Topic Summary

As larger proportions of the tiger population are in captivity instead of the wild, it is becoming increasingly important to provide them with optimum captive conditions that will preserve their natural behaviours (Szokalski et al. 2012). As such, it is important to study stereotypic behaviours such as pacing that involve repetitive locomotion in a fixed pattern without an apparent goal (Szokalski et al. 2012). Researchers have used time sampling to observe a relationship of increased pacing as enclosure sizes get smaller, which may be due restricted territory in comparison to what would be available in the wild (Breton & Barrot, 2014). As such, a secondary analysis of previous studies regarding pacing behaviour in carnivores, mainly felids, revealed that the susceptibility and severity of pacing can be predicted through natural range size (Kroshko et al. 2016). Additionally, when researchers placed a visual barrier between two tigers to test if being solitary would decrease pacing, it had the opposite effect (Bashaw et al. 2007). This was contrary to their predictions, but they hypothesize it may have been because olfactory cues still indicated the presence of the other tiger (Bashaw et al. 2007).

In contrast, pacing is not generally seen in cubs, despite adults in similar situations exhibiting the stereotypical behaviour (Mohapatra et al. 2014, Breton & Barrot, 2014). It has been theorized that the cubs do not begin pacing until they are old enough to leave their mothers and find new territory, which would be associated with the adult behaviour of finding and monitoring one's territory (Breton & Barrot, 2014). There is another theory that the cubs may simply not feel the spatial restriction to the same degree as adults due to their small size (Mohapatra et al. 2014). This would correlate to a secondary analysis that revealed when mass size is combined with the mean natural home range, it can significantly predict stereotypical pacing behaviour (Kroshko et al. 2016). However, mass size does not have a significant influence on its own (Kroshko et al. 2016).

One of the goals of researching pacing is to try and decrease the behaviour as it is seen as an indicator of suboptimal conditions (Lyon et al 1997). As such, different forms of enrichment and their effect on pacing behaviour have been studied, such as using spices to stimulate the olfactory system (Skibiel et al. 2007). This appears to be effective at reducing pacing short term, however, using enriching food such as frozen fish was more effective long term as it maintained an effect 7 days after removal (Skibiel et al. 2007). In addition, the use of a feeding box with irregular feeding times seems to be effective at reducing pacing as well (Jenny & Schmid, 2002). It is hypothesized that the inability for a tiger to satisfy foraging behaviour on its own terms may lead to pacing as it cannot effectively manage its own desires, and thus foraging boxes help relieve that issue (Jenny & Schmid, 2002). This is because the tigers have some degree of control by opening the feeding boxes themselves and occasionally succeeding, providing similar conditions as they would have in the wild (Jenny & Schmid, 2002). When researchers investigated pacing behaviour during transportation, they found that intense physical activity, such as a show for circus tigers also seemed to decrease pacing, even when enclosures were much smaller than many zoo habitats (Neville & Friend, 2003).

A lot of studies on pacing focus on the ultimate perspective, however, a more proximate study has also been conducted to monitor plasma cortisol levels, comparing tigers in a zoo and a

wildlife park (Sajjid et al. 2011). The tigers in the wildlife park had a larger enclosure and displayed less pacing, however, they were measured to have greater cortisol levels, albeit the difference was not statistically significant in comparison to the tigers in the zoo (Sajjid et al. 2011) However, this unexpected discrepancy requires further research due to a limited sample size, a problem common to many studies in the field (Szokalski et al. 2012). Thus, a study with a larger sample that measures cortisol would advance knowledge towards the biochemical aspect of pacing (Szokalski et al. 2012).

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