Improving the Accuracy of Monitoring Great Apes in the Wild: A Case Study from Southeast Cameroon

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Monitoring populations of endangered species over time is crucial in guiding and evaluating conservation efforts. Monitoring non-habituated great apes is commonly achieved through counting nests, calculating density and extrapolating to individuals. Field methods and conversion factors to estimate density have potential errors which limit the power and accuracy of monitoring, particularly where chimpanzees and gorillas live in sympatry. The results of monthly nest count surveys (24 months, 2009–2011) in the ‘La Belgique’ field site, north of the Dja Biosphere Reserve in Cameroon, highlight problems and suggest improvements to site-specific and range-wide great ape monitoring. Bias in density estimates can arise from unreliable nest builder identification: western lowland gorillas (Gorilla gorilla gorilla), known to have flexible nesting behaviour, were found to sleep in tree nests 3.80% of the time; while sympatric central chimpanzees (Pan troglodytes troglodytes), traditionally assumed to be exclusive tree-nest builders, slept in ground nests 3.37% of the time. Inaccurate nest production and decay rates also lead to bias: site-specific rates are calculated and compared to those from other sites, which are commonly adopted in density estimate calculations when site-specific rates are not available. Finally, in non-protected forests the use of transects and forest trails by local people for hunting influences great ape nesting: we present lower density and encounter rates per kilometre on established transects compared to newly opened ones. We found no change in nesting behaviour as a result of monthly surveys; therefore supporting the use of repeated surveys for great ape monitoring, assuming precautions are taken to minimise or prevent the use of transects by hunters.

What Are the Ecological Drivers and Behavioural Preconditions for Behavioural Innovation?

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One precondition for animal culture is behavioural innovation. If innovations spread socially and are transmitted over generations, the scene for cultural phenomena is set. But what are the ecological drivers and behavioural preconditions for innovation? We will explore these questions using Darwin’s finches as a model system. This species group is endemic to Galapagos where environmental conditions are harsh. Darwin’s finches display an extraordinarily high number of behavioural innovations, such as using tools, drawing blood from seabirds or breaking seabird eggs. Our experimental data also show a high baseline of behavioural parameters that are proposed preconditions for innovation, namely reversal learning and operant learning. These preconditions for innovativeness could be driven by ecological factors, such as unpredictable...