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# Feeding Behavior Fundamentally Affects Micro-Particle Intake in Mangrove Crabs

An assessment of the potential ingestion of microplastic pieces by Mangrove crabs in Hong Kong mangrove forest.

SOURCE: *Limnology & Oceanography Letters*  
*By Rola Alsharif 08 April 2020*

Mangrove ecosystems play an important role in the coastal marine environment, providing critical habitat for a range of aquatic animals, including the mangrove crab. Mangroves are currently facing significant threats from a variety of stressors, including plastic debris which are deposited through rivers. The consumption or ingestion of micro-particle plastic has not been well studied in mangrove ecosystems. In new research, Not et al. demonstrate the various feeding behaviors that affect the micro-particle intake of mangrove crabs.

Large amounts of plastic waste have been observed in broad areas of mangrove ecosystems and rivers are considered to be the major source. Hong Kong coastlines are not exempted from this as it is located at the banks of Pearl River – one of the largest contributors of plastics entering the ocean. Macroplastics are easily broken down into microplastics once trapped in coastal forests. These microplastics are accumulating abundantly within mangrove root systems. Not et al. 2020 investigates the existence of plastic debris in the stomach and gills of mangrove crabs, and demonstrate how the plastic debris are ingested by these aquatic animals.

A sample of 49 crabs were collected between 21st October 2017 and 3rd November 2017 in Hong Kong's mangroves. The samples were composed of four different crab species, each of which is unique in terms of its physiological and physical structure. The stomach and gills of the crabs were dissected and underwent sonication treatment. The filters produced from these samples were placed under a stereomicroscope for observation. The microparticles found in both the gills chambers and the cardiac stomach of the four crab species were quantified.

The researchers determined that almost all of the crabs had microplastic particles in their gills and stomachs. More microplastics were found in the stomachs compared to the gills, indicating that ingestion is the primary mode of intake. The researchers also found that the amount and composition of micro-particles in the stomachs and gills of the crabs varied substantially. The microparticles observed were a combination of non-plastic micro pieces and plastic from anthropogenic sources. Other than the ingestion process, the researchers identified that ventilation processes significantly determine the intake of micro-particles among species of mangrove crabs.

This research provides an opportunity for stakeholders to quantify the magnitude of plastic pollution in mangrove forests and lays the groundwork for understanding the impact plastic has on organisms. It also shows the significant role of crabs in the ecosystem and how pollution of the mangrove forests affects those roles, leading to a decrease in their food consumption and, consequently, of their energy budget. The feeding habits of the mangrove crabs accounted for their large amount of micro-particle intake. Therefore, organisms that filter feed may be more at risk to microplastic pollution.

**Citation:** Not, C., Lui, C.Y.I. and Cannicci, S. (2020), Feeding behavior is the main driver for microparticle intake in mangrove crabs. *Limnol Oceanogr*, 5: 84-91. doi:10.1002/lol2.10143.