



CHAPTER 10



Status of captive apes across Africa and Asia: the impact of extractive industry

Introduction

The lives of apes in their natural habitats and in captivity are inextricably intertwined. Policy and practice focused in one arena can and will have impacts in others. For example, allowing for the commercial uses of apes for entertainment purposes or as pets to private owners can create or sustain the illegal trade in these animals in range states and elsewhere in the world. Thus, the status of captive apes in non-range states bears upon efforts to conserve and manage apes globally, in terms of both public perception and the expansion of political will to save them from extinction. A key part of protecting wild apes is combating illegal trafficking in response to demands for apes as pets, as performers in exhibits and entertainment, and for unscrupulous zoos (Stiles *et*

“The association between extractive industries, the illegal trade in apes, and demand for sanctuary care is widely appreciated.”

al., 2013). How apes are treated and portrayed can influence public perceptions (Schroepfer *et al.*, 2011), and thus markets driven by human choices.

The status of captive apes is not only a policy or conservation issue; the captive apes themselves are impacted directly as well. Apes in captive environments can suffer from a number of diseases, injuries, and other factors leading to poor welfare. Detrimental effects can be long lasting; studies have found that apes living in captivity are sensitive to trauma and stress, experiencing both acute and chronic effects that can impact their lives and need for specialized care (e.g. Brüne, Brüne-Cohrs, and McGrew, 2004; Brüne *et al.*, 2006).

The association between extractive industries, the illegal trade in apes, and demand for sanctuary care is widely appreciated – from sanctuary employees and law enforcement officials, to ministry officials and international leaders. In a 2012 statement, Mr. John Scanlon, the Secretary General of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) emphasized the severity of the problem and the responsibility of industries: “Illegal trade is clearly a threat to great apes. [...] We must remain vigilant. Illicit trade is a problem particularly in respect to timber and minerals” (GRASP, 2013).

When extractive industries and associated activities result in the deaths of adult apes either directly or indirectly, the subsequent increase in the number of orphans drives demand for rescue centers and sanctuaries in which to home these apes. Just as regional and continental issues highlight the need for transboundary cooperation to protect ape populations, sanctuaries must be responsive to both local and national drivers as well as to other external pressures.

This chapter attempts to put ape welfare in the context of the global status of apes. It starts by providing a fundamental back-

ground on general issues of welfare and captivity, with results discussed in relation to the best available science on ape welfare and ethical considerations. It then focuses more explicitly on the impact of extractive industries on sanctuaries and rescue centers. Case studies from Africa and Asia illustrate evolving theory and practice on the linkages between apes in sanctuaries and rescue centers and ape conservation. The conclusions explore suggestions for engaging with the sector in ways that benefit extractive industries and apes, and thus reduce the pressure on sanctuaries.

The welfare status of captive apes: examples from non-range states and global implications

How and where are apes in captivity?

Apes are found in a variety of captive settings in both range and non-range states. A substantial number of international, national, state/regional, and municipal laws and regulations that vary widely determine where, why, and how apes may be held in captivity. For example, EU law severely limits testing on apes to cases of unusual emergency [2010/63/EC Article 55(2)], and there are currently no apes in European laboratories. Non-range states generally allow captive apes in accredited zoos or similar public or private facilities subject to limits specified by international agreements such as CITES. Though apes are sometimes used in entertainment, appearing in live performances, advertisements, television, and movies in some jurisdictions, the legal status of this practice varies and is subject to on-going legal and policy challenges (Stiles *et al.*, 2013). In some jurisdictions, apes are sold by commercial breeders and exotic animal dealers

or are owned as private pets. Sanctuaries and rescue centers may be permitted to house captive apes for rehabilitation or maintenance care. Apes at such facilities are often confiscated by authorities, but can also be relinquished voluntarily.

Origins of captive apes in non-range states

Most captive apes in non-range states were born in captivity. Where it is permitted by law, some captive breeding programs are for commercial purposes, while others were designed to manage captive populations of endangered species. These are typically operated by zoos that maintain studbooks and manage the reproduction of captive apes according to conservation and genetic priorities as well as criteria such as funding and other resources (WAZA, n.d.).

A small proportion of captive apes in non-range states were captured in the wild and imported before CITES and national laws such as the US Endangered Species Act (ESA) restricted such trade. As a result, wild-caught apes in captivity are now generally over the age of 30. Younger, wild-caught apes can be associated with fraud or other illegal trade, as highlighted by recent cases involving China and Egypt (Ammann, 2012; Tanna, 2012; Stiles *et al.*, 2013).

Status and welfare of captive apes: policy and practice

Any form of captivity comes with some risks for ape welfare, which can vary in form and severity depending on species, captivity type, facilities, and what people do to and for the apes in their charge. The general concept of animal welfare informs a number of policies and practices that directly and indirectly influence captive apes. There have been many efforts to define adequately the

concept of welfare, ranging from broad and simple, such as the absence of debilitating disease, to the very specific, such as a welfare matrix with 15 dimensions (Broom and Kirkden, 2004). A general definition of welfare from the World Organisation for Animal Health (OIE – *Office International des Epizooties*), for all terrestrial mammals is:

how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. (OIE, 2012, section 7.1)

Notably, the OIE definition includes both positive and negative criteria, i.e. criteria that must be present and others that must be absent in order to achieve the state of “welfare” or “wellbeing.”

Both social attitudes and science influence animal welfare. For example, strong public support can influence funding, policy, and even the practices of private companies. Laws and other policies on animal welfare are common, ranging from international agreements to codes in a specific city or town. Examples noted elsewhere in this chapter highlight how welfare policies inform which captive settings are permitted for apes, what minimum standards are in place where apes are captive, and which organizations or people are responsible for the care and welfare of apes in captivity. A vital consideration is that welfare laws and other legal protections and practices vary widely. Whether governed by laws or by organizational policies and procedures, welfare practices can range from the most basic protections aimed at preventing abuse and neglect to exemplary standards that aim for comprehensive individual welfare.

The law in a particular jurisdiction can impose positive and/or negative standards

“Welfare practices can range from the most basic protections aimed at preventing abuse and neglect to exemplary standards that aim for comprehensive individual welfare.”

on the captive environment. These may be minimal, determining whether or not there is even a duty to avoid harming apes (or animals in general). In the places where such laws do exist, generic animal cruelty and welfare laws can include apes. Some jurisdictions may have laws or welfare standards that are specific to apes. There are few regulatory standards and the welfare of captive apes is determined by the practices of a given industry, institution, or individual.

BOX 10.1

Positive and negative lists

Eighteen EU member states have negative lists of animals (including great apes) that are (un)suitable to be kept as pets, i.e. they identify prohibited rather than permitted species, usually based on health and safety reasons/risks or restrictions on international trade for conservation purposes. However, these lists allow for unrestricted trade in the species that are not listed, until enough evidence is presented to elicit inclusion on the list and/or the implementation of additional controls. Negative lists can be long and need updating regularly as new species enter the pet trade.

Currently, Belgium is the only EU member state that has a positive list of animals that are suitable to be kept (mammals only). This is a concise list of 42 permitted species, which was developed using the following criteria:

- the animal must be easy to keep in respect of its physiological, ethological, and ecological needs;
- it must not be aggressive and/or dangerous nor represent any other public health hazard;
- it must not be a threat to the native environment/indigenous fauna if it escapes or is released;
- detailed information concerning the care of the species in captivity must be available;
- and, where there is any doubt as to the suitability of the species as a “pet,” the benefit of the doubt must be given to the animal and it be excluded from the list.

In addition to this, each person must also prove s/he has the knowledge and equipment to care for the animal.

Implementation of the positive list has resulted in a significant reduction in the illegal trade in wildlife, impulse purchases of exotic pets, and unwanted animals entering shelters. It has also gained support from the Belgian public who assist the government by reporting prohibited species being kept illegally (Endcap, 2012, p. 2).

In June 2013, the Dutch Minister for Agriculture presented a positive list of exotic and non-exotic mammals that may be kept by private individuals. The list will come into force in January 2014.

Eurogroup for Animals, 2011; Endcap, 2012

Welfare concepts

A basic framework often used in animal welfare is the Five Freedoms (FAWC, 2009):

1. Freedom from hunger, thirst, or malnutrition;
2. Freedom from discomfort;
3. Freedom from pain, injury, and disease;
4. Freedom to express normal patterns of behavior;
5. Freedom from fear and distress.

The Five Freedoms emphasize essential biological functions and physical health and are largely freedoms from environmental drivers of poor physical welfare. The development of the Five Freedoms has roots in industrial animal agriculture, where the social and psychological complexity of farmed animals has historically been less readily acknowledged than among primates or apes *per se*. While the Five Freedoms are necessary for welfare, they are not sufficient to ensure positive welfare for captive apes. With respect to good practices in ape welfare, the Five Freedoms are most useful and appropriate as one component in the foundation of a more comprehensive welfare framework.

Welfare indicators and standards

A first step toward good welfare practice is defining standards and metrics that can demonstrate legal compliance or other standards of performance. Experts generally agree that injury, disease, malnourishment or other unhealthful states substantially decrease general welfare (e.g. Broom, 1991; Dawkins, 1998). The welfare of apes held in captivity depends partly on the current environment and the risks and protective factors it affords. For example, an evaluation of the suitability of primates as pets in terms of primate health and welfare reached a clear position

TABLE 10.1**Potential welfare risks for the various forms of captivity where apes are found**

Captivity type	Examples of potential welfare risks
Zoos	Varying quality of facilities and care programs (resources), contact with crowds of people (noise, sanitation)
Sanctuary or rescue center	Ape residents arrive with varying histories of injury, illness, abuse, and neglect that can be difficult to treat or manage. Varying quality of facilities and care programs (resources)
Exhibition and entertainment	Maternal and social deprivation, untrained handlers/personnel, harsh physical training techniques, poor access to veterinary care, poor facilities, nutrition, and care programs. Unpredictable environment as apes are sold and traded. Apes abused/neglected after infancy because of aggression and other conflict, untrained handlers/personnel
Breeders and dealers	Maternal and social deprivation, untrained handlers/personnel, poor access to veterinary care, poor facilities, nutrition, and care programs. Unpredictable environment as apes are sold and traded. Apes abused/neglected after infancy because of aggression and other conflict, untrained handlers/personnel
Pets	Complete social isolation from conspecifics is common, animals abused/neglected after infancy because of aggression and other conflict, untrained handlers/personnel, poor access to veterinary care, poor facilities, nutrition and care programs
Laboratories and testing facilities	Maternal and social deprivation, induced illness or injury through experiments and testing procedures, illness or injury untreated as part of experiments and testing procedures, depauperate, sterile environments used for some testing

against the practice (Soulsbury *et al.*, 2009). In addition to the welfare considerations for apes, there are a number of health and safety risks for humans who keep apes as pets, as well as for public safety. See Box 10.1 for information on “positive” and “negative” lists of animals that individuals may keep.

While some of the welfare risks documented for apes kept as pets generalize to other forms of captivity, risk factors can vary owing to the resources committed to care and the knowledge of the people who are in charge of ape welfare. For example, some zoos have dedicated welfare staff and veterinary care, whereas circuses typically do not. Examples of potential welfare risks for the various forms of captivity where apes are found are given in Table 10.1.

In addition to needs that stem from basic biology, some individuals in captivity have special needs owing to past experience, for

example developmental conditions, injuries, or disease owing to natural causes or intentional exposure in a laboratory environment. It is important to emphasize the difference between sanctuaries and zoos, as sanctuaries have developed specialized services to deal with physically injured and psychologically traumatized animals. Those responsible for the welfare of these individuals must provide for special needs requiring additional or individualized care.

Ethology and the welfare of captive apes

The presence of abnormal behavior is widely accepted as evidence of poor welfare. Importantly, these pathologies can be influenced by genetics, illness, or injury, or previous experience, including cruelty, neglect,

and trauma. Behavioral pathologies have been reported among apes in captivity (Yerkes, 1943), and recent studies have found that these can range from common to nearly ubiquitous in some populations of captive apes (e.g. Hook *et al.*, 2002; Birkett and Newton-Fisher, 2011). Behavioral and psycho-pathologies are not common among apes in the wild (Walsh, Bramblett, and Alford, 1982), and the natural behavioral repertoires of animals and behavioral diversity observed in the wild can act as benchmarks for creating and optimizing captive care programs.

Photo: The presence of abnormal behavior is widely accepted as evidence of poor welfare. Behavioral pathologies have been reported among apes in captivity for nearly a century. © Terry Whittaker



Apes tend to show strong motivation and preference for certain behaviors and exhibit signs of stress when they cannot engage in these behaviors. Drawing from concepts of natural behavior, some welfare practices have refocused on how captive environments and practices can offer opportunities suited to the needs and capabilities of a given species. Some environments fail to provide the means and opportunity for such behaviors. However, merely providing opportunities does not guarantee welfare, and detailed programs that specify practices and outcomes are vital. For example, following a mandated review of US policy that began in 2010 (Altevogt *et al.*, 2011b), a working group recently assembled by the US government defined ten recommendations for ethologically and socially appropriate environments, which included issues of group size, space requirements, outdoor access, diet, enrichment, and the appropriate training of personnel (NIH Chimpanzee Working Group, 2013).

Current and emerging practices that emphasize needs and opportunities are positive steps forward for the welfare of apes in captivity. Lingering limitations for an opportunities-based approach stem from the continued emphasis on environmental features such as furnishings and behavioral management. Where standards and performance are founded on the environment rather than on the apes per se, minimum standards and box-ticking could take center stage for implementation and compliance. By incorporating animal-centric metrics and outcomes, standards and practices can go beyond basic needs to account for supportive care and positive welfare for individual apes.

Another remaining challenge for the welfare of apes in captivity concerns the affective or emotional components of well-being. A comprehensive framework for ape welfare necessarily includes attention to the

affective realm that goes beyond “freedom from fear.” Not only does fear miss a full range of negative emotional states with legitimate welfare implications, such as sadness or distress, fear fails to address any neutral and positive emotional states, which are important and oft-neglected components of wellbeing (Balcombe, 2006, 2009, 2010).

Comprehensive frameworks for ape welfare: where do we go from here?

Welfare policies and practices lag behind the evidence that has emerged from a range of disciplines. One valuable trend is a more holistic view; instead of thinking of each behavior or trait in isolation, a broader framework can be used for considering clusters of related behaviors that comprise wellbeing or the lack thereof. A synthetic, ape-centered welfare practice must draw from knowledge across many disciplines and achieve multiple aims as shown in Figure 10.1 and in the following list.

1. Specific behaviors or biomarkers of poor welfare (Walsh *et al.*, 1982; Wobber and Hare, 2011; Lopresti-Goodman, Kameka, and Dube, 2012; Rosati *et al.*, 2012);
2. Cognitive skills and capabilities (Tomasello, Call, and Hare, 2003; Hare, Call, and Tomasello, 2006; Savage-Rumbaugh

et al., 2007; Fay, 2011; Hill, Collier-Baker, and Suddendorf, 2011);

3. Normal and abnormal development (Bloomsmith, Pazol, and Alford, 1994; Nash *et al.*, 1999; Van Noordwijk and Van Schaik, 2005; Matsuzawa, Tomonaga, and Tanaka, 2006);
4. The role of experience in behavior and social relationships (Reimers, Schwarzenberger, and Preuschoft, 2007; Kalcher-Sommersguter *et al.*, 2011);
5. Emotion and personality (Kano, Yamashita, and Tomonaga, 2012; Weiss *et al.*, 2012);
6. Specific psychological symptoms and disorders (Brüne *et al.*, 2004, 2006; Bradshaw *et al.*, 2008, 2009; Ferdowsian *et al.*, 2011, 2012);
7. Other indicators of wellbeing (Weiss, King, and Enns, 2002; King and Landau, 2003; Weiss, King, and Perkins, 2006).

Number and status of captive apes in select non-range states

Assessments of the number of apes in captivity and the conditions under which they are captive are vital for understanding the status of captive apes globally. With respect to captive apes in non-range states, such information bears upon a range of issues

FIGURE 10.1

Schema showing a building-block system for welfare practices that starts with a minimal Prevent Harm block (left), adding core components with each block to the right for Provide Basics, Support Needs, Promote Wellbeing and Assure Welfare



from international policy and harmonizing captive care practices to bioethics and deliberations regarding the funding of captive care.

Methods and reporting

The geographic sites used in the analysis were chosen because data on captive apes were available in government reports and other published sources. The type and amount of data available varied geographically, and also by captivity type. Some data were voluntarily reported and published, while other data were drawn from compulsory government reports that are available to the public. Other information has been aggregated from published studies and reports, media sources, or direct communications, which are cited accordingly. Where possible, multiple sources of information were cross-referenced to identify gaps in coverage and the reliability of figures reported, but some potential sources, such as legal cases or unpublished data, were not pursued. Thus, the information reported here represents best estimates based on the sources cited.

The best data coverage was found for the United States. Results from the United States are compared with figures available for the European Union (EU). Some sources were limited to a particular taxonomic group or to a particular type of captivity, which is noted in the text for each geographic region. For example, no figures are reported for non-accredited zoos, pets, or other forms of private ownership in the EU. Data were

not obtained for apes in any form of captivity not mentioned explicitly.

Since some variation in the number of individuals or the types of captivity reported could reflect differences in the law, some basic legal context for each geographic region in the analysis is provided. Following a description of specific data sources, the number of apes is reported by taxonomic class. Generally, data were aggregated at the level of the genus. However, figures for all species of gibbons and the siamang were aggregated into a single class, *Hylobatidae*. The number of individuals is also reported by captivity type together with other variables affecting welfare where applicable. The types of captivity found in each of the selected regions and data coverage are summarized in Table 10.2.

Captive apes in the EU, the political context and lawful types of captivity

The EU member states are parties to CITES and other multilateral agreements governing trade and other activities involving apes. There are a number of EU laws related to compliance with CITES, especially as it pertains to permitted uses and conditions for endangered fauna, including apes. For example, facilities must apply for exemptions under the law to pursue activities such as research, education or breeding for reintroduction (Council of the European Union,

TABLE 10.2

Forms of ape captivity found in reviewed sites.

	Zoos	Ent	Sanc	Other	Test	Pet	Deal
EU	Y	YND	Y	YND	N	?ND	?ND
USA	Y	Y	Y	Y	Y	Y	Y

Ent = entertainment and performing acts; Sanc = sanctuary and rescue centers; Test = invasive laboratory testing; Pet = privately owned pets not exhibited to the public; Deal = commercial dealers and breeders. For further explanations of each type, refer to text. Y = practice present; N = practice not present; YND = practice present, but no data available; ?ND = status of practice unknown, no data available.

1992, 1997). Zoos are further mandated under 1999/22/EC to meet standards including providing species-specific enclosures, suitable veterinary care and nutrition, along with provisions for licensing and inspection by member states (Council of the European Union, 1999).

Though it has been 10 years since the zoo directive was to be fully implemented, a recent report found that many member states did not have laws that fully satisfied the mandates, that many zoos still failed to meet minimum standards in practice or were altogether unlicensed, and work is still being done on developing guidelines for this directive (Born Free Foundation, 2011). Variation in the standards of the national laws governing zoos is considerable, including provisions that directly impact apes. For example, the minimum outdoor enclosure space for chimpanzees is 400 m² per five chimpanzees in Austria versus 40 m² per four chimpanzees in Lithuania with considerable variation in between. In some member states there are no explicit standards at all (Born Free Foundation, 2011).

Enforcement and inspection are also an on-going concern. Analysis of zoo inspection reports from 2005–08 found that approximately 9% of British zoos were graded as substandard, with another 8% lacking documentation of an inspection for the period studied (Draper and Harris, 2012).

In 2006–08 the Environmental Directorate of the EU undertook a series of evaluations regarding directive 86/609/EEC (Council of the European Union, 1986) governing the use of animals, including apes, in experiments and testing. Citing exceptional welfare risks for apes and finding no evidence for impact on competition or scientific capacity (Gramke *et al.*, 2007, p. 237; see also Resolution 18, 2010/63/EC), new language on ape experiments was adopted in 2010. While the new language in 2010/63/EC is not an outright ban, all future research

on great apes is prohibited (Article 8(3)) with the sole exception provided under a “safeguard clause” (Article 55(2)) that may be requested only to save an ape species from extinction or under exceptional circumstances with an “unexpected outbreak” of disease among humans (European Parliament and Council, 2010).

EU data by captivity type

Laboratories

As a consequence of both EU law and the national laws of member states, there are no apes used in laboratory testing at this time. Apes previously used in testing have been transferred to zoos or sanctuaries (see next section).

Sanctuaries

Apes previously used in testing before the various laws were enacted were transferred to other captive settings. For example, in the Netherlands, chimpanzees previously used in disease experiments were transferred to a specialized sanctuary for exotic animals, while apes with no health conditions were transferred to zoos (van den Berg, 2006). Austria adopted a national ban on the use of apes in research in 2006 (Knight, 2008), but the path from laboratory testing to retirement was more complex. A small number of captive apes in the EU are housed in sanctuaries that provide care for apes formerly used in research, entertainment, or held as pets or in other private ownership. While some transfers to the sanctuary are made voluntarily (e.g. laboratories in Netherlands and Austria), others involve legal actions or seizures (e.g. AAP, 2011, 2012). The number of apes is reported for each sanctuary in Table 10.3. For information on sanctuaries and rescue centers both published sources and personal communications were used as cited.

TABLE 10.3

Number of apes in EU sanctuaries by country and taxonomic group (where available)

Sanctuary name	Country	Taxon	Number
AAP (AAP, 2012)	Netherlands	Chimpanzee	44
Gut Aiderbichl (Gut Aiderbichl, 2011)	Austria	Chimpanzee	37
Mona Foundation (MONA Foundation, 2013)	Spain	Chimpanzee	12
Monkey World (Monkey World, 2012)	UK	Chimpanzee	59
		Orangutan	16
		<i>Hylobatidae</i>	23
Primadomus (AAP, 2013)	Spain	Chimpanzee	8
Wales Ape and Monkey Sanctuary (Wales Ape and Monkey Sanctuary, n.d.)	UK	Chimpanzee	10
		<i>Hylobatidae</i>	2

TABLE 10.4

Number of apes in EU zoos based on figures reported by ISIS

Taxon	Male	Female	Unknown	Taxon total
Orangutan	113	177	16	306
Gorilla	164	239	5	408
Chimpanzee	273	465	3	741
<i>Hylobatidae</i>	355	275	89	719
Grand total				2174

Zoos

Between October and December 2012, census data were requested for all ape genera from the International Species Information System (ISIS), which aggregates census figures voluntarily reported by member zoos (ISIS, 2012a). The ISIS website indicated that some data may be missing or out of date as they transition to a new software system (ISIS, 2012b). Since membership and reporting are voluntary, not all zoos are necessarily included. The ISIS data contained records for 2174 apes in Europe. The number of male, female, and unspecified sex individuals for each taxon is shown in Table 10.4.

Discussion and specific welfare risks raised by EU data

Evidence of rescues and sanctuary transfers from circuses and other private ownership within the EU indicates on-going challenges with variation in legal standards and enforcement within the Union. There is a lack of animal welfare consideration in the EU for captive wild animals, as it is seen as a national and not regional issue for member states to implement. Adoption of EU-wide standards for zoos could address some of these problems, and coordinated reporting and law enforcement will also be critical. The political will and legal mechanisms for enforcement might benefit from advocacy

and other forms of public awareness, and the European Alliance of Rescue centers and Sanctuaries (EARS) is currently being developed to support and represent rescue centers and sanctuaries in Europe (EARS, 2013).

A main concern arising from the ISIS data is the 77 solitary apes in the record. Most of the isolates were *Hylobatidae* (49, 63.6%), followed by 19 chimpanzees (24.7%, one bonobo), seven orangutans (9.1%) and just two gorillas. Six facilities with solitary apes exhibit no other ape taxon. As noted earlier, the legal standards and practices for zoos vary widely across the EU, with evidence that welfare is lacking at many locations, especially newer member states. *National Geographic* recently published an extensive report on the welfare of great apes in German zoos (Nakott, 2012), which included an infographic highlighting some key facts, including:

- Of the 40 zoos exhibiting about 450 apes, ten of the zoos exhibited great ape isolates or pairs only.
- Of the zoos considered, only six met the highest standards and international best practices consistent with the needs and capabilities of great apes.
- Eleven chimpanzee exhibits and four other ape exhibits at 13 zoos were classified inappropriate for on-going ape exhibition and recommended for closure. The remaining exhibits were found in need of varying degrees of improvement to realize minimum standards.

As the EU moves forward with a review of zoo standards, and member states evaluate policy and practice, a long-term view is critical, in part because of the long lifespan of apes. The *National Geographic* article, for example, pointed out that captive breeding could affect when individual zoos or countries could phase out ape exhibitions. Likewise, it suggested that a network of “havens” or sanctuaries could be a suitable

alternative for apes housed in isolation or other inappropriate settings (Nakott, 2012). For any system of sanctuaries or other “havens,” the age structure of the ape population to be served, including future births, strongly influences the demand for space and for care services over time.

The United States and its legal context

The United States is also party to CITES and other treaties covering trade in apes. Testing on apes is subject to US regulations regarding housing and other conditions in laboratories and other standards under the Animal Welfare Act (AWA). What laboratories may do with individual apes once they are deemed “surplus to need” is governed by the Chimpanzee Health Improvement and Maintenance Act (CHIMP Act). In 2011, the US government undertook a formal review of ape testing with the National Academies of Science, which recommended several changes, including reducing the number of individuals used (Altevogt *et al.*, 2011b). A working group recently evaluated the new requirements put forward by the Academies for biomedical and behavioral research using chimpanzees and suggested a number of standards for housing and care practices (Box 10.2).

US law allows individuals and organizations to exhibit apes subject to licensure and standards with the United States Department of Agriculture (USDA). If properly registered, it is lawful to sell captive-bred apes, or to buy and privately own apes purchased from such dealers. State and local laws may also govern these activities. Depending upon the jurisdiction, these range from outright prohibition, to negative or positive standards, to an absence of any law specifically addressing apes. Where these activities are legal, state and local licenses can also be required and local authorities may pursue legal action against violating parties.

BOX 10.2**Breakthrough NIH decision 2013**

Although invasive biomedical research protocols have decreased in US laboratories over the past decade, a significant number of chimpanzees have continued to be held in laboratories and holding facilities for potential future need. Signaling a major shift on the part of the government, on June 26, 2013 the National Institutes of Health (NIH) announced a decision to accept the vast majority of recommendations made in the Council of Councils Working Group on the Use of Chimpanzees in NIH supported Research Report.¹

Among other things, the newly announced policy will permanently retire hundreds of chimpanzees now held in laboratories. The NIH decision stipulates that all but 50 chimpanzees owned and supported by the government shall be transferred to the federal sanctuary system in the near future. There, individuals will live the rest of their lives in specialized sanctuary settings, with proper nutrition, preventative veterinary care, enriching stimulation, and a social environment appropriate for chimpanzees.

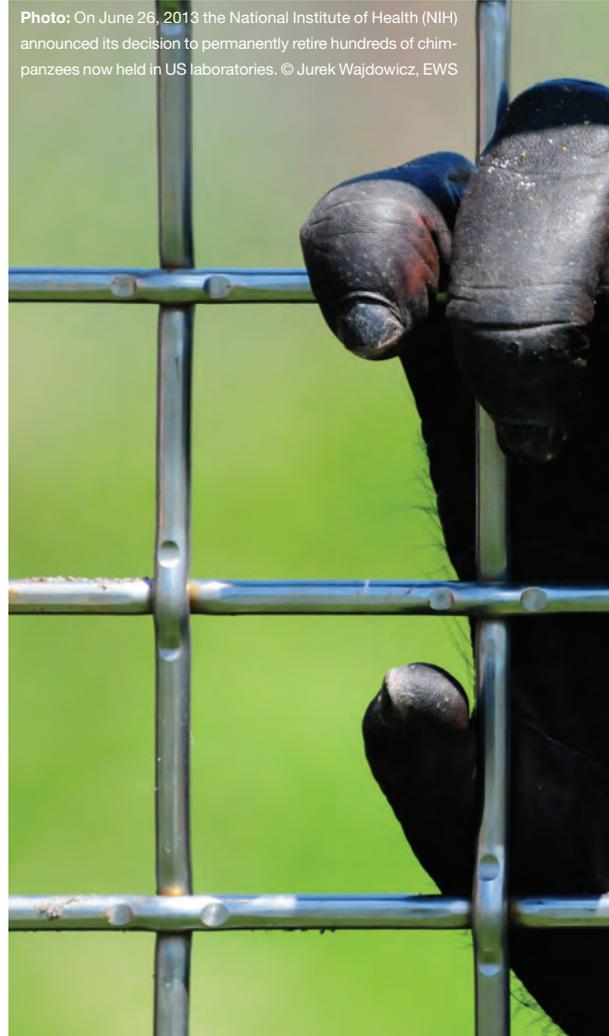
The new NIH plan followed from a review process that was initiated by members of Congress and culminated in a December 2011 report by the Institute of Medicine (IOM), entitled “Chimpanzees in biomedical and behavioral research: assessing the necessity” (Altevogt *et al.*, 2011a). The IOM made strong recommendations after determining that the US chimpanzee research program was largely unnecessary. As a result of the IOM study, NIH Director Collins requested that a special Working Group of experts develop a plan to implement the IOM’s guiding principles and criteria for chimpanzee research, analyze the current use of chimpanzees in research, assess the placement and size of chimpanzee populations, and review potential future use.

The NIH announcement came on the heels of a Proposed Rule by the United States Fish and Wildlife Service (USFWS) to list US captive chimpanzees as endangered, alongside their wild counterparts.² (See sub-section entitled ‘Transparency and regulatory practices impacting ape welfare’ in the Discussion section below for further detail.)

Analysis of data sources, limitations, and results

Data on ape sanctuaries were collated from external sources and from sanctuary materials or direct communications. Some figures were drawn from government records, published sources and personal communications as cited. For chimpanzees only, independently vetted data from the ChimpCARE project (ChimpCARE, 2013) served as the authoritative data source. Official USDA data for registrations for breeders, dealers, exhibitors, federal research, and research using captive apes were used to assess the

Photo: On June 26, 2013 the National Institute of Health (NIH) announced its decision to permanently retire hundreds of chimpanzees now held in US laboratories. © Jurek Wajdowicz, EWS



number of sites and number of individuals by taxon, and frequency of animal welfare citations were obtained from the agency’s public records database (USDA, 2012). Not all entities that house captive apes are required to register with the USDA. Data were obtained on December 28, 2012 for the period 2010–12.

The number of apes in US sanctuaries is shown by species in Table 10.5. A notation of where these data are also counted in other sections is indicated.

ChimpCARE, established by Lincoln Park Zoo, uses different categories than the USDA for most site types, and allows for



more nuanced consideration of patterns across site type. ChimpCARE does not geo-reference or break out distinct sites for private parties such as pet owners, providing a total of 60 chimpanzees (3% PRIV) in this category. Chimpanzees were most frequently reported for laboratories (962, 49.3% LAB) followed by sanctuaries (522, 27.9% SANC), and AZA zoos (261, 13.4% AZA). Fewer chimpanzees are designated as being in non-accredited facilities (106, 5.4% NON) and entertainment (20, ~1% ENT). The number of chimpanzees by ChimpCARE site type is shown in Figure 10.2, and to facilitate comparison with USDA figures and

TABLE 10.5

Apes in US sanctuaries by taxonomic group with reference to appearance in other sections of the report dataset

Sanctuary name	Taxonomic group					In other data?	
	B	C	G	O	H	USDA	ChCare
Center for Great Apes		29		15		x	x
Chimp Haven		123				x	x
Chimpanzee Sanctuary NW		7				x	x
Chimps Inc.		8				x	x
CA Black Beauty Ranch		3			4	x	x
Gorilla Haven			1			x	
Great Ape Trust	6					x	
International Primate Protection League					33		
Primarily Primates		47			4		x
Primate Rescue Center		11			1	x	x
Save the Chimps		267				x	x
Wildlife Waystation		48					x

B = bonobo; C = chimpanzee; G = gorilla; O = orangutan; H = *Hylobatidae*; ChCare = ChimpCARE Project.

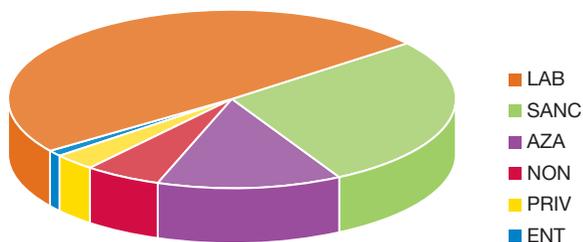
interpretation of data, a matrix is also provided in Figure 10.2.

From 2010–12, 239 bodies registered with the USDA were reported to hold captive apes. Accounting for registrants who held more than one certificate type, cancellations and revocations (1 only), 224 entities were active in 2012: 201 exhibitors, 8 research laboratories, 9 dealers, 4 breeders and 2 federal research facilities (see Figure 10.3).

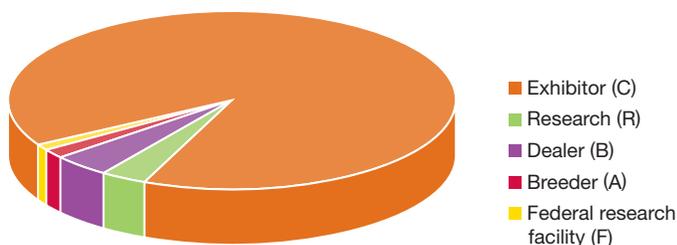
USDA data for inventory by taxonomic class were drawn from the most recent report for each ACTIVE registrant (see Table 10.6). If a registrant went from ACTIVE to CANCELLED status during 2012 AND had

FIGURE 10.2

Number of chimpanzees reported by Project ChimpCARE for six site types relative to those used by the USDA to classify official federal licenses and registrations. See text for abbreviations

**FIGURE 10.3**

Number of 2012 USDA registrations with apes, by certificate type. The single-letter code is assigned by the USDA for use in its official records



a 2012 inspection, those data were included in the analysis. If an ACTIVE registrant had no 2012 inspection, the most recent, from 2011 or 2010, were used. Data are collated by certification type.

Discussion and specific welfare risks and violations

The USDA enforces the AWA, but the agency does not technically issue “violations” when registrants do not meet AWA standards. The USDA calls such instances “non-compliance items” (NCIs). There are a number of caveats for interpreting what the USDA data mean for the health and welfare of apes.

- The NCIs reported for facilities with apes may or may not impact the apes present. The electronic query data do not provide details about the number

TABLE 10.6

Apes inventory by taxonomic group*

Registration type	Number of apes
<i>Hylobatidae</i>	
Breeder	17
Dealer	35
Exhibitor	567
Federal Research	5
Research	0
Total for <i>Hylobatidae</i>	624
<i>Gorillas</i>	
Exhibitor	310
Total for gorillas	310
<i>Orangutans</i>	
Federal Research	1
Exhibitor	245
Total for orangutans	246
<i>Chimpanzees</i>	
Federal Research	172
Research	777
Exhibitor	977
Total for chimpanzees	1926
Grand total of apes	3106

* As reported for USDA active registrants in 2012

or species of animals impacted, except where certain sections of the law are themselves species specific.

- At minimum, compliance failures at a site could represent increased risk for the apes, increasing in severity across a range of welfare effects. For example, some cases are merely administrative (e.g. out of date health certificates), while others involve poor welfare or even death (e.g. lack of routine veterinary care or treatment of acute injury resulting in premature death).
- It is not always clear whether an NCI represents acute or chronic welfare concerns, or some combination thereof.
- Inspection data only provide some of the story on welfare: just as the absence of disease is distinct from excellent health, the absence of NCIs on an inspection is

distinct from a certification for welfare best practices or evidence of positive welfare status among apes.

During 2010–12, there were 1344 NCIs at USDA registered sites where captive apes were held. More than 42% of these were in reference to housing and facilities. The frequency of USDA inspections varied across sites; for example, not all sites were inspected in all years while other sites were inspected multiple times per year. This can pose a risk for welfare, in that pain and suffering or the risk thereof are not identified and mitigated, or cited with the potential of punitive actions by the agency, as early as possible.

Apes as pets

Both the ChimpCARE and the USDA data revealed that apes are still kept in private ownership as companion animals, particularly chimpanzees and gibbons. The number of apes kept as pets varied by state, perhaps as a result of variation in legal requirements. As noted earlier, though this may be legal in some jurisdictions, the practice is subject to regulation under a number of federal laws.

Public knowledge and opinions on the keeping of apes as pets varies considerably. For example, a recent experiment examined how people perceived the keeping of chimpanzees as pets after viewing either entertainment or educational videos (Schroepfer *et al.*, 2011). Among those watching entertainment, 35% of people reported that they were in favor of the right to keep chimpanzees as pets. Even after viewing an educational video about chimpanzees, approximately 10% of people surveyed stated that they were in favor. In the entertainment group, the authors attributed greater support for allowing chimpanzees to be pets to misinformation about factors such as “size, desirability, and abundance” of chimpanzees portrayed in entertainment settings (Schroepfer *et al.*, 2011).

Discussion

The data that are available on the welfare of apes in captivity in these representative non-range states can, to an extent, aid in estimating welfare status elsewhere. As gaps regarding the number of apes in captivity are filled, there is no doubt that efforts are needed to expand the number of apes receiving high-quality captive care. A scientific approach that is grounded in best-available evidence regarding ape ethology, natural history, needs, and capabilities will provide a critical foundation for future efforts both to establish welfare programs where they do not exist and to improve existing welfare practices globally. The use of strong evidence and vetted model programs can serve practical implementation as well as monitoring and evaluation activities.

Transparency and regulatory practices impacting ape welfare

Some evidence suggests that many people living in the United States are unaware that all apes, including chimpanzees, are at risk of extinction. It turns out that when seeing chimpanzees in artificial, unnatural settings where they wear clothes, and especially if they are seen posing with people, people mistakenly think chimpanzees are abundant and safe (Schroepfer *et al.*, 2011). These misconceptions can be hard to set straight. For example, some people surveyed had misconceptions about the status of chimpanzees, even after passing through a zoo exhibit with signs that explain the plight of wild chimpanzees (Ross *et al.*, 2008). These studies demonstrated that people use their experiences with captive apes as a basis for drawing conclusions about wild apes. Even when those conclusions conflict with facts presented in scientific or educational contexts, personal experience and cultural context affected conclusions such that many people were unconvinced that chimpanzees needed

protection in the wild. There could be analogous impacts for education and sensitization projects in range states that stem from local or international drivers.

These personal, albeit indirect experiences with apes have proven to be so influential that it would be risky to ignore social practices and regulations that influence apes in captivity. Under the ESA, the US government has long considered the chimpanzee under a “split” listing where wild animals are *Endangered*, but captive individuals are only recognized as *Threatened*. Under this lower risk designation, it is legal to use chimpanzees for a variety of commercial purposes within the United States so long as the proper permits are in place.

For example, chimpanzees can be forced to perform in circuses, film, and television and kept in commercial exhibit centers, zoos, and laboratories. To one extent or another, all of these practices hinge on the split-listing status under the ESA.

Some scientists and organizations contend that the split-listing status in the United States is harmful because it creates markets for chimpanzees and it sends contradictory messages about the impetus and urgency for protecting them (USFWS, 2013). Such a policy could undermine conservation and protection efforts, including those undertaken by sanctuaries in range states. Indeed, calling on range states to protect wild chimpanzees and enforce laws that prohibit keeping chim-

Photo: Orphaned apes may be seized from hunters, markets, or private dealers, whether obtained indirectly, as a secondary effect of the bushmeat trade, or directly, as products for sale. The illegal trade in live apes, affecting thousands of apes each year, is currently growing. © Alison White



panzees as pets or using them for private commercial exhibition is potentially less compelling when coming from a government that allows those same practices to occur within its own borders.

The US government announced, in June 2013, a Proposed Rule that would enable the FWS to address the inconsistency of the split-listing of chimpanzees (USFWS, 2013). The agency cited increased threats to chimpanzees throughout their range and a lack of evidence that these patterns would change in the near future. While the agency noted that domestic use of chimpanzees in entertainment or other commercial activity could lead to misperceptions that may impact conservation negatively, these practices were not deemed a “significant” driver for threats to the chimpanzee, where habitat loss, hunting, disease, and illegal trade have been on the rise and have direct effects on wild chimpanzee populations (Federal Register, 2013, pp. 35211–14). For these and other reasons detailed by the agency, the FWS determined that the ESA “does not allow for captive held animals to be assigned separate legal status from their wild counterparts on the basis of their captive state” (Federal Register, 2013, p. 35202). Following a mandatory public comment period, the FWS will make a final determination regarding the Proposed Rule and address remaining questions about its implementation.

More generally, and as both international and intergovernmental organizations implore private and public institutions to give funding for ape conservation, there are also calls on range states to adopt stronger legal frameworks and enforcement, accountability, and even to fund these efforts. Wild chimpanzee populations are declining, and a unified, global effort is needed to save the species from extinction. Consistent conservation policy at the national level is an integral part of the larger global efforts, a subject explored in greater detail in the next section.

The impacts of extractive industries on sanctuaries and rescue centers

Range state sanctuaries and rescue centers

After the bushmeat trade, habitat loss and fragmentation, and disease, the illegal trade in live apes is considered to be one of the most pressing threats to the survival of apes in the wild. Orphaned apes may be seized from hunters, markets, or private dealers, whether obtained indirectly, as a secondary effect of the bushmeat trade, or directly, as products for sale. The illegal trade in live apes, affecting thousands of apes each year, is currently growing (Stiles *et al.*, 2013).

In range states, a number of different facilities may offer care to orphaned apes and other individuals that are taken into captivity, including sanctuaries, rehabilitation centers, and rescue centers. Rescue centers and rehabilitation centers typically focus on shorter-term residency, for example for recovery from an injury or until a release site can be finalized. By contrast, sanctuaries typically house long-term residents and even provide lifetime care that can span decades in some cases. While some sanctuaries do have reintroduction programs, these run in parallel with long-term housing. Zoos sometimes provide short- or long-term care in ape range states, and where no such facilities exist, such housing and care must be improvised. While there are distinctions between facility types, for the purposes of this chapter the term “sanctuary” shall be taken as an inclusive term that covers all such facilities, unless an exception is explicitly noted.

The most obvious impact on sanctuary capacity in both the short and long term is arrival rate: the more apes that are orphaned, the greater the number of potential rescues and residents at the facilities. In fact, demand for sanctuaries in ape range states has been

substantial since at least the 1990s (Farmer, 2002). A comparison of data from 2001 and 2009 (Faust *et al.*, 2011) reveals that the total population size across 13 Pan African Sanctuaries Alliance (PASA) sanctuaries housing apes increased nearly 60% overall (479 to 855). A detailed analysis of arrivals at 11 PASA sanctuaries reported that the growth rate from 2000–06 was approximately 15% (Faust *et al.*, 2011), though it has slowed over time (Stiles *et al.*, 2013). Models of future growth that account for various re-release and arrival scenarios estimate the population will grow to between 550 and 1800 individuals in the next 20 years (Faust *et al.*, 2011). A summary of sanctuary information gathered from 2009 to 2012 is shown in Table 10.7 (Africa) and Table 10.8 (Asia). The number and location of ape sanctuaries and the number of present residents shown were drawn from a number of sources, including published articles, websites, and

personal communication. Although an effort has been made to update and confirm these data, figures might not account for the most recent rescue arrivals in residence, births, transfers, reintroductions, or deaths, especially those taking place since March 2011.

The pattern for ape sanctuaries in Asia is different (Figure 10.8). Not only is the sanctuary population substantially bigger, but growth due to arrival rates is accelerating (Stiles *et al.*, 2013). For orangutans, the situation has been especially dire for years. The Great Apes Survival Partnership (GRASP) sent a technical mission to Indonesia to evaluate the situation in 2006 (CITES and GRASP, 2006). Trade and weak CITES enforcement were viewed as significant drivers. The mission report concluded:

Whatever form the trade takes and whatever motivates it, the overwhelming evidence of the scale and seriousness of the problem is

TABLE 10.7

Number of apes in African sanctuaries in 2011 by country

Country	Range state?	# Sanc	B	C	G
Cameroon	Yes	4	0	244	33
Congo (ROC)	Yes	3	0	156	5
DRC	Yes	6	55	85	30
Rwanda*	Yes	0	0	0	0
Gabon	Yes	3	0	20	9
Gambia	Yes	1	0	77	0
Guinea	Yes	1	0	38	0
Nigeria	Yes	1	0	28	0
Sierra Leone	Yes	1	0	101	0
Kenya	No	1	0	44	0
Uganda	Yes	1	0	45	0
Zambia	No	1	0	120	0
South Africa	No	1	0	33	0

Sanc = number of sanctuaries reported for country; B = bonobo; C = chimpanzee; G = gorilla. *The Mountain Gorilla Veterinary Project (MGVP) runs a rescue program with joint operations in Rwanda and the DRC, which is reported only in this cell ("Rwanda").

TABLE 10.8**Number of apes in Asian sanctuaries in 2011 by country**

Country	Range state?	# Sanc	O	H
Cambodia	Yes	1	0	9
Indonesia	Yes	16	1208	293
Malaysia	Yes	3	400	0
Taiwan	No	1	0	0
Thailand	Yes	4	0	182
Viet Nam	Yes	2	0	17

Sanc = number of sanctuaries reported for country; O = orangutan; H = *Hylobatidae*.

the number of orangutans in “rescue” and “rehabilitation” centers. In Kalimantan alone, [...] Indeed, it is hard to view this figure as anything other than an indictment against the law enforcement efforts of the relevant agencies in Indonesia. (CITES and GRASP, 2006, p. 11)

In Africa and Asia, the demand for sanctuary space far exceeds both supply and funding. Furthermore, whilst reintroduction might be a long-term goal for many facilities, arrival rates can outpace the rehabilitation training and/or exceed the release capacity of sanctuaries and rescue centers. The sheer number of apes entering these centers is not the only challenge facilities face. Responsible reintroduction involves a variety of complex factors including financial cost, disease risk, post-release monitoring, and securing suitable release sites (Beck, Rodrigues, and Unwin, 2007). Whether sanctuaries and rescue centers undertake reintroduction or not, essentially all of the work they do can be impacted by extractive industries.

Potential impacts of extractive industry on ape sanctuaries

In part, the impacts of extractive industries on sanctuaries are shaped by complex ecological and socioeconomic factors, in

addition to the specifics of the industries themselves. Impacts can range in severity (mild to severe) and interval (immediate to delayed) and can be either positive or negative for the sanctuaries and ape residents. The case studies presented later in this chapter illustrate how relationship building with the sector (in the case of Best Management Practices (BMPs) or other partnerships) can help to mitigate negative impacts. These voluntary practices are not, however, a complete solution; as long as competing economic interests for resources exist, wild apes will still face risks owing to industrial expansion, and sanctuaries will continue to be impacted.

Impacts to operations

By their nature, extractive industries clear land, convert land from one use to another, or otherwise modify landscapes. Habitat loss and degradation reduce the area that might be available for sanctuary locations, for sanctuary programs of managed rehabilitation of semi-free ranging individuals, as well as the creation or the expansion of reintroduction sites that can be used by sanctuaries.

Operational impacts can also be administrative and logistical in nature. For example, if roads and vehicles operated by a private company facilitate the illegal transport of

apes from one country to another, seizing individual apes, transferring them to a rescue facility, and potentially repatriating them to the country of origin becomes more complex legally and thus administratively. The laws of the country of seizure and the country of origin are involved, as well as CITES authorities. Some of these challenges have been recognized, and experts have called on CITES to be responsive to the special needs of such cases (Wolf, 2009). Where nationals of other countries are involved in illegal activities, those laws could come into play as well, as has been seen in a number of recent high-profile international cases in Egypt, Guinea, and China (Ammann, 2012; Stiles *et al.*, 2013).

If the country of seizure is not a range state or is not equipped to handle the necessary testing for transport or to handle ape care during law enforcement, permitting or planning, outside experts or resources are usually necessary. For example, special expertise, testing equipment, and transport were necessary for sanctuary transfer to Uganda when four chimpanzees from the Democratic Republic of Congo (DRC) were seized in Sudan (CS and WCT, 2011; PASA, 2011). A charter flight was also necessary to airlift another chimpanzee from Sudan to a sanctuary in Kenya (Maina, 2009).

Impacts to resident ape health and wellbeing

In extractive industries, work sites, roads, and other business activities often take place in remote areas where the natural resources are found. Some of these areas are also ape habitat. By nature, such sites and operations are difficult to police and illegal activity can thus be easier to conceal. Increased access and reduced risk could make illegal activities such as keeping apes as pets on private company property easier or more attractive.

There are many health and welfare risks for apes kept as pets. Even in the absence of

abuse or neglect, inadequate nutrition or veterinary care, close confinement and other risks can impact health, welfare, and ultimately survival. For example, in April 2013, an orangutan rescued by a sanctuary in Indonesia was found at a plantation with no cage or other housing at all; the infant was simply kept tied up in a bag (SOS, 2013). Where there is frequent transport from industrial sites to urban centers or across borders, these apes could easily become victims of the illegal trade, transported under poor conditions with associated health risks. If these infants are ever seized or rescued, they can require extensive veterinary care and rehabilitation that could last for many years. Specialized needs owing to injury or illness increase the pressure on sanctuary services and resources.

Impacts to rescue, rehabilitation, and related community programs

Sanctuaries are often involved in programs that require the permission of, or cooperation with, government authorities or local communities – including conservation programs focused on wild apes. Where those same authorities and/or communities have relationships with industry and the needs of sanctuaries or rescue organizations are at odds with those interests, organizations involved with protection of apes in captivity and in the wild can face challenges working with government and/or communities as well as with the industries themselves.

In the extreme, these challenges could take the form of conflict. Such competition between sanctuaries and industry might be direct, as in the case of land rights to a specific area pursued by both parties. The competition could also be indirect. For example, a private landowner might be convinced to protect ape habitat under a payment-for-ecosystem-services (PES) model that benefits apes. However, if there are faster or more lucrative returns from

renting out land rights or extracting and selling natural resources to a commercial buyer, one or many landowners might forgo PES options. The government or its agents could also be involved in such scenarios by virtue of authority to grant or deny permits to sanctuaries and rescue centers or to private companies. Where interests differ greatly, there is the potential for legal action or other conflict between parties.

Spatial effects, the catchment area, and law enforcement

For apes in their natural habitats, the impacts of extractive industries are expected to have strong spatial relationships, i.e. the strongest impacts are more likely to come from extraction near them than distant from them. The same is not always true for the association between extractive industries and sanctuary populations. Sanctuaries and rescue centers can be influenced by both localized and distant drivers because they can serve as a “catchment” for other geographic areas, either (1) where orphaned apes arriving at the sanctuaries originate or (2) where orphaned apes are confiscated. Catchment areas can be synonymous with the home country, or, in the case of sanctuaries in non-range states, such as South Africa, be exclusively outside the home country.

While customs, laws and other risks in catchment areas can differ from those operating locally, increasing arrests, prosecutions, and penalties are priorities for combating the illegal trade in apes (Stiles *et al.*, 2013). One fundamental challenge is that law enforcement capacity is often insufficient to counter the volume of the bushmeat and illegal live animal trades (Drori, 2012; Stiles *et al.*, 2013). However, it has been recognized that if there is no sanctuary in a given area then there is no real incentive for confiscations. Indeed a range of factors can delay the law enforcement needed to seize an

ape held captive illegally for months or years (Teleki, 2001). Even where enforcement challenges are largely administrative, such as coordination between government agencies, the availability of sanctuary space and services could impact enforcement actions.

Beyond a lack of incentives, confiscations could be disincentivized where stakeholders perceive potential costs for initiating enforcement owing to a lack of accessible sanctuary space. For example, informants or officers could be concerned that they might be compelled to provide care for or to obtain veterinary services for the confiscated apes despite a lack of resources. The effect could also work the other way, where access to a sanctuary is a driver. The availability of sanctuary capacity, funding, and political will for protecting apes theoretically could prompt a surge in enforcement and confiscations. In so doing, initial access to a sanctuary could further increase demand for it, potentially beyond capacity. The evidence for a variety of enforcement–sanctuary interdependencies warrants careful consideration by those managing and financing the expansion of enforcement because sanctuary capacity can impact activities as well as outcomes.

The involvement of international law enforcement where repatriation is mandatory or preferable provides a stark example of how broad a catchment area can be, from transcontinental to several continents away, and also sends a strong message to those involved in the trade (Stiles *et al.*, 2013). Such confiscations can be local, where individuals are found near the site where they once lived freely, or regional, where some cross-border coordination is required. However, enforcement actions can also involve a much larger geographic net spanning continents, disparate legal frameworks, and complicated logistics that bear directly upon sanctuaries. Proving the provenance and origins of illegally traded animals has

“ Sanctuaries and rescue centers can be influenced by both localized and distant drivers because they can serve as a “catchment” for other geographic areas. ”

become a sticking point, repatriating individuals is controversial, and DNA testing may be required. Furthermore, if the apes are to be returned, they would require both sanctuary space and services, at least for rehabilitation, although possibly for lifetime care.

Temporal relationships

Whether industry drivers have immediate or delayed repercussions for sanctuaries can be influenced by a number of factors, such as local cultural practices, corruption, and the history and capacity of law enforcement. Beyond arrival rates, the demographic traits of new residents can also be influenced, and sanctuaries have to respond accordingly. For example one analysis reported that 100% of gorillas and bonobos, as well as the majority of chimpanzees (80%), were estimated under 4 years of age upon arrival, while some chimpanzees were estimated to be 5–11 (16.6%) or even more than 12 years of age (2.8%) (Farmer, 2002). A subsequent analysis of demographics at sanctuaries indicates that average age at arrival decreases over time (Faust *et al.*, 2011). Such a pattern appears to reflect the history of law enforcement and the population of apes being rescued.

When a sanctuary becomes operational, local rescues might include individuals used in exhibitions or privately owned for an extended time. As most animals in that category are successfully rescued, arrivals gradually shift towards newly orphaned apes and lower median age (Faust *et al.*, 2011). Where catchment areas are large and enforcement is unpredictable, such a shift could take more time or result in periodic increases in median age at arrival. Likewise, with complex, lengthy repatriation cases, age at arrival would likely be above the median. Increased age at arrival is likely associated with both longer histories of captivity and weaker temporal relationships

between sanctuary demands and their drivers, including extractive industries. Importantly, the longer histories of captivity associated with illegal trade have direct implications for the health and welfare of individual apes and the care that they need after arrival at a sanctuary.

Socioeconomic factors influencing extractive industry impacts

The influence of extractive industries on ape sanctuaries and their residents is determined by socioeconomic factors within their country and by variables associated with catchment countries. Some sanctuary programs are directly affected by poverty and other socioeconomic variables. For example, household poverty in an area could affect the motivation of stakeholders to participate in community programs such as PES or the sustainability of programs to reduce human–wildlife conflict (HWC) through insurance or incentives. Land conversion to cash crops or agroforestry might also impact sanctuary programs or the availability of land for facilities or release sites. In many countries where household poverty rates are high, the concentration of natural resources is also high, a phenomenon called the “resource curse” (Kolstad, Søreide, and Williams, 2008). Not surprisingly, these same countries and resources also attract extractive industries.

The available evidence does not indicate that illegal trade is linked to poverty per se, but rather that the income and power disparities that occur in many developing countries are the drivers (Stiles *et al.*, 2013). More directly, factors such as weak governance or corruption could undermine sanctuary efforts to prevent illegal ape trade or impede the enforcement actions necessary to rescue an ape.

Governance

Poor governance and corruption are recognized risks with natural resources and may serve to weaken other governance structures in the countries affected (Layden, 2010). Likewise, governance is also a critical variable that can influence how extractive industries impact sanctuaries. For example, when governments are corrupt, laws that are intended to protect apes and ensure that nongovernmental organizations (NGOs) and civil society organizations operate effectively can be undermined by competing interests or ignored altogether.

The forestry sector has proven to be vulnerable to corruption, though scale can be hard to estimate (Layden, 2010). Some evidence suggests there is a relationship between rate of deforestation, prevalence of illegal logging, and weak governance and corruption; for example, at a time when illegal logging was estimated to account for more than half of all logging in Indonesia, the country also ranked high on the Corruption Perceptions Index (2009: 111 of 183 (Layden, 2010, p. 2)). Recognized risk factors may increase vulnerabilities in the natural resources sector and make it harder to combat the effects of corruption, including industries where existing corruption levels are high and existing governance and regulation are poor (Kolstad *et al.*, 2008, p. 4). With the complex relationships between governance and extractive industries in mind, it is clear that these are also risks for sanctuaries and rescue centers.

Potential for positive impacts through private sector partnerships

While there is ample evidence of the risks and negative impacts on ape populations and ape sanctuaries from the presence of extractive industries, it is vital to remember

that opportunities also exist for engagement with the sector. Even while policy reforms are sought to strengthen ape protection, including those that curb extractive industries, ape conservation and sanctuary organizations can also seek collaboration. Partnerships that emphasize mutual benefit and obviate harm are also instructive (see the Wildlife Wood Project case study in Chapter 4). Two case studies from Uganda and Indonesia are presented here.

Photo: Rescued chimpanzees from within Uganda demonstrate that illegal trade is an on-going risk; whilst chimpanzees with origins outside Uganda reflect the regional risk associated with illegal trade and the significance of sanctuaries for transboundary enforcement and long-term chimpanzee care. © LAGA & The EAGLE Network



CASE STUDY 1

Chimpanzee Sanctuary and Wildlife Conservation Trust, Entebbe and Ngamba Island, Uganda

In 2010, approximately 9.7% of Uganda's land (19 981 km²) was officially protected (FAO, 2012). Wild populations of both chimpanzees and gorillas are found in Uganda, with chimpanzees living both within and outside of protected areas and gorillas ranging outside of protected areas. In addition to these ape populations, two facilities house rescued chimpanzees from both within and outside of the country. Rescued chimpanzees from within Uganda demonstrate that illegal trade has occurred in the recent past, and is an on-going risk. Similarly, chimpanzees with origins outside Uganda reflect the broader regional risk associated with illegal trade as well as the significance of sanctuaries for both transboundary enforcement and long-term chimpanzee care.

The Chimpanzee Sanctuary and Wildlife Conservation Trust (CS and WCT) established the Ngamba Island Sanctuary (NIS) in 1998, and is a founding member of PASA. The project was undertaken in cooperation with the Uganda Wildlife Education Center (UWEC) and the Uganda Wildlife Authority (UWA), both of which continue to serve as Trustees. The founding of NIS coincided with a wave of new enforcement actions that resulted in a number of chimpanzee confiscations and even some successful prosecutions. Since NIS was established, a greater number of confiscated and/or surrendered chimpanzees have been placed at Ngamba Island (28) than the original facility at Uganda Wildlife Education Centre (UWEC) (12).

Most individuals arrived at Ngamba when they were 2–4 years of age (26; see Table 10.9). The number of very young individuals under 2 years of age at arrival is over 20% overall, with the average age of new arrivals decreasing over time. As NIS has approached maximum physical capacity, annual arrival

rates have also declined, with approximately ten arrivals since 2004. Though some chimpanzee residents at NIS are of Ugandan origin (18), the majority are from the DRC (27). The precise origins of the residents belie a much larger area in terms of catchments, as some residents arrived following enforcement efforts in Burundi (2), Tanzania (1), and Sudan (4).

Natural forest accounts for a relatively small (29 880 km²), rapidly declining (-2.3% p.a. 2000–10 (FAO, 2010b)) proportion of land in Uganda. Although forest extraction and exporting of timber and other forest products is limited under law, the Ugandan government has acknowledged illegal logging as a major challenge, noting that constraints on measuring or estimating these activities are impediments to enforcement and to realizing sustainable development objectives linked to forestry (Ssekika, 2012). In the context of impacts for chimpanzees, CS and WCT, together with partners and collaborators, have undertaken a number of activities to slow rates of loss through protection and to accelerate reforestation. The project has contracted 342 forest owners who are conserving and reforesting a total of 15.9 km² in designated areas within the Semliki-Murchison landscape (P. Hatanga, personal communication, 2013). While this is a fraction of the total private forestland in the area, the pilot project has gained traction in the community and has achieved important milestones for the project plan (P. Hatanga, personal communication, 2013).

Oil exploration is also on-going in the area around CS and WCT forest projects that include a PES component. The CS and WCT and its partners have taken an active role in engaging representatives of the sector, adding Tullow Oil to the technical steering committee that guides and monitors PES implementation (P. Hatanga, personal communication, 2013). Through this partnership, Tullow Oil has expressed interest in conservation initiatives, specifically buying carbon credits, supporting biomass energy efficiency projects, and other potential forms of financial support (P. Hatanga, personal communication, 2013).

TABLE 10.9

Summary data for chimpanzee residents at Ngamba Island Sanctuary, 2012

Gender of residents		Year of arrival		Country of origin		Age at arrival		Catchment source	
Males	20	Before 1998	19	DRC	27	0–1*	11	Uganda*	35
Females	28	98–99	4	Uganda*	18	2–4	26	Sudan	4
Total	48	00–01	8	Rwanda	1	>4	10	Europe	3
		02–03*	6	Unknown	1			Burundi	2
		04–05	0					DRC	2
		06–07	4					Tanzania	1
		08–09	2						
		10–11	0						
		2012	4						

* Does not account for one live birth on site

CASE STUDY 2

Borneo Orangutan Survival Foundation (BOSF), Central and East Kalimantan, Indonesia³

Forest accounts for a significant (approx. 50%, 937 500 km²), but declining (-1.13% p.a. 2000–10), proportion of land in Indonesia. It has been an important part of the economy for many years, although patterns of extraction and trade have changed over time. Both legal and illicit markets have major impacts on forest cover and land use more generally, and thus the orangutans residing in affected habitats (Robertson and van Schaik, 2001; Nellemann *et al.*, 2007; Lawson and MacFaul, 2010; Felbab-Brown, 2011; Wich *et al.*, 2011; Felbab-Brown, 2013; Stiles *et al.*, 2013; Vidal, 2013b). Importantly, deforestation is tied to multiple extractive industries in Indonesia, making it difficult to link larger trends to any single sector.

Wild populations of orangutans are found both within and outside of protected areas in Indonesia (Nellemann *et al.*, 2007), and direct HWC involving orangutans is a well-known problem that has received considerable international media attention around conservation and consumer habits (Wich *et al.*, 2011; Meijaard *et al.*, 2012). Orangutans displaced by habitat conversion are often treated as pests, and may be trapped and brought to rescue centers or sanctuaries. Orangutans captured by workers or residents of nearby communities following conflict are subject to seizure by authorities, and if they survive, would be candidates for placement at a sanctuary if they cannot be re-released immediately. In addition to wild populations, some facilities house rescued orangutans where they undergo veterinary care and rehabilitation for re-release. In cases of injury or illness that prevents reintroduction, specialized facilities and programs provide long-term care (e.g. BOSF, 2012).

Indonesia's strategic plan aims for the re-release of all orangutans (Ministry of Forestry, 2009b). While some animals might be able to return to the wild right away or after minor veterinary care, others require a period of more extensive rehabilitation or skills training to ensure that they can survive in the wild. BOSF was established in the 1990s with the primary aim of keeping orangutans in their natural habitat. BOSF also operates rehabilitation and reintroduction programs that return confiscated or surrendered orangutans to the forest through translocation or reintroduction programs. Only a small number of orangutans are long-term residents; those orangutans that are ineligible for release because of their health status are provided with lifetime care.

A 2012 report on BOSF's Samboja Lestari orangutan re-release program emphasized three criteria for successful release (Preuschoft and Nente, 2012):

1. That the orangutans have learnt the skills needed to survive and thrive in the forest. These skills are not instinctual for the orangutan; they must be learnt.
2. That the released orangutans will not infect the wild population with dangerous transmittable diseases, including diseases that can affect both humans and orangutans (zoonoses).
3. That the forest they are released into is secure and the orangutans can remain safe from further human threat in the future.

Between 1991 and 2012, more than 650 orangutans were released or translocated from BOSF rehabilitation centers. The smaller program at Nyaru Menteng released 44 orangutans and translocated an additional 190 orangutans. The larger program, Samboja Lestari, released 422 orangutans and translocated 41 orangutans. In accordance with the strategic plan, release efforts have been building momentum in recent years. In 2012 BOSF re-released 44 orangutans in Central Kalimantan and another 6 in East Kalimantan. As of February 2013, 20 more orangutans had been re-released, with plans for 100 more within the year. Efforts to ensure safety are enhanced via post-release monitoring, which is becoming an increasingly important component of the BOSF programs.

Even with this ambitious re-release schedule, demand for sanctuary space and services is substantial. In early 2013, approximately 820 orangutans were present in the BOSF reintroduction programs in Central and East Kalimantan. Arrival rates at orangutan sanctuaries have been a concern for many years and currently far outpace those at sanctuaries for African apes (Farmer, 2002; Stiles *et al.*, 2013).

For BOSF and its facilities, a primary strategy for working with extractive industries is the promotion of BMPs, which include oil palm, forestry, and mining sectors. The BMPs address both prevention and mitigation efforts that ideally are undertaken in cooperation with other companies and with conservation organizations, such as BOSF. Some BMPs include land and wildlife management efforts, such as:

- Surveying private concessions and locating areas supporting significant biodiversity. Such areas should be allocated and restored if necessary to serve as conservation areas protecting viable habitat for wildlife, including orangutans.
- Collaborating with neighboring companies and organizations to maintain or create corridors, connecting conservation areas with those in other concessions, as well as with nearby protected areas.

If a private company has intact forest BOSF could partner with the company to evaluate the habitat and determine if it is possible for resident orangutans to remain in the forest over time (J. Sihite, personal communication, February 2013). If there are no resident orangutans in a private forest, but that habitat is suitable for orangutans, there is the potential to use BMP to re-introduce orangutans into the forest. The aim is to have the companies voluntarily implement BMP and work

in partnership with rescue centers and other industry and conservation partners to sustain orangutan populations on private land.

While BMPs can potentially prevent or reduce impacts on orangutans, this is not always possible. For example, there can be concessions where there is no suitable area for conservation, where the resident orangutan population is not viable, and/or pressure from surrounding communities is not sustainable. In such cases, a company would conduct rescue and translocation of those individuals to ensure their introduction into safe, suitable natural habitat at some other location, potentially after seeking input from the government or in consultation with government officials (J. Sihite, personal communication, February 2013).

Where these cases are directly linked to a particular company, involvement can entail more than the voluntary BMPs. For example, if orangutans arrive from a specific company at one of the BOSF centers, the company could offer to pay for care and treatment costs (J. Sihite, personal communication, February 2013). Such support can be temporary, i.e. lasting until the orangutans are re-released. If individuals are ineligible for re-release because of health status or other factors and long-term residency is required, company financial support could also take the form of lifetime care costs. This sort of financial support is viewed as a company's responsibility to the orangutans. Importantly, support for specific displaced orangutans is distinct from voluntary donations through adoptions (BOSF, 2012) or other charitable giving by companies and individuals who do not have a direct role in habitat conversion or HWC (J. Sihite, personal communication, February 2013).

Sanctuary challenges specific to Indonesia

Site selection for the final re-release of rehabilitated orangutans is especially impacted by extractive industry vis-à-vis the availability of habitat. As forest is shrinking, there are fewer and fewer options for such sites because of the two-fold space requirement:

- First, there must be a pre-release area without resident orangutans for outgoing quarantine to manage the risk to the re-release candidates.
- Second, there should be a distinct release forest for post-quarantine animals to minimize infection risk from re-release candidates.

The present rates of habitat conversion are so extreme that it will become increasingly difficult to find new sites that can provide optimal size and configuration for both pre-release health quarantine and re-release forest areas.

The mining of coal, for example, provides an illustration of how extractive industry could have a wide range of effects relevant for apes: immediate–long-term, localized–international, and direct–secondary–indirect. Through various direct and indirect effects associated with water – demand on water resources, flooding secondary to deforestation, and pollutants such as sulfates that pose risks to people and/or animals – coal mining operations can impact both the immediate vicinity and wider surrounding areas (Voorhar and Myllyvirta, 2013, pp. 45–46; Van Paddenburg *et al.*, 2012). In the long term, the effects of increased CO₂ emissions from growing coal consumption (domestic and exports), which is expected to increase dramatically in Indonesia by 2020 (Voorhar and Myllyvirta, 2013), could be further compounded by deforestation from other mining and other extractive industries.

Conclusion

The patterns and impacts of extractive industries are complex. While direct and indirect effects for wild populations have been documented, and research continues to suggest where the greatest challenges and opportunities lie for industry partnerships to serve conservation, few studies have been undertaken on the impacts of extractive industries on sanctuaries per se. Given their vital role in combatting the illegal ape trade – education, prevention, alternative sustainable livelihoods, law enforcement partnerships, ape care and rehabilitation, and even re-release to the wild – such data gaps could slow progress in the long run.

A growing body of data indicates that the illegal ape trade is associated with extractive industries, and that these same industries can take a proactive role in reducing harm and protecting apes if they so choose or where such efforts are mandated or incentivized. This is not to say that the solutions are simple. More data are needed, and it is imperative to make progress on implementing BMPs with a wide range of extractive industries (e.g. Morgan and Sanz, 2007; Morgan *et al.*, 2013). Evaluation and monitoring will continue to be vital tools for linking these practices to outcomes that are positive for ape conservation and protection.

Wildlife conservation organizations have called for greater involvement of CITES (e.g. TRAFFIC, 2010) and appear to envision an even larger role for the future (CITES, 2013b). Multilateral agreements and resolutions on ape protection vis-à-vis extractive industries do not always acknowledge the value and growing role of sanctuaries, while others do so explicitly. For example, key sections of the 2009 Frankfurt Declaration on Gorilla Conservation directly and indirectly impact sanctuaries. The role of mining, energy and other extractive industries is highlighted throughout the Declaration, with

the most significant item involving explicit demand for sanctuary space and services:

5. Call upon states to combat illegal trade through the confiscation of illegally held live gorillas and ensure their repatriation into sanctuaries in their country of origin in cooperation with CITES. (Frankfurt Declaration, p. 3)

Thus, as range and donor states and industries respond to calls for action, sanctuaries need to be at the table as vital stakeholders. The impacts on and the needs of sanctuaries are vital for planning, logistics, and funding of such programs. One risk is in failing to anticipate and plan for the impacts on sanctuaries as a distinct component in overall conservation and protection planning. For example, a failure to provide for the capacity of sanctuaries or inadequate accounting for space and services could be detrimental to rescue as well as larger protection efforts. While animal rescue and welfare has not been a traditional conservation concern, it nevertheless has a role that must be appreciated, supported, and acknowledged, with the facilities themselves seen as a tool for conservation goals.

For policy, law enforcement, and rapid change in industry practices to turn things around, rescue centers and sanctuaries also need to be strong. These facilities and organizations need sustainable funding and other support to expand their capacity – infrastructure, human capacity, systems – to serve the apes in their charge and be a partner in the preservation and protection of apes. Sanctuaries and rescue centers also need and deserve a seat at the table wherever the future of apes is on the agenda; as stakeholders in the protection of apes and their habitats, they have invaluable insight and knowledge to share and they are an essential part of the solutions.

Whether we consider a population of apes losing the last of their habitat, an iso-

lated individual hidden away as a pet, or a sanctuary full of rescued apes, our ultimate goal is to protect them. Protection requires a shared, global ethos that values apes and is based on respect for apes in their own right wherever they happen to be. Emphasizing the intrinsic value of the apes in captivity, and the interdependencies and shared risks facing apes in captivity and in their natural habitats positively reflects such an ethical foundation.

Acknowledgments

Principal authors: Debra Durham and Adam Phillipson

Endnotes

- 1 http://dpcpsi.nih.gov/council/working_group.aspx
- 2 <https://s3.amazonaws.com/public-inspection.federalregister.gov/2013-14007.pdf>
- 3 All data in this section via J. Sihite, personal communication, February 2013 or BOSE, 2012 except as cited