

## Marine Iguana Podcast Discussion Rubric

The following resources and links have been selected to deepen your students understanding of the complex relationships that exist among species in an ecosystem as well as the scientists who hav contributed research to our collective understanding of the web of life.

### Introduction:

The podcast **Marine Iguana, *Amblyrhynchus cristatus*** is part of a series called “One Species at a Time,” a catchy title designed to help you draw students into important concepts and phenomena using focal species. Naturally, the vast majority of these podcasts reveal that when it comes to the biosphere you can never really consider just one species at a time. In just 4 minutes, this short podcast features 3 species and 2 researchers.

### Key concepts:

- Endemic Species
- Variation among individuals in a species
- Behavior Adaptations and complex predator-prey interactions
- Communications and social signaling

### Post-Listening Discussion Prompts:

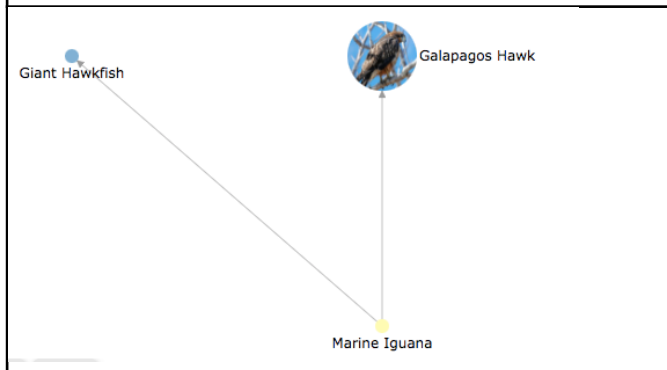
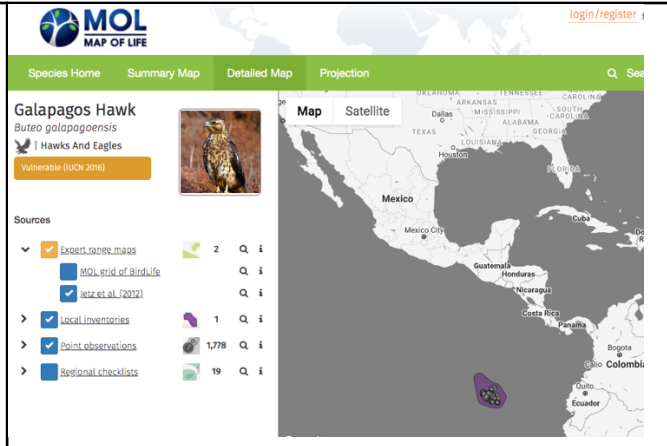
Below are some ideas to help engage your students in discussion and critical thinking after listening to the podcast. These prompts will help frame your students thinking around some of the biological concepts at play in the Galapagos. Feel free to use all, choose some, re-word or create new prompts to help make your students thinking visible and audible!

1. Explain the variation in the marine iguanas and how this influences their survival.
2. Draw/describe the relationship between the marine iguana and the brown hawk.
3. Which iguana has a selective advantage and why?
4. What behavioral adaptation do the hawks use to hunt their prey?
5. Does the mockingbird have a positive or negative impact on the survival the marine iguana? Explain. (How does the mockingbird increase the evolutionary fitness of the marine iguana?)
6. Draw/describe the complex relationship between these three organisms based on what you heard.
7. [See the strategies](#) the Galapagos Hawk uses to hunt marine iguanas as described in the podcast. How does this compare to what you drew/described in question #2?

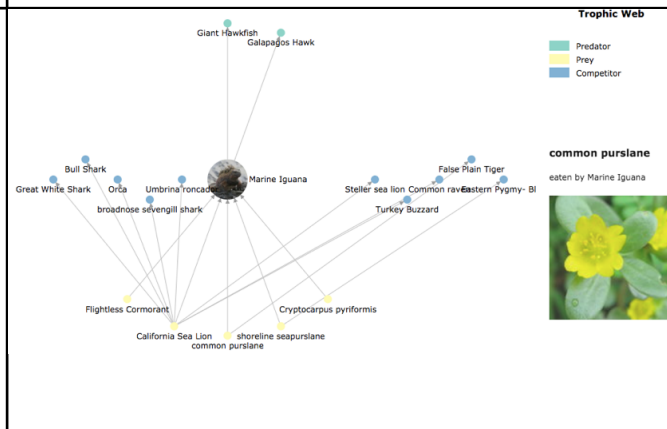
## The Species:

After listening to the podcast and contemplating the discussion questions, have your students dig a little deeper to learn more about the complex interactions of the organisms involved.

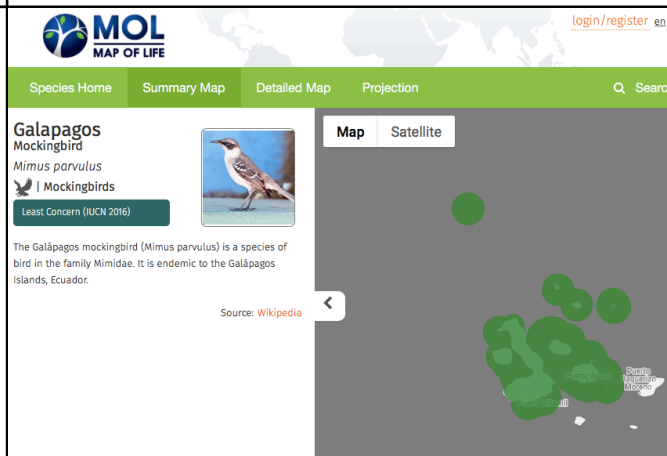
**Galapagos Hawk, *Buteo galapagoensis***  
Visit [this page](#), on the Map of Life website to see where the Galapagos Hawk is found. The Trophic Web for the Galapagos Hawk is not very complex, but adds another species. Why might that be?



**Marine Iguana, *Amblyrhynchus cristatus***  
Visit the MOL page [for the Marine Iguana](#) to see where the species can be found. You can see that the [Iguana](#) is part of a complex food web.



**The Galapagos Mockingbird, *Mimus parvulus***  
The Mockingbird is not in either the Iguana or the Hawk food webs, and yet its still and important player in the predator-prey relationship. Would you call it a competitor?



### Discussion Questions for Extension:

The following questions provide a creative, open-ended outlet for your students to explore the complex interactions among species as well as make their current understanding of the concepts visible.

1. If there were no mockingbirds, what would/could happen to the marine iguana population? Be specific and provide evidence and reasoning.
2. If there were no mockingbirds, how would that affect other organisms in the marine iguana food web you see in map of life? Use specific examples and interactions from the MOL resource.
3. What is the relationship between the marine iguana and the giant hawkfish? Based on their habitats, how is this relationship maintained? Does the giant hawkfish have a positive or negative trophic effect on the Galapagos Brown Hawk? Explain.
4. Marine Iguana and the Galapagos Hawk are endemic to the Galapagos, they are rare and range limited. Why is that so important? (Hint: consider the ecosystem and trophic webs you viewed)

### The Researchers:

**Dr. Michael Romero**, learn more about the [Romero Lab](#)

Discussion Idea: What did Romero and Wikelski learn about the stress response of the marine iguanas in the Galapagos island? How could this research be applied to other organisms? to humans?

The following [article](#), published in *Tufts Now* in 2010 provides an overview of the study and findings conducted by Romero and his co-author Martin Wikelski on the stress response of marine iguanas in the Galapagos islands. The article points out how this research has evolutionary applications everywhere - those organisms who are able to more quickly turn off their corticosterone response will be more likely to survive. The complete published study, "Stress physiology as a predictor of survival in Galapagos marine iguanas," from Romero and Wikelski can be found [here](#).

**Dr. Maren Vitousek**, learn more about the [Vitousek Lab](#)

Discussion Idea: How did Dr. Vitousek and colleagues figure out that the marine iguanas were using the calls of the mockingbird as protective alarm signals?

Check out a reader friendly [article from Scientific American](#) describing the phenomenon and how Vitousek come to discover it. Or you and your students can get a little more nitty gritty by reading a [short review of the study](#) from the Journal of Experimental Biology or the [original published study](#) with methods, data, and graphics.

### Thinking like a Scientist

Species adaptations and interactions are complex and depend on many environmental factors.

The podcast focuses on an intense interaction between two species that is clearly very important. Do you think that other species or elements in the ecosystem have shaped these creatures? If yes, list 2-5 that you think might matter. Hint: the mockingbirds warn the lizards of the hawks' presence. Use the [MOL.org](#) resources to help you! Marine Iguana

Scientists are now trying to determine similar interactions among species all over the world. Check out what some scientists are [doing](#) and [learning](#) along the way! Can you think of a similar example to these 2 or 3 species interactions among species near where you live?