

Comparison between continuous and instantaneous sampling methods in brown bears (*Ursus arctos*): a pilot study

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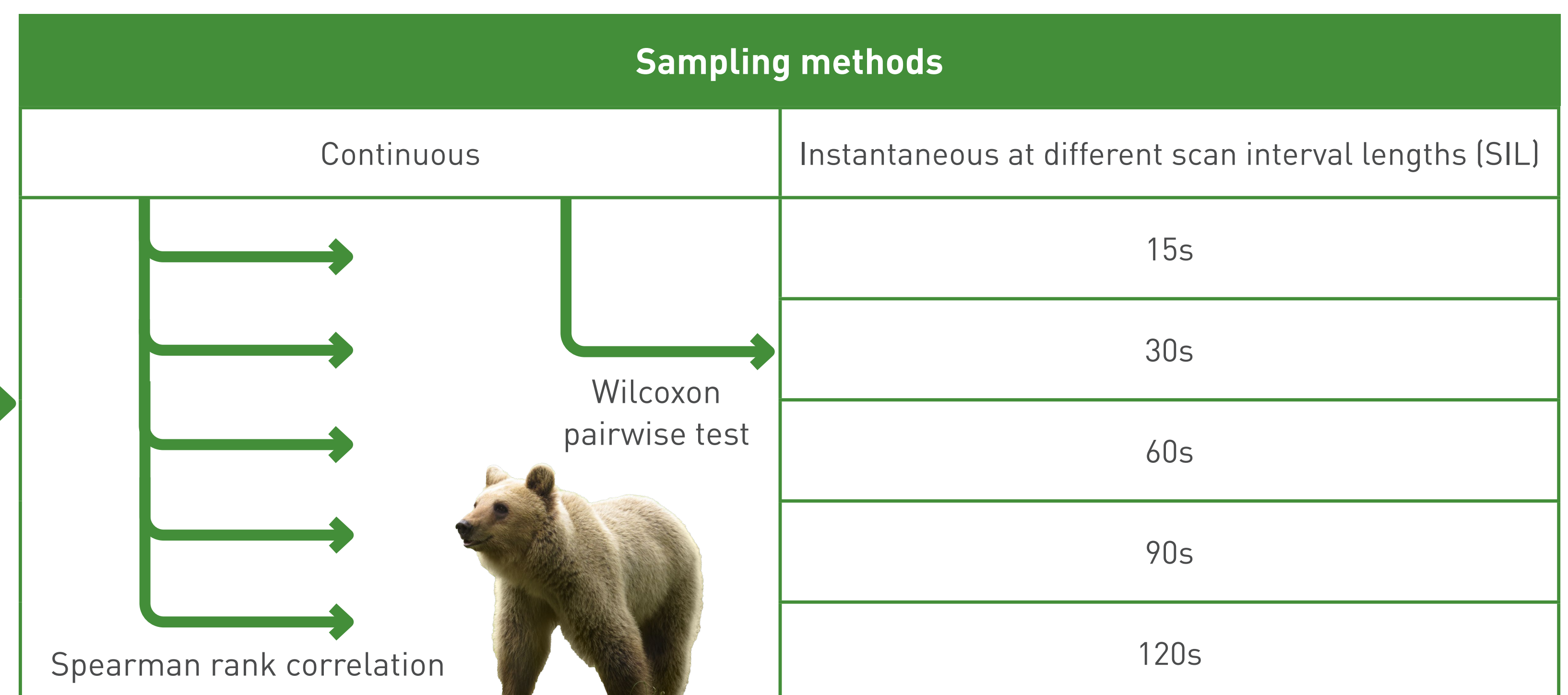
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INTRODUCTION

Behavioural monitoring programs are crucial to improve animal welfare in facilities caring for wild animals. Observations are often performed by caretakers during daily routines, making feasibility crucial and typically favouring instantaneous sampling.

This study aims to preliminarily investigate the accuracy of instantaneous sampling compared to continuous, more complete but also time-consuming, in behavioural observations of brown bears (*Ursus arctos*) in FOUR PAWS sanctuaries.

MATERIALS AND METHODS



RESULTS

Statistical analysis was conducted on behaviours for which sufficient data were available.

Continuous sampling		Resting	Locomotion	Eating	Bathing	Stereotypies	Self-directed	Flight	Other	Out of Sight
Instantaneous Sampling	15s	high	high	high	high	high	high	moderate	high	high
	30s	high	high	high	high	high	high	moderate	high	high
	60s	high	high	high	high	high	high	moderate	high	high
	90s	high	high	moderate	high	moderate	moderate	high	high	-
	120s	high	moderate	moderate	high	weak	high	high	high	-

Table 1. Spearman rank correlations between the percentage of total time (continuous) and the percentage of scans (for all SIL) of each behaviour classified according to Munita et al. (2016): high 0.75 to 1 or -0.75 to -1; moderate 0.5 to 0.75 or -0.5 to -0.75 and weak 0.25 to 0.5 or -0.25 to -0.5.

Feasible for caretakers

Continuous sampling	Resting	Locomotion	Eating	Bathing	Other	Out of Sight	Stereotypies	Self-directed	Flight
Instantaneous Sampling at 30s	0.04	0.68	0.33	0.50	0.08	0.54	0.06	0.33	1.00

Table 2. P-values of the Wilcoxon signed-rank test / Two-tailed test between the percentage of total time (continuous) and the percentage of scans at 30s of each behaviour. Significant set at p-value <0.05.

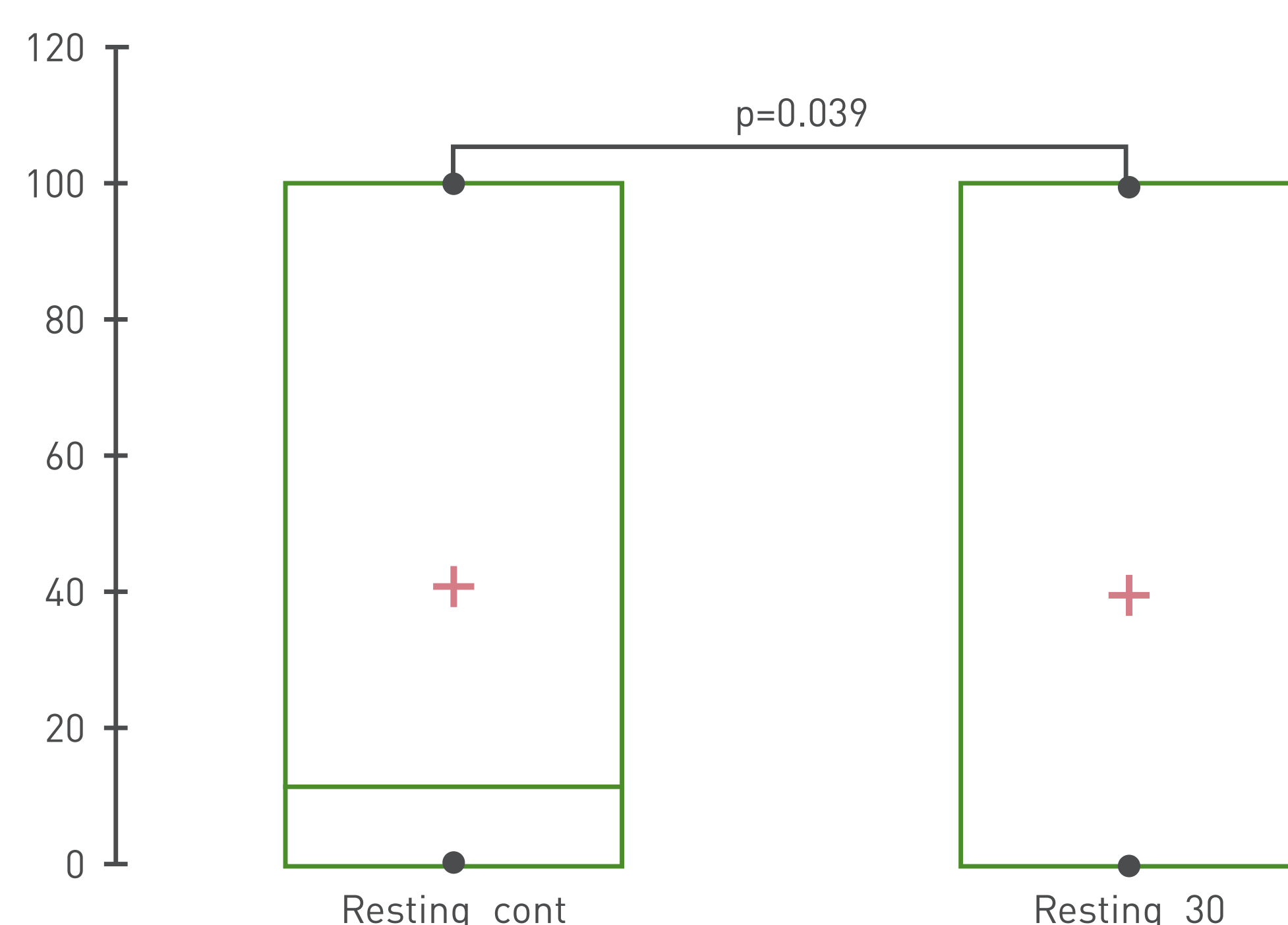


Figure 1. Box plot of Wilcoxon test (p-value <0.05) between the percentage of total time (continuous) and the percentage of scans at 30s of Resting. The significance seems caused by a minimal variation on otherwise very similar data.

CONCLUSIONS

In conclusion, the 30s instantaneous sampling method was found accurate and the data suggest using this scan interval length for regular behavioural observations in FOUR PAWS brown bears sanctuaries.

