

# DATA *Nugget*

## Feral chickens fly the coop

Featured scientist: Eben Gering from Michigan State University

### Research Background:

When domesticated animals that humans keep in captivity escape into the wild, we call them **feral**. You may have seen feral animals, such as pigeons, cats, or dogs, right in your own backyard. But did you know that there are dozens of other feral species all over the world, including goats, parrots, donkeys, wallabies, and chameleons?

Sometimes feral species interbreed with closely related wild relatives to produce **hybrid** offspring. Feral dogs, for example, occasionally mate with wolves to produce hybrid pups which resemble both their wolf and dog parents. Over many generations, a population made up of these wolf-dog hybrids can evolve to become more wolf-like or more dog-like. Which direction they take will depend on whether dog or wolf traits help the individual survive and reproduce in the wild. In other words, hybrids should evolve traits that are favored by natural selection.

You might be surprised to learn that, like dogs, chickens also have close relatives living in the wild. These birds, called Red Junglefowl, inhabit the jungles of Asia and also many Pacific islands. Eben is a biologist who studies how the island populations of these birds are evolving over time. He has discovered that Red Junglefowl on Kauai Island, which is part of Hawaii, have recently started interbreeding with feral chickens. This interbreeding has produced a hybrid population of birds that are somewhere in



Red Junglefowl are the same species as chickens (*Gallus gallus*). On Kauai, they mated with feral chickens to produce hybrids.



Feral hen on Kauai with her recently hatched chicks.

*Left photo by Tontantours, Right photo by Pamela Willis*

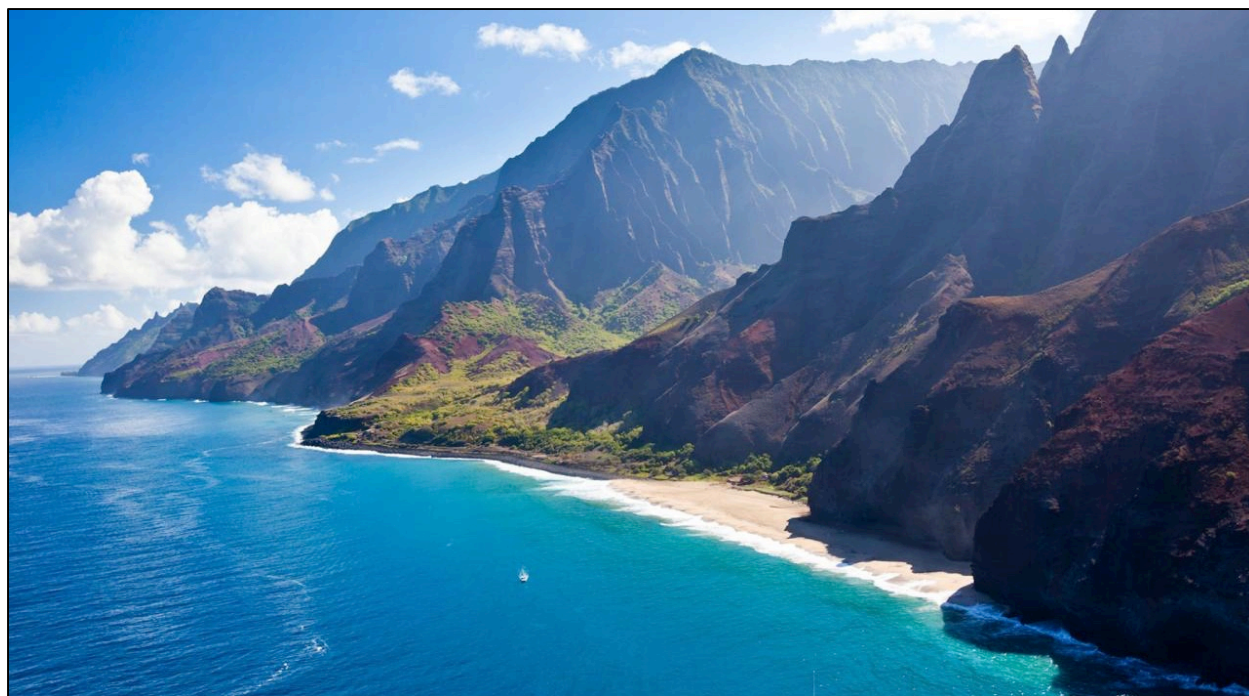
between red junglefowl and domestic chickens.

One of the biggest differences between chickens and Red Junglefowl is their breeding behaviors. Red Junglefowl females lay only a handful of eggs each year and only in the spring. Domestic chickens can lay eggs during any season and sometimes up to 300 or more eggs in one year! Eben wanted to know more about the breeding behaviors of Kauai's feral populations. In many cases, natural selection favors individuals who produce more offspring during their lifetimes. Because domesticated chickens can lay eggs year-round, Eben thought that the feral population would be evolving to be more like domesticated chickens. He predicted that feral hens would breed in all seasons.

To test his hypothesis, Eben's research group collected hundreds of photographs and videos of Kauai's hybrid chickens. Tourists delight in photographing Kauai's wild chickens and uploading their media to the internet. Fortunately for Eben, their cameras and cell phones often record the dates that images are taken. Eben looked at media posted on websites like Flickr and YouTube to find documentation of feral chickens throughout the year. This allowed him to see whether chicks are present during each of the four seasons. He knew that any hen observed with chicks had recently mated and hatched eggs because the chicks only stay with their mothers for only a few weeks.

*Scientific Question:* Is the hybrid chicken population on Kauai evolving to behave more like chickens or more like Red Junglefowl?

*What is the hypothesis?* Find the hypothesis in the Research Background and underline it. A hypothesis is a proposed explanation for an observation, which can then be tested with experimentation or other types of studies.



A view of the island of Kauai in Hawaii.

Name \_\_\_\_\_

Scientific Data:

**Use the data below to answer the scientific question:**

Month	Time of Year	Total number of hens observed	Hens that were observed with chicks	Hens that were observed without chicks
December	Winter	24	3	21
January	Winter	11	4	7
February	Winter	14	1	13
March	Spring	42	8	34
April	Spring	4	3	1
May	Spring	18	7	11
June	Summer	12	3	9
July	Summer	12	2	10
August	Summer	3	2	1
September	Fall	12	2	10
October	Fall	5	3	2
November	Fall	14	4	10

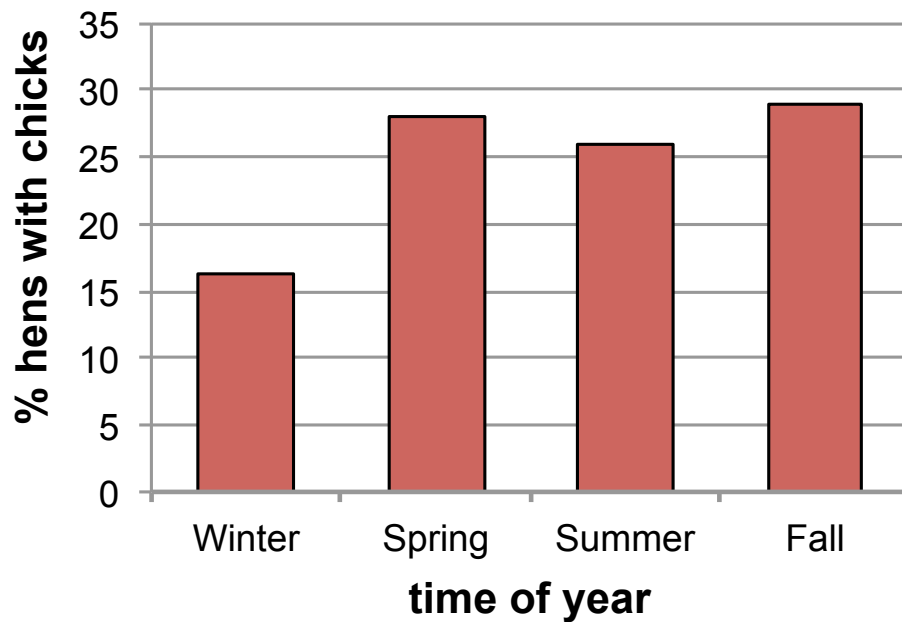
Proportion hens with chicks		Percent hens with chicks	
Winter		Winter	
Spring		Spring	
Summer		Summer	
Fall		Fall	

What data will you graph to answer the question?

Independent variable: \_\_\_\_\_

Dependent variable: \_\_\_\_\_

Below is a graph of the data: Identify any changes, trends, or differences you see in the graph. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



Interpret the data:

Make a claim that answers the scientific question.

What evidence was used to write your claim? Reference specific parts of the table or graph.

Name\_\_\_\_\_

Explain your reasoning and why the evidence supports your claim. Connect the data back to what you learned about how natural selection can operate on feral populations.

Did the data support Eben's hypothesis? Use evidence to explain why or why not. If you feel the data was inconclusive, explain why.

*Your next steps as a scientist:* Science is an ongoing process. What new question(s) should be investigated to build on Eben's research? What future data should be collected to answer this question(s)?