

# Raising the red flag: why captive primates experience welfare problems in zoos

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**“Two chimps in a concrete enclosure with a rope and tyre, but nothing else. One chimp was huddled against a wall not moving, the other sat by the dirty glass window, staring out”.**<sup>1</sup> This is just one of the Red Flag Reports submitted to Born Free, a charity aiming to prevent the exploitation and suffering of captive wild animals. The charity created the “Raise the Red Flag” reporting system, allowing members of the public to report abnormal behaviour, poor husbandry and poor handling practices observed in captive-kept wildlife. From 2019 to 2024, Born Free has received over 17,000 reports, which are used to further investigate the welfare of zoo animals.<sup>2</sup>

Primates are the focus of many of these reports, with behaviours such as repetitive neck-twisting, over-grooming, vomiting and regurgitation having been reported.<sup>1</sup> These abnormal behaviours can represent poor welfare and are linked to housing primates in unsuitable environments.<sup>3</sup> Other poor welfare indicators include physiological abnormalities such as infertility and an increased incidence of veterinary problems compared to wild primates.<sup>4,5</sup>

The development of welfare problems appears to be more common in certain primate species compared to others.<sup>5</sup> The gentle lemur commonly exhibits welfare problems such as over-grooming and high morbidity, whereas the ring-tailed lemur appears to develop minimal behavioural and veterinary problems in captivity.<sup>5</sup> This leads us to question, why do primates develop welfare problems in captivity, and why are certain species more susceptible to developing problems than others?

## The behavioural biology behind welfare problems in captivity

Non-human primates inhabit a large range of ecosystems throughout South America, Africa and Asia.<sup>6,7</sup> Within the wild, primates may

inhabit large home ranges, form complex social groups and forage for many hours a day.<sup>6,7</sup> It is impossible to emulate the natural habitats of wild primates within captivity. Not only are captive habitats vastly smaller, but there is a continuous presence of keepers, veterinarians and visitors.<sup>8</sup> Primates have not evolved to live within these captive environments; due to the constraints of these exhibits, captive primates may not be able to exhibit commonly expressed behaviours by their wild counterparts.<sup>9,10</sup> This may induce stress within captive animals. Stress is a state of physiological and behavioural adjustment which occurs to maintain homeostasis (a self-regulating process to maintain internal stability) when environmental conditions are suboptimal.<sup>10</sup> If the animal continues to experience high levels of stress, biological processes may be negatively impacted, decreasing growth rates, suppressing the immune system and causing infertility.<sup>10</sup>

Additionally, this inability to exhibit natural behaviours may negatively impact the affective state (or ‘feelings’) of the animal, leading to the development of abnormal behaviours such as stereotypies.<sup>9</sup> Stereotypies are thought to originate from the chronic inability to exhibit behaviour in response to internal or external stimuli despite high motivation. Many of these behaviours are controlled by negative feedback loops, meaning the animal will stay within a high motivation state until the behaviour is performed.<sup>9,10</sup> Hence, the inability to perform these behaviours leads to stress and a state of chronic frustration (an emotion arising from the nonfulfillment of a desired goal).<sup>11</sup> Carrying out stereotypic behaviours releases dopamine which may help to reduce the chronic frustration and stress the animal is experiencing.<sup>10</sup> Thus, stereotypic behaviour may aid the animal in coping with their captive environment.

Although some stereotypic behaviours occur in the absence of poor welfare and function as ‘self-enrichment’,<sup>3,10</sup> many stereotypic

behaviours can become harmful to the animal and lead to poor welfare states.<sup>8</sup> For example, gorillas live in large social groups and naturally exhibit social grooming behaviour. When they are kept alone or in small groups, they may over-groom or self-mutilate as they are unable to carry out social grooming despite experiencing a high motivation to do so. This may cause the gorilla to redirect this motivation through hair pulling<sup>9</sup>. This can lead to injuries and negatively impact the health of the gorilla. Hence, the development of harmful stereotypes negatively impacts welfare.<sup>8,9,10</sup>

## Why are some species more prone to welfare problems than others?

The motivation of primate species to exhibit species-specific behaviours is a product of natural selection and evolution within their ecological niche.<sup>5,9</sup> As different primate species have evolved in different environments, they will have varying levels of motivation to perform specific behaviours. For this reason, the inability to perform a specific behaviour will greatly impact species which have a high motivation but marginally impact the welfare of species with a low motivation to exhibit this behaviour.<sup>5,9</sup> Hence, some species are more suitable to living within captivity than others.

A study carried out by Pomerantz et al showed that primates that had access to larger home ranges in the wild exhibited a higher rate of pacing in captivity compared to species with smaller home ranges.<sup>9</sup> The red-faced spider monkey inhabits a home range of roughly 206 hectares, with a rough day journey range of 2400m.<sup>9</sup> Within captivity, they are kept in considerably smaller spaces. Due to the inability to carry out long day journeys within captivity, spider monkeys may redirect this motivation and begin to pace.<sup>9</sup> In contrast, the common brown lemur live in smaller home ranges of roughly 48.6 hectares, carrying out day journeys of 550m.<sup>9</sup> The motivation to carry out long day journeys is therefore lower and pacing behaviour is generally not exhibited within this species when kept in captivity.<sup>9</sup> Hence, an animal's natural biological behaviour greatly impacts their predisposition to welfare problems and ability to successfully live in captivity.

## Conclusion

Many primate species face welfare problems in captivity, with certain species experiencing greater welfare issues than others. With the inability for certain behaviours to be exhibited in captivity, species with a high motivation to carry out these behaviours may be the most affected and subsequently develop abnormal behaviours. Thus, this raises the question of whether these species, which are predisposed to welfare problems, should be kept in captivity. As veterinarians, conservationists and members of the public, we have a duty to monitor the welfare of these species and 'raise the red flag' to prevent the suffering of captive primates.

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Phoebe is a fourth-year veterinary student at the University of Bristol. She has a strong interest in zoological medicine, conservation and One Health. Last year, she completed an intercalated masters in Global Wildlife Health and Conservation at the University of Bristol, where she worked alongside the Cheetah

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