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A review of welfare indicators for sea turtles undergoing rehabilitation, with emphasis on environmental enrichment

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Abstract

For animals undergoing rehabilitation it is vital to monitor welfare in a way that is feasible, practical, and limits stress to the animal. The industry gold standard is to assess welfare under the Five Domains model, including nutrition, environment, physical health, and behaviour as the first four physical domains and mental domain as the fifth. Feasibility and effectiveness of these domains for assessing welfare of sea turtles undergoing rehabilitation were reviewed and it was determined that the mental state can be best assessed through behavioural changes. A scoping review of the literature was conducted using Scopus and Web of Science to investigate use of environmental enrichment devices (EEDs) as a measure of welfare in sea turtles. Behavioural assessments using EEDs were found to be well-documented; however, most EED studies pertained largely to livestock or zoo animals. Furthermore, studies rarely concentrated on reptiles, and specifically sea turtles. Results also showed that certain welfare assessment methods may be less appropriate for short-term captivity experienced during rehabilitation. Additionally, the hospital environment limits the ability to address some of the domains (ie biosecurity, feasibility, safety of turtle, etc, might be compromised). This review shows that only three of the nine environmental enrichment strategies described in the literature suit the specific requirements of sea turtles in rehabilitation: feeding, tactile, and structural. It is documented that turtles display behaviours that would benefit from EEDs and, therefore, more specific studies are needed to ensure the best welfare outcomes for sea turtles undergoing rehabilitation.

Keywords: animal welfare, behaviour, captivity, enrichment devices, marine turtle, testudine