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Sodium Hunger in the Amazon

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Editorial

Sodium is one of the biological essential elements for most animals; this element is required for growth, maintenance, and survival [1]. However, it is not equally available in nature. Coastlines typically have the highest sodium concentrations; in contrast with some portions of Amazon, which have less sodium deposition than in regions closer to the sea [2].

Figure 1: Bees and butterflies, the most frequent visitors to our sweat.

In Western Amazon (approximately 3.000 km away from the Atlantic Ocean and 2.000 from the Pacific Ocean), the sodium from the sea carried by the rain is scarce, the rains formed in this region by the 'flying rivers' are primarily recycled by the forest itself and the need for sodium is easily perceived; insects, especially bees are everywhere licking the sodium released from our sweat and ingrained in clothes, backpacks and tools. Bees, butterflies and other insects that often feed on nectar and pollen they collect from flowers are the most frequent visitors to our sweat (Figure 1), but birds and mammals are often attracted to salt licks, which are becoming tourist attractions in western Amazonia. Understanding more about sodium deposition could improve predictions about the geographic distribution of Amazonian species [3], and highlight additional questions, such as what the consequences of the sodium-availability are to ecosystem dynamics and species assemblages.

Sodium levels in the soil may favor salt-tolerant species [4], this relationship is also influenced by the interactions between plants and fungi [5]. Animal assemblages are affected by the existence of 'sodium hotspots' in nature — places where animals congregate in search of sodium-rich food sources [6]. Such congregations may impact species interactions, such as predator-prey dynamics [7]. Furthermore, plant-animal interactions are being influenced by the variability of sodium in the landscape, especially plant-pollinator networks [8]. At the ecosystem level, decomposition rates are affected by sodium availability [9], as well as what alternative sources of sodium are present in the forest [10]. Given the multifaceted nature of sodium's impact across different ecological scales, there are clearly many open questions. These questions offer fertile ground for further research and warrant detailed empirical investigations to fully understand the nuances of sodium's role in shaping ecosystems and assemblages of animals and plants.

A better understanding of these basic needs are crucial to predict species distributions in the Amazon, especially under scenarios of climate change and anthropogenic disturbances, which could alter patterns of sodium deposition, and hence the hunger for salt.

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