

Science News

from research organizations

Print Email Share

More warm-dwelling animals and plants as a result of climate change

Date: February 20, 2017
Source: Senckenberg Research Institute and Natural History Museum
Summary: Since 1980, populations of warm-dwelling species in Germany have increased. The trend is particularly strong among warm-dwelling terrestrial species, as shown by the most comprehensive study across ecosystems in this regard to date. The most obvious increases occurred among warm-dwelling birds, butterflies, beetles, soil organisms and lichens according to a new study. Thus, it appears possible that rising temperatures due to the climate change have had a widespread impact on the population trends of animals in the past 30 years.
Share: Facebook Twitter Google+ LinkedIn + Email

- RELATED TOPICS
- Plants & Animals
- Nature
 - New Species
 - Endangered Animals
- Earth & Climate
- Climate
 - Environmental Awareness
 - Ecology



- RELATED TERMS
- Global warming controversy
 - Tuna
 - Escherichia coli
 - Giant squid
 - Amphibian
 - Gorilla

Since 1980, populations of warm-dwelling species in Germany have increased. The trend is particularly strong among warm-dwelling terrestrial species, as shown by the most comprehensive study across ecosystems in this regard to date. The most obvious increases occurred among warm-dwelling birds, butterflies, beetles, soil organisms and lichens according to the study published recently in the scientific journal "Nature Ecology & Evolution" led by Senckenberg scientists. Thus, it appears possible that rising temperatures due to the climate change have had a widespread impact on the population trends of animals in the past 30 years.

Since 1980, the average annual temperature in the study areas in Germany increased by approx. 0.3 degrees Celsius per decade. "This may sound harmless, but it has a serious impact on nature. Long-term temperature changes have long-term effects on the population size of plant and animal species. Nearly half of the populations of various species showed a significant increase or decrease since 1980. The direction of change of each species is influenced by whether it prefers warm or cool temperatures. This link is very obvious in mobile species such as birds and butterflies but also in slow growing species such as lichens" says Dr. Diana Bowler of the Senckenberg Biodiversity and Climate Research Centre.

"If you compare the success of different species within terrestrial communities, warm-dwelling plant and animal species have increased," adds Prof. Dr. Katrin Böhning-Gaese, director of the Senckenberg Biodiversity and Climate Research Centre. Also, some cool-dwelling terrestrial species have decreased. In freshwater and marine communities, the effects of the temperature increase apparently manifested themselves in more complex ways. But even here, the signs are visible: the populations of warm-dwelling marine fish in the North Sea are on the rise.

In the course of the meta-analysis, Bowler and her team analyzed data from approximately 1,000 species on their changes in population size. They were able to document long-term trends in the population size of species within 22 local or regional communities since 1980. "Never before has there been a study about the long-term effect of increasing temperatures on species' population sizes that involved so many different European species. We examined species in communities on land, in freshwater and in the ocean - from algae to mammals," comments Bowler. Whether species prefer warm or cool temperatures was assessed by the temperatures at the locations in which each species lives in Europe.

The majority of the long-time data came from Germany, with additional data from The Netherlands and Belgium, plus the North Sea. "In total, 27 institutions, including scientific institutions, state authorities, non-governmental organizations, and citizen scientists contributed to this huge data set. It is only through such large collaborations that we can give answers to some of the most important ecological questions of our time" says Bowler.

The study confirms that the changes in ambient temperature are having a direct impact on the population sizes of species. The study also suggests that the impacts of climate change are more prevalent across communities than other threats. "Land use change still poses a serious threat to the populations and diversity of species. However, its effect tends to be of a more local nature, while climate change is geographically widespread. Temperature increases affect the populations of species across Germany, and this very effect can already be observed today," Böhning-Gaese sums up.

Story Source:
Materials provided by Senckenberg Research Institute and Natural History Museum. Note: Content may be edited for style and length.

Journal Reference:
1. Diana E. Bowler, Christian Hof, Peter Haase, Ingrid Kröncke, Oliver Schweiger, Rita Adrian, Léon Baert, Hans-Günther Bauer, Theo Blick, Rob W. Brooker, Wouter Dekoninck, Sami Domisch, Reiner Eckmann, Frederik Hendrickx, Thomas Hickler, Stefan Klotz, Alexandra Kraberg, Ingolf Kühn, Silvia Matesanz, Angelika Meschede, Hermann Neumann, Robert O'Hara, David J. Russell, Anne F. Sell, Moritz Sonnewald, Stefan Stoll, Andrea Sundermann, Oliver Tackenberg, Michael Türkay, Fernando Valladares, Kok van Herk, Roel van Klink, Rikjan Vermeulen, Karin Voigtländer, Rüdiger Wagner, Erik Welk, Martin Wiemers, Karen H. Wiltshire, Katrin Böhning-Gaese. Cross-realm assessment of climate change impacts on species' abundance trends. Nature Ecology & Evolution, 2017; 1 (3): 0067 DOI: 10.1038/s41559-016-0067

Cite This Page: MLA APA Chicago

Senckenberg Research Institute and Natural History Museum. "More warm-dwelling animals and plants as a result of climate change." ScienceDaily. ScienceDaily, 20 February 2017. <www.sciencedaily.com/releases/2017/02/170220085126.htm>.

Ad closed by Google

Related Stories

Fiddler Crab Migrating North, Possibly from Climate Change
Nov. 24, 2014 — The fiddler crab, Uca pugnax, has migrated nearly 50 miles north of its supposed natural range along the US East Coast. This may be another sign of climate change, experts ... read more »

Brazilian Zoologists Discovered the First Obligate Cave-Dwelling Flatworm in South America
Sep. 25, 2014 — Typical cave-dwelling organisms, unpigmented and eyeless, were discovered in a karst area located in northeastern Brazil. The organisms were assigned to a new genus and species of freshwater flatworm ... read more »

Climate Changes Distribution of Plants, Animals
Jan. 9, 2014 — Swiss plants, butterflies and birds have moved 8 to 42 meters uphill between 2003 and 2010, scientists report. Climate warming is changing the distribution of plants and animals worldwide. Recently ... read more »

Land and Sea Species Differ in Climate Change Response
May 29, 2012 — Marine and terrestrial species will likely differ in how they respond to climate change according to a new study by Simon Fraser University and Australia's University of ... read more »

Image of a large yellow industrial ball mill.

BALL MILL
HONGJI® SPECIALIZED BALL MILL
MANUFACTURER OF CHINA
hongjimachinery.com

CHAT NOW

Strange & Offbeat

- PLANTS & ANIMALS
- 'Tully Monster' Mystery Is Far from Solved, Group Argues
 - 3-D Printed 'Eagle Eye' Camera Mimics Sharp Vision of Predators
 - Squishy Supercapacitors Bathed in Green Tea Could Power Wearable Electronics
 - Fossil Discovery Rewrites Understanding of Reproductive Evolution
- EARTH & CLIMATE
- New Species of Marine Worm Discovered in Antarctica
 - Sticky Gels Turn Insect-Sized Drones Into Artificial Pollinators
 - What Happened to the Sun Over 7,000 Years Ago?
 - Scientists Design Electricity Generator That Mimics Trees
- FOSSILS & RUINS
- Good Ribbance: Dinosaur Rib Bones Reveal Remnants of 195-Million-Year-Old Protein
 - 500-Million Year-Old Species Offers Insights Into the Lives of Ancient Legged Worms
 - Bag-Like Sea Creature Was Humans' Oldest Known Ancestor
 - Exceptionally Preserved Jurassic Sea Life Found in New Fossil Site

MINING DUMP TRUCK

1-3 CUBIC WHEEL LOADER SALES PROMOTION

www.yutonghi.com

CHRISTMAS CARNIVAL COMING!

Image of a yellow mining dump truck.

Powered by Google

OCF RESEARCH CENTER
Ad churashima.okinawa

Most of Greenland ice melted to...
sciencedaily.com

Ceramic Mill Manufacturer -...
pc.hongjimachinery.com

Researchers Discover 'Hole' In...
sciencedaily.com

UPS Battery Suppliers
Ad saoredsun.com

Why an ice age occurs every...
sciencedaily.com

A new picture of the last ice age
sciencedaily.com

Move over, solar: The next big...
sciencedaily.com

Recommended Articles

- Ups and downs of biodiversity after mass extinction
University of Zurich, ScienceDaily , 2012

Impact Of Climate Warming On Fish
Cemagref, ScienceDaily , 2008

Sea life 'must swim faster to survive' to survive climate change
ARC Centre of Excellence in Coral Reef Studies, ScienceDaily , 2011

Marine biodiversity loss due to global warming and predation, study predicts
University of British Columbia, ScienceDaily , 2011

Extinctions expected to increase strongly over the century
Institut de Recherche pour le Développement (IRD), ScienceDaily , 2010
- Ancient DNA Analysis Suggests Rapid Warming, Human Activity Drove Large Species to Extinction
GenomeWeb , 2015

Possibilities, Obstacles of Polar Genomics Come Into Focus at International Genomics Meeting
GenomeWeb , 2008

Climate Change Genomics Heats Up
GenomeWeb , 2012

Global Map of Amphibian, Land Mammal Genetic Diversity Reveals Impact of Human Habitation
GenomeWeb , 2016

Scientists Use DNA Barcoding to ID Canadian Freshwater Fish
GenomeWeb , 2008

Powered by Trend MD

Free Subscriptions

Get the latest science news with ScienceDaily's free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

- Email Newsletters
- RSS Feeds

Follow Us

Keep up to date with the latest news from ScienceDaily via social networks:

- Facebook
- Twitter
- Google+
- LinkedIn

Mobile Apps

Get the latest news from ScienceDaily via our free mobile apps, available for download on the following platforms:

- iPhone/iPad
- Android

Have Feedback?

Tell us what you think of ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

- Leave Feedback
- Contact Us