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# Assessing the health impact of plastic pollution (pp) on the Galápagos marine iguana (*Amblyrhynchus cristatus*).

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## Abstract

The endemic marine iguana was identified as a high-risk species for plastic pollution (PP) and has been recorded with ingestion and entanglement PP effects in the archipelago. Then, PP could pose a threat to the health of this species. Therefore, we assess the possible health impact of PP in *A. cristatus*, by evaluating stool samples and blood value data to establish PP exposure in 98 animals covering four subspecies across three of the five bioregions in the Galápagos. In the same places, we also carry out PP standard methods on the coastline, algae, water, and sediment, thus achieving a complete additional comparison. Filters were examined using a FT-IR imaging system. In total, 75 synthetic items were found in 49 animals. Each sample had between 1 and 4 items. The most common type was a) Alpha-cellulose, likely from clothing; b) Nylon, likely from fishing equipment; c) Polyester, likely from clothing; d) Polyethylene, likely from degraded beach litter. Finally, Pyr-GC/MS was used to identify and quantify plastics concentrations. Polypropylene (PP) was the predominant plastic detected in 44 iguanas (0.11 mg/g SD=0.21 DW). Then polyethylene (PE) in 30 iguanas (1.37 mg/g SD=1.15 DW). Finally, health data indicate clinically healthy animals based on standard vital signs, morphometry, and blood value data. However, some health

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parameters show a particular effect in the iguanas with microplastics vs. those with not. Our study provides a baseline of PP in *A. cristatus*. Furthermore, this PP apparently does not correlate with the health of these animals. This may be due to relatively low levels of plastic pollution in iguanas, their physiology, and the difficulty of isolating PP from other anthropogenic stressors. Considering that PP continues to grow exponentially worldwide, and Galápagos is no exception, keep measuring PP and wildlife's health is fundamental for the Galápagos and the planet.

**Keywords:** Galápagos, marine iguana, health, FTIR, PyrGC/MS, microplastics