'Nursery nests' are better for survival of young black-and-white ruffed lemurs

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Black-and-white ruffed lemur (Varecia variegata variegata) in a tree. Credit: TONY CAMACHO/SCIENCE PHOTO LIBRARY

Young Malagasy black-and-white ruffed lemurs are more likely to

survive when they are raised in communal crèches or "nursery nests" in which their mothers share the draining responsibility of feeding and caring for their offspring. This is according to anthropological research on lemur infant care by Andrea Baden and colleagues of Yale University. The study, published in Springer's journal *Behavioral Ecology and Sociobiology*, describes a rare case in which fitness differences, such as infant survival, between cooperative and non-cooperative lemurs are observed.

Baden and her team studied eight female black-and-white ruffed lemurs (Varecia variegata) in the Ranomafana National Park in Madagascar who only once reproduced large litters during the six consecutive years of observation. Combined data on their nesting behavior, genetic relatedness and the survival of infants showed a positive relationship between crèche-use, a mother's time spent feeding and infant survival.

Ruffed lemurs are large-bodied and gregarious primates with slow life histories that form social communities to cooperatively help defend territory. They are the only diurnal non-human primates who bear litters of altricial or undeveloped offspring. This means that, as in humans, newborn ruffed lemurs need special care and feeding. Newborns, for instance, cannot yet cling to their mothers at birth, which makes travel together in the forest canopy impossible. This places a specific energy burden on the mother, who provides exclusive care for the first six weeks of her infants' lives and therefore has less time to spend on feeding and foraging.

Only a small percentage of female ruffed lemurs opt for solitary brooding and raise their young on their own. The others participate in communal nesting, breeding and babysitting in which several mothers regularly pool resources to cooperatively rear their offspring until they are about 10 weeks of age and are capable of independent travel. This method of infant care is unusual in mammals, and especially among

primates, with the most notable exceptions being humans and some nocturnal primates of the suborder Strepsirrhini.

Communal nesting allowed female ruffed lemurs to spend less time at their nests and gave them more opportunity to feed elsewhere than was possible for single nesting females. Infant survival was also significantly higher the more this crèche system was used. Genetic tests showed that cooperation was common among kin, but not exclusively so. This is the same as with humans and several other communally breeding birds and mammals.

"Kinship may have helped the evolution of cooperative breeding in primates, but the mutual benefits may outweigh the costs of helping, irrespective of any family relationships," says Baden, who believes that the current research sheds light on understanding just how communal breeding evolved. "Our results contribute to a growing body of evidence suggesting that kin selection alone cannot explain the extensive cooperation observed in many animal taxa."

More information: Baden A.L., et al. (2013). Communal nesting, kinship, and maternal success in a social primate, *Behavioral Ecology and Sociobiology*. DOI: 10.1007/s00265-013-1601-y

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