



UNIVERSITÀ DEGLI STUDI DI TORINO

This Accepted Author Manuscript (AAM) is copyrighted and published by Elsevier. It is posted here by agreement between Elsevier and the University of Turin. Changes resulting from the publishing process - such as editing, corrections, structural formatting, and other quality control mechanisms - may not be reflected in this version of the text. The definitive version of the text was subsequently published in *Journal of Veterinary Behavior*, 9 e1–e19 (2014), [1456438], doi:10.1016/j.jveb.2014.09.025

You may download, copy and otherwise use the AAM for non-commercial purposes provided that your license is limited by the following restrictions:

- (1) You may use this AAM for non-commercial purposes only under the terms of the CC-BY-NC-ND license.
- (2) The integrity of the work and identification of the author, copyright owner, and publisher must be preserved in any copy.
- (3) You must attribute this AAM in the following format: Creative Commons BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>), [+ *Digital Object Identifier link to the published journal article on Elsevier's ScienceDirect® platform*]

Effect of two forms of environmental enrichment on small felids in captivity

S. NORMANDO^{1,*}, A.N. LUCARDA², L. BONO³, FOVINO F. NAI¹, E. MACCHI², P. PONZIO²

¹ Dipartimento di Biomedicina Comparata e Alimentazione, Padua University, viale dell'Università 16, Agripolis, 35020 Legnaro (PD), Italy

² Dipartimento di Scienze Veterinarie, Università di Torino, via L. Da Vinci, 44, Grugliasco (TO), Italy

³ Parco Faunistico Cappeller, via Kimle, 36050 Cartigliano (VI), Italy

*Corresponding author: simona.normando@unipd.it

Key words: environmental enrichment; caracal; ocelot; serval; fecal glucocorticoids

The objective of this study was to evaluate the effects of two forms of environmental enrichment (i.e., two small swinging barrels and a sloped platform) on behavior and adrenocortical activity in ocelots (*Leopardus pardalis*, n ¼ 2), caracals (*Caracal caracal*, n ¼ 3) and servals (*Leptailurus serval*, n ¼ 3) housed in three different samespecies enclosures. Twenty minute observations were performed three times a day, four days a week (focal scan sampling every 10 seconds), during four one-week long experimental phases: baseline, introduction of the first enrichment (barrels), addition of the second enrichment (platform), post-enrichment. This procedure was applied twice. Fecal samples were collected four times weekly throughout the study for analysis of glucocorticoid metabolites using a immune enzymatic method. There was a difference on the amount of time cats were recorded as “out-of-sight” with respect to treatment. Cats were most visible when both the enrichments were present and lest visible in the post enrichment phase. When only scans in which the animals were visible were analyzed, there was a difference in the time the cats were playing, with a marked increase in the enrichment phases, especially with both enrichments present.

Cats were most often recorded in affiliative interaction in the double enrichment phase and least in the post enrichment phase.

Fecal glucocorticoids concentration differed among phases, being generally higher in the baseline phases than in the enrichment ones. We conclude that the presence of the enrichment increased behavioral patterns deemed to be indicative of a good welfare, such as play.