

New Species Interactions

The climate-induced variation of species' range and related biome shifts cause previously unacquainted species to come into contact with each other. This results in competition for resources and changes in the way predators interact with their prey. For example, red foxes have moved northward toward a warming tundra and compete for prey with native Arctic foxes.

Invasive Species

Climate change and invasive species are two major threats to biodiversity. Put them together and the repercussions are projected to be widespread. Climate change will provide new ways for invasive species to encroach on new territory. Natural disasters like storm surges and high winds, which increase in number and severity as the earth warms, spread non-native plants and insects to new territories. For example, the winds of the 2005 hurricane season likely introduced cactus moths to Mexico, where their presence threatens endemic cactus species.

Interrupted Seasonal Cycles

So many species are dependent upon climate to guide the patterns of their lives—like mating, reproduction, hibernation, and migration, to name a few. As these patterns shift to reflect changing climate, it causes a ripple effect and hampers the health of the entire ecosystem. The altered timing of animal behaviors that are guided by

weather—such as migration by birds, hibernation for bears, bats, and even alligators—will result in mismatched timing between species and their food sources. For example, caribou migration patterns have been disrupted by an earlier flowering season of their plant food source, leading to food shortage late in the season and depleted number of offspring.

Changes in Human-Nature Interactions

Melting sea ice opens the Arctic for oil drilling, bringing ships into previously untouched territory of Pacific walrus. Expansion of agriculture and the need for water will lead humans to infringe on native wetlands, destroying habitat of countless plant and animal species. Increased drought activity will force koalas out of the safety of eucalyptus trees in search of water, exposing them to risk of death from road traffic.

This list provides evidence of the significant effects on nature resulting from climate change. Although these facts are frightening and the journey ahead challenging, there is hope. By taking the difficult but necessary steps to decrease carbon emissions, we can give the world's species hope of a livable planet. (Special thanks to our friends at the Conservation Breeding Specialist Group for compiling this factsheet).

Brown Polar Bears, Oh My!

Sally Walker

This short note has been culled (poached) from an article by Bob Weber, from the Canadian Press, 15 March 2013. Photograph by: John Lucas, Edmonton Journal (on another page). See and read it all (and weep) at http://www.edmontonjournal.com/story_print.html?id=8102444&sponsor=

Recently documented research indicates that some clusters of polar bears might turn brown as a result of their changing habitat due to climate change. It is not known exactly how polar bears became white in the first instance but scientists poking around in the evolutionary history of bears, as such, have been hoping to learn why the colours black, brown, and white natural to bears showed up where they did and how. Beth Shapiro, one of the authors of the study published in the journal PLOS Genetics, opines that colour changes could occur in contemporary bears as their habitat changes due to climate changes.

There is a group of brown bears that might suggest a link. They are called ABC bears because they live in the Admiralty, Baranof and Chichagof Islands on coastal Alaska. Earlier studies of the ABC Brown bear DNA indicates that polar bears are more closely related to them than other brown bears. Using DNA analysis they determined that the ABC bears were more related to polar bears because they used to BE polar bears, e.g. a vestige of the last Ice Age population of polar bears. When the Ice Age ended that group was separated from other polar bears and as the weather warmed up male brown bears swam across the waters from the Alaska mainland and found the trapped polar bears with whom they mated.

Simplifying the scientific explanation to its bare bones and playing with scientific fire, these polar bears didn't have enough of the right stuff, DNA, to maintain their racial qualities and they morphed into brown bears. What makes this very interesting is whether we fully follow the science or not is that climate change is melting sea ice and over time (a lot of time perhaps) changes polar bear habitat to brown bear habitat and the polar bears are just going to become brown bears. Shapiro comments on the adaptability of polar bears that permits them to hybridize with the brown bears. Instead of being a good thing all around, as adaptability is normally considered, it is a "kind of a shame" for polar bears, says Shapiro. NOT just polar bears! Also for people who love polar bears. Something magical and miraculous will leave the world along with the polar bears.