

Video Resource

Birds on the Brink: Is there hope for Hawaii's endangered honeycreepers?

Video Producers

WILD HOPE | HHMI
Tangled Bank
Studios

Video Club activity prepared by Dina Constantinides & Sarah Bordenstein. The *Wolbachia* Project - and this Video Club activity - are not affiliated with the producers of this video.

Image: *Hawaiian honeycreeper on a 'ōhi'a lehua tree at Hakalau Forest National Wildlife Refuge in Hawaii.*



Image available via public domain, USFWS

Title

Wolbachia & Hawaii's Honeycreepers

VIDEO ACCESS

<https://www.wildhope.tv/episode/birds-on-the-brink/>

BEFORE THE VIDEO

Match the following terms with their definitions.

Adaptation	Native species	Selective pressure
Ecosystem	Parasite	Vector
Invasive species	Speciation	

1. _____: A community of interacting organisms and their physical environment.
2. _____: The process by which new species form.
3. _____: An inherited characteristic that helps an organism survive and/or reproduce in a certain environment.
4. _____: An environmental factor that influences the survival and reproduction of organisms. It can lead to changes in the traits of a population over time.
5. _____: An organism that naturally occurs in a specific region or ecosystem.
6. _____: An organism that is not indigenous, or native, to a specific area and whose introduction causes (or is likely to cause) economic or environmental harm, or harm to human, animal or plant health.
7. _____: An organism that lives in or on another organism at the expense of the host.
8. _____: An organism that transmits a disease, or disease-causing agent, from one host to another.

Watch the video and discuss the following questions with your class.

INTRO

9. How might the loss of honeycreepers impact the Hawaiian ecosystem?

EVOLUTION OF HONEYCREEPERS

10. Name three types of adaptations among honeycreeper species.
11. Highlighting one adaptation above, how might a selective pressure have led to its evolution in honeycreepers?

EXTINCTIONS

12. Name three factors that have contributed to the endangerment of the Hawaiian honeycreeper.
13. Why were mongooses introduced to Hawai'i and how did their introduction impact bird species?
14. Why might high speciation make birds less resilient in the face of stressors like land loss and the introduction of invasive species?

RESTORATION

15. How does restoring native trees help to save endangered birds?

REINTRODUCTION

16. How do scientists know which species used to live on a particular island?

AVIAN MALARIA

17. What is avian malaria and how is it spread?

MOSQUITO CONTROL

18. How might releasing male mosquitoes with a different strain of *Wolbachia* help to control the spread of avian malaria?
19. Which mosquitoes bite and spread disease, male or female?

CONCLUSION

20. Would you support the release of *Wolbachia*-mosquitoes? Why or why not?

Wolbachia-mediated Mosquito Management

Termed Incompatible Insect Technique (IIT), multiple global initiatives are testing the release of *Wolbachia*-mosquitoes to selectively crash populations of harmful, invasive mosquitoes.

Debug Fresno is a US-based field study led by the biotech company Verily. Partnering with MosquitoMate, Debug Fresno successfully reduced the population of invasive *Aedes aegypti* mosquitoes in Fresno, CA. Learn more about their approach here: <https://debug.com/how/>.



Create a graphic illustration to accompany this video.

Graphic illustrations capture the interest of readers and concisely summarize a key finding of the research. They often accompany journal publications and news releases to highlight main take-home messages.

Create an illustration for one of the following topics:

#1 – EVOLUTION OF HAWAIIAN HONEYCREEPERS

The video discusses the origin and evolution of Hawaiian honeycreepers. Provide a summary illustration and/or highlight a specific adaptation.

#2 – EXTINCTION OF HAWAIIAN HONEYCREEPERS

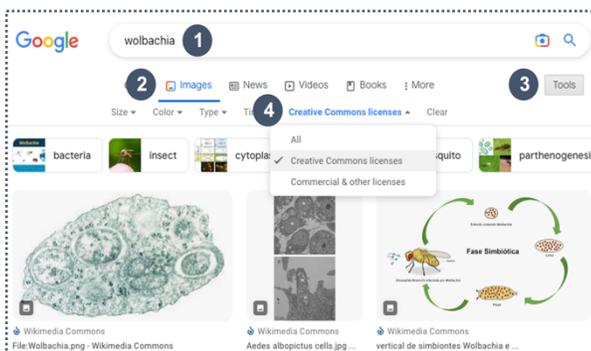
The video discusses several contributing factors to the disappearance of Hawaii's honeycreepers. Illustrate a summary of the factors or detail a specific cause.

#3 – WOLBACHIA-MEDIATED MOSQUITO MANAGEMENT

Create an illustrated overview of *Wolbachia*-mediated mosquito control.

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2. From the main results page, select **Images**
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Other Resources for Free Images

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Vecteezy: <https://www.vecteezy.com>

PhyloPic: <https://beta.phylopic.org>

Openverse: <https://wordpress.org/openverse>

Flaticon: <https://www.flaticon.com>

Bioicons: <https://bioicons.com>



Current Events

What is the current status of *Wolbachia*-mediated mosquito management in Hawai'i?

RESEARCH. Summarize the status of Hawaiian honeycreeper conservation using online news articles, videos, and publications. The following resources can help you get started:

- <https://www.birdsnotmosquitoes.org/>
- <https://www.npr.org/2024/06/12/nx-s1-4906582/mosquito-hawaii-birds-endangered-species-extinct>
- <https://www.nps.gov/articles/the-time-is-now-saving-maui-s-honeycreepers-before-it-is-too-late.htm>



Image of the kiwikiu, or Maui Parrotbill, by Zach Pezzillo, Maui Forest Bird Recovery Project. Made available under CC BY-SA 4.0 license.