

# Chapter 1

## The Need and Relevance of the Book: Problematic Wildlife and the Modern World



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*In Wildness is the preservation of the world*  
(Henry David Thoreau)

*Oh nature, nature, why do you withhold what first you promise?*  
*Why do you so deceive these sons of yours?*  
(Giacomo Leopardi)

*We must not force nature but persuade it*  
(Epicurus)

### 1.1 What Is the Inspiration Behind this New Book?

This book is the natural continuation of a previous volume titled *Problematic Wildlife* (Angelici 2015). *Problematic Wildlife* was well-received by the public and critics (Ramanan and Khapugin 2017). The public acclaim for the book has been attributed to its very structure, which addressed diverse themes and needs, incorporating research syntheses and case studies, to develop a broad, innovative, and comprehensive definition of the phase “problematic wildlife.”

The primary stimulus for a second volume on the same theme was the Third International Congress on conflicts and interactions between man and wildlife (“III Congresso Nazionale Fauna Problematica”) held in Cesena, Italy, in 2016 (Angelici and Rossi 2016). Some of the themes and topics which emerged on the Congress that were not addressed in *Problematic Wildlife* included sustainable hunting, invasive species, urban wildlife, and the dynamic relationship between science and animal activists.

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We further explore these topics in the new volume because of their relevance to emerging issues related to the ecology of the planet in the broadest sense and the inevitable overlap between ecosystems, habitats, wildlife conservation, and human activities (Rosell and Llimona 2012; Clement and Standish 2018; Tucker et al. 2018).

It is becoming increasingly clear that the interactions between humans and wildlife will become common and more challenging. As such, increased human interventions will be needed to better manage human-wildlife conflicts to achieve some level of coexistence with wildlife (Frank and Glikman 2019). However, even increased human intervention does not always ensure a possibility of success (Angelici et al. 2015).

As we reviewed the term “problematic wildlife” as defined in the introductory chapter of the first volume (see Angelici 2015), we realized that the definition can also be applied to a multitude of diverse, dynamic, and complex interactions presented in the second volume. And at the same time, we can see new case studies and management experiences merging in this “composite of discipline.”

## 1.2 Problematic Wildlife: From Direct Danger to Humans to Negative Impact on Human Activities

In some cases, wildlife can pose a serious danger to human health and safety (e.g., Conover et al. 1995; Dickman and Hazzah 2016). This is due to the uncontrolled increase of the human population, which in many areas is overlapping with the range of potentially dangerous species (e.g., Landy 2017), or because the habitats of these species are eroded or irreparably altered, such as when natural prey disappear (e.g., Linnell et al. 2002).

Some typologies of risks to humans posed by large predators (Harris and Herrero 2007; Caldicott et al. 2005) or by venomous species (Alirol et al. 2010) were presented in the first volume (see McLennan and Hockings 2016; Linnell and Alleau 2016). In the present volume, this theme is further examined with new cases (Perry et al. 2020c; Murphy 2020; Sheperd 2020).

The negative human interactions with wildlife can also be linked to anthropogenic activities and include increased predation on livestock and/or crop damage (Mishra et al. 2016; Atickem et al. 2010). Moreover, the uneasy coexistence between humans and some predators (i.e., the gray wolf *Canis lupus*) in North America or Europe has created new economic impacts and social realities which also raise new ethical issues regarding the role or right of humans to the management of wildlife (Mech et al. 1996; Messmer et al. 2001; Nie 2002; Treves et al. 2003; Imbert et al. 2016). All these issues are addressed in this volume (see Sheperd 2020; Khan et al. 2020; Meriggi et al. 2020).

### 1.3 Problematic Wildlife: Urban Wildlife Conflicts Are an Emerging Problem

Wildlife and their management in urban landscapes is a theme that has been emerging for a long time (Leedy et al. 1978; Goode and Goode 1989; Messmer 2000; Adams 2005). Today many species of large homeothermic vertebrates have adapted to live in urban or suburban environments (Gloor et al. 2001; Graser et al. 2012), sometimes by changing their habits, as diet or activity patterns (see Ditchkoff et al. 2006; Lowry et al. 2013; Gunther et al. 2018). Often these scenarios created new problems (Hong et al. 2014), to include road traffic accidents (Collinson et al. 2014; Sáenz-de-Santa-María and Tellería 2015; Found and Boyce 2011; Gunther et al. 2018) and the increased risk of disease transmission (de Mattos et al. 2013; Vos et al. 2012) that will need to be addressed.

In recent years, the distribution of wild boar (*Sus scrofa*, feral swine) populations has expanded worldwide (see Massei et al. 2015), and they now inhabit peri-urban and urban areas (Stillfried et al. 2017). Feral swine have also colonized large metropolitan areas in Europe (Castillo-Contreras et al. 2018). Additionally many mammals of medium and large size, from red foxes (*Vulpes vulpes*) to coyotes (*Canis latrans*), have adapted well to urban life (Lawrence and Krausman 2011; Scott et al. 2014; Baker and Timm 2017). The unique conflicts the wildlife creates in urban environment will require innovative solution. Perry et al. (2020a) provide an extensive review of the issues in the book.

Also the populations of many species of birds have been increasing in urban areas (Shochat et al. 2010) and have impacts on urban ecosystems that are often difficult to assess (Blackwell et al. 2013; Manville II 2016; Menchetti et al. 2016). For example, the problem of urban seagulls is increasingly worldwide (Belant 1997), as reviewed in the chapter by Benussi and Fraissinet (2020).

### 1.4 Problematic Wildlife: Hunting and Ecotourism – Possible Mechanisms for Conservation and Coexistence?

The role of hunting in wildlife conservation is a theme that has often caused rifts between hunters and scientists (Johannesen 2005; Hames 2007; Lindsey et al. 2007; Treves 2009; Organ et al. 2012; Paulson 2012; Delibes-Mateos et al. 2014; Benítez-López et al. 2017). We know how different human visions and values of ecosystems and the environment, together with ethical and practical contents, can lead to diametrically opposed positions, but in some cases, these two worlds may not be completely incompatible and can coexist to pursue the same goals, even synergistically (Redpath et al. 2017), while maintaining their perspectives.

As an example, there is a lack of consensus in the role of trophy hunting in Africa (Lindsey et al. 2013; Packer et al. 2011). Trophy hunting under specific and strictly

controlled cases allows the removal of selected animals and generates resources for the conservation of all species (Di Minin et al. 2016; Lindsey et al. 2006), but this industry must be managed in a strictly ethical way to avoid repercussions on ecosystems (Messmer et al. 1998; Lindsey 2008; Lindsey et al. 2009).

We know that many hunted species also are a source of conflict for agriculture producers and pastoralists (Messmer et al. 1998, Frank et al. 2015). Many of these prized game species are artificially managed via introduction, reintroductions, or restocking operations. This form of management may have consequent impacts and repercussions on native wildlife populations and habitats (Champagnon et al. 2012; Goedbloed et al. 2013). Emblematic cases that exemplify this situation include the European hare (*Lepus europaeus*) (Canu et al. 2018) and wild boar (Giménez-Anaya et al. 2020).

Finally, even ecotourism, an emerging aspect of human-wildlife interactions, under certain conditions, can make a contribution to wildlife conservation (Krüger 2005). In fact, ecotourism is in continuous development and represents a sustainable activity that will allow to make the wildlife and its importance for ecosystems more widely known and to raise funds for the development of depressed areas (Hunt et al. 2015) and for the protected areas (Brandt and Buckley 2018).

## 1.5 Problematic Wildlife: Species Extinction

Establishing with certainty the extinction of an animal species and the underlying causes is a complex and often subjective task (Collen et al. 2010). In fact, many taxa were rediscovered tens and even hundreds of years after declared extinct (Scheffers et al. 2011).

Furthermore, in several cases, on the basis of discoveries of documents and samples, or using statistical-mathematical models, the year of extinction of a species has been debated (Black et al. 2013; Turvey et al. 2017).

Being certain of the extinction of a species is an important aspect of conservation, as species considered prematurely extinct cannot be effectively protected (Collar 1998). Black (2020) illustrates the challenges in the conservation of animal species that are difficult to observe.

A special category is represented by the big cats, which despite their size can be very cryptic and difficult to observe (Brassine and Parker 2015). Examples of this are the rediscovery of the lion *Panthera leo*, in Gabon (Barnett et al. 2018), and the survival of the Caspian tiger *Panthera tigris virgata* (once considered extinct in the 1970s), until the 1990s (Emre 2004).

The volume contains a review by Rossi et al. (2020) on this topic, with several case studies of big cats of the genus *Panthera* whose true extinction date remains difficult to determine.

## 1.6 Problematic Wildlife: Zoos, Conservation, and Animal Rights

The role and importance of the zoos in species conserving biological diversity are still subject for debate (Mazur and Clark 2001; Minter and Collins 2013; Scanes 2017); ex situ conservation engages zoos through their recovery and reproduction centers. But the importance of captive breeding for the protection of animal species continues to raise questions (Ebenhard 1995; Bowkett 2009). In captivity it was possible to save not only *taxa* reduced to few individuals (Collar et al. 2012) but also species extirpated in nature (Maddison et al. 2012). Zoos are also involved in in situ conservation through recovery programs for endangered species in collaboration with government authorities and local communities (Tribe and Booth 2003).

Themes, from the animal welfare to management challenges, animal rights, and conflicts between scientists and animal activists, are examined in the volume by Perry et al. (2020b) and Robovský et al. (2020).

Another novel aspect, relative to zoos and changing public opinion, are roles zoos play in the conservation of “charismatic species” such as elephants, big apes, or cetaceans. On one hand, charismatic species may be considered problematic for zoos because they attract more animal welfare-related concern from animal activist groups. But on the other hand, their popularity helps zoos to achieve their mission, increasing funding available for field conservation (Hosey et al. 2020).

The role human dimensions play with respect to human coexistence with certain emblematic species (i.e., the large carnivores) is a contemporary debated theme (Dickman et al. 2013; Lewis et al. 2017). A field of the so-called “human dimensions” is to analyze the perception that people, especially those living in areas where the large carnivores exist, have in regard to predators, their ecological role, and their own “right to exist” (Madden 2004). In terms of conservation, the public perception of the taxonomic status of a species plays an important role because it directly affects the targeting of resources and the priority of interventions (Master 1991; Messmer et al. 1999, 2001). However, some studies have not found significant effects of taxonomy on conservation (Morrison et al. 2009); there are cases in which populations considered as endemic species were instead introduced species that should not be considered as conservation priorities (Messmer et al. 1999; Helgen and Wilson 2003). Finally, it should be noted that the only way that a taxon can be legally protected is through its formal recognition as species or subspecies and subsequent assessment of extinction risk according to internationally accepted procedures (ICZN 1999). It follows that the taxonomic revisions of populations then ascribed to new species or subspecies (Hrbek et al. 2014) can be very important for conservation. These topics, including two case studies, are discussed in this book by Gippoliti and Groves (2020).

## 1.7 Problematic Wildlife: Humans and Herpetofauna

In the second volume, specific cases and research and management experiences are further examined concerning homoeothermic (i.e., mammals and birds) and poikilothermic vertebrates mainly reptiles (Perry et al. 2020c). It is rather intuitive to understand how several reptile species can represent a danger to man and his activities (Alves et al. 2012).

We know that venomous snakes represent a threat to human life (Chippaux 1998). It is estimated that at least 20,000 people die each year from snake bites, but the number, due to data deficits from many countries where venomous snakes are widespread, may reach almost 100,000 (McNamee 2001; Williams et al. 2019). The total number of snake bites is more than 15 times the reported fatalities (Chippaux 1998).

In rare cases, the snakes may be dangerous even if not venomous. Despite the fact that few constricting species, mostly pythons, *Python sebae* and *Malayopython reticulatus*, and the green anaconda, *Eunectes murinus*, are implicated in humans' death, the fear that these large reptiles cause has a global dimension (Murphy and Henderson 1997). A very exhaustive and in-depth review on the conflicts between man and big snakes is reviewed in the book (Murphy 2020).

Annually, there are also human mortalities attributed to attacks by crocodiles (mainly *Crocodylus niloticus* and *Crocodylus porosus* but also lesser and occasional other species), alligators (*Alligator mississippiensis*), or more rarely *Melanosuchus niger* and other species; however these are a few in number (Conover et al. 1995; Caldicott et al. 2005).

Others problems can be created by reptiles, and even amphibians, if introduced in areas where they are not originally present (Kahl et al. 2020; Licata et al. 2020). Invasive herpetofauna can cause ecological upheavals, on the native fauna (Kraus 2015), and to find a solution is necessary to invest in new resources even without the certain of a positive outcome (Kraus 2009; Licata et al. 2020).

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