A review of current indicators of welfare in captive elephants (Loxodonta africana and Elephas maximus)

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Abstract

Concerns over elephant welfare in UK zoos have implications for their future in captivity. To monitor improvements made to elephant welfare in UK zoos, non-invasive, valid and reliable indicators of welfare are needed. Using a rapid review strategy and critical appraisal tool, we aimed to appraise evidence from peer-reviewed literature on potential welfare indicators for captive elephants. Scopus, Web of Knowledge and Ovid were searched in January 2014 using terms relevant to captive elephants and welfare assessment. Inclusion and exclusion criteria were applied and remaining articles were critically appraised against a specially designed welfare indicator appraisal tool. Thirty-seven unique indicators of welfare were extracted from 30 peer-reviewed papers which met the inclusion criteria. Behavioural measures of welfare (n = 21) were more common than either physical (n = 11) or physiological (n = 5) measures. Stereotypies were the most frequently used behavioural measure, glucocorticoids were the most frequently used physiological measure and body condition scores were the most frequently used physical measure. There was most support for the following indicators of improved welfare state: reduced stereotypies, reduced glucocorticoids and improved body condition scores. Additional measures which require further validation but had strong associations with the most supported measures, and thus have potential use in welfare assessment, were: increased lying rest and positive social interactions. Further validation of the described measures is needed, but this information forms a crucial part of the knowledge required to efficiently monitor and improve the welfare of elephants in captivity.

Keywords: animal behaviour, animal welfare, captivity, elephant, welfare assessment, welfare indicators

Introduction

Zoo elephant welfare across North America and Europe has been publicly criticised in influential reports (Clubb & Mason 2002; Kiuru 2007). These reports have led to a widespread response from animal welfare organisations and the UK Government (Zoos’ Forum 2010; Born Free 2015; People for the Ethical Treatment of Animals [PETA] 2015). In 2008, the UK Government called for an independent study with the remit of providing “objective, independent data on the welfare of elephants in the UK” (Harris et al 2008). The results from the report by Harris and colleagues (2008) were reviewed by the Zoos’ Forum (a government advisory committee) and then used to make recommendations to government. A range of areas of concern were highlighted in the report by Harris and colleagues (2008). In response to these concerns, the Zoos’ Forum stated that unless substantial improvements were shown in the health and welfare of captive elephants in the UK and unless there was a compelling reason to breed elephants in the UK, then UK zoos should take steps to stop keeping elephants (Zoos’ Forum 2010). In order to document improvements in welfare in any species, including elephants, valid welfare indicators are needed. Here, we use an evidence synthesis approach to identify a suite of welfare indicators for elephants.

For the purposes of this review, animal welfare is considered to be a concept which encompasses both mental and physical health, engagement with the physical or social environment and the opportunity to exhibit control or choice. This is purposefully similar to the definition by Dawkins (2008) who defined welfare as whether or not an animal is healthy and has what it wants.

Maintaining a high level of welfare for animals in any captive environment is of paramount importance. The very nature of the captive environment usually means individuals are exposed to a range of situations which, in all likelihood, they would rarely, if ever, experience in the wild. However, the