

PARASITE IN MANGROVE FINCHES OF THE GALAPAGOS ISLANDS

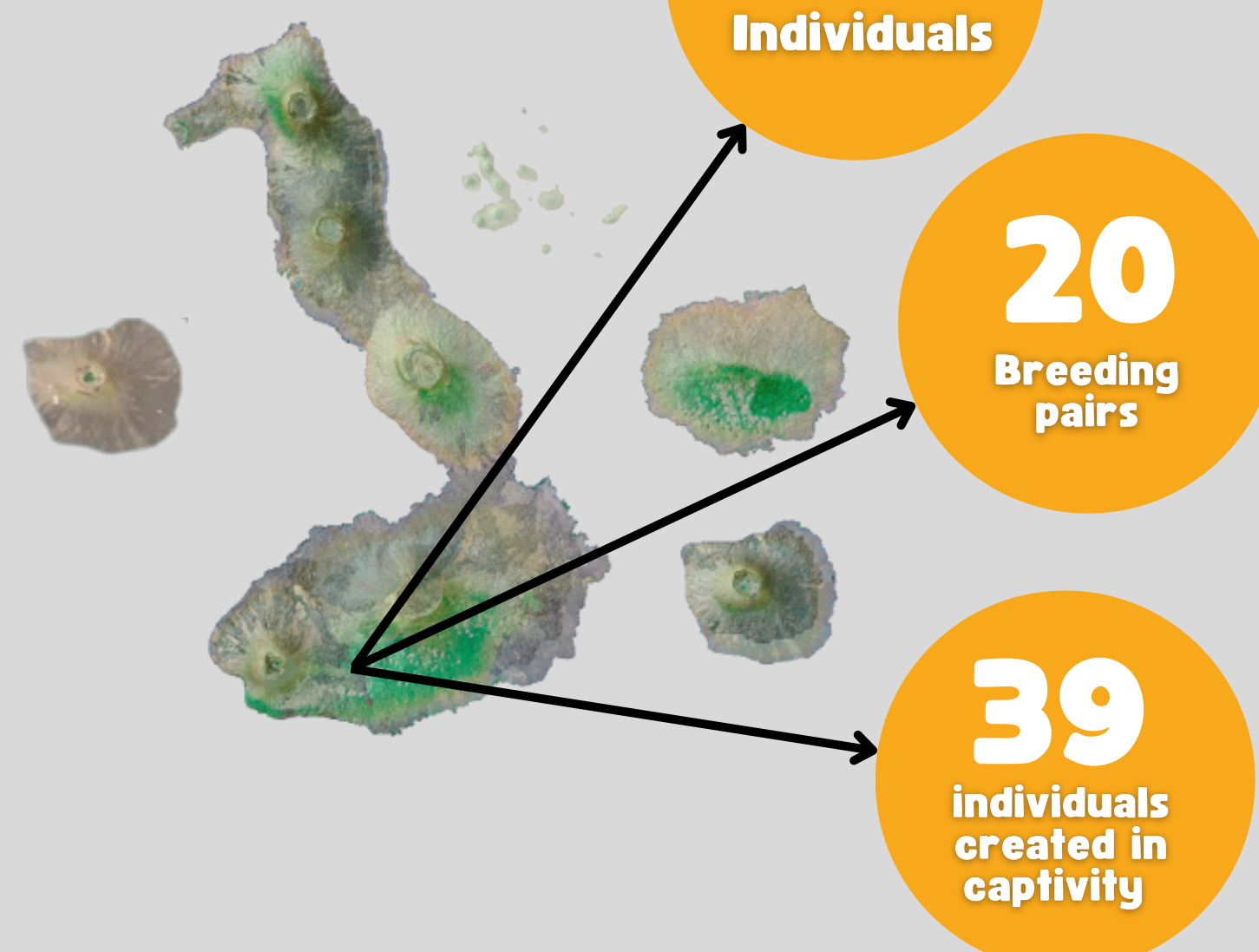


The Galapagos Islands are an archipelago located in the Pacific Ocean, in the coast of Ecuador and they are considered as one of the Wonders of the World because of their native and endemic flora and fauna. In this natural environment, despite being very small, there is a special and important group of birds that have been a model to describe the ecological and evolutionary processes, continuing with the studies of Charles Darwin, and currently raise enormous scientific interest worldwide.

THE MANGROVE FINCH (Camarhynchus heliobates)

According to Galapagos Conservation Action, 2022, the mangrove finch is a **critically endangered endemic species**, regarded as one of the rarest birds in the Galapagos Islands, which are distributed throughout 30 ha of mangrove forests on Isabela Island (the graph shows the number of mangrove finches in Isabela Island).

Number of camarhynchus heliobates



MAIN PROBLEM

The invasive species of fly named Philornis Downsi resulting from the introduction of exotic species into the Galapagos Islands represents the greatest threat in the form of a parasite affecting mangrove finches inhabiting Isabela Island. (Garrido, 2018).

RESEARCH QUESTION

To what extent does the invasive fly named Philornis Downsi influence the decline in the number of individuals of the camarhynchus heliobates species (Mangrove Finch)?

HYPOTHESIS

- Alternative hypothesis:** Philornis Downsi flies influence the decline in the number of camarhynchus heliobates individuals.
- Null hypothesis:** Philornis Downsi flies do not influence the decline in the number of Camarhynchus heliobates individuals.

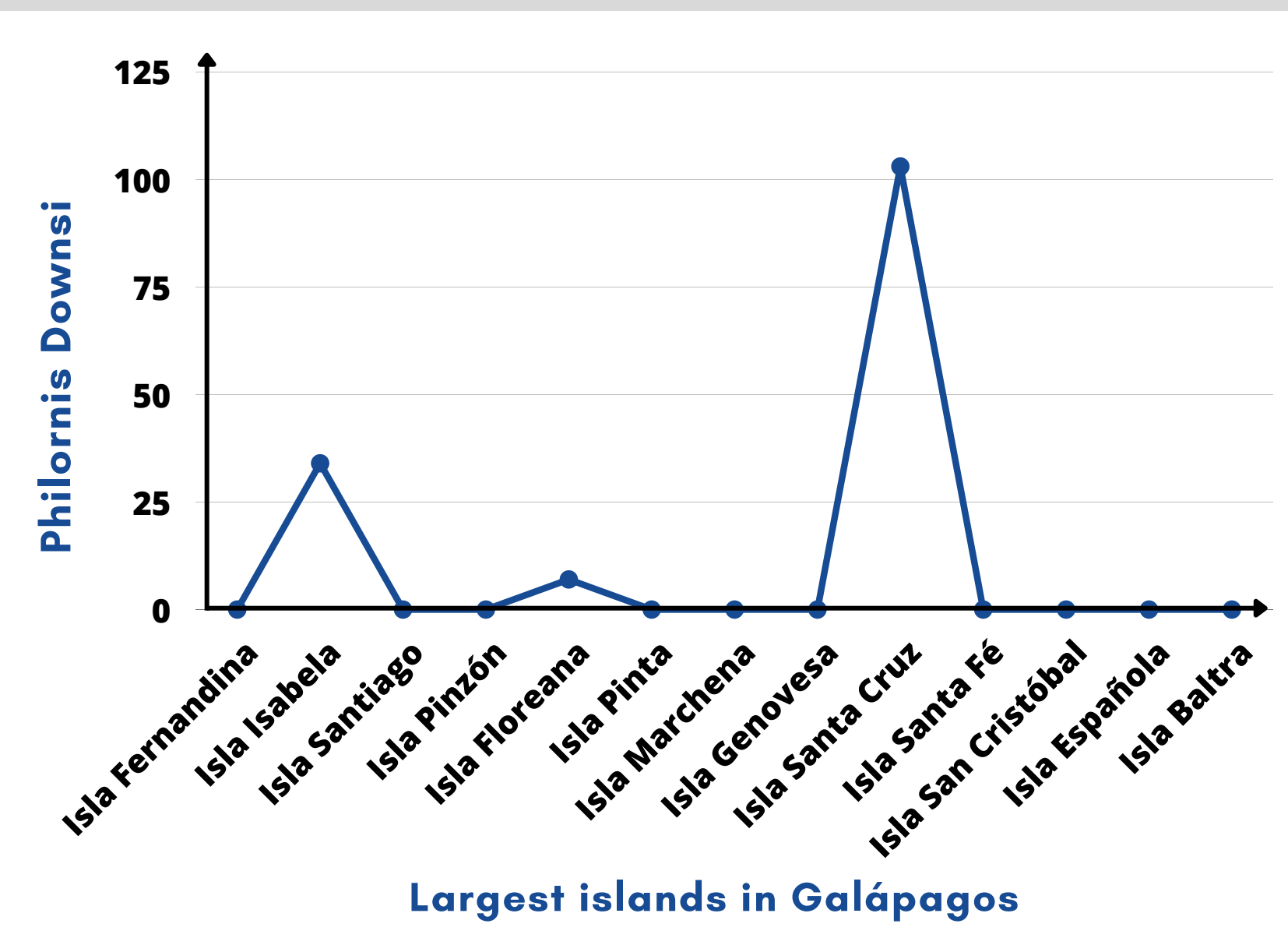


ARRIVAL OF PHILORNIS DOWNSI TO GALAPAGOS

The fly Philornis Downsi was introduced in the Galapagos Islands in the 1960s, as a result of maritime and air traffic. It exists in **11 of the 13 large islands in the archipelago** and is mainly concentrated in humid regions and rainy areas. (Garrido, 2018)

WHY IS IT A PARASITE FOR FINCHES?

The larvae of this species require bird nestlings for feeding and being able to survive, in other words, they are parasitic.

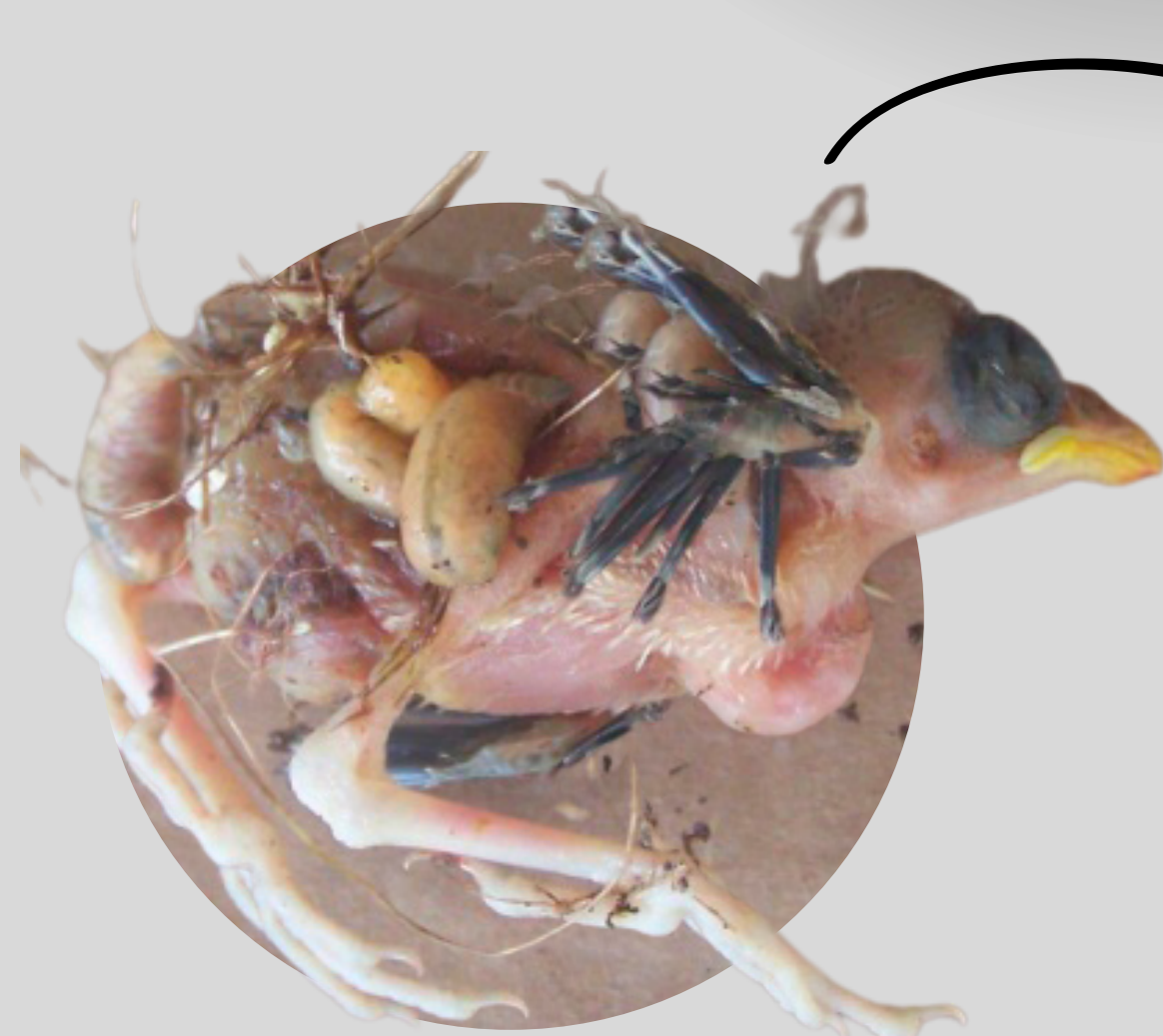


Analysis (Figure 1)

Figure 1 shows the data from the source "Charles Darwin Foundation consulted in 2022", evidencing that the largest number of Philornis Downsi flies are located in Santa Cruz Island and Isabela Island. Considering that the finch habitat is established in the mangrove, Isla Isabela has been chosen as the research site, with 38 distributions of registered flies.

Philornis Downsi and its effects on finches until 2018

Approximately 85% of Darwin's finch nests have been infected by Philornis Downsi, whose larvae kill over half of all finch nestlings within a year. Such is the mortality rate produced by this type of fly that it is estimated that the species could become extinct in less than 100 years. (Garrido, 2018)



Visual representation of a camarhynchus heliobates nestling being affected by three parasitic larvae of Philornis Downsi.

(By students, 2023)

Figure 2 is the interpretation of the information gathered from the sources "Rodríguez, 2018 and Lewis, 2019". It should be pointed out that out of the approximately 100 individuals of mangrove finch inhabiting Isabela Island, 70% are threatened by Philornis Downsi, 20% are exposed to other threats, whereas only 10% of that species is free from any threat.

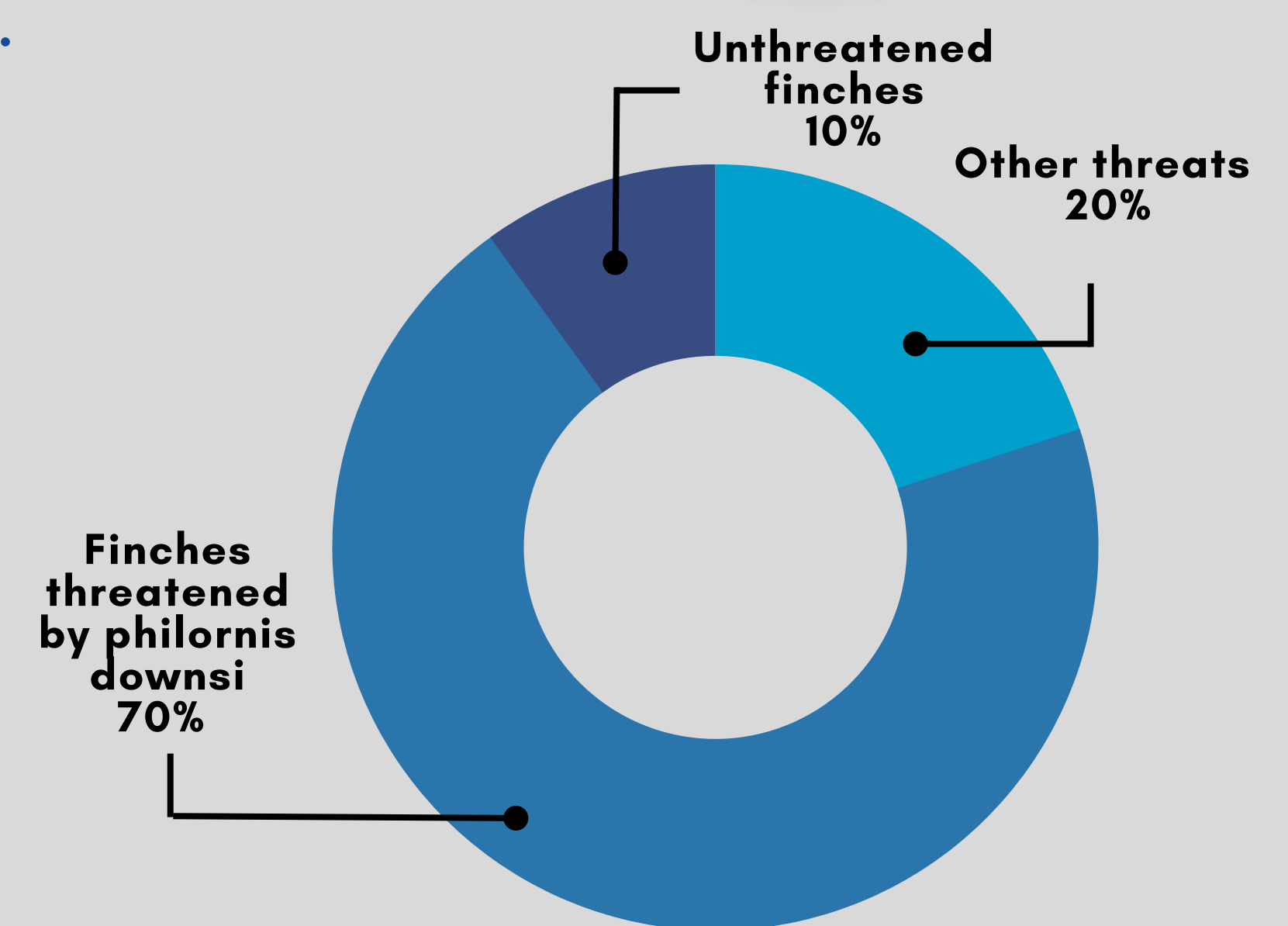


Figure 2. Percentage of the mangrove finch population in Isabela Island threatened by the philornis Downsi fly. (By students, 2023)

Analysis (Figure 2)

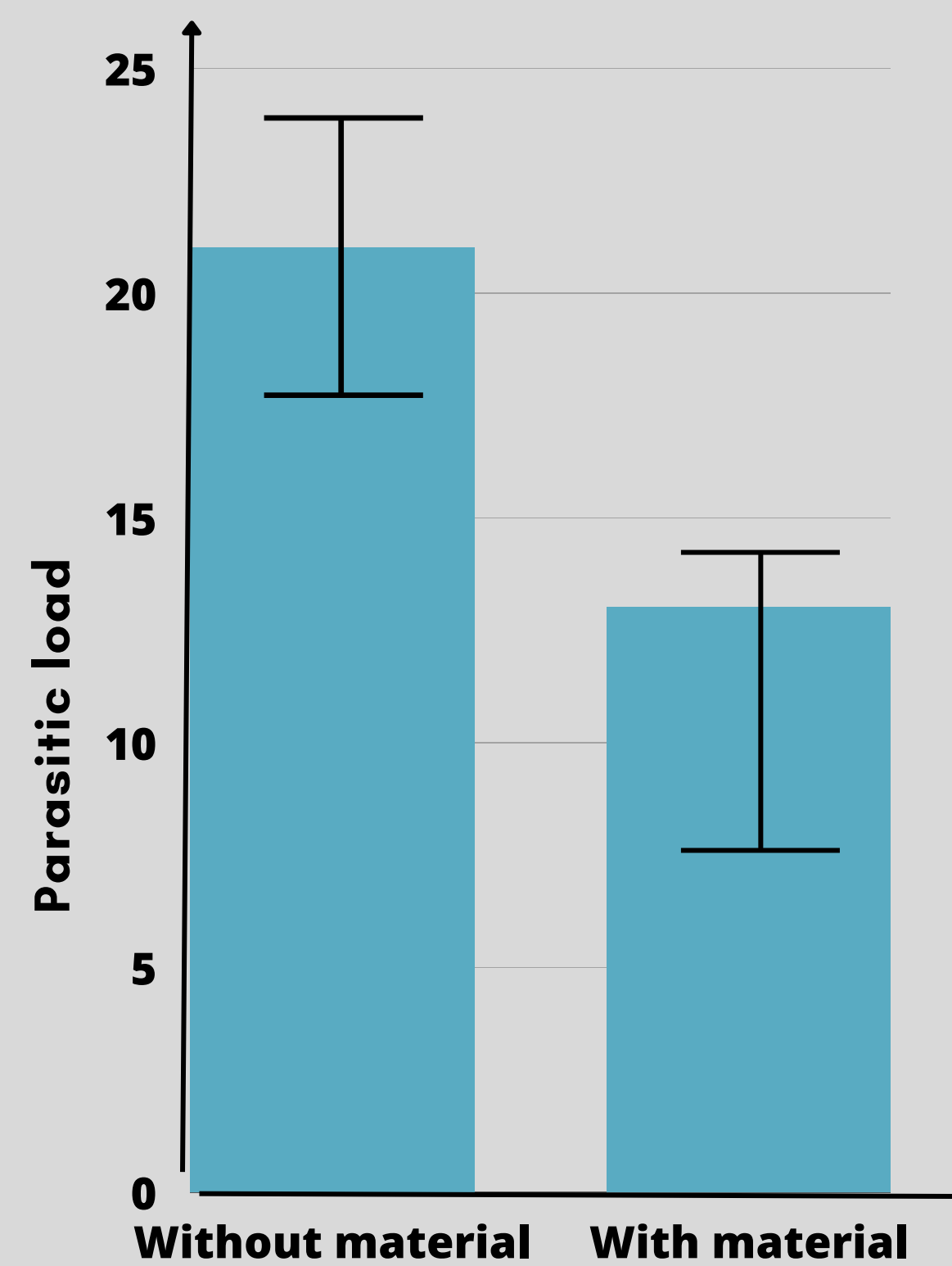


Figure 3. Parasitic load of nests in relation to dispenser materials. (Chonillo, 2021)

Analysis (Figure 3)

Figure 3 refers to a research on the use of dispensers with 3 types of materials (cotton, coconut fiber and feathers), these were sprayed with the "cyromazine" insecticide, and the materials were used by finches for building nests. According to the Galapagos National Park Directorate, this self-fumigation contributes to the protection of finches in the short term.

Figure 3 shows the effectiveness of the method in reducing the concentration of philornis downsi in finch nests; the parasitic load of nests without material has a median of 21, which exceeds the value of nests with material, where the median is 13, thereby allowing for an increase in finch reproduction.

- SDG associated with the research on parasites in mangrove finches of the Galapagos Islands.



CONCLUSIONS

Philornis downsi has dramatically affected the mangrove finch population. Figure 3 shows a solution for controlling the parasite, which allowed for determining how much parasitic load is present in uncontrolled nests of this species. Therefore, philornis downsi flies do have an influence in the number of mangrove finch individuals, which is evidenced by 70% of the total number of mangrove finches being threatened by the parasite.

RECOMMENDATIONS

With this poster we seek to promote research on the issues faced by endemic species in the Galapagos Islands with regard to introduced species.

- More up-to-date research on the mangrove finch is recommended in order to gain in-depth knowledge of the dangers of the Philornis Downsi parasite.
- Truthful information should be gathered from reliable sources.
- Accurate statistical data should be used with the aim of achieving a better statistical representation.

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