Project Philornis
Our efforts to stop these parasites

In the 60s, probably cargo ships arrived in Galapagos carrying *Philornis downsi*, a small fly that would later become a serious threat to the health of several native and endemic birds. The Charles Darwin Foundation together with their collaborator (SUNY-ESF) are conducting research to gain a better understanding of the biology of the species. Once this is accomplished, a control strategy can be developed to prevent *P. downsi* from further damaging bird populations.

The life cycle of this fly includes a parasitic larval stage, which feeds at night on the blood of nestling birds, and a free-living adult that lays eggs in bird nests containing young. The larvae continue to develop in the nest as they parasitize the birds. Small broods suffer higher parasite loads per nestling and therefore higher nestling mortality. In addition to direct nestling mortality (up to 75%), studies have confirmed that some surviving nestlings of Darwin's finches may have reduced growth rates, anaemia, and may suffer permanent physical damage.

The fly's high mortality and fitness impacts are thus of conservation concern especially for vulnerable and declining species like the mangrove finch, the medium tree finch and others. Flies possess a high dispersal capacity and use a wide range of habitat and hosts. They have been recorded on 14 islands. Studies are underway to test the possibilities of efficient trapping in key areas (e.g. pheromone traps) and management through sterile insect control (life cycle of fly needs to be reproduced in captivity) for long term solutions.

Quick Facts

Philornis downsi:

Habitat and Diet: Adult flies are free-ranging eating fruits and decaying material. They lay eggs in bird nests containing nestlings. Fly larvae feed on blood and tissue causing reduced growth, anaemia and bill deformation. Mortality due to these parasites ranged between 16 and 95% depending on environmental factors.

Range: Known from 14 islands. Inhabited islands have highest fly number. Only Genovesa and Espanola have been found free of these parasites.

IUCN Designation:
Invasive

Project Objectives

- Determine if it is possible to rear flies in captivity to better understand their life cycle. This is necessary in order to develop a sterile insect program. By releasing sterile flies into the wild, breeding can occur but offspring will not result, thus reducing fly populations. Techniques are currently being developed to maintain flies in captivity and to reproduce them without a life host.
- Better understand if and how the fly populations fluctuate seasonally. This is being achieved through monitoring flies in the wild.
- Develop an attractant to trap flies thereby diminishing their impact. This is being done in collaboration with SUNY-ESF State University of New York.

Meet the Team

The *Philornis* project is lead by Dr. Birgit Fessl who manages a team of Ecuadorian volunteers and international collaborating scientists. The team is grateful for the support of the **Galapagos Conservancy** and **Galapagos Conservation Trust** who make this work possible