: they include hunters, falconers, falconers who are also hunters, and non-hunters as well. Those people who are not hunters often participate in the taking of the birds indirectly, for example by accepting and using the meat offered. To a more comprehensive understanding of the role of hunting in the life of local communities in general, the representatives of all these groups should have been involved in the discourse, which was not feasible during the present study due to the limited amount of available time and funding.

The interviews with hunters are synthesised in the followings, with special attention to the key messages regarding the role and importance of hunting in their lives, their opinion on raptor shooting, on Georgia as a tourism destination, and on the current hunting legislation.

Starting Hunting

"In the morning small boys would come and ask when I was going for hunting. I would say at 5, which is very early, but the boys come at 4:45, they are so eager. Sometimes I don't want them to come, that's why I say such an early hour, but they still come, they are so keen." / Hunter 1, Dagva/

Respondents get their first impressions about hunting at a young age, often from their father/grandfather, or from the other children in the village. The earliest age when the respondents started hunting was 6 (1), the latest was 25 years (1), 3 started at the age of 9-10, and 5 started when they were 15-16 years old (2 NA).

Four respondents started with friends and other children in the village, 5 learnt from his father ("It is like a tradition in the family."), 1 learnt from his grandfather, and one respondent told us that it is not necessary to learn, because it is "like hunting for women, you just know how to do it" (1 NA).

The Role and Importance of Hunting

"Hunting is time full of pleasure" / Hunter 7, Makhinjauri/

"It is respectful to share the meat with neighbours and friends."

"I become more experienced over time. When I was younger, it was more like playing: we went hunting with 10 friends, but shot only one bird, so we made dinner with that. Now we are more serious... but it doesn't matter how many birds you shoot, spending good time is more important. It never happens that someone shoots a bird and takes it home saying it is mine. We always share. It is like a tradition." / Hunter 4, Kvirike/

Respondents associated different opinions with the role of hunting in their lives, but most answers agreed on that it is a way of "getting meat on the table" and a source of pleasure (Figure 9). The responses also showed that hunting is connected to several social factors and functions in the community, besides shooting for the pot (Figure 10).



Figure 9. Distribution of answers to the question "What is hunting in your life?".



Figure 10. Functions and social factors associated with hunting, other than shooting for the meat.

To the question "How important is hunting in your life on a 10 scale, where 0 is 'not important' and 10 is 'very important'?" 91.7% of the hunters said 'very important'. Opinions were: "Nothing else is more important in my life"; "I cannot compare hunting with any other sport." Only one respondent said that hunting was "not so important" for him (3 or 4 on the 10-scale), but then his wife pointed out that it is important for her, because they conserve the meat for the winter.

Opinion on Raptor Shooting

"Why would anyone shoot raptors? You can't eat them." /Hunter 7, Makjinjauri/

"One patron is 80 tetri⁷. Shooting raptors is like throwing away your money... you could buy something useful for your family instead." /Hunter 5, Zeda Makhinjauri/

"Raptors eat mice, they are useful birds; they should not be shot. I always tell the other hunters don't shoot birds of prey, they are eating snakes, mice, and they help people, but many hunters come from other parts of

⁷ The subunit of lari, the currency of Georgia (app. 30 eurocent).

Makhinjauri or Batumi just to spend time here shooting raptors." /Hunter 5, Zeda Makhinjauri/

Six respondents (50%) said they do not shoot raptors, but they all knew people who do. Three respondents (25%) openly condemned raptor shooting as something that involves the destruction of useful birds and sheds bad light on Georgian people as violators of the law. The other three hunters considered raptor shooting as a harmless free-time activity mostly important for "restless" young people, who "do not know how to identify birds".

While some respondents seemed to be startled by the idea of eating raptors and found it "unimaginable", it was considered as a "normal" meal by others. No real pattern was found in the social, economic or educational background of the respondents with different opinions, although the closer the interviewees lived to the city, the more frequently they considered birds of prey inedible.

Distinguishing between Species

"There is the fish-eater irao, which has bad smell. Black irao also has bad smell. We didn't shoot mimino⁸ and shevardeni⁹, they are small. If it wasn't edible, we didn't shoot it. When it flies you see what it is, and if it can't be eaten, you shoot another one... When I was younger I shot everything I saw. When I got older I only shot the bigger ones, with more meat." /Hunter 2, Dagva/

Hunters showed very different skills in the identification of bird species (Table 4). The respondents who showed better identification skills were falconers (2); one of them participates in a SABUKO project that aims to train local falconers as ringers. These two respondents were the only ones who could identify the "unmistakeable" (Forsman 2007, 417) light morph of the booted eagle (*Hieraaetus pennatus*) to the species level, while the other 10 respondents did not recognise it as an eagle. Another characteristic species with a diagnostic plumage is the short-toed eagle (*Circaetus gallicus*) (Forsman 2007), which was distinguished from the other raptors by one hunter, who said it was a "matrosi", a sailor, referring to the bird's unique look.

⁸ Eurasian Sparrowhawk (Georgian); widely used for smaller raptors in general.

⁹ Falcon (Georgian).

ID†	Species in the picture	Georgian name	Total responses	Correct id	Correct taxon
19.	Blackbird	Shashvi	11	11	0
7.	Oriole	Melaghuri	10	10	0
13.	Crane	Tsero	10	10	0
24.	Ноорое	Орорі	7	7	0
23.	Bee-eater	Meputkria	7	5(7)***	0
16.	Sparrowhawk	Mimino	10	9	0
11.	Woodcock	Tghis katami	11	9	0
22.	Sparrowhawk in flight	Mimino	7	6	0
1-2.	Honey Buzzards	Krazanachamia / irao	22	15	0
15.	Black Grouse	Rojo	10	4	0
21.	Roller	Ghapghapa	9	2	0
6.	Booted Eagle light morph	Chia artsivi	10	2	0
10.	Hobby	Marjani	10	1	5
12.	Steppe Eagle	Velis artsivi	10	0	7(9)*
20.	Lesser Spotted Eagle	Mtsire mkivani artsivi	11	0	5(8)**
3.	Levant Sparowhawk male	Shavtvala mimino	10	0	6
5.	Pallid Harrier male	Velis dzelkori	11	0	2
4.	Montagu's Harrier	Mdelos dzelkori	9	0	2
14.	Black Stork	Qarqati	8	0	1
17.	Pallid Harrier juvenile	Velis dzelkori	10	0	1
18.	Black Kite	Dzera	11	0	0
8.	Steppe Buzzard	Chveulebrivi kakacha	10	0	0
9.	Short-Toed Eagle	Gvelichamia	9	0	0
TOTALS			233	91	28

Table 4. The proportion of correctly identified birds on species and taxon level.

⁺ ID refers to the number of the picture in Appendix 6.

* The higher number stands if 'qarapataghi' is accepted as a local name for the taxon.

** The higher number stands if 'qarapataghi' and 'berkuti' are accepted as local names for the taxon.

*** The higher number stands if 'kvirkvila' is accepted as a local name of the species.

Opinion on Legislation

"These people [the raptor shooters] should be fined. It is not good... and raptors are not in the licence." / Hunter 5, Zeda Makhinjauri/

"There is a lot of fuss about allowed and not allowed birds. For example the licence allows 10 quails per day, but if I could shoot 15 it is very annoying." / Hunter 7, Makhinjauri/

"Some people go hunting without knowing how to shoot. They can shoot each other or themselves. Previously you had to pass exams on how to shoot, and only if you passed this test you could be a member of a hunting organisation. They also checked your background and mental health. I used to be a member of a hunting association, but there is no such anymore. Back then you couldn't buy a gun without being a member... Now it is different." /Hunter 5, Zeda Makhinjauri/

Four hunters expressed the view that the present hunting legislation is not strict enough and it should be changed, especially regarding the lack of background and mental state check. Two said it was good as it is, and one held the view that it is already too strict (3 NA).

All hunters said they had been checked before (for gun or hunting licence), but it always happened in the wetlands when they were hunting quail, never in the mountains. One hunter said he knew raptors were not in the licence, but he would shoot them anyway because "nobody cares".

Georgia as a Tourism Destination

"These people [tourists] come here because they are interested in Georgia, and these migratory birds are not everywhere. They want to see these birds here." / Hunter 5, Zeda Makhinjauri/

"Georgia is a special place for bird migration. Birds are flying through here like in a bottleneck, that's why there are so many here." /Hunter 9, Makhinjauri/

"There were some people from the Netherlands filming the migration here, and these guys [the hunters] were shooting raptors even then... now the world will see that people don't respect the nature and the laws in Georgia." /Hunter 9, Makhinjauri/ Five hunters said Georgia was a good place for bird migration, but "nothing special", while 2 of them found Georgia "special", and 5 of them had no opinion on this question. Two hunters were aware that tourists have been frequenting Georgia for birdwatching, and they had positive attitudes towards them, all the others have never met tourists before.

One hunter expressed shame at people shooting raptors "right in front of the tourists' eyes", which, he said, would "deliver the world a bad impression on Georgia".

Species Loss

"What if there were no more birds that come here...? I haven't been thinking about that... but it would be bad." / Hunter 4, Kvirike/

All (12) respondents experienced a decrease in the number of migratory birds year by year, which they attributed to illnesses (2)/changes in migratory routes (1), or did not specify a reason (9). This observation, however, did not influence their shooting behaviour, although one respondent expressed his concern about losing the opportunity of bird hunting.

4.3. Synopsis

Chapter 4 discussed the main findings of the study: it overviewed the results of questionnaires with hunters and of the in-depth interviews with stakeholders involved in raptor shooting, as well as the observations and data collected during the systematic monitoring.

Based on the questionnaires, more than half of the respondents do engage in raptor shooting in autumn. For the considerable majority of the hunters the main stated driver for the shooting was having fun, though a considerable proportion takes home and prepare a meal from the quarry.

The data collected through the systematic monitoring of the hunting activity showed that the shooting affects four species the most: the honey buzzard, the Montagu's and the pallid harriers, and the steppe buzzard. However, it is important to note that the monitoring period likely did not include the peak of the eagle migration, and it is assumed that more eagles fall victim to the shooting later in October or in November.

During the second phase of the study, six main stakeholders involved in the conflict were identified. The in-depth interviews with these stakeholders suggest that the majority of the parties condemn raptor shooting, and find it an unacceptable, major problem in Georgia that negatively affects the international reputation of the country and thus its appeal as a tourism destination, as well as poses a threat to certain vulnerable species.

On the other hand, from the viewpoint of local hunters, bird shooting is an important freetime activity, and opportunity for maintaining good social relationships. While the quarter of the interviewed hunters condemned raptor shooting, many other respondents (and their wives) saw birds of prey as a good source of meat, which they often conserve for the winter.

It was also found that most hunters do not distinguish between species, but select their targets based on size and colour, and shoot the bigger and light coloured birds.

Summarising, it is seen that raptor shooting is more of an important social activity and a way of getting meat on the table for local hunters than a long-standing tradition. The other stakeholders in the conflict, on the other hand, see it as an unacceptable problem that needs a solution. The nature of this solution, however, is seen in different measures: some local hunters would prefer less strict legislation and no more quotas; other parties see it necessary to have stricter legislation and enforcement; while others aim for a mutual understanding through awareness-raising.

CHAPTER 5. DISCUSSION

In order to identify the elements which characterise the conflict over migratory birds of prey in the Batumi Bottleneck, this chapter synthesises and interprets the results summarised in Chapter 4 using Redpath *et al.*'s (2013) conceptual framework presented in section 2.1.4.

5.1. Redpath et al. (2013)'s Conceptual Framework for Conflict Mapping

5.1.1. Identifying Stakeholders and their Relationships

Figure 11 shows the main identified stakeholders affected, and their potential relationship, which depends on the management of the conflict. It is seen that in most cases there is a possibility for advantageous and disadvantageous situations as well, which points out the sensitivity of the conflict, when inadequate management decisions can easily lead to undesired outcomes.

The hierarchical relationships are not represented in Figure 11, but it is assumed that the various stakeholders do not have equal say regarding the conflict in question. For instance, the Department of Environmental Supervision determines the rangers' scope of activities in the field, but the Department operates according to the policies set by the Directorate of Environment and Natural Resources. SABUKO can lobby for favourable changes in the present policies and practices, but, being a young organisation without extended membership-base and strong international support from governmental bodies and other NGOs, has limited influence in decision-making, and the same can be said about local communities.

The alliance that had started to develop between SABUKO and the Department of Tourism and Resorts is built on the growingly popular ecotourism and birdwatching tourism that is seen as mutually beneficial for the Department and for SABUKO, who operates a co-called homestay network in one village near Batumi. This network involves several local families, who provide accommodation and full board for an agreed price for visitors who want to experience the raptor migration and Georgian hospitality.



Figure 11. The stakeholders in the conflict, and their potential relationship. The direction of the arrows shows the negatively affected party/beneficiary of the relationship.

It is important to note, however, that mainly one village sees the direct benefits of ecotourism via this homestay network, which would be difficult to expand to other, more remote, villages. Furthermore, it is not yet known what effect this has inside the village, where certain households participate in the network, while others do not.

Figure 11 also shows that SABUKO and local communities have the most potentially conflicting and beneficial relationships identified, which suggests that these two parties have crucial role in the conflict resolution.

5.1.2. Mapping Stakeholder Values, Attitudes, Goals, and Positions

5.1.2.1. Values Associated with Raptors, and Opinions about their Shooting

Based on the interviews, the direct and indirect use value of migratory birds are the most frequently occurring on the value map (Figure 12): those interested in birdwatching tourism see them as an opportunity to attract tourists, while others see them as a free and easily accessible source of food. Having pleasant time with friends was also often emphasised in connection with hunting, which underlines its importance in the social life (Loveridge *et al.* 2007). Most of the hunters interviewed did not consider raptor shooting a long-standing tradition that links community members through generations; it was rather seen as a widespread free-time activity done by "everybody". When "everybody does the same thing", it can be called a *norm* (Heberlein 2012, 92), and norms have a certain power: they determine what community members should and ought to do. These so-called social norms have unwritten rules about what one should do as the part of the community. While these rules are relatively solid, they might change through conflicts with personal norms held by certain individuals in the community, which supports the importance of awareness raising and education as means to reach receptive individuals, although attitudes with emotional components closely linked to people's identities are very difficult to change (Heberlein 2012).

While Heberlein (2012, 47) points out that attitudes might "die out" with aging generations, and people with bad habits can be replaced by fresh-minded young people who think and behave differently thus creating new and better norms, this is likely not applicable in this case, as young people are often more fervent hunters than the older generation, and children are involved in hunting since an early age.

The existential and aesthetic value of birds of prey is also an important element on the value map (Kellert 1993), while the widespread belief that all raptors kill domestic fowl point out the need for education. Here it is worth noting that for some stakeholders it was not the raptors themselves that represented some kind of a value, but the legislation which protects them. These parties held the view that regulations should be enforced by all possible means.



Figure 12. Different values associated with birds of prey. Adapted from Kellert 1993.

The many different values summarised in Figure 12 shows the complexity of beliefs and opinions surrounding birds of prey, but a less diverse picture characterises the opinions on the shooting, mostly considered "unacceptable" even among hunters themselves. Nevertheless, for a group of hunters raptor shooting is a regular activity which is not weighed against regulations or ethical considerations. Some of these hunters are aware of the legislation and thus the conflict as well, but others, mostly in remote villages, have not noticed the conflict yet.

The diversity of beliefs and opinions about raptors and their shooting likely means that a similarly complex approach with sensitive feedback mechanisms will be necessary to effectively involve all the stakeholders in the conflict management. The different values held by the parties may also influence their perception of the situation, which might impact their views on the potential solutions and on the inferred associated costs.

5.1.2.2. Identified Problems

Lack of Awareness

One of the main problems identified is the general lack of awareness about the conflict itself, especially regarding its details. The hunters who participated in this research were overwhelmingly found to be unaware of the legislation and the potential legal consequences of their activity; they did not know about the global significance of the study area in bird migration, neither about the ecological implications of the continued shooting. On the other hand, governmental bodies showed unawareness about the scale of the shooting, and its functions and importance as a social activity, as well as a lack of understanding of the sensitivity of the conflict.

Species Loss

At the moment, species loss is the major concern of SABUKO, which especially threatens large eagle species (*Aquila/Clanga spp.*), and the harriers (*Circus spp.*). The three harrier species that migrate in Batumi are the marsh (*C. aeruginosus*), the Montagu's and the pallid harrier; all showing globally decreasing trends with the last one being Near Threatened (BirdLife 2013a; 2013b; 2013c). Montagu's and pallid harriers are often difficult to identify to a species level in the field with unexperienced eyes, thus SABUKO finds it crucial to raise awareness of these species especially and to educate hunters about their importance.

Although many hunters claim they are aware that eagles are "rare" and "should not be shot", they are often not able to distinguish these species from buzzards in the field. The practice of selecting for the bigger or "white" birds further endangers eagles and cranes, as well as the lighter coloured birds like the short-toed eagle and the light morph of the booted eagle. However, this claimed practice was not supported by the results of 'Phase I – Systematic Monitoring', which showed that the most abundant species get shot most often. It is important to note two things here: firstly that the peak eagle migration, and thus the high number of shot eagles, might occur later in the season; and secondly, from a small population like that of the pallid harrier or the greater spotted eagle even a relatively small take can be harmful (Miller and Spoolman 2009).

Potential Escalation of the Conflict

Representatives of governmental bodies interviewed see raptor shooting "unacceptable", mostly on the basis of the relevant legislation. They acknowledge that the enforcement is "very difficult" due to logistical reasons and the lack of resources. Despite the known difficulties, the representative of the Department of Environmental Supervision (the head of the rangers on the regional level) expressed his willingness to act immediately and start patrolling with SABUKO helping them to identify the "worst villages" and shooting spots. This, however, would lead to increased resentment and the quick escalation of the conflict (Solomon *et al.* 2015), which goes against the non-confrontational approach taken by SABUKO. Certain distrust and animosity has already been experienced among hunters towards governmental bodies and even towards SABUKO, which denotes the sensitivity of the situation well. On the other hand, procrastinated intervention might give the image of weakness and indecisiveness, which could undermine the authority of the institutions in question (Anthony *et al.* 2010). To reach a mutually agreeable resolution of the conflict in the future, it is of key importance to maintain good relationship with stakeholders, built on their trust, and to involve them in the discussions and negotiations from the very beginning (Redpath *et al.* 2013).

5.1.2.3. Potential Solutions

One potential solution identified during the study was immediate action, supported by the Department of Environmental Supervision and the hunters who oppose raptor shooting. This coercive intervention (Arias 2015) would mean stricter enforcement: fining some hunters to deter others. The presumed consequences of this solution would be a rapid decrease in hunting pressure, but also the emergence of animosity and distrust, and finally a dangerous and undesirable situation like, for example, in Malta, where volunteers working for saving the illegally trapped birds face open conflicts and physical aggression every spring (Franzen 2010). The hunters' widely held opinion that stricter legislation and enforcement is undesirable further emphasises this risk. Hunters, on the other hand, are not a homogenous group; some of them do see the need for stricter control and changes in the present practices.

An alternative solution to immediate strict control would be delayed action, which is favoured by SABUKO. They see the potential resolution in the transformation of the widespread views about raptors building on the pride of local people by highlighting the uniqueness and importance of Georgia for bird migration, and in intensive awareness-raising and reach-out campaigns complemented with scientific monitoring of the effects and trends of hunting during several "transition years". This approach is expected to help in setting up new norms and initiating a change from inside the communities (McKenzie-Mohr *et al.* 2012). The negative consequences would be a weakening image of governmental organisations and SABUKO, as well as a continued hunting pressure for years to come.

Although the clear long-term aim of SABUKO is to put an end to raptor shooting, it is possible that Georgia could apply for derogation from international treaties protecting migratory birds of prey in case it is scientifically proven that shooting makes no harm to the populations of these species. This would only be possible with proper control of strict policies (Jansen pers.comm.).

Financial compensation for not shooting raptors was also raised as a potential solution, but considered not applicable due to the nature of the shooting, which is closer to a free-time activity than to subsistence hunting (Jansen pers.comm.). There have been attempts to buying trapped birds from falconers (van Maanen 1999), but this would likely mean an incentive for the trappers to catch more.

The third possibility is no action at all, which is preferred by the hunters who engage in raptor shooting. Many of them accept and respect the present legislation regarding the requirements of hunting and gun licences, the quotas on certain species, and the beginning and end of the hunting season, but they would prefer no changes in the present practice of enforcement.

5.2. Synopsis

Chapter 5 aimed to synthesise and interpret the results of the study, and it outlined a multiple stakeholder conservation conflict situation which has been emerging as a consequence of the different values associated with birds of prey and thus the non-compliance with the relevant legislation.

The conflict is characterised by a complex web of relationships between the affected parties, where in most cases there is a potential not only for a mutually beneficial co-operation, but also for the development of adverse approaches and the polarisation of opinions. This sensitive situation forecasts multifaceted challenges in the effective implementation of management decisions even though the majority of the stakeholders perceive this non-compliance in a largely similar way, and agree on the final objective of the conflict resolution, which is to put an end to the raptor shooting. The very different conceptions about how to reach this final objective, on the other hand, suggest that it may not be possible to find a compromise favoured by all parties (White and Ward 2011).
CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

The aim of the thesis was to answer how affected stakeholders perceive shooting of migratory raptors in the Batumi Bottleneck. Its objectives were to identify these various stakeholders implicated in the conflict in question, and to understand their beliefs and opinions towards:

- birds of prey and their shooting;
- the problems discerned around the shooting; and
- the potential solutions of the conflict and the associated risks.

6.1.1. The Main Findings of the Research

6.1.1.1. Understanding the Beliefs and Opinions towards Birds of Prey and their Shooting

The multifaceted values associated with raptors range on a broad scale, from seeing them as mere food source to appreciating their existence and beauty. The attitudes based on these values point out the complexity of the conflict, where a similarly complex approach might be necessary for its resolution. On the other hand, the opinions about raptor shooting were less diverse, with the majority of the parties seeing it unacceptable. This suggests that most of the parties are on common ground and perceive the problem in a similar way, but they differ in their approaches regarding the solution.

6.1.1.2. Problems Discerned around the Shooting

Depending on their associated values and opinions, each stakeholder expressed their concerns differently, but it is seen that the most urgent issues to be dealt with are the lack of awareness of the peculiarities of the situation by the affected parties; the potential loss of species; and the risk of the escalation of the conflict.

6.1.1.3. The Potential Solutions of the Conflict and the Associated Risks

The desired solutions range from no action at all through delayed action with reach-out campaigns and awareness-raising, to immediate action and stricter enforcement. Two parties are affected the most by the potential changes in the relationship between the stakeholders: local communities and SABUKO. These parties might be the most negatively affected by a win-lose or lose-lose situation that could result from poor conflict management.

6.1.2. The Implications of the Research

The study has offered an evaluative perspective on the various attitudes towards raptors and the different opinions on the possible solutions which highlight the importance of an interdisciplinary approach that integrates natural and social sciences for managing the conflict in question (White and Ward 2011). The resolution of this conflict requires the stakeholders' willingness to discuss and negotiate with other parties, which is crucial to reduce the risk of the polarisation of the parties, and to facilitate the co-existence of birds of prey and local people on the long term.

It is seen that the values, goals, and the desired means of reaching them stated by the interviewed parties are often incongruous with each other in their present form despite the widespread perception that shooting raptors is unacceptable. Taking into account all the affected parties' opinions requires extensive roundtable-discussions to understand the wider social-ecological context of the shooting, and to discuss and debate appropriate resolution mechanisms. The alliances and confrontations that can develop between the stakeholders can either facilitate or hinder this dialogue, thus it is important to find mutually agreeable solutions to foster conflict resolution. As White and Ward (2011) point it out, preliminary and follow-up monitoring should also play an important role in deciding about the necessary intervention methods, because the lack of scientific evidence about the effectivity of strategic decisions frequently leads to poor policies.

6.1.3. The Limitations of the Research

A caveat has to be noted here against generalising the findings of the present thesis, as the interviewed hunters cannot be considered the representatives of the entire hunter community. For a deeper understanding of the conflict it is important to see that local communities are not

homogenous regarding their perception of raptor shooting and hunting in general. The heads of governmental and non-governmental bodies, on the other hand, were considered to represent their institution and its official approach towards the conflict, but it is likely that their personal opinion biased their answers. The scale of this conflict is therefore multifaceted at all levels, which requires extensive investigation and monitoring before deciding on strategic interventions.

6.2. Recommendations

Future activities in the Batumi Bottleneck should be aimed towards the better understanding of the social and ecological context of the conflict, and towards the identification of the best intervention strategy. To attain this goal, the following strategies are recommended as a next step.

6.2.1. Gathering Scientific Evidence

Suggested action: Systematic monitoring of hunting pressure.

Expected results: As a next step towards a systematic conflict management the gathering of scientific evidences and the gaps in the present knowledge is suggested. The number of species shot per season, the long-term trends of hunting pressure, and the identification of the source populations are the most urgent questions to understand the ecological impacts of the shooting.

At the moment, the development of a long-term monitoring protocol is in progress based on the experiences gained during the present study; and its launch is planned for the autumn season of 2015. This monitoring is expected to provide solid data regarding the scale and trends of the shooting on the long term.

6.2.2. Awareness Raising

Suggested action: Reach-out campaigns and environmental education.

Expected results: To foster a mutual understanding amongst the parties, it is seen crucial that they are informed about the particularities of the situation on the short term. Furthermore, a reach-out campaign to raise hunters' awareness about migration, the global significance of Georgia,

and about the existing laws, whilst maintaining the non-confrontational approach towards hunters is considered a crucial practical step for the nearest future.

6.2.3. Adaptive Management

Suggested action: Adaptive management is suggested as a possible way to encourage compliance and to coordinate management efforts (Salafsky *et al.* 2001).

Expected results: The results of the systematic monitoring and the reach-out campaigns should be integrated into an adaptive management framework, to facilitate the finding of the best possible intervention approaches.

6.3. Synopsys

Illegal resource use is an increasing threat that heavily affects social-ecological systems and biodiversity on a global scale (Gavin *et al.* 2010; Solomon *et al.* 2015). To understand the context of such activities and in order to make informed policy decisions systematic monitoring of non-compliance together with assessing human behaviour, motivations, and social factors are necessary (St John *et al.* 2010).

This thesis covered the first and second steps in Redpath *et al.* (2013)'s framework (Figure 1): it drew the map of the stakeholders affected in the conflict; identified the potential changes in their relationships; and unpacked the values, attitudes, goals and positions associated with raptors and their shooting. This knowledge can now be used as a basis for further steps towards the actual management of the conflict.

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PERSONAL COMMUNICATIONS

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APPENDICES

Appendix 1. Introduction of the 2014 research. English and Georgian version.

Dear Mr. Hunter!

We are students from Hungary, England and Spain, studying hunting traditions in Georgia. We would be very grateful if you could answer our questions in this questionnaire. Your answers will be kept anonymous.

Thank you very much for your help!

პიტივცემულო ბატონო მონადირე!

ჩვენ ვართ სტუდენტები უნგრეთიდან, ინგლისიდან და ისპანეთიდან. ვსშავლობთ საქართველოში მონადირეობის ტრადიციებს. ძალიან დიდი მადლობები ვიქნებით თუ შეავსებთ ჩვენს მიერ წარმოდგენილ ბლანკებს. ყველა პასუხი იქნები ანონიმური. წინასწირ გიხდით დიდ მადლობის დახმარებისთვის!

Appendix 2. Questionnaire on the hunting traditions of Georgia and Ajara (Georgian).

თარიღი:				
მაცხოვრებლების რაოდენობა:	საქმიანობა:	ასაკი:	განათლება:	რამდენია წელია აქ ცხოვრობთ
ოჯახების	უმუშევარი დროებითი სამუშაო	რელიგია:	საშუალო პროფესიული კვალიფიკაცია	
რაოდენობა:	დასაქმებული პენსიონერი	ეროპნება:	უმაღლესი	

თქვენ ხართ მონადირე?			თქვენ რას ფიქრობთ: ნადირობის ტრადიცია ან სპორტი? ტრადიცია / სპორტი			
რამდენი მონადირეა სოფ	ელში?		ლოკალური მაცხოვრებლე სხვადასხვა მხარეებიდან?	ბი? / ჩამოსულები საქართვ	ელოს	
რომელია ნადირობისთვი გაზაფხულზე თუ ნადირ	ის საუკეთესო სეზონ ობთ? კი	io? p / არა	რამდენ დღეს გრძელდება	სეზონი?		
საუკეთესო დღეს რამდენ მტაცებელ ფრინველს მოკლავთ?			რისთვის ნადირობთ საკვებისთვის, გართობისთის, საკვებისთვის, მავნებლების კონტროლისთვის?			
მთლიანი ფრინველი მიგაქვთ თუ აჭრით ფრთებს?			რა სახის იარაღს იყენებთ? ნადირობთ თუ არა მაღლთან ერთად? კი/არა			
აკეთებთ თუ არა პატრონას თქვენ თვითონ? კი/არა/ზოგჯერ			მარტო ნადირობთ თუ ჯგუფთან ერთად? რამდენი ხართ ჯგუფში?			
სოფელში ბაზიერები არა ნადირობენ?? კი./არა	იან? №? ბაზი	ერები თუ	არიან ბრაკონიერები სოფელში?			
სახეობა	რიცხვი დღის განმავლობაში	ჭამთ?	სახეობა რიცხვი დღის ქ განმავლობაში			
მწყერი			იხვი			
შაშვი			индейка			
მოლაღური (მტაცებელი			

ნადირობის ტრადიციები

სასაუბრო თიმები

მეფუტკრია

ტყეს ქათამი

ოფოფი მტრედი

1. იცით თუ არა რამე მიგრაციის შესახებ? კი / არა	4. გაქვთ ლიცენზია ნადირობე	ბენ? კი / არა	
2. შემცირდა თუ გაიზარდა ფრინველების რაოდენობა?	5. შეგიძლიათ ჩამოთვალოთ კ 1. 2.	კანონიერი და უკანონო სახეობის? 1. 2.	
	3.	3.	
3. არიან ცხოველები რომლებიც პრობლემებს ქმნიან? რა / რატომ?	ყველა მონადირე მიჰყვება წეს	ესებს? კი / არა	

კურდღელი ტურა

მელია

დათვი

შთაბეჭდილება: უხალისოდ გვცემდა პასუხებს/სურდა პასუხების გაცემა/ ბედნიერი იყო პასუხებით (ამაყი) **შენიშნვნები და კომენტარები:**

Appendix 3. Questionnaire on the hunting traditions of Georgia and Ajara (English).

Date:

Village	Nr of Inhabitants	Occupation	Age	Education	How long
		Unemployed		Primary school	living here
	or families	Temporary jobs	Religion	Professional Qualification	_
		Employed	_	University	
		Retired	Nationality		

Hunting Traditions							
Are you a hunter?			Is hunting tradition or sport for you?				
How many hunters in the	village?		All locals? Some	from other cities/co	untries?		
Best season for hunting?	Spring huntin	ng?Y/N	Are you hunting now?	For what?			
How many days per week	during the season	1?	For fun? / Food? / Pest control? / An	nimal food? Other?			
Takes the whole bird / Cuts and leaves the wings?			What weapon do you use?	With dog?	Y / N		
Do you make your own cartridge? Y / N / Sometimes			How many in a group?				
Are there falconers?	Nº? Also shoot?	Y/N	Are there poachers in the village?				
Species?	nr / day	Eats?	Species	nr / day	Eats?		
Quail			Duck				
Blackbird			Turkey				
Oriole			Raptor – Maximum on a very good day?				
Bee-eater			Rabbit				
Ноорое			Jackal				
Pigeon			Fox				
Woodcock			Bear				

1.	Are you aware of the migration? Y / N / NA	4. Do you have lic	ence to hunt?	
2.	Have you noticed an increase /decrease in	5. Can you list 3 legal and 3 illegal species?		
	number of birds seen in autumn?	1.	1.	
	increase / decrease / doesn't know	2.	2.	
		3.	3.	
3.	Are there animals that are problematic for you? What / why?	6. Do all hunters f	follow the rules here?	
			Y / N / NA	

Impression: reluctant to answer / willing to answer / happy to answer (proud to be a hunter)

Notes and Comments

Appendix 4. Illegal hunting monitoring sheet – Autumn 2014

KEY FOR FILLING OUT THE MONITORING SHEET – Please read it carefully

INTENSITY: The intensity of the migration during the observation.

0 – no migration

1 – very low intensity (less than 10 birds / hour)

2 - low intensity (~10 birds / hour)

3 – medium intensity (~100 birds / hour)

4 – high intensity (~1000 birds / hour)

5 – very high intensity (~10,000 birds / hour)

TOTAL: The daily totals of killed / injured birds. Fill out AT THE END of your observation.

SHOT: Fill out DURING your observation by tallying the birds shot.

INJURED: Fill out DURING your observation by tallying the birds injured.

Adult: Fill out DURING your observation by tallying the adult birds killed / injured, if you are able to age them.

Juv.: Fill out DURING your observation by tallying the juvenile birds killed / injured, if you are able to age them.

Female / Female-col.: Fill out DURING your observation by tallying the female birds killed / injured, if you are able to sex them.

Male: Fill out DURING your observation by tallying the female birds killed / injured, if you are able to sex them.

MUID: Medium unidentified raptor.

SUBTOTAL: Add up all the TOTAL numbers, regardless the species and the injury.

KILLED BIRDS GRAND TOTAL: Add up all the numbers, regardless the species.

INJURED BIRDS GRAND TOTAL: Add up all the numbers, regardless the species.

E	The number of SHOT / INJURED birds include ALL the birds you see killed / injured; sexing and ageing is EXTRA information.
lecti	For example if you see 8 adults and 2 of unknown age shot, you would write 10 in the SHOT column and 8 in the Adult column.
YOUR REMARKS	
C	

Date:	Start Time:	End Time:		
Location:		Observers:		
Wind:	Start: no wind / light breeze/ medium	breeze / strong / gale	End: no wind / light breeze/ medium breez	e / strong / gale
Precipitation:	Start: dry / light rain / showers / rain		End: dry / light rain / shower / rain	
Cloud cover:	Start: 0-25% / 26-50% / 51-75% / 76-10	00%	End: 0-25% / 26-50% / 51-75% / 76-100%	
Intensity of mig	ration: Start: 0 / 1 / 2 / 3 / 4 / 5		End: 0 / 1 / 2 / 3 / 4 / 5	
Altitude of migr	ration: Start: very low / low / mediur	n / high / very high	End: very low / low / medium / high / very	high
Total number o	f hunters seen:	TOTAL:	Number of hunters interviewed:	TOTAL:
Out of	which under 15 :			
Out of	which are shooting from their garden :			
Out of	which are shooting from the road :			
Number of trap	pers:	TOTAL:	Number of trappers interviewed:	TOTAL:
Out of	which with guns :	TOTAL:		
Number of hide	es seen from the observation point:			TOTAL:
Number of shot	변 ts fired from the observation point: 끈			TOTAL:
Number of shot	ts heard from the observation point:			TOTAL:

SHOT AND INJURED BIRDS

	Honey Buzzard	TOTAL	Steppe Buzzard	TOTAL	Black Kite	TOTAL	Marsh Harrier	TOTAL
ALL SHOT								
Adult								
Juvenile								
Female / Female col.								
Male								
ALL INJURED								
Adult								
Juvenile								
Female / Female col.								
Male								
SUBTOTAL	ollection							
YOUR REMAR	YOUR REMARKS							

	Montagu's Harrier	TOTAL	Pallid Harrier	TOTAL	MonPalHen	TOTAL	Booted Eagle	TOTAL
ALL SHOT								
Adult								
Juvenile								
Female / Female col.							DARK	
Male							LIGHT	
ALL INJURED								
Adult								
Juvenile								
Female / Female col.								
Male								
	Sparrowhawk	TOTAL	Levant Sparrowhawk	TOTAL	Goshawk	TOTAL	Accipiter spp	TOTAL
ALL SHOT								
Adult								
Juvenile	<u> </u>							
ALL INJURED	ollectic							
Adult	eTD C							
Juvenile	CEU							
SUBTOTAL								

	Lesser Spotted Eagle	TOTAL	Greater Spotted Eagle	TOTAL	LSE/GSE	TOTAL	Other Eagle	TOTAL
ALL SHOT								
Adult								
Juvenile								
ALL	[1	1				1	
INJURED		ľ						
Adult								
Juvenile								
	MUID	TOTAL	Falcon spp	TOTAL	Hobby	TOTAL	Merlin	TOTAL
ALL SHOT								
Adult								
Juvenile								
ALL	[1	1				1	
INJURED		ļ						
Adult								
Juvenile								
	Bee-eater	TOTAL	Oriole	TOTAL	Other (indicate)	TOTAL	Other (indicate)	TOTAL
ALL SHOT								
Adult								
Juvenile	Collect							
INJURED	eTD C							
Adult	CEU							
Juvenile								
SUBTOTAL		Ī						

BIRD REMAINS FOUND AROUND THE OBSERVATION POINT

OTHER SPECIES / OTHER REMAINS / LEGS / SKULLS / FEATHERS	TOTAL

YOUR REMARKS

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KILLED BIRDS GRAND TOTAL:

INJURED BIRDS GRAND TOTAL:

Appendix 5. Introduction to the in-depth interviews with hunters, 2015.

My name is Anna Sandor and I am conducting research with the Central European University, Hungary, concerning hunting traditions in Georgia. I have been told that you hunt and I would like to ask some questions from you, to use your answers in my research.

I will not reveal your name and any information that could be used to identify you personally. All your answers are kept anonymous and confidential.

I need to quote your answers as accurately as possible and thus I would like to record our conversation if you agree.

If you would like more information about my research, you can contact me by phone or by e-mail.

Telephone (Hungary): +36 20 97 49 815 Telephone (Georgia): + 995 555 33 78 90 E-mail address is: sandor_anna@student.ceu.edu

Appendix 6. Pictures used for testing identification abilities of hunters.



2. Honey Buzzards (Photo: Christean Gelpke)

4. Montagu's Harrier (Photo: Bernhard Glüer)



5. Pallid Harrier (Photo: Rien van Wijk)



3. Levant Sparrowhawk (Photo: Lior Kislev)





6. Booted Eagle (Photo: Christean Gelpke)



Appendix 6. cont.

7. Golden Oriole (Photo: Carl Hawkins)



- 8. Steppe Buzzard (Photo: Johannes Jansen)
- 9. Short-toed Eagle (Photo: BRC)



10. Hobby (Photo: BRC)



11. Woodcock (Photo: bird-ukraine.pp.ua)



12. Steppe Eagle (Photo: Freek Verdonckt)



Appendix 6. cont.

13. Common Crane (Photo: H. P. Kristoffersen)



14. Black Stork (Photo: BRC)



15. Black Grouse (Photo: Neil McIntyre)



16. Eurasian Sparrowhawk (Photo: BRC)



17. Pallid Harrier (Photo: Wim Deloddere)



18. Black Kite (Photo: N. Bouglouan)



Appendix 6. cont.

19. Common Blackbird (Photo: Lon Dubh)



20. Lesser Spotted Eagle (Photo: BRC)



21. Roller (Photo: Albert de Jong)



22. Eurasian Sparrowhawk (Photo: BRC)



23. Bee-eater (Photo: Manuel Presti)



24. Hoopoe (Photo: Doğan Erol)



Villago	Data	Dete	Data		End	Start	End	Start	End	Start	End
village		Date	time	time	wind	wind	CC (%)	CC (%)) precip.	precip.	
Sakhalvasho	26/	/08/2014	16:00	16:45	Light breeze	NA	76-100	NA	Light rain	NA	
Zeniti	26/	/08/2014	16:15	17:30	No wind	NA	51-75	NA	OLR	NA	
Chakhati	27/	/08/2014	NA	NA	NA	NA	NA	NA	NA	NA	
Kobuleti	27/	/08/2014	NA	NA	NA	NA	NA	NA	NA	NA	
Zeda Sameba/Kvirike	27/	/08/2014	15:50	17:10	Light breeze	NA	100	NA	Dry	NA	
Dagva	28/	/08/2014	NA	NA	NA	NA	NA	NA	NA	NA	
Shuaghele	28/	/08/2014	10:30	11:30	No wind	NA	51-75	NA	Dry	NA	
Sakhalvasho	29/	/08/2014	14:35	15:20	Light breeze	NA	76-100	NA	Dry	NA	
Shuaghele	29/	/08/2014	15:00	16:00	NA	NA	NA	NA	NA	NA	
Zeda Achkva	29/	/08/2014	15:00	17:00	No wind	NA	76-100	NA	Showers	NA	
Sakhalvasho	31/	/08/2014	08:00	16:30	No wind	NA	26-50	NA	OLR	NA	
Sakhalvasho	01/	/09/2014	09:30	15:00	Light breeze	NA	0-25	NA	Dry	NA	
Zeda Sameba	01/	/09/2014	09:00	15:00	No wind	NA	26-50	NA	Dry	NA	
Zeniti	01/	/09/2014	10:20	15:00	Light breeze	NA	51-75	NA	Dry	NA	
Sakhalvasho	,02 ection	/09/2014	08:10	15:30	Light breeze	NA	26-50	NA	Dry	NA	
Simoneti	100 D 02/	/09/2014	13:00	14:00	NA	NA	NA	NA	NA	NA	
Akhalsopeli	VED 61	/09/2014	09:00	10:00	NA	NA	NA	NA	NA	NA	

Appendix 7. Systematic monitoring: weather data.

Appendix 7 cont.

Villago		Data	Start	End	Start	End	Start	End	Start procin	End prooin	
village		Dale	time	time	wind	wind	CC (%)	CC (%)	Start precip.		
Zeda Achkva		04/09/2014	14:30	18:00	NA	NA	NA	NA	NA	NA	
Zeda Sameba		04/09/2014	15:30	17:00	No wind	NA	26-50	NA	Dry	NA	
Zeniti		04/09/2014	16:00	17:45	NA	NA	NA	NA	NA	NA	
Sakhalvasho		07/09/2014	09:00	14:30	No wind	No wind	26-50	51-75	Dry	Dry	
Zeda Achkva		07/09/2014	12:25	15:45	No wind	No wind	51-75	26-50	Dry	Dry	
Zeniti		07/09/2014	13:30	15:30	No wind	No wind	76-100	76-100	Dry	Dry	
Gonio		09/09/2014	08:20	10:45	Light breeze	NA	0-25	NA	Dry	NA	
Zeda Achkva		09/09/2014	08:00	11:30	Light breeze	No wind	51-75	0-25	Light rain	Dry	
Zeda Sameba		09/09/2014	08:35	11:35	Light breeze	Light br.	51-75	51-75	Dry	Dry	
Zeniti		09/09/2014	09:00	11:00	Light breeze	Light br.	26-50	51-75	Dry	Dry	
Sakhalvasho/Makhinja	auri	10/09/2014	12:15	14:40	Light breeze	No wind	76-100	51-75	Light rain	Dry	
Zeda Achkva		10/09/2014	08:00	13:45	No wind	Light br.	76-100	51-75	Rain	Dry	
Zeda Sameba		10/09/2014	08:30	13:30	Light breeze	No wind	76-100	76-100	Light rain	Dry	
Sakhalvasho		12/09/2014	14:30	16:45	No wind	No wind	76-100	76-100	Dry	Dry	
Dagva	-	14/09/2014	09:15	12:00	No wind	Light br.	0-25	0-25	Dry	Dry	
Zeda Achkva	llection	14/03/2014	08:30	11:00	No wind	No wind	0-25	0-25	Dry	Dry	
Sakhalvasho	D Co	15/09/2014	08:00	09:00	No wind	No wind	26-50	26-50	Dry	Dry	
Gonio	CEU eJ	16/09/2014	09:00	11:00	Light breeze	Light br.	76-100	76-100	Showers	Dry	
Sakhalvasho	0	16/09/2014	08:45	12:30	No wind	No wind	76-100	76-100	Dry	Rain	
Sakhalvasho		16/09/2914	16:45	18:00	No wind	No wind	26-50	26-50	Dry	Dry	

Appendix 7 cont.

Villago	Data	Start	End	Start	End	Start	End	Stort procin	End procin
village	Date	time	time	wind	wind	CC (%)	CC (%)	Start precip.	End precip.
Zeniti	17/09/2014	10:15	11:30	Light breeze	No wind	76-100	0-25	Dry	Dry
Dagva	17/09/2014	08:25	12:45	Light breeze	No wind	76-100	26-50	Light rain	Dry
Zeda Sameba	17/09/2014	09:30	12:30	No wind	No wind	76-100	0-25	Light rain	Dry
Zeda Achkva	18/09/2014	08:20	11:45	No wind	No wind	0-25	0-25	Dry	Dry
Sakhalvasho	18/09/2014	08:00	12:30	No wind	No wind	0-25	0-25	Dry	Dry
Sakhalvasho	19/09/2014	07:45	11:45	Light breeze	Light br.	26-50	76-100	Dry	Dry
Kveda Achkva	19/09/2014	09:00	12:00	Light breeze	Light br.	76-100	76-100	Dry	Dry
Kvirike	19/09/2014	12:30	14:00	Light breeze	Light br.	76-100	76-100	Dry	Rain
Zeda Achkva	20/09/2014	08:00	11:30	No wind	Light br.	76-100	76-100	Light rain	Rain
Sakhalvasho	20/09/2014	08:00	09:30	Strong	Strong	76-100	76-100	Heavy rain	Heavy rain
Kvirike	22/09/2014	08:30	13:30	No wind	Light br.	26-50	26-50	Dry	Dry
Sakhalvasho	22/09/2014	07:45	16:00	No wind	No wind	0-25	0-25	Dry	Dry
Sakhalvasho	23/09/2014	07:45	13:00	No wind	No wind	0-25	0-25	Dry	Dry
Zeda Achkva	23/09/2014	08:30	17:30	No wind	No wind	0-25	0-25	Dry	Dry
Kvirike	23/09/2014	09:15	11:35	No wind	Light br.	0-25	0-25	Dry	Dry

CC = Cloud cover.

OLR = Occasional Light Rain.

Village	Date	IoM Start	IoM End	Hunters seen	Shots heard	Trappers seen	Hides seen	Observation time
Sakhalvasho	26/08/2014	3	NA	3	5	0	6	00:45:00
Zeniti	26/08/2014	3	NA	4	5	0	0	01:15:00
Chakhati	27/08/2014	NA	NA	0	0	0	0	0
Kobuleti	27/08/2014	NA	NA	0	3	0	0	0
Zeda Sameba/Kvirike	27/08/2014	2	NA	2	3	0	0	01:20:00
Dagva	28/08/2014	NA	NA	0	0	0	0	0
Shuaghele	28/08/2014	4	NA	2	1	0	0	01:00:00
Sakhalvasho	29/08/2014	2	NA	0	0	0	6	00:45:00
Shuaghele	29/08/2014	NA	NA	3	1	0	0	01:00:00
Zeda Achkva	29/08/2014	3	NA	23	89	0	0	02:00:00
Sakhalvasho	31/08/2014	5	NA	12+	512	0	8	08:30:00
Sakhalvasho	01/09/2014	3	NA	4	40+	2	8	05:30:00
Zeda Sameba	01/09/2014	4	NA	0	0	0	0	06:00:00
Zeniti	01/09/2014	4	NA	3	20	0	0	04:40:00
Sakhalvasho	02/09/2014	4	NA	4	50	0	8	07:20:00
Simoneti	.g 02/09/2014	NA	NA	2	5	2	0	01:00:00
Akhalsopeli	og/09/2014	NA	NA	0	0	1	7	01:00:00
Zeda Achkva	04/09/2014	NA	NA	13	14	0	0	03:30:00
Zeda Sameba	^巴 04/09/2014	3	NA	0	30	0	0	01:30:00

Appendix 8. Systematic monitoring: migration and hunting/trapping effort data.

Appendix 8 cont.

Village	Date	IoM Start	loM End	Hunters seen	Shots heard	Trappers seen	Hides seen	Observation time
Zeniti	04/09/2014	NA	NA	1	5	0	0	01:45:00
Sakhalvasho	07/09/2014	NA	NA	8	23	0	8	05:30:00
Zeda Achkva	07/09/2014	4	NA	6	23	0	1	03:20:00
Zeniti	07/09/2014	2	NA	0	7	0	0	02:00:00
Gonio	09/09/2014	0	NA	0	27	0	6	02:25:00
Zeda Achkva	09/09/2014	2	NA	8	64	0	0	03:30:00
Zeda Sameba	09/09/2014	3	NA	0	67	0	0	03:00:00
Zeniti	09/09/2014	2	NA	3	23	0	0	02:00:00
Sakhalvasho/Makhinjauri	10/09/2014	1	NA	10	30	1	13	02:25:00
Zeda Achkva	10/09/2014	0	NA	12	22	0	0	05:45:00
Zeda Sameba	10/09/2014	1	NA	0	33	0	0	05:00:00
Sakhalvasho	12/09/2014	1	NA	8	16	0	4	02:15:00
Dagva	14/09/2014	2	NA	2	70	0	0	02:45:00
Zeda Achkva	14/03/2014	0	NA	7	48	0	0	02:30:00
Sakhalvasho	15/09/2014	0	NA	0	2	0	1	01:00:00
Gonio	16/09/2014	2	NA	10	22	1	9	02:00:00
Sakhalvasho	16/09/2014	0	NA	0	0	0	0	03:45:00
Sakhalvasho	16/09/2914	2	NA	4	15	0	7	01:15:00
ਹ Zeniti	17/09/2014	1	NA	2	8	0	0	01:15:00
Dagva	17/09/2014	2	NA	1	49	0	0	04:20:00

App	pendix	8 cont.
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Village	Date	loM	loM	Hunters	Shots	Trappers	Hides	Observation
		Start	End	seen	heard	seen	seen	time
Zeda Sameba	17/09/2014	2	NA	1	51	0	0	03:00:00
Zeda Achkva	18/09/2014	2	NA	3	37	0	0	03:25:00
Sakhalvasho	18/09/2014	2	NA	6	66	1	10	04:30:00
Sakhalvasho	19/09/2014	0	NA	5	60	0	0	04:00:00
Kveda Achkva	19/09/2014	0	NA	8	15	0	0	03:00:00
Kvirike	19/09/2014	1	NA	1	10	0	0	01:30:00
Zeda Achkva	20/09/2014	1	NA	6	22	0	0	03:30:00
Sakhalvasho	20/09/2014	0	NA	2	4	0	4	01:30:00
Kvirike	22/09/2014	1	NA	11	35	0	0	05:00:00
Sakhalvasho	22/09/2014	3	NA	14	99	0	4	08:15:00
Sakhalvasho	23/09/2014	0	2	4	65	0	15	05:15:00
Zeda Achkva	23/09/2014	0	1	10	241	0	1	09:00:00
Kvirike	23/09/2014	0	1	7	47	0	1	02:20:00
TOTALS				223+	2044+	8	33 ¹⁰	159:05:00

 $\frac{\Gamma ALS}{IoM = Intensity of Migration.}$

¹⁰ Only the maximum number of hides was counted per village.

Appendix 9. List of abbreviation of species.

Abbreviation	Species
HB	Honey Buzzard Pernis apivorus
SB	Steppe Buzzard Buteo buteo vulpinus
ВК	Black Kite Milvus migrans
Marsh	Marsh Harrier Circus aeruginosus
Mon	Montagu's Harrier Circus pygargus
Pal	Pallid Harrier Circus macrourus
Mon/Pal	Montagu's or Pallid Harrier species
BE	Booted Eagle Hieraaetus pennatus
MERAPI	Bee-eater Merops apiaster
TD	Turtle Dove Streptopelia turtur
Roller	European Roller Coracias garrulus
SpH	Eurasian Sparrowhawk Accipiter nisus
MUID	Medium Unidentified Raptor
STE	Short-toed Snake Eagle Circaetus gallicus
Oriole	Golden Oriole Oriolus oriolus
UPEP	Hoopoe <i>Upupa epops</i>

CEU eTD Collection
Village	Date	HB	SB	BK	Marsh	Mon	Pal	Mon/Pal	BE	MERAPI	TD	Roller	SpH	MUID	TOTAL
Sakhalvasho	26/08/2014	1													1
Zeniti	26/08/2014														0
Chakhati	27/08/2014														0
Kobuleti	27/08/2014	1													1
Zeda Sameba/Kvirike	27/08/2014														0
Dagva	28/08/2014														0
Shuaghele	28/08/2014	4				1									5
Sakhalvasho	29/08/2014														0
Shuaghele	29/08/2014	1								1					2
Zeda Achkva	29/08/2014	16		1		1	1	3		1	5	2			30
Sakhalvasho	31/08/2014	1							1	1					3
Sakhalvasho	01/09/2014	3													3
Zeda Sameba	01/09/2014														0
Zeniti	01/09/2014	1													1
Sakhalvasho	02/09/2014														0
Simoneti	02/09/2014														0
Akhalsopeli	03/09/2014														0
Zeda Achkva	04/09/2014														0
Zeda Sameba	04/09/2014														0
Zeniti	04/09/2014									2					2
Sakhalvasho	07/09/2014														0
Zeda Achkva	07/09/2014														0
Zeniti	07/09/2014														0
Gonio	09/09/2014														0
Zeda Achkva	09/09/2014														0
Zeda Sameba	09/09/2014	2													2
Zeniti	09/09/2014					1									1

Appendix 10. Systematic monitoring: number of birds shot.

Appendix 10 cont.

Village	Date	HB	SB	BK	Marsh	Mon	Pal	Mon/Pal	BE	MERAPI	TD	Roller	SpH	MUID	TOTAL
Sakhalvasho/Makhinjauri	10/09/2014														0
Zeda Achkva	10/09/2014														0
Zeda Sameba	10/09/2014														0
Sakhalvasho	12/09/2014							1		1					2
Dagva	14/09/2014		1												1
Zeda Achkva	14/03/2014														0
Sakhalvasho	15/09/2014														0
Gonio	16/09/2014														0
Sakhalvasho	16/09/2014					1							1		2
Sakhalvasho	16/09/2914														0
Zeniti	17/09/2014														0
Dagva	17/09/2014														0
Zeda Sameba	17/09/2014														0
Zeda Achkva	18/09/2014		1				2			2					5
Sakhalvasho	18/09/2014														0
Sakhalvasho	19/09/2014							1							1
Kveda Achkva	19/09/2014		1												1
Kvirike	19/09/2014														0
Zeda Achkva	20/09/2014														0
Sakhalvasho	20/09/2014	1											1	4	6
Kvirike .g	22/09/2014	1	6												7
Sakhalvasho	22/09/2014		1												2
Sakhalvasho	23/09/2014	2	3	1	1		1						6	4	17
Zeda Achkva	23/09/2014		2						1				1	1	5
Kvirike	23/09/2014														0
TOTALS		34	15	2	1	4	4	5	2	8	5	2	9	9	100

Village	Date	HB	SB	BK	Marsh	Mon	Pal	Mon/Pal	STE	BE	SpH	Oriole	MERAPI	TD	UPEP	TOTAL
Sakhalvasho	26/08/2014	1				1										2
Zeniti	26/08/2014															0
Chakhati	27/08/2014															0
Kobuleti	27/08/2014															0
Zeda Sameba/ Kvirike	27/08/2014															0
Dagva	28/08/2014	1														1
Shuaghele	28/08/2014	1														1
Sakhalvasho	29/08/2014															0
Shuaghele	29/08/2014	2														2
Zeda Achkva	29/08/2014	3				1						1				5
Sakhalvasho	31/08/2014															0
Sakhalvasho	01/09/2014	5		1								2		2		10
Zeda Sameba	01/09/2014															0
Zeniti	01/09/2014															0
Sakhalvasho	02/09/2014															0
Simoneti	02/09/2014	1											1			3
Akhalsopeli	03/09/2014	1														1
Zeda Achkva	04/09/2014	8		1												9
Zeda Sameba	04/09/2014															0
Zeniti	04/09/2014															0
Sakhalvasho	07/09/2014	2		2		2		1				4	2			13
Zeda Achkva	07/09/2014															0
Zeniti	07/09/2014															0
Gonio	09/09/2014															0
Zeda Achkva	09/09/2014	1														1
Zeda Sameba	09/09/2014															0

Appendix 11. Systematic monitoring: number of bird remains found.

Appendix 11 cont.

Village	Date	ΗВ	SB	BK	Marsh	Mon	Pal	Mon/Pal	STE	BE	SpH	Oriole	MERAPI	TD	UPEP	TOTAL
Zeniti Sakhalvasho/	09/09/2014															0
Makhinjauri	10/09/2014	2	1					2					2			7
Zeda Achkva	10/09/2014	23														23
Zeda Sameba	10/09/2014	1						1								2
Sakhalvasho	12/09/2014															0
Dagva	14/09/2014	4			1						2					7
Zeda Achkva	14/03/2014	2				1										3
Sakhalvasho	15/09/2014															0
Gonio	16/09/2014	2						1								3
Sakhalvasho	16/09/2014															0
Sakhalvasho	16/09/2914															0
Zeniti	17/09/2014															0
Dagva	17/09/2014															0
Zeda Sameba	17/09/2014	1						1								2
Zeda Achkva	18/09/2014															0
Sakhalvasho	18/09/2014	4						2					2			7
Sakhalvasho	19/09/2014															0
Kveda Achkva	19/09/2014	8			4			3		1	5		2			23
Kvirike	19/09/2014	50	6	2	3	1	1		1	1	1		3		1	70
Zeda Achkva	20/0复/2014															0
Sakhalvasho	20/0 20/14															0
Kvirike	22/09/2014															0
Sakhalvasho	22/09/2014															0
Sakhalvasho	23/09/2014															0
Zeda Achkva	23/09/2014															0
Kvirike	23/09/2014															0
TOTALS		123	7	6	8	6	1	11	1	2	8	7	12	2	1	195

CEU eTD Collection