INTRODUCTION

Section 2: The Status and Welfare of Great Apes and Gibbons

I n each volume of *State of the Apes*, Section 2 covers issues that affect the broader in-situ and ex-situ populations of apes globally, complementing the theme explored in Section 1. In this volume, Chapter 7 examines the impacts of industrial development projects on apes living in their natural habitat and updates case studies presented in previous volumes. Chapter 8 offers an overview of activities and initiatives developed to improve captive ape welfare and assesses the status of apes in captivity.

The online Abundance Annex—which is available at www.stateoftheapes.com—presents updated population estimates for in-situ great apes across their ranges, as well as a mix of population and density estimates for gibbons across their ranges. When compared to data provided in the previous volumes in this series, the annex allows for the tracking of population trends and patterns over time.

Chapter Highlights

Chapter 7. The Status of Apes: Impacts of Industrial Development Projects on Apes

This chapter looks at industrial development projects in ape range states, summarizes the potential impacts of these projects on the different ape species based on their

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socioecology and explores species-specific responses to identified impacts. It also identifies the best mitigation strategies currently available to ensure positive conservation outcomes for apes, including national legislation, international lender requirements, certification schemes and the International Union for the Conservation of Nature's Avoid, Reduce, Restore and Conserve (ARRC) Task Force.

Since the first volume of *State of the Apes* was published, two main factors have led to enhanced mitigation efforts: national and lending standards around biodiversity management have improved, while more research has shed light on how industrial development projects affect apes. Taking these factors into consideration, the chapter updates case studies that appeared in previous volumes, including on the Congo Basin's Sangha Trinational region, the Wildlife Wood Project in Cameroon and the Simandou mine in Guinea.

Chapter 8. The Welfare and Status of Captive Apes

The first part of this chapter aims to measure and build a better understanding of the welfare of captive apes. The second part updates statistics on captive ape populations in zoos, rescue and rehabilitation centers, and sanctuaries around the world.

Animal welfare refers to an animal's quality of life. Welfare issues may be linked to a complex set of factors, including cultural, economic, political, religious and social conditions. As discussed in the chapter, one tool for assessing and managing a captive ape's welfare is the Five Domains Model, which reflects how behavioral interaction, environment, nutrition and physical health contribute to an animal's mental state.

In relation to ape welfare, the chapter explores species-specific requirements, trade, reintroduction, standards of practice, assessments and related tools, such as the Enclo-

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sure Design Tool. It also considers examples of shared learning and action to support ape welfare, such as the Gorilla Rehabilitation and Conservation Education Center in the Democratic Republic of Congo.

The second part of the chapter updates the population statistics of captive apes in zoos, rescue and rehabilitation centers, and sanctuaries around the globe. These statistics are not exhaustive: not all countries are covered, and a complete picture of the extent of captivity is difficult to obtain. The available data suggest that the number of captive apes is relatively static, although some individuals have been moved from one type of captive facility to another, and there are notable exceptions. Where there are variations, the reasons for them are not always clear or well understood, largely due to a lack of comprehensive data. Another impediment is a lack of information sharing, not only between zoos, but also with captive animal census databases (such as Species360), zoo associations and studbooks. Poor communication may be linked to capacity issues, language barriers, other priorities, technology or low levels of confidence in collaborative initiatives.