

The effects of three types of environmental enrichment on the behaviour of captive Javan gibbons (*Hylobates moloch*)

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Abstract

Studies on a large variety of species have shown that enrichment can be successfully used to encourage natural behaviours, to decrease rates of abnormal behaviour and to improve welfare in captive animals. However, whether or not a specific enrichment device is enriching depends on the species and its circumstances in captivity. In this study, we investigate the effect of three different enrichment devices (a novel object, an olfactory and a food-based enrichment) on the behaviours of four groups of captive zoo-housed Javan gibbons (*Hylobates moloch*). This species is endangered in the wild, and captive populations form an important resource in ongoing conservation efforts. We investigated how three different enrichment devices affect gibbon activity budgets and stress related behaviours. We further assessed to what extent gibbons habituated to these devices over two periods of five consecutive exposure days. We found that gibbons engaged on average 0.08 times per minute with the foraging device, 0.03 times per minute with the novel object and 0.02 times per minute with the olfactory enrichment. All three enrichment devices were found to significantly increase the frequency of foraging behaviours, while the novel object and the foraging box were also found to increase rates of singing behaviour. No change in the already low rates of stress-related behaviours was found following exposure to enrichment devices and habituation to the devices was generally absent. We conclude, that all three enrichment devices offer a species-appropriate, practical and inexpensive form of environmental enrichment for captive Javan gibbons, which may enhance the wellbeing of captive groups.

Keywords: [Gibbon](#), [Feeding enrichment](#), [Olfactory enrichment](#), [Novel object enrichment](#), [Habituation](#)

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