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Additional observations of lachryphagous butterflies and bees

In a Trails and Tribulations article (*Front Ecol Environ* 2012; **10**[8]: 446–47), Dangles and Casas described an interaction between a yellow-spotted river turtle (*Podocnemis unifilis*) and a solitary bee (*Centris* sp) in Ecuador's Yasuní National Park, citing this as what “appears to be the first documentation of tear-feeding behavior by solitary bees on river turtles”. Characterized as “lachryphagous” or tear-drinking, these interactions may be more common than previously reported and may not be restricted to



Figure 1. A *Julia* butterfly (*Dryas iulia*) and a solitary bee (*Centris* sp) in a lachryphagous interaction with a spectacled caiman (*Caiman crocodilus*) along Costa Rica's Puerto Viejo River.

turtles. Spectacled caimans (*Caiman crocodilus*) and American crocodiles (*Crocodylus acutus*) – as well as several species of turtles, including the Nicaraguan slider (*Trachemys emolli*) and the black river turtle (*Rhinoclemmys funerea*) – are commonly seen basking on the shores of the Puerto Viejo River, in northern Costa Rica. In December 2013, a spectacled caiman was observed near the La Selva Biological Station basking on a log. A *Julia* butterfly (*Dryas iulia*, Nymphalidae) and a solitary bee (*Centris* sp, Anthophoridae) were simultaneously engaged in tear-feeding behavior (Figure 1) similar to that described by Dangles and Casas. The basking caiman remained passive during the interactions, which my colleagues and I observed, photographed, and filmed for approximately 15 minutes. Other observations of butterflies tear-feeding on turtles have been recorded at La Selva as well. A Google (image and web) search for similar observations will currently yield photographs and reports of tear-feeding butterflies and moths on turtles and caimans (and even humans!) throughout the world's tropics. It is difficult to assess whether any of these

images predate Dangles and Casas' observations, but it highlights the growing photographic evidence of these hard-to-see events. A recent paper by Plotkin and Goddard (2013) explored the broad implications of this behavior to humans and provided additional references for this and other fluid-feeding exhibited by members of the Lepidoptera. Additionally, Bänziger et al. (2009) detailed the behavior of other Apidae drinking human tears in Thailand. Closely tied to “puddling” behavior, tear-feeding behaviors are apparently a common strategy exploited by several groups of insects to obtain salts and proteins from concentrated sources.

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