Where Have the Rains Gone?
Fish, Mosquitos, and Water Management in Coastal Ecuador.

by Michael Vina

The south-central coast of Ecuador has always been subjected to both abrupt and gradual climatic variations. Rainfall that has recently become highly unpredictable, and moderate to prolonged droughts are part and parcel of people's daily worries. Coastal Ecuador from north to south presents a mosaic of habitats and ecosystems, ranging from lush, verdant landscapes to a mixture of dry tropical, humid, and cloud forests, to extremely arid environs as one nears the Peruvian border. Indeed, within a small pocket in the larger Manabi province, a micro-climatic regimen takes hold of the area between May and November, when strong onshore winds coupled with the presence of the Humboldt current produces perpetual gray skies and a persistent drizzle known as *garua*.

While fishers and farmers note the importance of heavy rainfall between December and May, the constant *garua* was cited as the most important weather phenomenon, helping to maintain soil humidity during the absence of heavy rains and providing much-needed relief from the relentless sun of the previous six months. Such is the anticipation for the *garua* that many locals express a deep satisfaction when they sense that the gray skies and light drizzle will begin to dominate the region. Decades ago, when Heriberto was just a child, he would run along the sandy streets, flailing his skinny arms in the air while screaming, *'llego la garua! Llego la garua!'* (the *garua* has arrived!). Such was his infatuation with the draping drizzle that it was not long before the rest of the community nicknamed him 'Garua'. These seasonal rhythms have been significantly altered where the once ubiquitous drizzle is no longer as present as it used to be, and heavy rainfall typical during the other half of the year has become sparse and sporadic. The reduced rainfall has limited the movements of organisms from the sea to the estuary and vice versa, restricting the combination of lifeforms that generate curiosity, excitement, and sustenance. Many locals partly attribute the unpredictable nature of the weather to the tug of war between El Niño and La Niña, two major climatic phenomena linked to wind patterns, oceanic currents, and fluctuating sea-surface temperatures that not only affect coastal Ecuadorian rainfall patterns, but also trigger droughts and floods across the globe.

Locals cite their experiences during the mega El Niño events of 1982 and 1998 as significant historical and ecological markers. The narratives that accompany these memories reveal the creativity and improvisation released in times of uncertainty fanned by increased climatic variability, but they also unveil the constant interplay between well-being, abundance, scarcity, death, and life. Floods spawned by El Niño cause much devastation but also inject life and vitality to soils, vegetation, mangroves, estuaries, fish, and crustaceans, in effect reshuffling the coastal landscape, causing disorder and order interchangeably (cf. Strang 2004:65).

In the small mangrove estuary bordering the town of Las Tunas and along the intertidal zone, water appears as stagnant puddles, interconnecting lagoons, tranquil ponds, and raging rivers which all in one way or the

other draw humans and nonhumans to share "sites of active engagement" (cf. Todd 2014:224). Fishers are captivated by the multiple uncanny forms that water and sediments can take, whether for sustenance, recreation, or mere contemplation. In addition, the movement of water generated by strong swells and tidal surges during El Niño creates a series of temporary lagoons near dry sections of river mouths and adjacent mangrove dunes, where locals have harvested fish, shrimp, and crabs, which they describe as "something that has always been done." Some lagoons hold only shrimp, while others contain shrimp and crabs, and yet many other larger bodies of water can include several fish species in addition to crabs and shrimp, a cornucopia of life forms partly generated by rainfall, sediments, and movement. Imagination and ecological knowledge direct engagement with different marine organisms, but imaginaries of the sea and estuary are also produced and reaffirmed through the spontaneity and perpetual "habits" (Kohn 2013:63) of fish and different water configurations. In this way, water affords the interweaving of imagination and ecological knowledge.

Both the *garua* and steady rainfall are also crucial for marine environs. It seems that certain fish that crave a combination of fresh and salt water also miss the rains, as fishers note that the brackish waters that emerged near the coast during months of sustained rain created favorable conditions for several fish species to feed and reproduce. Now fish such as snapper (*Lutjanus spp.*), snook (*Centropomus viridis*), and schools of mullet (*Mugil cephalus*) appear infrequently in both large numbers and large sizes. Of these fish, the chalaco (*Dormitator latifrons*), a mostly freshwater species that craves El Niño conditions and spends its time swimming back and forth in fresh and brackish waters, plays a vital role as a culinary delicacy and as emergency food (Ellen 2007:24) during intense El Niño events when the flow of market goods diminishes. While traversing the mangrove with Heriberto after a few days of spontaneous rain, he noted the voracious appetite of the chalaco as it snipped mosquitos and other flying insects from the surface of the water. It was then that he revealed that many households place chalacos in their water tanks and cisterns to consume the pesky mosquitos and their larvae.

Flooding rains cause a boom in mosquito populations but also increase the presence of chalaco in and around mangroves, estuaries, and intertidal zones. With this increase in chalaco, locals recognize that mosquito populations tend to taper off. Chalaco is a versatile fish, but even more versatile is the *Aedes aegypti* mosquito, responsible for spreading illnesses such as dengue, zika, malaria, and most recently chikungunya. This mosquito can thrive under near-drought conditions if it can find water in and around homes and stagnant puddles across the landscape. The cisterns used to manage water for household needs, including hygiene, cooking, washing clothes, and nourishing home gardens, provide an ideal repository for the mosquito's larvae.

El Niño replenishes aquifers, fills up rivers and lagoons, and supplies pipes with water allowing it to be pumped into people's homes. In 2012, the Ecuadorian army corps of engineers installed water pipe infrastructure and meters to provide and charge for running water delivered to settlements in this rural area. State representatives promised that clean water would be delivered daily. Besides this, the engineers recommended that people destroy their cisterns because running water would become the norm and the cisterns did nothing more than attract breeding mosquitos. However, people resisted these recommendations, knowing well that promises made by the state tend to be ephemeral. Water management has a long history in the area as Pre-Hispanic populations depended on cisterns and water catchments known as *albarradas* for thousands of years to help capture and store water from rainfall (Marcos 2003). At higher elevations in the cloud forests of Manabi, remnants of pre-Columbian cisterns that were used to accumulate drizzle for agricultural purposes can still be found by the attentive observer.

During an outbreak of chikungunya in 2015, the state mobilized a broad fumigation campaign, consisting of pickup trucks equipped with spraying technology, which clouded towns with noxious fumes for several hours. When the spray seeped into households, people's memories of chalacos and cisterns emerged. With it grew the desire for rainfall so that the estuary could come back to life, providing the much-needed presence of chalaco to consume and take home to be placed in cisterns. Not only were people reminiscing about the days of predictable rainfall, but they also vehemently criticized the state for failing to supply a steady stream of quality water. They juxtaposed the murky pipe water, often filled with worms, with the cleaner water they

used to fetch at the river's edge decades ago before the town river dried up and ceased to flow. Many locals were content that they had not destroyed their cisterns as the state provides running water only twice a week, leaving people reliant on traditional strategies to collect water or to negotiate prices with water tankers that use pumps to extract water from aquifers. Regardless of where the water comes from, it always ends up stored in a cistern, and, if the rains allow it, with hungry chalaco ready to help manage mosquito populations.

In this short piece, I have attempted to dispel the notion that coastal settlements solely consist of humans living among humans. I have illustrated that these communities instead consist of humans living and dwelling with a broad range of multispecies relations and climatic disruptions. Distinct kinds of water—brackish, salt, fresh—intervene in the lives of people, fish, mosquitos, and several state institutions. In our analyses, these socio-ecological relations must include humans alongside other living selves, but also the substances such as water that weave our lives together. The seascape's watery contours as well as its sneaky and slithery inhabitants offer rich empirical observations and broad imaginative possibilities (Harris 2015). Across these transitional landscape patches, relations forged between humans, waters, insects, fish, and infrastructure also provoke stories of environmental change as well as expose a plurality of knowledges that inform a dynamic assemblage of local strategies through which coastal communities grapple with uncertainty, risk, and vulnerability.

References

Ellen, Roy. 2007. "Introduction." Pp. 1-45 in *Modern Crises and Traditional Strategies: Local Ecological Knowledge in Island Southeast Asia,* edited by Roy Ellen. Oxford: Berghahn Books.

Harris Mark. 2015. "From the River: Making Local Histories of the Imagination." Pp. 23-40 in *Reflections on the Imagination: Human Capacity and Ethnographic Method,* edited by Mark Harris and Nigel Rapport. Burlington: Ashgate.

Kohn, Eduardo. 2013. *How Forests Think? Toward and Anthropology Beyond the Human* Berkeley: University of California Press.

Marcos, Jorge. 2003. *Rescate del conocimiento ancestral del manejo sostenible de la biodiversidad.* Guayaquil, Ecuador: CEAA Espol.

Strang, Veronica. 2004. *The Meaning of Water*. Oxford: Berg.

Todd, Zoe. 2014. "Fish Pluralities: Human-Animal Relations and sites of engagement in Paulatuuq, Arctic Canada." *Inuit Studies* 38(1-2): 217-238.