

WPI

Parrots, Go Away!

Team Corn Cops

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Background

- Wildlife damage costs \$4.5 billion to the agricultural sector each year.
- Bird damage accounts for 15-30% damage to U.S. staple crops.
- In Argentina, 100,000 tons of sunflowers were destroyed by parakeets and doves, leading to a \$2.2 million loss in one year.
- Nanday Parakeets are highly adaptable, with widespread feral populations in California, Florida, and Puerto Rico.
- San Francisco Agricultural High School is financially self-sufficient, run by Fundación Paraguaya. Its mission is to educate the disadvantaged in order to spur entrepreneurship.

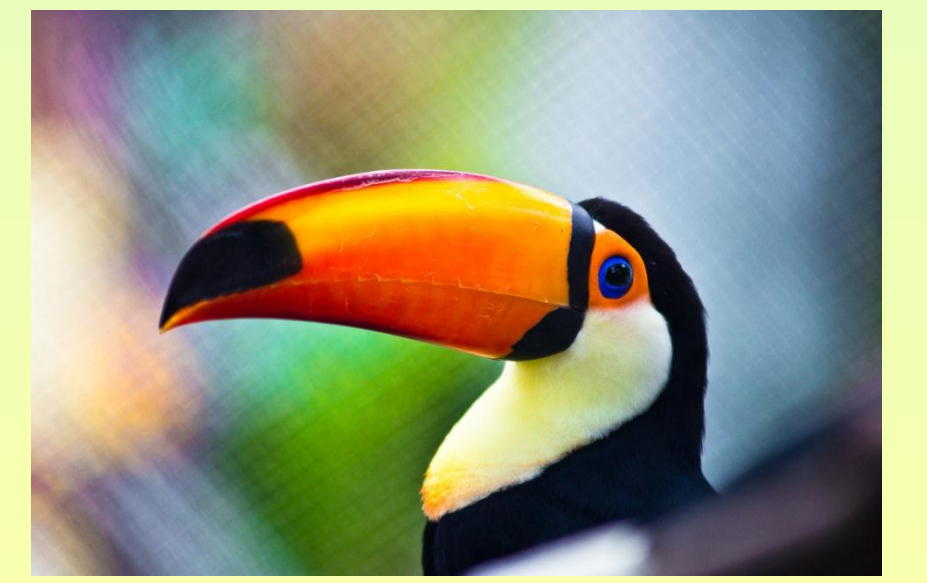
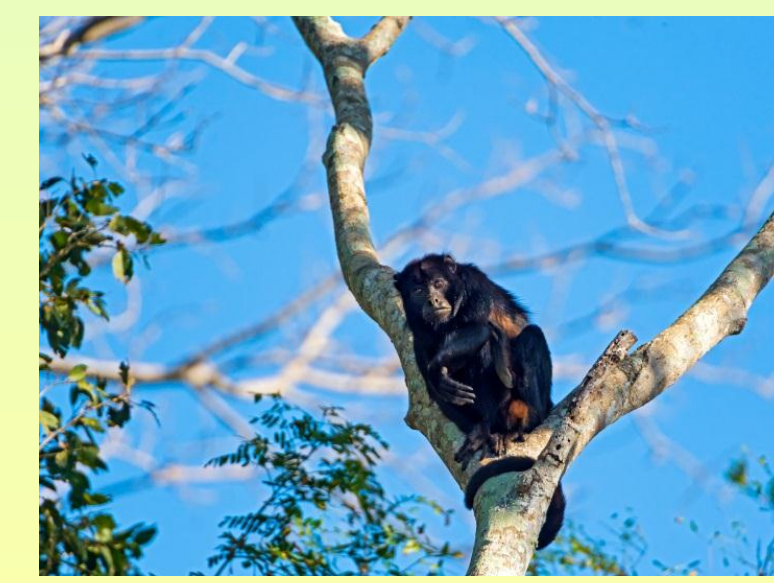
Abstract

The purpose of this project was to find a permanent solution for controlling parrot infestations that damage corn crops at the San Francisco Agricultural High School in Paraguay. The school is unable to grow corn to feed its livestock because Nanday Parakeets consume or damage virtually the entire crop. Our team researched and developed a range of cost-effective, environmentally-friendly strategies to combat the parrots, and presented them to a representative of the school. This year, this school will be conducting two corn trials based on our recommendations: one using a helikite, another using grocery bag covers. If our solutions are successful and corn crops are saved from parrot infestations, the school should be able to provide livestock feed and could thus allocate additional funds to the students' needs. If proven effective, our proposed solution could serve as a model for other small farmers in the region who could protect their corn crops as well.

Project Goals

Our aim was to create a solution with the following criteria in mind:

- Low cost
- Permanent or Long-term
- Sustainable
- Locally available
- Not disruptive to neighbors, monkeys, or other birds
- Not harmful to parrots
- Can be implemented by other small farmers



Solutions Examined

METHOD	ILLUSTRATION	CONSIDERATIONS
Alarm Calls: species-specific danger calls played over speakers		Pros: • Prior success at large farms • Volume adjustable Cons: • High-maintenance, high-tech • Expensive: purchase, installation • More success with smaller birds
Neem and Garlic Oil: biological irritants sprayed onto crops or integrated with feed		Pros: • Inexpensive where grown • Natural substances Cons: • Allium poisoning • Degrades in UV light
Caging: structure made of chicken wire, built around plot		Pros: • Reliable physical barrier • Long-lasting Cons: • Difficult assembly • Expensive materials, labor
Helikites/Deltakites: helium-filled or wind-supported balloons or kites shaped like predators		Pros: • Prior success • One per acre; re-usable Cons: • Helium purchased periodically • Instinctive scare device, temporary
Shade Cloth Bags: "envelopes" made from shade cloth and placed over each ear of corn		Pros: • Reliable physical barrier • Re-usable; durable Cons: • Costs of materials • Making of bags



Solutions Being Applied

Corn Trial 1: Plastic Bags

Description:

- White grocery bags are collected
- Holes are punched in them for air and water flow
- As corn begins to flower, each ear is covered with a bag
- The handles are tied securely



Pros:

- No cost
- Re-usable
- Physical Barrier
- Reduce, Reuse, Recycle

Cons:

- Possibility of litter
- Not extremely durable

Corn Trial 2: Evil Eye

Description:

- Helium balloons with the "evil eye" printed on them
- Light winds create constant movement
- Imitates predatory birds



Pros:

- Instinctive scare device
- Low cost
- One balloon covers about 0.5 hectares

Cons:

- May not be available in Paraguay
- Helium must be purchased to periodically refill the balloon
- Temporary

Conclusion



The best solution for the San Francisco Agricultural High School is using plastic grocery bags to cover each ear of corn. As a no-cost solution, this method will not divert funds away from the students' needs. The school will save money as the Nanday Parakeets are unable to destroy the harvest, and instead of buying feed, the school can use its own corn to raise livestock. This solution is inexpensive and simple enough that it can be used by students' families, and other regional farmers, whose crops are also devastated by the Nandays.

The school planted its corn between November 19th and 23rd. The two trials will begin on day 60, when the corn stalks begin to flower. At that time, Team Corn Cops will ask the school about the difficulties that arose when first applying the two methods, and any foreseen problems. At the end of the season, in May, the team will again contact the school, asking about the effectiveness of the two solutions, including the amount of corn lost, and whether this was an acceptable level of damage. Based on these answers, the solutions can be modified appropriately.

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