

The (mis)use of the term ‘commensalism’ in primatology

This commentary arose from a workshop entitled ‘What works, and what doesn’t work? The challenge of creating effective applied conservation research in human-modified habitats’, held during the joint meeting of the European Federation for Primatology and the Primate Society for Great Britain in Oxford, 2019. One discussion point highlighted the different use of terminology between disciplines as a challenge for effective multidisciplinary conservation research. Growing number of publications have drawn attention to the misuse of the terms such as human-wildlife conflict (Marshall et al. 2007, Peterson et al. 2010, Davidar 2018), crop-raiding (Hill 2017), or ecotourism (McKinney 2017). Here we widen this conversation by reflecting on an additional term regularly used in primatology: commensalism. Here, we will give the different definitions of the term ‘commensal’ used across disciplines and the implications of its misuse. We will then discuss whether this term can be used to categorise human-nonhuman primate (afterward primates) relationships, and conclude by proposing alternative terminology.

Contrasting definitions and its implications

A commensal relationship is defined in the biological sciences as ‘an association between two organisms in which one benefits and the other derives neither benefit nor harm’ (Oxford Dictionary 2015). Commensal species gain benefits such as nutrients, shelter, support, or locomotion from a partner species, which remains unaffected. However, primatologists commonly define commensal primates as ‘primate populations that take advantage of human food, waste or crops to supplement their diet or as their main food source’ (Gautier and Biquand 1994: p210). After its introduction in the 1990s, the term

‘commensalism’ resurged following Paterson and Wallis’ (2005) efforts to avoid the negative implications of terms such as ‘pest’ or ‘weed’ species.

While commensalism is commonly used for describing human-primate relationships, particularly for *Macaca* and *Papio* species (68%, Figure 1), only 8 papers in our literature review (12%) defined their use of commensalism. Two of these papers acknowledge the biological definition of ‘commensalism’ as described above, but note that in primatology the term is used more broadly to mean primates living in close proximity to humans, or those using anthropogenic landscapes and resources. All other papers which defined ‘commensalism’ used this definition, after Gautier and Biquand (1994), mirroring the way the term was used by authors who did not offer a definition.

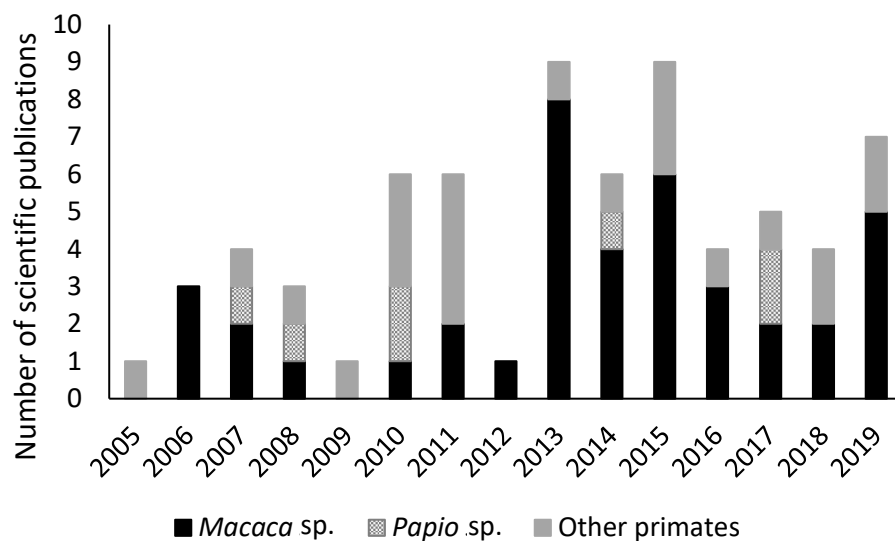


Figure 1: Number of scientific papers published in peer-reviewed journals using the term ‘commensal’ between 2005-2019. Papers were searched via Google Scholar using the terms ‘primate’ and ‘commensal’. We chose 2005 as the starting date based on the publication date of Paterson and Wallis’ definition of ‘commensal primates’. We included peer reviewed articles and book chapters, but omitted abstracts, theses, and encyclopaedia

entries. All relevant papers were read for the use of ‘commensalism’ in this context; those that used the term were then checked for (a) whether (and how) commensalism was defined by the authors, (b) what taxonomic groups were discussed, and (c) whether the paper reported specific positive or negative outcomes of the human-primate relationship.

Using ‘commensalism’ imprecisely may lead readers to think that human-primate relationships have a clear, one-way benefit, obscuring potentially important risks to either humans or animals. This may have unintended consequences on the relationships between local communities and primates, potentially increasing resentment towards primates and undermining conservation efforts. However, of 69 studies published in 2005-2019 using the term ‘commensal’, roughly half (37 or 54%) highlighted negative effects for either the humans or the primate species involved, increasing confusion around what the authors mean about the term ‘commensal’. Finally, commensalism does not specifically refer to dietary benefits, but an array of benefits such as shelter or support against predators. Therefore, using the term ‘commensal’ only for dietary benefits conferred by humans diminishes our understanding of the relationships between humans and primates.

Can non-human primates ever be considered commensal with humans?

The categorisation of human and primate relationships is complex. Some primate populations have multilevel interactions with humans, which include a multitude of foraging resources, human users, and environments involved. The following factors should be taken

into consideration when determining whether a primate population can be called 'commensal':

1) Foraging resources (if applicable)

Feeding on human-sourced food can be considered as costly, commensal or mutually beneficial. For instance, while some people tolerate crop-foraging by primates (Riley and Priston 2010), others would consider it as damage or competition. Similarly, provisioning can provide some benefits to humans, such as improved well-being, but can also be costly due to aggression or pathogen transmission. Therefore, we suggest that primates be considered commensal to humans only when they feed on discarded human food, and when we have demonstrated that it does not present any direct or indirect costs for human users.

2) Sustainable relationship

Commensalism must be recognised as a sustained relationship, and it cannot be defined by one species gaining short-term benefits from another. For example, provisioned wildlife may gain easy nutrients in the short-term, but run a higher risk of pathogen transmission, human-animal aggression, or dietary imbalance in the long-term, so that the benefits are short-lived. Therefore, evidence of a commensal relationship must be sustained over at least two generations to consider the potential long-term changes associated with this interspecies relationship.

3) Cost/benefit ratio evidence

For a primate population to be called 'commensal' in relation to humans, the cost/benefit ratio of the relationship, in the short and long-term, must be assessed. However, to date,

little is known about potential costs and benefits that humans, and living in anthropogenic landscapes, might provide for wild primates. Therefore, more research is needed to better understand the cost/benefit ratio of relationships between humans, primates and their shared environments, so that we can reassess whether the term ‘commensal’ could ever be used to describe human-primate relationships.

Conclusion

Words matter. It is our duty as scholars to use the most accurate terminology available to reduce confusion across disciplines, and it is imperative that we consider the unintended consequences of our word choices. Therefore, we suggest that primatologists refrain from using the term ‘commensal’ if not all criteria are met. Instead, we propose using more neutral terms, depending on context, which would advance our understanding of those human-primate dynamics.

- **Sympatric primates** – The term sympatric is defined as ‘animal species or populations occurring within the same or overlapping geographical areas’ (Oxford Dictionary 2015). Sympatric does not imply any specific relationship between the two species, and makes no statement on provisioning, crop-foraging, or other shared resources.
- **Provisioned primates** – This term describes a population of primates that use human-sourced foods freely given to them by the humans.

- **Crop-foraging, human-sourced foraging, or urban-foraging primates** – These terms are neutral and refer to foraging on agricultural plants or on human food found in urban areas in the same way we would report other foraging strategies.

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