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Title:	Behavioural ecology and acoustic communication in a cooperatively breeding paleotropical bird, Jungle Babbler (<i>Argya striata</i>)
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Abstract:	<p>Cooperative breeding is limited to about 9% of bird species and represents an advanced form of sociality. It is characterized by cooperative brood care and extensive social interactions that come at the cost of time spent on sustenance activities. These social interactions between group members are modulated by a complex communication system, as predicted by the social complexity hypothesis. In cooperative breeders, apart from the breeding pair, non-breeding individuals (helpers) contribute to providing care for young ones at the nest, thereby ensuring nesting success. This is a possible explanation as to why they are hosts to many avian brood parasites. Thus, they are also likely to have evolved strategies to discriminate against brood parasites. This thesis focused on a cooperatively breeding passerine, Jungle Babbler (<i>Argya striata</i>). I examined their social behaviour, complexity in acoustic communication, the brood care system and their ability to discriminate against an avian brood parasite, Jacobin Cuckoo. First, I examined how Jungle Babblers (JB) allocate differential amount of time to individual versus social behaviours and how this time-activity budget varies at diurnal and seasonal scales. I found that JB devote about a third of their time to social behaviours. Several behaviours exhibited a temporal pattern both at diurnal and seasonal scales. Next, I examined their vocal repertoire and the behavioural contexts of vocalizations. I found that JB possess a structurally and functionally complex vocal repertoire comprising of 15 vocalizations that modulate various social interactions, thereby upholding the social complexity hypothesis. I then studied cooperative brood care in terms of provisioning, brooding and the underlying communication system between adults and young ones of JB. I found provisioning rate to be independent of group size but correlated to the age of the young ones, with an increase in provisioning rate as the young ones get closer to fledging out. However, there was a decrease in the brooding duration with the age of the young ones. More importantly, JB showed synchronous provisioning which is considered as an important strategy in parental care of social animals to avoid predation. Controlled playback experiments on young ones of JB of different age classes revealed an ontogenic pattern in their begging response to acoustic and tactile stimuli. Finally, I found acoustic differences between calls of young ones of JB and that of Jacobin Cuckoos. However, a series of playback experiments showed that JB could not always discriminate between the calls of conspecific young ones and that of the heterospecific brood parasite, and about 50% of the time responded to both calls similarly. This possibly allows brood parasites to continue to persist in the host's nest despite existing information in the signals to allow host discrimination against the parasite. Taken together, the thesis presents a comprehensive understanding of various fundamental aspects of social and vocal behaviour of a cooperative breeding paleotropical bird species. This work contributes to a better understanding of the evolution of cooperation, sociality as a driver of communicative complexity and the arms-race between host and brood parasites.</p>
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