DISEASE

Livestock parasite outbreaks

R. Soc. Open Sci. http://doi.org/446 (2015)

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Parasitic nematodes (helminths) pose a significant and widespread problem for grazing livestock with implications for animal welfare and food production. Parasite distribution and infestation levels are strongly climate dependant — having already altered under ongoing climatic changes — yet projections of these impacts on future parasite risk remain sparse.

Naomi J. Fox from the Disease Systems Team, SRUC, UK, and co-workers combine a model of helminth transmission dynamics with a host grazing model to investigate the potential for climate change to influence livestock infections.

They find that changes in temperature-sensitive parameters related to survival and development of the parasites' free-living stages, over-winter survival and behavioural characteristics of the host can have nonlinear effects on nematode parasite burdens. This suggests that minor alterations in temperature around particular thresholds could cause dramatic changes in the intensity of parasitic nematode outbreaks. *AB*

THEATRE

Creating anthropo-scenes

J. Contemp. Drama Engl. http://doi.org/448 (2015)

As the climate continues to change in response to human activities, researchers and the public are wrestling with ways to express the impact of our species on nature. Dramas can aid such understanding.

The idea that humans not only affect the natural world but hold geological agency has recently been captured by the concept of the anthropocene. Una Chaudhuri from New York University, USA, explores how a handful of plays help to situate, personalize and embody this transformation.

She describes how two plays in particular — Caryl Churchill's *Far Away* and Wallace Shawn's *Grasses of a Thousand Colors* — subtly alter perceptions of the role humans play in contributing to climate change. In *Far Away*, the imagined world mirrors the IPCC's recent warnings that plants and animals may have to migrate to escape rising temperatures. *Grasses of a Thousand Colors* further dramatizes the paradoxes inherent in addressing and living with climate change, as the central character grapples with the consequences of a technological fix that worsens rather than solves an ecological crisis.

Such presentations help audiences to understand and engage with the temporal and spatial dissonances at the heart of anthropogenic climate change. *MH*

ARCTIC ECOSYSTEMS

Effects of sea-ice loss

Prog. Oceanogr. http://doi.org/447 (2015)

JACQUESVANDINTEREN / ISTOCK / THINKSTOCK

The black guillemot is an ice-associated bird, spending winters in the Arctic pack ice and breeding close to the edge of the ice in summer. As a result of recent Arctic sea-ice loss, surface temperature in open waters has increased, causing a decrease in abundance of polar cod, the primary food source for black guillemot chicks.

George Divoky, of the Friends of Cooper Island, and colleagues combined monitoring records from a black guillemot colony in Alaska gathered from 1975 to 2012 with satellite records of sea-ice extent to examine the effect of recent ice loss on chick diet and condition.

They found that at the beginning of the records, the sea-ice edge was located approximately 100 km from the colony at the end of the breeding season. But in the past decade this distance has increased to 500 km, resulting in higher sea surface temperatures in foraging areas. At the same time, polar cod decreased from being the major food source for chicks (making up 95% of their diet) to comprising less than 5%, coinciding with a fivefold increase in chick starvation. *ET*

Written by Alastair Brown, Mat Hope, Eithne Tynan and Bronwyn Wake.

MARINE BIOLOGY

Bacterial boost

Aquat. Microb. Ecol. **75,** 27–42 (2015)

Black carbon, particulate matter resulting from the incomplete burning of carbon-based fuels, is a strong contributor to global warming. Its role in the climate system (absorbing heat and reducing surface reflectivity) is well known but its impact on the ocean is less understood. Atmospheric deposition of black carbon to the ocean could impact on the microbes of the ocean surface.

Andrea Malits of Sorbonne University and CNRS at the Oceanographic Observatory, Villefranche sur mer, France, and colleagues investigate the effect of black carbon deposition on marine microbial processes. This is achieved by adding a black carbon reference material to a seawater sample with a stable bacterial and viral community.

Black carbon reduced viral production but increased bacterial production. The bacterial increase was thought to be caused by either lower viral infection (which would result in cell breakdown) or the additional carbon available for growth. The growth was further enhanced if the black carbon had been exposed to solar radiation, as it would be during atmospheric transport. These results highlight how increased black carbon emissions could impact on marine microbes, particularly in coastal zones. *BW*