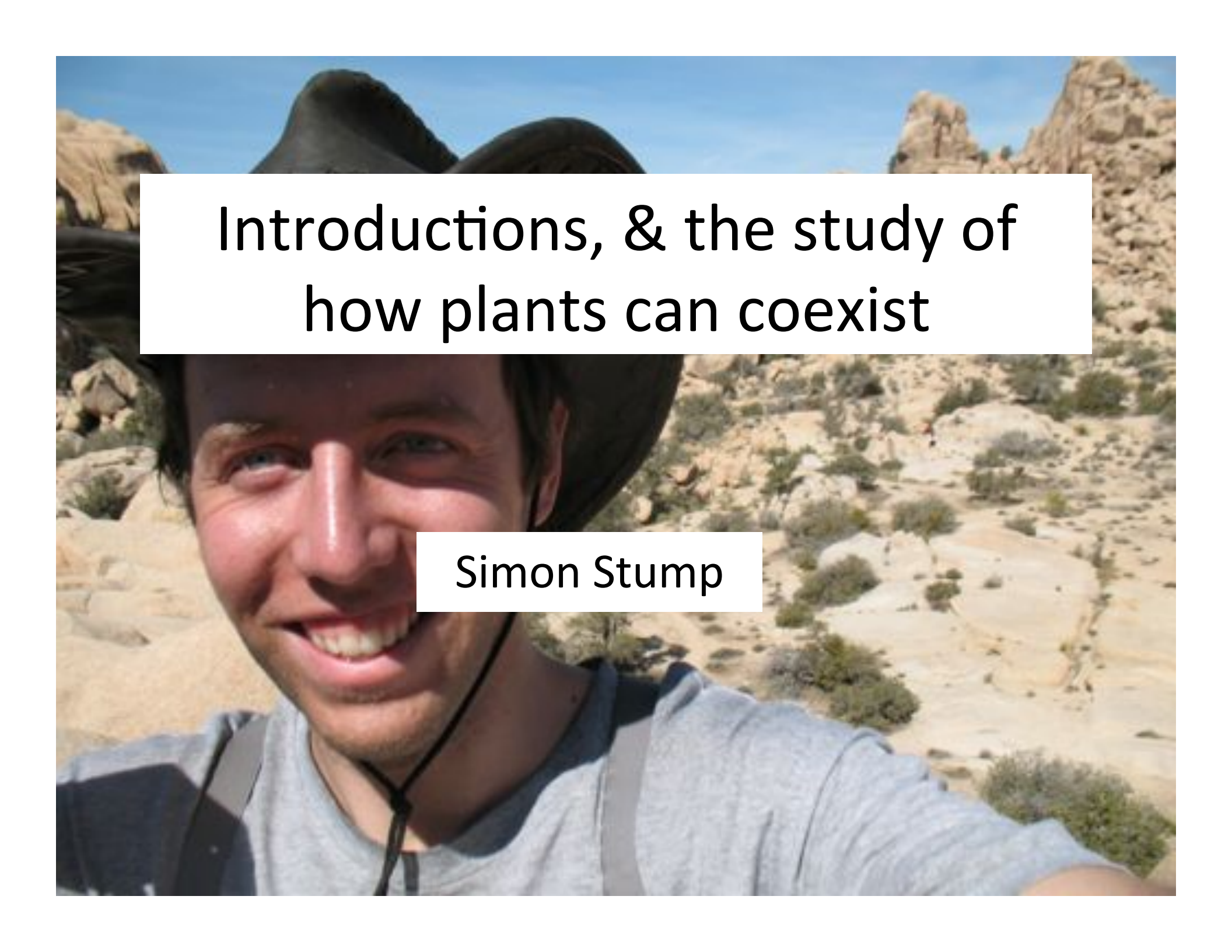
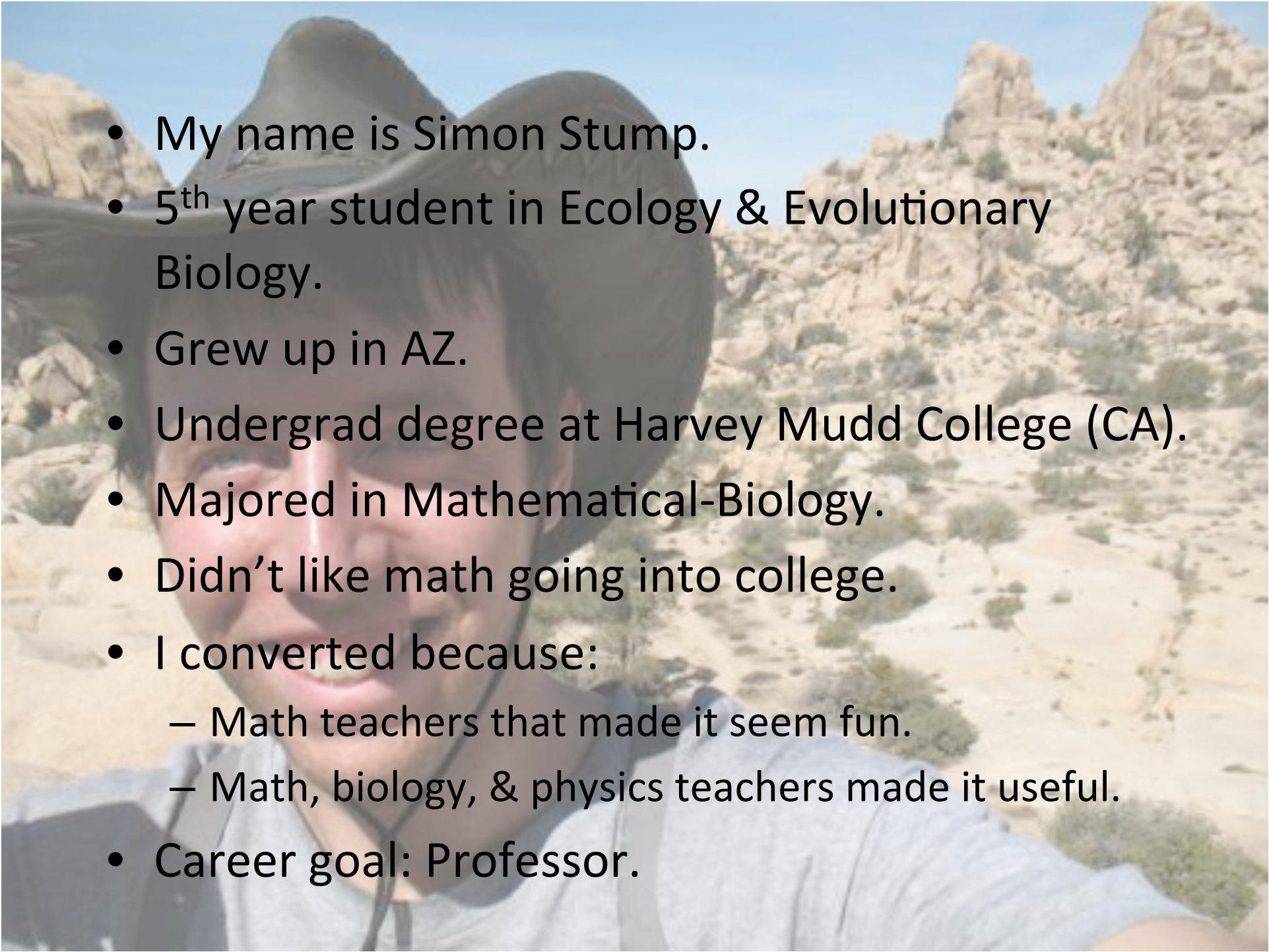


A photograph of Simon Stump, a man with dark hair and a wide smile, wearing a grey t-shirt and a dark hat. He is standing in a desert landscape with rocky terrain and sparse green shrubs under a clear blue sky. The text "Introductions, & the study of how plants can coexist" is overlaid on a white rectangular background in the upper center of the image.

Introductions, & the study of how plants can coexist

Simon Stump

- 
- A photograph of a young man, Simon Stump, wearing a wide-brimmed hat and a light blue shirt, standing in a desert landscape with rocky hills in the background. The image is semi-transparent, allowing the text to be overlaid.
- My name is Simon Stump.
 - 5th year student in Ecology & Evolutionary Biology.
 - Grew up in AZ.
 - Undergrad degree at Harvey Mudd College (CA).
 - Majored in Mathematical-Biology.
 - Didn't like math going into college.
 - I converted because:
 - Math teachers that made it seem fun.
 - Math, biology, & physics teachers made it useful.
 - Career goal: Professor.

http://www.flickr.com/photos/artour_a/2094144149/



Photo Credit: Harriet Maccracken



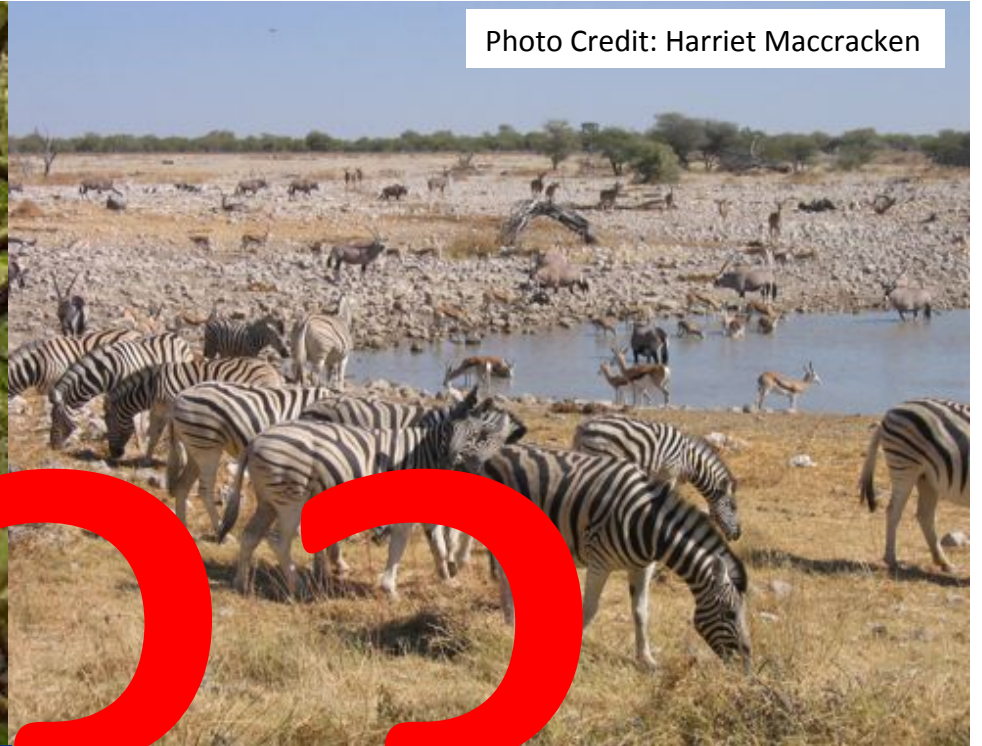
<http://www.howstuffworks.com/great-barrier-reef.htm>



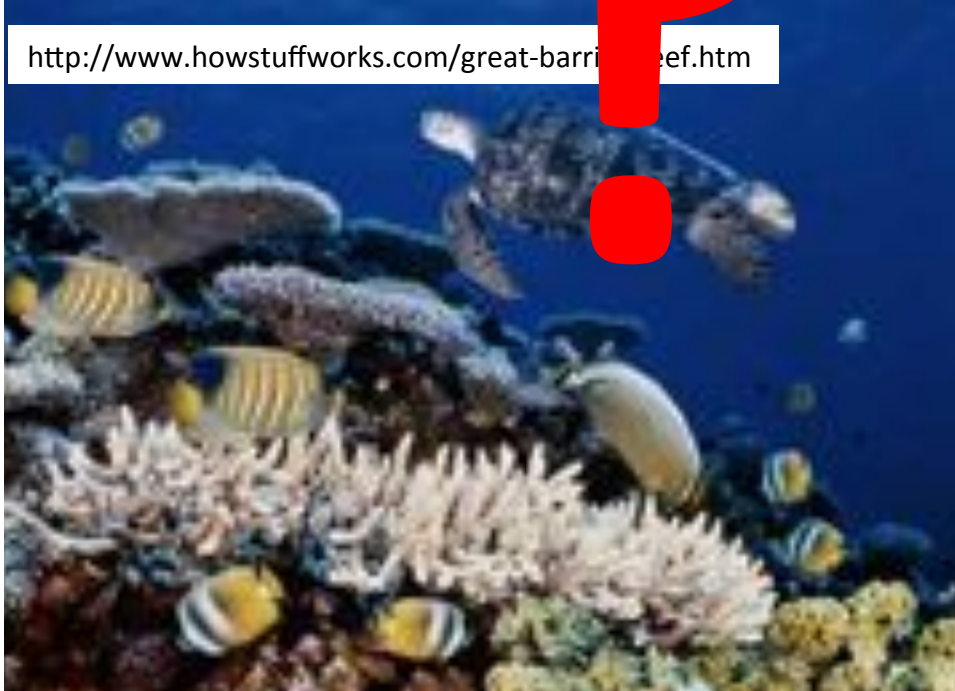
http://www.flickr.com/photos/artour_a/2094144149/



Photo Credit: Harriet Maccracken



<http://www.howstuffworks.com/great-barrier-reef.htm>





<http://museum.wa.gov.au/frogwatch/Kimberley/1050.aspx.html>



<http://www.southwestclimatechange.org/figures/buffelgrass>

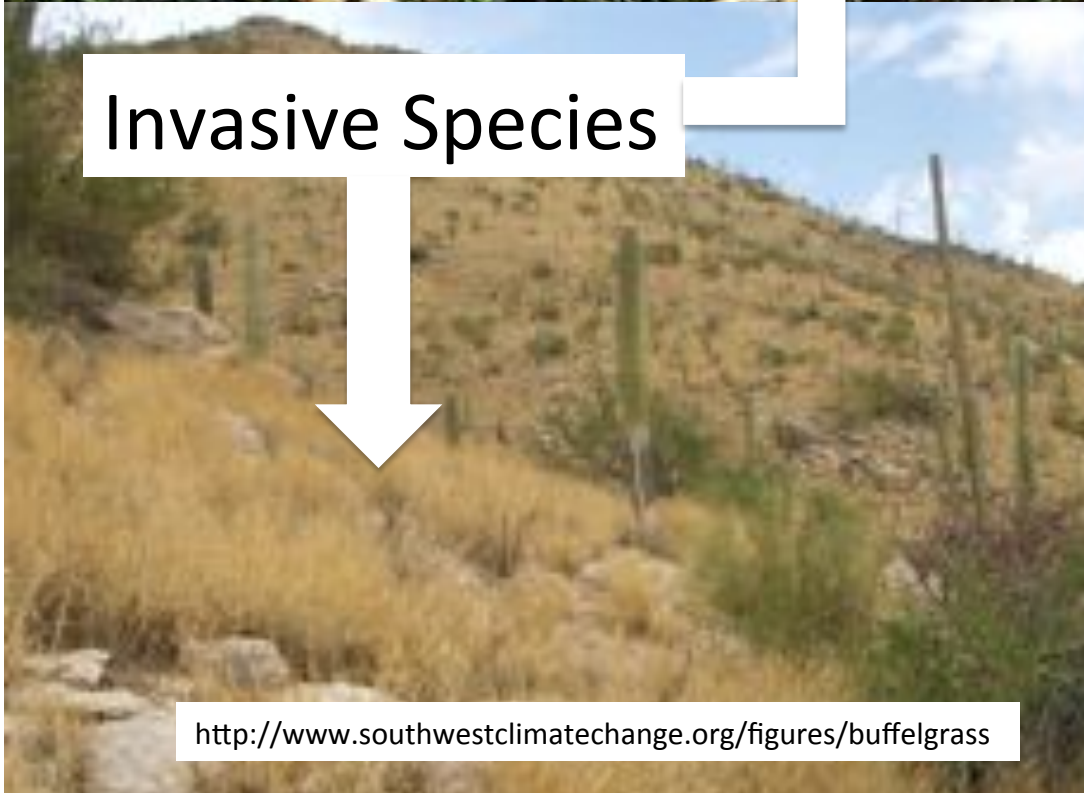


Threatened &
Endangered Species



<http://museum.wa.gov.au/frogwatch/Kimberley/0.aspx.html>

Invasive Species



<http://www.southwestclimatechange.org/figures/buffelgrass>



Threatened & Endangered Species





<http://museum.wa.gov.au>



Artificial Environments



Photo Credit: Shimada, K., commons.wikimedia.org

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Species

Invasive S



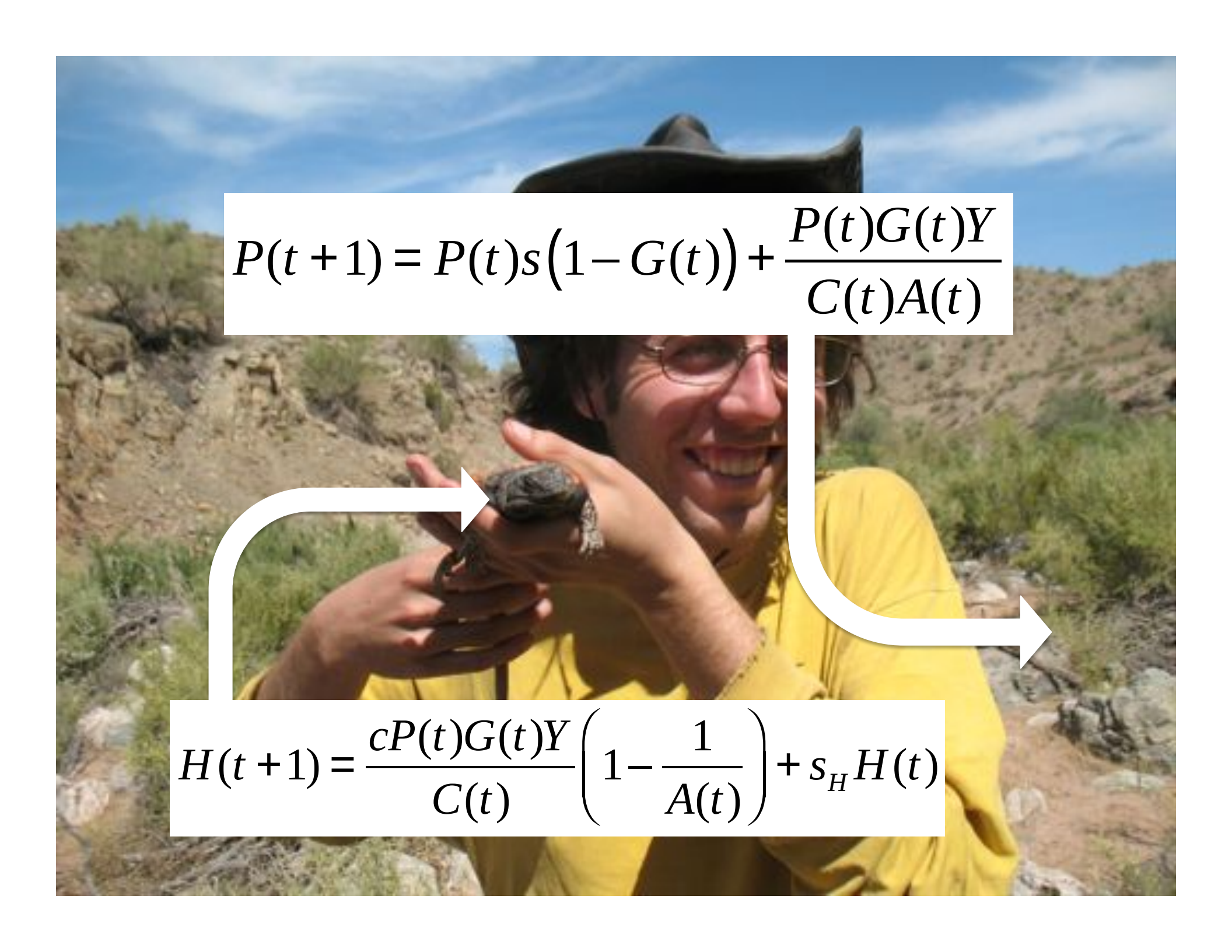
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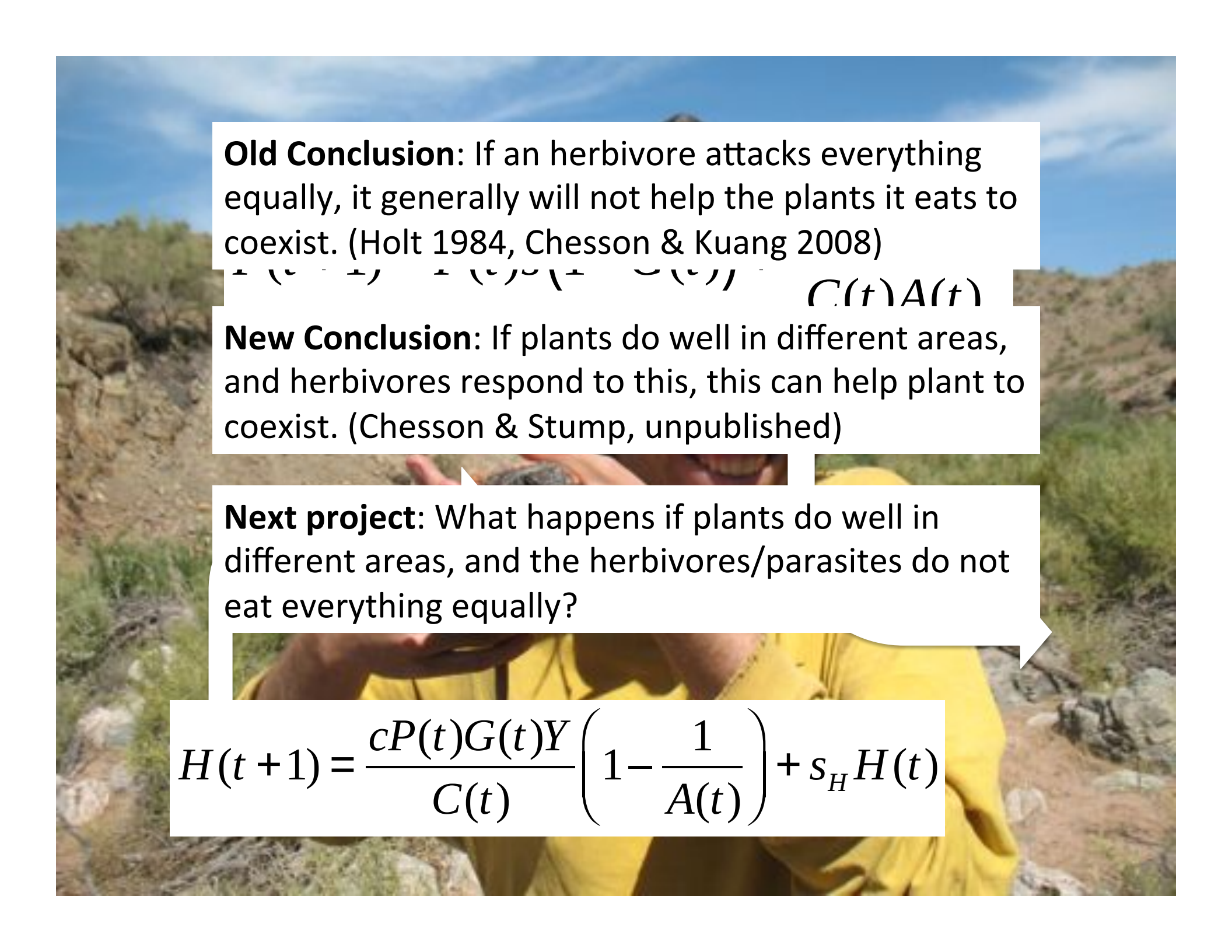
For my dissertation, I study how plants can coexist, and how herbivores, parasites, and variation in the physical environment effect coexistence.





A photograph of a person wearing a black cowboy hat and a yellow long-sleeved shirt, smiling and holding a small, dark-colored turtle in their hands. The background is a desert landscape with dry grass, shrubs, and a blue sky with light clouds. Two large white arrows originate from the turtle: one points to the left towards the first equation, and the other points to the right towards the second equation.
$$P(t + 1) = P(t)s(1 - G(t)) + \frac{P(t)G(t)Y}{C(t)A(t)}$$

$$H(t + 1) = \frac{cP(t)G(t)Y}{C(t)} \left(1 - \frac{1}{A(t)} \right) + s_H H(t)$$



Old Conclusion: If an herbivore attacks everything equally, it generally will not help the plants it eats to coexist. (Holt 1984, Chesson & Kuang 2008)

$$\frac{dC(t)}{dt} = cP(t)G(t)Y - C(t)A(t)$$

New Conclusion: If plants do well in different areas, and herbivores respond to this, this can help plant to coexist. (Chesson & Stump, unpublished)

Next project: What happens if plants do well in different areas, and the herbivores/parasites do not eat everything equally?

$$H(t+1) = \frac{cP(t)G(t)Y}{C(t)} \left(1 - \frac{1}{A(t)} \right) + s_H H(t)$$

Questions?

