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## **Behavioural assessment of dental pain in captive Malayan sun bears (*Helarctos malayanus*)**

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### **Abstract**

Captive bears are prone to developing dental pathology for reasons including longevity in captivity, inappropriate diet, trauma, and stereotypical bar biting. If not detected, this can cause pain and suffering, with negative welfare consequences. As animals cannot verbally express feelings, objective methods are required to detect pain. Some methods of pain assessment can be invasive and impractical but behavioural observations offer a non-invasive alternative. Behavioural assessment for the detection of pain has been described in some domestic species but little published research has applied this to wild animal species. Eight Malayan sun bears (*Helarctos malayanus*) required dental extractions under anaesthesia. Their behaviour was observed, alongside a control cohort with no visible disease, pre-operatively and at one, two and four weeks post-operatively, when it was assumed the pain had resolved from the original pathology and surgery performed. Behavioural indices measured included general activity, social behaviours, stereotypies, eating-related behaviours and oro-facial behaviours hypothesised to be affected by dental pain. Bears that had received treatment took significantly longer to eat hard sugarcane pre-operatively compared to four weeks post-operatively, and took longer to eat soft porridge one week post-operatively compared to four weeks post-operatively. Untreated bears tended to be more active outdoors one week post-operatively compared to the treatment cohort. Results suggest that using hard foods and assessing the duration of eating behaviours could be useful to indicate dental pain in sun bears. General behavioural assessment of dental pain in sun bears is unlikely to be effective as a single diagnostic tool, but may be combined with other methods of assessment, and further research into this area is warranted.

**Keywords:** animal welfare, behaviour, dental pain, pain assessment, sun bears, wild animal