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An evaluation of the role of 'biological evidence' in zoo and aquarium enrichment practices

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Abstract

Evidence-based approaches are key to advancing all areas of zoo and aquarium practice. Output from empirical study must be disseminated to those within the industry so that results can support changes to husbandry and management for individual species. Information on enrichment techniques is published in a range of sources, including papers in the peer-reviewed and 'grey literature' (ie professional but non-reviewed publications). To investigate how evidence is implemented into enrichment practices, we sampled all enrichment studies identified in one online repository of peer-reviewed papers and two grey literature publications across an eleven-year period. We recorded whether the enrichment was supported with biological evidence (whether it was developed using published enrichment-focused research for that species and/or with the species' ecology and behaviour information) alongside analysis of the type of enrichment used and the chosen study species. Enrichment articles were more likely to be supported by biological evidence in peer-reviewed than grey literature. Taxonomic differences in the use of evidence were noted; for example, enrichment provided to carnivores and parrots was more likely to be supported with biological evidence compared to that used for penguins. Of the five enrichment types, nutritional enrichment was most often based on biological evidence. Multi-category and physical enrichment types were more common across all literature sources whereas social enrichment was less common, suggesting barriers to implementation of all enrichment types in zoological facilities. Our research suggests that zoo and aquarium professionals are considering species-specific welfare needs by ensuring that enrichment protocols are supported by biological evidence. However, opportunities to diversify the enrichment types being offered and species being researched are identified.

Keywords: *animal training, animal welfare, environmental enrichment, evidence-based approaches, zoo animal management, zoo research*