

Yosemite's alpine chipmunks take genetic hit from climate change.

<http://news.berkeley.edu/2012/02/19/climate-change-erodes-alpine-chipmunk-genetic-diversity/>

A look at one species, found in Yosemite, and how abiotic factors influence genetic variation and population survival over time.

Warming in Yosemite National Park sends mammals packing to higher and cooler elevations.

http://www.berkeley.edu/news/media/releases/2008/10/09_grinnell.shtml

Abiotic factors influence animal behavior. This changes the population structure of a given ecosystem (Yosemite), resulting in a domino effect in ecology (food chain, predation, gene pool).

Kermode Bear

<http://ngm.nationalgeographic.com/2011/08/kermode-bear/barcott-text>

Phenomenon- In one region of British Columbia the North American black bear (the type of bear we have in California) exhibits a genetic mutation that results in phenotypes of white fur. These bears are not albino or polar, they just have a recessive mutation.

What is a Spirit Bear?

<https://www.bear.org/website/bear-pages/black-bear/basic-bear-facts/101-what-is-a-spirit-bear.html>

An explanation of the genetic mutation that results in a phenotypic white Black Bear.

Video: Drone shows devastation of bark beetles on drought-stricken Yosemite forest.

http://sfist.com/2016/04/13/video_drone_footage_shows_devastati.php

Could be used as phenomenon for Big Idea #2 in our Conceptual Flow.

Bark Beetles in California Conifers

http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5384837.pdf

An explanation of the beetles, how to identify them, what they do to the tree, how to identify trees that have been infected, how to prevent them from attacking trees.

UC Davis scientists say genome sequencing may save California's legendary Sugar Pine

<http://goldrushcam.com/sierrasuntimes/index.php/news/local-news/5514-uc-davis-scientists-say-genome-sequencing-may-save-california-s-legendary-sugar-pine>

Use this article to support natural phenomenon that trees can exhibit favorable genes that make them more resistant to certain pathogens. Conservation efforts include isolating this genetic sequence and artificially selecting for it in seedlings in order to produce new Sugar Pine tree generations that are less susceptible to disease.

Global Warming and Cellular Respiration

- Increased global temperatures speed up the life cycle of the spruce bark beetle
- Beetles bore holes in bark of spruce trees causing the spruce trees to die
- Without cold winters, the spruce bark beetles continue to multiply
- Warmer temperatures make enzymes work faster, so metabolic processes work faster; beetles mature twice as quickly
- More beetles means more dead trees, which increases forest fires releasing CO₂ in the air and heat into the atmosphere

Spruce bark beetle



Figure 4-24a. Biology: Science for Life, 2/e
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