



Representations of animal species in a pediatric hospital

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ABSTRACT

Background: Representations of animals are commonplace in children's Hospitals. The distribution of animal species represented in toys, decorations and other utensils in pediatric practice though is unknown.

Methods: All animal representations in a large children's Hospital in the English North West were counted and identified to species level where possible. A descriptive association of represented species, particularly of the charismatic megafauna, and threat levels experienced by similar species in the wild was compared.

Results: Wild animals predominated, being represented much more commonly than pets and other domesticated species. Animals of the charismatic megafauna found in the hospital experienced some level of threat in the wild, the majority we found included species that were critically endangered, facing a high risk of extinction.

Conclusion: Many of the animals that find representation in toys, movies, hospital decorations and utensils found abundantly in our Children's Hospital belong to species that face imminent threat of extinction in the wild.

Keywords: Biodiversity, Habitat loss, Endangered species, Environment, Domesticated species

INTRODUCTION

Biodiversity is decreasing at an alarming rate. Habitat loss, environmental pollution, poaching and global warming all contribute to this ecological emergency. Almost a third of all animal species are meanwhile listed as endangered (Wrobel AG, 2021).

Poaching of endangered species, illegal animal trade, global travel and (Fan Y, 2019) other environmental changes all contribute to the disappearance of animal species while habitat loss and climate change are continuing to (Barouki R, 2021) infringe on ecosystems to unprecedented extent (Caminade C, 2019). Climate change, intensive animal farming, human en-

croachment on animal habitats, urbanization and global travel all intensify the risks associated with zoonotic infectious diseases, too (Mangili A, 2005, Ellwanger JH 2002) – as highlighted by the One Health initiative of the World Health Organization (Albert C, 2018).

It is not known how frequently animals are represented in the hospital environment, what species predominate, and how common critically endangered fauna features in this context. Animals belonging to the "charismatic megafauna", i.e., species that carry iconic status or particular appeal are, while enjoying most sympathy and fame through media and folklore, paradoxically amongst the species at highest risk of extinction (van Swaay C, 2019). Further, with children experiencing

the world more and more virtually, and most growing up in urban environments, the constant exposure to a huge variety of animal species early in life may distort their perception of the state of biodiversity in the « real world », as previously discussed (van Swaay C, 2019).

MATERIALS AND METHODS

All safely accessible clinical and non-clinical areas of the hospital, with the exception of administrative areas, were inspected over the course of 48 hours in mid-February, avoiding seasonal and holiday-related overrepresentation of certain animals. Areas accessible to the public and outpatient department were assessed, as were the common areas of patient wards.

Patient rooms were included where clinical status of the child allowed this interaction and did not interfere with clinical care. Patients and parents in the intensive

care areas and patients who were acutely unwell were not approached. The patient rooms were inspected by the child, the parent and/or their nurse and animal species documented on a paper questionnaire.

Publicly accessible areas were surveyed by two observers and animal species documented concurrently, identified to genus and species level where possible. Both individuals were healthcare professionals with an interest in wildlife conservation confident in animal species identification to the level required for this purpose.

For identification of threat level, the International Union for Conservation of Nature’s Red List of Threatened Species was used (IUCN, 2021).

Extinct (dinosaurs, mammoths), fantasy (unicorn, dragons) animals or anthropomorphized animal-like representations (Grover, Elmo) were identified and listed separately (Figures 1 and 2).

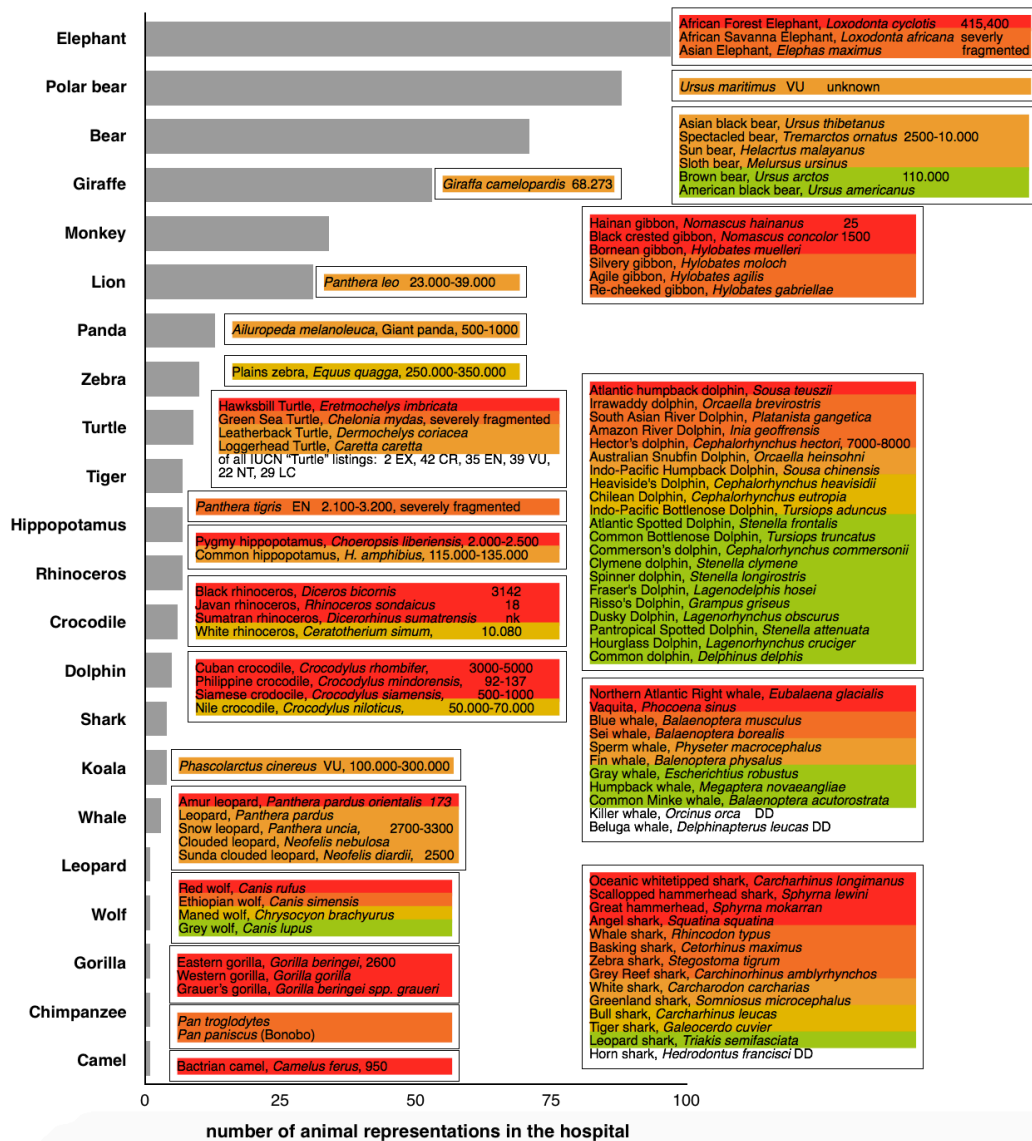


Figure 1: Frequency of representation of species belonging to the charismatic megafauna in the Children’s Hospital, and IUCN grading of threatened status of species subsumed under the represented animal. Where available, the number of individuals remaining in the wild is listed. **Note:** (■) critically endangered; (■) endangered; (■) vulnerable; (■) near threatened; (■) least concern; (oo) data deficient.

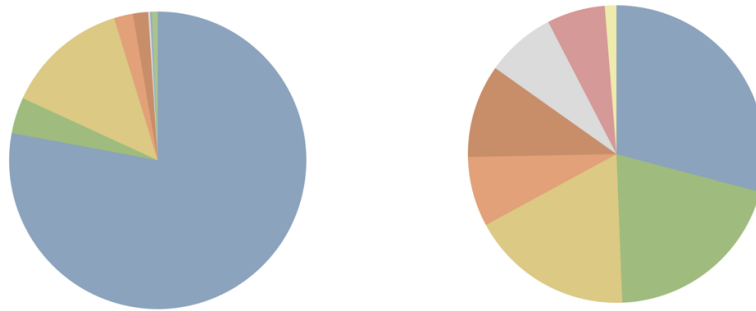


Figure 2: Panel A: Insects and spiders, panel B: Invertebrates of the sea, numbers represented in Children's Hospital. **Note:** (●) butterfly; (●) caterpillar; (●) bumblebee; (●) dragonfly; (●) ladybird; (●) ant; (●) stagbeetle; (●) spider; (●) starfish; (●) crab; (●) octopus; (●) snail; (●) lobster; (●) seashells/mussel; (●) coral; jelly fish.

RESULTS AND DISCUSSION

Overall, we identified 2502 animals belonging to 89 species were represented in decorations, pictures, and toys, in addition to fantasy animals and extinct species.

Certain species require specific clarification. The elephant is the mascot of the Children's Hospital and as such featured prominently on branded items. Other animals occurred predominantly, or exclusively, in movie associated merchandise (warthog, hyena, lemur, sloth, clownfish, blue tang fish, green sea turtle and toucan).

The vast majority of representations was of wild animals, as opposed to pets or domesticated species (Supplementary Figure 1). Even when counting all sheep, horses, ducks, and geese we encountered as domesticated, only 416 (16.6%) representations were of animals that are encountered as domesticated breeds.

Another 217 (8.7%) representations were of fantasy animals (unicorns, dragons), anthropomorphized animal-like toys (Elmo, Grover, Furby), or extinct animals such as dinosaurs, sabre tooth tigers, and mammoths.

The vast majority of animals depicted were species occurring in the wild, many of which are experiencing dramatic loss of habitat, fragmentation of their remaining population, and rapid decline in population numbers. In summary, when already extinct and fantasy animals were excluded, we identified 1869 toys and decorations representing animals occurring in the wild in the Children's Hospital, divided between 84 different genus.

First, we identified representation frequency of what has been referred to as "charismatic megafauna" (Figure 1). We found that every single animal genus/species of the charismatic megafauna we identified in the hospital environment included species or subspecies that were critically endangered.

The by far most frequently depicted animals were butterflies ($n=378$). Other invertebrates featured less prominently (Figure 2), accounting for 565/2502 representations (22.6%).

The latest report from the UK Butterfly conservation Society (2015) showed that 76% of the UK's resident and regular migrant butterfly species declined in either abundance or occurrence over the past 4 decades (CSS, 2018). A Europe-wide project documented a 39% decline in grassland butterflies in Europe over only the last 30 years, from 1990 to 2017 (van Swaay C 2019).

The representation of wild animals in media used by children is thus in stark contrast to the frequency these species are encountered in the wild. How this may affect children's and adults' perception of the threat level for a species is a concern that has been previously discussed (CSS, 2018, Courchamp F, 2018).

CONCLUSION

We found that most animals represented as toys and decorations in our hospital have species counterparts in the wild that are critically endangered and threatened with extinction in the near future. While we did not formally survey the children's perceptions, those who took part and were old enough to discuss this project were all too aware of the incongruence between the declining species diversity in the natural world and what was presented by hospital decorations and the toys on offer. We hope our work will help to raise awareness of this important issue, demonstrate the awareness many health care professionals and paediatric patients already have, and ultimately help to support conservation efforts.

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