Batrachochytrium salamandrivorans (Bsal). In addition to the chaos caused by Bd, an even more deadly pathogen is now wreaking havoc. Fortunately, the new chytrid fungus is largely restricted to the immediate site of discovery, but in the time since discovery, it has been found in nearby parts of Belgium and Germany and the threat of spread to other species and areas is high. It seems to be endemic and enzootic in species of the Family Salamandridae in eastern Asia and it is likely to have been introduced to Europe through the pet trade. In both Europe and North America, new restrictions have brought importation nearly to a halt. Whereas Bd can kill individual amphibians, some recover, and some immunity has been detected, so far as is known, outside its native range, Bsal is lethal. Other infectious diseases also affect amphibians. While most are relatively poorly known and not associated with any mass mortality events, ranaviruses have been known for decades and they can be a significant factor in local populations.

Amphibian diversity and distribution

Paradoxically, in this era of great concern for amphibian survival, more and more new species are being discovered. Some of these are not new discoveries but rather subdivision of long-known species detected through the use of molecular markers. The majority are new discoveries. The numbers are impressive. As of August 2018, 7900 species of amphibians are known, about twice the species known in 1985. Roughly three new species are being described per week! Many of the new species reflect the greatly increased focus on the study of amphibians and the numbers of scientists being recruited. Field biologists are probing ever deeper, into the last unexplored places on this planet. Areas that are particularly rich in new species include Madagascar, Papua New Guinea and several South American countries. It is not just unexplored areas that are producing new species; in 2017 and 2018, new species were recorded from the United States and many new species were found in urban areas of India and China.

South America is the richest area for frogs, with Brazil having over 1000; Ecuador has 586 frogs, which contrasts with 28 for Spain, a country nearly twice as large. Salamanders are more northern in distribution, with United States having almost 200 species. While salamanders in the Old World barely enter the tropics, the lungless salamanders, Plethodontidae, have undergone an adaptive radiation in the New World tropics (over 40% of all salamanders), where they extend south of the 20th parallel in Bolivia. Caecilians occur only in tropical countries. Perhaps the most surprising center of caecilian diversity is the Seychelles islands (with eight species) in the Indian Ocean; India has the most caecilians (nearly 40 species).

Amphibians are key components of ecosystems throughout the world, and they may be the most abundant vertebrate in many local communities despite escaping notice by most people. They are often the top predator of invertebrates in ecosystems, and the most abundant vertebrates by biomass. Frogs and salamanders are a critical food source for other vertebrates. They are richly represented in tropical regions where they have radiated especially along mountain slopes. Frogs and salamanders are familiar animals, enjoyed by the public, studied by many scientists, and the focus of biomedical and environmental research. Today amphibians are in crisis, often victims of anthropogenic factors and novel pathogens, but they are long-term survivors and many species continue to thrive. Frogs, salamanders and caecilians promise to be with us for the long term.

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Museum of Vertebrate Zoology and Department of Integrative Biology, University of California, Berkeley, CA 94720-3160, USA.
*E-mail: wakelab@berkeley.edu

Correspondence

Orangutan populations are certainly not increasing in the wild

Erik Meijaard[1,2,9,*], Julie Sherman[3], Marc Ancrenaz[1,4], Serge A. Wich[5,6], Truly Santika[2], and Maria Voigt[7,8]

A recent report, published by the Government of Indonesia with support from the Food and Agricultural Organization and Norway's International Climate and Forest Initiative, states that orangutan populations (*Pongo* spp.) have increased by more than 10% in Indonesia from 2015 to 2017, exceeding the government target of an annual 2% population increase [1]. This assessment is in strong contrast with recent publications that showed that the Bornean orangutan (*P. pygmaeus*) lost more than 100,000 individuals in the past 16 years [2] and declined by at least 25% over the past 10 years [3]. Furthermore, recent work has also demonstrated that both Sumatran orangutans (*P. abelii*) and the recently described Tapanuli orangutan (*P. tapanuliensis*) lost more than 60% of their key habitats between 1985 and 2007, and ongoing land use changes are expected to result in an 11–27% decline in their populations by 2020 [4,5]. Most scientific data indicate that the survival of these species continues to be seriously threatened by deforestation and killing [4,6,7] and thus all three are Critically Endangered under the International Union for Conservation of Nature's Red List.

We applaud the Indonesian conservation authorities for providing publicly available documentation on forest management impacts, and for their use of quantitative measures of wildlife conservation progress [1]. Based on the above-mentioned discrepancy, however, we question whether appropriate methods and efforts were employed to assess management impacts on wildlife trends. For orangutan impact monitoring, the Indonesian government reported on nine monitoring sites, including national parks for which the 2015 population was established to be 1,153 orangutans [8]. By 2016, the government estimated that these sampled populations had more than doubled to 2,451 individuals [8]. There are three major issues with this reported population trend. First, it is biologically impossible for an orangutan population to double its size in a year [9]. Second, some of the government-sampled sites are used for orangutan introductions or translocations from other sites (for example, Bukit Baka–Bukit Raya National Park), implying that any net positive change in the monitored sites was inevitably preceded by at least an equally large negative change in non-monitored populations from which orangutans had been initially removed. Third, the nine government sampling plots and their reported populations represent less than 5% of the Bornean and Sumatran orangutan ranges, and zero percent of the Tapanuli orangutan range. Furthermore, all monitoring sites are within protected areas, whereas the majority of orangutans occur in non-protected lands [4,6,7]. It is thus scientifically unjustified to extrapolate population trends from these sampling sites to the total range of all three species.

The apparent mismatch between reported and achievable population growth for orangutans is not limited to this species alone. Indeed, the report states that populations of 19 of the Indonesian government's 25 priority species also grew by more than 10% [1]. This is not possible for some of the listed species, such as the Sumatran rhinoceros (*Dicerorhinus sumatrensis*), given known breeding rates and threat levels. For the past several decades overall Sumatran-rhinoceros birth rates have been exceeded by death rates [10].

We acknowledge the difficulty of accurately estimating population trends for elusive, low-density species such as orangutans. However, we believe that the current Indonesian government methods provide an unrealistically positive and biased picture of orangutan population trends. The direct measurements of orangutan numbers could, for example, be complemented with an assessment of changes in their forest habitat, which would offer a more robust estimate of their current status. Establishing targets such as an increase in the percentage of orangutan habitat that is protected or well managed, including not only forest management but also the implementation of zero-killing policies, might allow easier verification of progress towards established goals.

We urge the Indonesian government to review its conservation-impact methods since they offer an inaccurate description of the current reality. There is an experienced group of Indonesian and foreign scientists working across disciplines who are willing to help set realistic targets and develop feasible and scientifically robust monitoring methods. Given the Indonesian government's recent successes in implementing policies to reduce fires and restore peatlands [1], there is a timely opportunity to step up urgently needed improvements in species conservation and to demonstrate real success in protecting Indonesia's rich biodiversity and its unique natural heritage. Only effective collaboration between governments, non-governmental organizations, scientists, rural communities and the corporate sector will save the orangutan.

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AUTHOR CONTRIBUTIONS

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DECLARATION OF INTERESTS

The authors declare no competing interests.

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[1]Borneo Futures, Bandar Seri Begawan, Brunei Darussalam. [2]ARC Centre of Excellence for Environmental Decisions, The University of Queensland, Brisbane, QLD, Australia. [3]Wildlife Impact, PO Box 31062, Portland, OR 97231, USA. [4]HUTAN-Kinabatangan Orang-utan Conservation Programme, Sandakan, Sabah, Malaysia. [5]Research Centre in Evolutionary Anthropology, and Palaeoecology, School of Natural Sciences and Psychology, Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK. [6]Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands. [7]Max Planck Institute for Evolutionary Anthropology, Deutscher Platz 6, 04103, Leipzig, Germany. [8]German Centre for Integrative Biodiversity Research (iDiv) Halle–Jena–Leipzig, Deutscher Platz 5e, 04103 Leipzig, Germany.
[9]Lead Contact.
*E-mail: emeijaard@gmail.com (E.M.)