

First Case of Myiasis in the Laurent's Whiptail Lizard, *Cnemidophorus murinus murinus*, possibly by the New World Screwworm, *Cochliomyia hominivorax*, on the Southern Caribbean Island, Curaçao

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ABSTRACT



The New World Screwworm, *Cochliomyia hominivorax*, can lay up to four-hundred eggs on exposed wounds and the larvae possess noxious saliva, which stimulate infections and destroys integral tissues. This ectoparasite prefers to feed on living tissue rather than on necrotic tissues. The clinical term for this larval infestation is myiasis, which often causes serious hemorrhages and deteriorates the overall host's health, frequently becoming fatal. Sterile male introductions of *Cochliomyia hominivorax* stimulated the eradication from the United States in 1982, as well as several countries throughout the New World. On Curaçao, eradication events took place in 1954 and again in 1977, however these events proved unsuccessful, verified by several records of reintroductions. Myiasis in reptiles is rare, yet some cases have been described. For instance, in Italy, the Greek Tortoise, *Testudo graeca*, was parasitized by the blowfly larvae of *Lucilia ampullacea*, additionally in the Czech Republic the Hermann's Tortoise, *Testudo hermanni*, served as the host for blowfly larvae of *Calliphora vicina*. To the best of our knowledge there have been scant observations reported of fatal myiasis amongst Curaçao's reptilian fauna. On 12 January 2013 east of the Marazul Dive Resort, Sabana Westpunt, Curaçao an adult male Laurent's Whiptail Lizard, *Cnemidophorus murinus murinus*, was found presenting an extensive degree of nasal, ocular, oral, tympanic, and cutaneous myiasis by screwworm larvae. cursory examination showed the lizard to be alive, ambulatory, but with obvious signs of tissue damage, tail autotomy, and impaired motor skills. For this individual, the high levels of soft tissue damage and signs of morbidity appeared to be reaching fatal stages. The presence of the tail autotomy on the lizard may have been the original oviposition site for this opportunistic fly. Accordingly, reptiles on Curaçao may be faced with a new negative and potentially life-threatening effect associated with an old wound.

Background and Historical Prevalence

The Calliphoridae family of flies has several parasitic species, including blowflies and screwworm flies (Fig. 1). Larvae of blowflies infest and ingest necrotic tissues, while screwworm larvae infest and consume live tissue. The pathological condition is called *Myiasis*, or an infestation of maggots, which begins in lesions or other wounds and injuries of the host. The infected lizard was found on Curaçao, a putative region for the New World Screwworm, therefore it is regarded as a likely parasitic culprit.

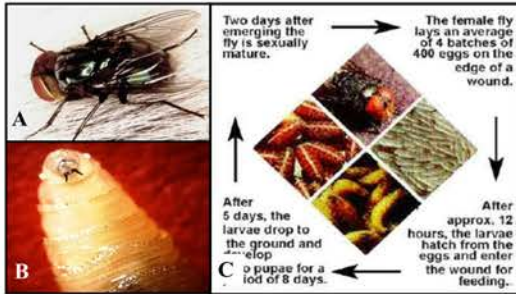


Figure 1: Life cycle of a typical calliphorid fly: Adult fly (A), larva (B), and life cycle (C). (Modified from Google Images®)

- Example: New World Screwworm lays up to 400 eggs
- Larvae possess noxious saliva, destroying integral tissues
- Feeds on living tissue rather than necrotic tissues
- Eradication events from sterile male introductions (Fig. 2):
 - United States; 1966
 - Parts of Central and South America; 1972
 - Africa; 1991
 - Mexico; 1991
 - Curaçao; 1954, 1977

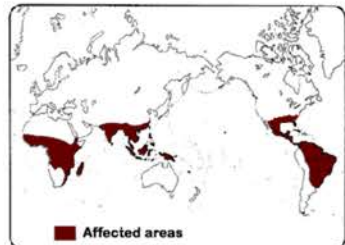


Figure 2: Geographical distribution of the New World Screwworm, *Cochliomyia hominivorax*. (Modified from Google Images®)

In Situ Observation

In January 12, 2013, east of the Marazul Dive Resort, Curaçao (Fig. 3), an adult male Laurent's Whiptail Lizard, *Cnemidophorus murinus murinus*, (Fig. 4) was found presenting widespread symptoms of ectoparasitism by 2-4 mm eggs, with the most likely suspect being the New World Screwworm.

Location



Figure 3: Geographical points of interest including the neighboring islands to the location of specimen found on Curaçao. (Modified from Google Earth®)

Description of Individual

When approached, the lizard would make quick spasmodic movements with intermittent stops displacing several adult flies. Basic motor skills persisted but they appeared to be diminished.

- **Alive and ambulatory**
- **Tissue damage**
- **17 cm SVL; 25 cm TL**
- **Impaired motor skills**



Figure 4: Various images of the infected Laurent's Whiptail, *Cnemidophorus murinus murinus*.

Pathology

After capture and closer examination, all facial orifices, several skin folds, and various lacerations exhibited extensive infestation by these eggs (Fig. 4). The lizard exhibited an extensive degree of nasal, ocular, oral, tympanic, and cutaneous myiasis (Fig. 4). For this individual, the high levels of soft tissue damage and the clear signs of morbidity appeared to be reaching fatal stages. Some consideration should be given to the presence of tail autotomy, approximately eight cm from the vent (Fig. 5).

References

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Figure 5: Hypothesized original oviposition site.

Implications for Reptiles on Curaçao

Curaçao reptiles may be faced with a negative, potentially, life-threatening effect associated with wounds (Fig. 6). For proper risk assessment of host organisms, continued research is required also in the neighboring islands. The fly species responsible for this case of myiasis remains unknown. Thus, methods to identify the culprit species are necessary to enact eradication strategies for the flies, as part of comprehensive conservation plans for the island's herpetofauna.



Figure 6: Healthy Laurent's Whiptail Lizard (left) and infected lizard (right).

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