

Mississippi, Amazon, and Orinoco theory

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In an earlier story, I mentioned black band disease in corals, the reduced populations of damselfish, and the near destruction of the populations. I also mentioned explanations that might not explain everything but don't contradict observations either.

Well, during one of my classes on pesticides, I learned that there were some incomplete statements made in the government literature. Specifically, the fact sheets might claim that an herbicide would break down in the soil in a certain number of days. The numbers cited were normally between 30 and 60 days. The labels might also say that the chemical is destroyed by salt water.

During my work in the Keys, I had a project that required an examination of oceanic currents in the Gulf of Mexico. As it turns out, the equatorial current that flows west from Africa hits the South American continent just north of that eastward extent of Brazil. The current is deflected to the north and into the Gulf of Mexico. Along the way, it picks up the runoff from both the Amazon River and the Orinoco River, as well as some smaller ones. The waters then flow west, thereby creating a clockwise flow through the Gulf of Mexico along the coast and up to Texas and the lower United States. Along the way, the waters mix with the Rio Grande and the Mississippi (and Missouri) rivers. Look at the delta in Louisiana. The shape of the delta will confirm the flow. From there, the water flows down along the West Coast of Florida becoming the Florida Current, through the Keys, and then along the East coast becoming the Gulf Stream.

In a bacteriological investigation, I learned that micro particles of dirt that originate in fresh water and that are discharged into salt water, can retain a micro layer of fresh water around them. The phenomenon allows bacteria that are killed by salt water to survive for weeks or months, depending on local physics.

Now, there is enough information to tell a story that does not contradict observations.

The rivers I mentioned drain absolutely huge basins, much of which is in agricultural use. The Mississippi alone drains 1.2 million square miles. The basin extends from Montana to western Pennsylvania, and south to the northern parts of Texas. The Illinois, Missouri, and Ohio rivers feed it, and it is not the largest of the three rivers that contribute flow to the Gulf of Mexico.

There are many nations where there are fewer restrictions on pesticides than in the United States. The time frames cited for decay are long enough that dirt that might be contaminated with pesticides from Iowa could reach the keys before the chemical degrades. The microlayer of fresh water would serve to extend that time even longer. Should those particles fall to the bottom along the way, there is the chance that they could be ingested by corals, damsel fish, the urchins. There is now a credible pathway for pesticides from massive land areas to flow through the reefs of Belize, Texas, and both coasts of Florida.

There is absolutely no way for me to test this or to calculate the volume of material or the level of contamination, but the first step in the scientific process of discovery has been achieved; an hypothesis has been offered.

The story does not offer an explanation for black band disease, but black band does not contradict anything in the hypothesis either. I will offer my thoughts on that disease elsewhere.

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