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Ethical birding call playback, and conservation

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Running head: Birding and call playback

Article impact statement: Playing recorded calls to attract unseen birds into view is frowned upon, but we suggest call playback can yield net conservation benefits.

Until recently, bird-watching essentials comprised two items—comfortable footwear and binoculars. While field guides increased accessibility and popularity of birding, smart-phones have revolutionized this pastime via birding applications to facilitate identification and to play recorded calls to attract unseen birds into view. In the rush to adopt this technology, there has been little questioning of the consequences of using call-playback, either for birds or birders. Although many have pondered this question and tales of excessive playback abound, few studies have measured effects on birds, suggesting the prevailing view of call-playback as necessarily

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/cobi.13199.

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harmful is not evidence-based. Using current practices of professional birding guides in Colombia as examples, we consider the motivations underlying call-playback use, identifying five priorities for strategic research to inform ethical birding practices. We suggest judicious use of call-playback can yield positive outcomes for conservation, minimizing disturbance, generating sustainable income for local communities and increasing opportunities for the wider community to engage with nature.

Globally we are facing accelerated biodiversity loss. Paradoxically, people of all demographics are increasingly wanting to 'experience' nature, with bird watching just one option offered by the tourism industry. The transition from hobby to a distinct niche of ecotourism has manifested in recent decades with numbers of birders in some countries doubling (Collins-Kreiner *et al* 2013). As with any nature-based tourism, there is great potential to foster a connection with the environment and wildlife (Connell 2009; Ardoin *et al* 2016), balancing potential benefits of coexistence and conflict with nature (Budowski 1976).

Call-playback has long been used by biologists for monitoring marsh birds (Conway 2011), owls and other furtive species, playing a recording to simulate a territorial incursion and elicit a response. Despite concerns regarding habituation, territorial abandonment and increased risk of predation *inter alia*, little empirical data is available to assess effects of call-playback. Several studies have quantified effects of caller identity on behavioural (neighbour vs. stranger; Budka & Osiejuk 2013) and physiological responses (Deviche *et al.* 2014), with other work evaluating response times (Bogner & Balldassare 2002), male versus female reactions (Bard *et al.* 2002) and inter-specific interactions (Gibbs & Melvin 1993), mostly using vocal behaviour as the response variable (but see Bui *et al.* 2015 where 60% of radio-tracked California Ridgway's rails demonstrated no difference in movements after playback surveys). In the only definitive study to evaluate how birders using playback can affect birds (Harris & Haskell 2013), no deleterious short or long-term effects were found. Birds initially responded vocally to call-playback but

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quickly became habituated to the pre-recorded vocalizations so that responses essentially ceased after 12 days and, in one case, a pair built a nest right next to a playback speaker! Excepting behavioural studies examining conspecific recognition (*e.g.,* Davis 1986; Deviche *et al.* 2014), we are unaware of any work estimating physiological responses to call-playback, in contrast with mutiple studies on effects of approach distance and human disturbance more generally (Coetzee & Chown 2016). Likewise, no information is available on longer-term effects of call-playback on individuals or populations, nor community-scale comparisons of areas experiencing different frequencies of call-playback. So, although some birding groups and conservation organizations have strict policies limiting the use of call-playback (*e.g.,* the Australian Wildlife Conservancy formally prohibits call playback in its reserves), these policies are best regarded as precautionary rather than evidence-based.

While we know little about the effects of call-playback on birds, we know less about the attitudes, practices and motivations of birders (Stevens *et al.* 2015). During recent (July–August 2017) fieldwork in Colombia, we (DMW and MDC) gained insight into current practices of professional birding guides in terms of how and why call-playback is used, as well as the benefits and disadvantages for observing birds. Over a three-week period, we engaged the services of eight professional birding guides, all of whom used call playback in a comparable manner. In areas where a particular species was heard or considered likely to occur, pre-recorded vocalizations were broadcast. With few exceptions, these calls were accessed via the same smart-phone app (*All Birds Colombia*, Sunbird Apps; containing over 4,000 calls including at least one call for all 1,889 species known to occur in Colombia) and played via a portable loud-speaker. Of the 588 species seen during fieldwork, call playback was attempted for 129 species. Of the 93 species which responded to call-playback and were seen, 44 were observed subsequently without call-playback. A further 36 species did not respond to call-playback but were subsequently seen. So, just 49 species were seen only after call-playback—less than 10% of the trip list.

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Reflecting on our experience and discussions with our guides, four deductions emerged. First, call-playback increases the number of species seen and dramatically decreases the time until first sighting. Unlike conventional surveys where weeks of effort may be required to generate reliable estimates of species richness in Neotropical rainforests (and most detections are from vocalizations; Watson 2010), our guides indicated that their clients rarely spend more than three days per location and direct observation is much more important than 'heard only' detections. Second, call-playback is an essential tool to locate many species their clients want to see—a birding guide's livelihood is tied directly to their ability to consistently find furtive and range-restricted species on demand. With the growth of ecotourism and rising numbers of tourists travelling to developing countries to see birds (Stevens *et al.* 2015), this demand fuels an increasingly important revenue stream for communities with few non-extractive economic opportunities. Third, views of birds responding to call playback were typically fleeting—birds often appeared agitated, rarely staying within view for more than a few seconds. For those species seen subsequently without call-playback, we had longer looks, observed more behaviours and learned more of their natural history. Fourth, guides take their clients to a small number of known sites—readily accessible, safe areas where they can consistently find sought-after species. These locations often have specific accommodation tailored to birding, with feeders to attract birds (especially hummingbirds, also tanagers and ant-pittas) and established partnerships with local communities (e.g., as drivers, for access to adjacent land, information on reliable locations). Deleterious effects of call-playback would compromise future income opportunities, so birding guides and affiliated operators and providers represent direct beneficiaries of best-practice birding.

Rather than considering effects in terms of individual birds, this wider socio-economic context needs to be incorporated explicitly when quantifying effects of call-playback. Thus, while we need to measure any detrimental effects of call-playback, these findings need to be

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reconciled with a realistic counterfactual—the combined direct and indirect consequences of not using call-playback. Longer duration visits and more time spent walking off trails necessarily increase trampling effects and may disturb more species and ecological processes. Spending more time and covering more ground trying to encounter elusive species may provide better views and entail longer visits, but may also make these locations less popular for time-constrained ecotourists. Without call-playback, those locations where highly sought-after species are seen sporadically will be visited less, local communities receiving proportionally less income from visitors, so diminishing the realized economic value of intact habitats. To contextualise effects on individuals, impacts should be considered in terms of the proportion of populations affected, high-visitation sites likely representing negligible areas and numbers of residents for all but the most range-restricted taxa.

Protected area management systems aim to reconcile competing uses of areas with high conservation value, with recognition of "sacrificial areas" regarded as one strategy to balance visitor needs with environmental protection (Black & Crabtree 2007). We suggest that designating particular birding locations as 'call-playback permitted' or 'call-playback not permitted' would foster an improved understanding of the consequences of call-playback. As well as facilitating comparisons, justifying this regulation provides valuable opportunities to educate the community about ethical birding and the intersection between recreation and animal welfare. For species with small population sizes or highly-restricted distributions, limiting the use of call-playback by birders is sensible until evidence estimating effects is available. Likewise, using call-playback before searching preferred habitats is difficult to justify, especially since resultant views are typically shorter and reveal less about the species' behaviours. Although some guidelines currently available are reasonable (*e.g.,* avoid call-playback near nesting birds) we simply don't know enough about how birds are affected by call-playback or other forms of disturbance to advise on best-practice usage.

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To clarify call-playback effects on individual birds, several questions need to be addressed:

1). What are the long-term effects of call-playback on: (i) physiological stress; (ii) site fidelity; (iii) reproductive success; and (iv) juvenile recruitment and territorial establishment?

2). Do birds use vocal discrimination to recognise and, with sufficient exposure, ignore, individual calls? (such as those included in smartphone 'apps').

At the broader scale, we need to know:

3). How does birding with and without call-playback differ in terms of habitat disturbance?

4). In areas visited by birders, what proportion of populations is affected by call-playback?

5). How much does birding with call-playback contribute to local economies?

Experiencing nature is a prerequisite for valuing nature, and call-playback is an interactive means to promote a wider and deeper understanding of species and their behaviours to foster a desire to protect them. Nature-based recreation necessarily involves disturbance (Budowski 1976)—minimising those effects, and maximising the economic and conservation benefits of the experience are the basis of minimal-impact ecotourism (Ardoin *et al* 2016). With the growing popularity of birding and the increasing prominence of wildlife-centred tourism, quantifying these trade-offs is a priority. The widely-held claim that call-playback necessarily leads to habituation and, therefore, diminished efficacy for attracting species into view needs testing. In addition to measuring how call-playback affects individual animals and their communities, this work will inform the design of next generation birding apps and evidence-based guidelines for ethical birding. Birders already contribute valuable information on the distribution, movements and behaviour of an increasing number of species (Camacho 2016). By embracing ethical

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birding praxis, birders and birding guides will also deliver net positive outcomes and make lasting contributions to both animal welfare and biodiversity conservation.

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