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QUESTION 1

Read the text attached.

Passage 1

Critical information needed in fight to save wildlife

With global temperatures rising, an international group of 22 top biologists is calling for a coordinated effort to gather important species information that is urgently needed to improve predictions for the impact of climate change on future

biodiversity. Current predictions fail to account for important biological factors like species competition and movement that can have a profound influence on whether a plant or animal survives changes to its environment, the scientists say in

the September 9 issue of the journal Science. While more sophisticated forecasting models exist, much of the detailed species information that is needed to improve predictions is lacking.

"Right now, we\\'re treating a mouse the same way as an elephant or a fish or a tree. Yet we know that those are all very different organisms and they are going to respond to their environment in different ways," says University of Connecticut

Ecologist Mark Urban, the Science article\\'s lead author. "We need to pull on our boots, grab our binoculars, and go back into the field to gather more detailed information if we are going to make realistic predictions."

The 22 top biologists affiliated with the article identify six key types of biological information, including life history, physiology, genetic variation, species interactions, and dispersal, that will significantly improve prediction outcomes for individual

species. Obtaining that information will not only help the scientific community better identify the most at-risk populations and ecosystems, the scientists say, it will also allow for a more targeted distribution of resources as global temperatures

continue to rise at a record rate.

Current climate change predictions for biodiversity draw on broad statistical correlations and can vary widely, making it difficult for policymakers and others to respond accordingly. Many of those predictions tend not to hold up over time if they

fail to account for the full range of biological factors that can influence an organism\\'s survival rate: species demographics, competition from other organisms, species mobility, and the capacity to adapt and evolve.

"We haven\\'t been able to sufficiently determine what species composition future ecosystems will have, and how their functions and services for mankind will change," says co-author Dr. Karin Johst of the Helmholtz Centre for Environmental

Research and the German Centre for Integrative Biodiversity Research. "This is because current ecological models often do not include important biological processes and mechanisms: so far only 23 percent of the reviewed studies have

taken into account biological mechanisms."

Generating more accurate predictions is essential for global conservation efforts. Many species are already moving to higher ground or toward the poles to seek cooler temperatures as global temperatures rise. But the capacity of different

organisms to survive varies greatly. Some species of frog, for instance, can traverse their terrain for miles to remain in a habitable environment. Other species, such as some types of salamander, are less mobile and capable of moving only a

few meters over generations.

"New Zealand\\'s strong foundation in ecological research will help," explains study co-author Dr. William Godsoe, a Lincoln University lecturer and member of New Zealand\\'s Bio-Protection Research Centre. "One of our hopes is to build on

these strengths and highlight new opportunities to improve predictions by explicitly considering evolution, interactions among species, and dispersal." This will aid in the development of strategies to manage impacts on species and

ecosystems before they become critical.

With more than 8.7 million species worldwide, gathering the necessary biological information to improve predictions is a daunting task. Even a sampling of key species would be beneficial, the authors say, as the more sophisticated models

will allow scientists to extrapolate their predictions and apply them to multiple species with similar traits.

The researchers are calling for the launch of a global campaign to be spearheaded by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services or IPBES. The IPBES operates under the auspices of four United

Nations entities and is dedicated to providing scientific information to policymakers worldwide. One thousand scientists from all over the world currently contribute to the work of IPBES on a voluntary basis. The scientists are also encouraging

conservation strategies to support biodiversity such as maintaining dispersal corridors, and preserving existing natural habitats and genetic diversity.

"Our biggest challenge is pinpointing which species to concentrate on and which regions we need to allocate resources," says UConn Associate Professor Urban. In an earlier study in Science, Urban predicted that as many as one in six

species internationally could be wiped out by climate change. "We are at a triage stage at this point. We have limited resources and patients lined up at the door."

Passage 2

Forecasting climate change\\'s effects on biodiversity hindered by lack of data

An international group of biologists is calling for data collection on a global scale to improve forecasts of how climate change affects animals and plants. Accurate model predictions can greatly aid efforts to protect biodiversity from

disturbances such as climate change and urban sprawl by helping scientists and decision-makers better understand, anticipate and respond to threats that imperil species and ecosystems.

In a paper published in Science on Thursday (Sept. 8), biologists cite a critical lack of data on key biological mechanisms ?such as how animals and plants spread during their lifetime and how they evolve in response to changes in the

environment - as the main obstacle to improving models\\' ability to forecast species\\' response to climate change.

"This paper is a call to arms," said Patrick Zollner, article co-author and Purdue associate professor of wildlife science. "The world is in dire circumstances. We\\'re losing a lot of species, and we\\'re largely unaware why. How do we need to

rethink the kind of data we\\'re collecting so we can take advantage of modern modeling tools to understand the outcomes of climate change for ecological systems? This could help us forestall losing wildlife that we later deeply regret."

The group outlines two key problems that hinder the capability of current models to make realistic predictions about biological responses to climate change.

Most models are descriptive, based on statistical correlations and observations, and fail to capture the underlying processes that produce observed changes. For example, a descriptive model might show that lynx in the northern U.S. are

declining while bobcat populations in the same region are on the rise. Understanding what is driving this change requires a different sort of model, one that incorporates biological mechanisms. A mechanistic model that accounts for how

warming temperatures affect snow depth, for instance, could provide insights into why bobcats - better adapted to habitats with less snow - are gaining a competitive edge over lynx. But 77 percent of current models of climate change\\'s

impacts on wildlife do not include biological mechanisms.

Another challenge is that as models have grown in sophistication, they have far outpaced data collection. Put another way, a model is like a state-of-the-art kitchen, but the cupboards are bare.

"We can now build videogame-like environments with computers where we can create multiple versions of Earth and ask what the implications under different scenarios are," Zollner said. "But our ability to learn from these tools is constrained

by the kinds of data we have."

The group advanced several proposals on how to improve models, collect missing data and leverage available data to make broader predictions.

They identified six biological mechanisms that influence wildlife\\'s responses to climate change: physiology; demography and life history; evolutionary potential and adaptation; interactions between species; movement over land or water; and

responses to changes in the environment. They ranked the information needed to account for these mechanisms in models and suggested proxies for data that are missing or hard to collect.

A globally coordinated effort to fill data gaps could greatly advance improvements in models and informed conservation approaches, the researchers wrote. They point to the Intergovernmental Panel on Climate Change and its consistent

improvements in climate change modeling as a valuable blueprint for such a project.

But local and regional conservation groups need not wait for a global body to coalesce to start using a mechanistic approach in their own region, Zollner said "If the ideas put forth in this paper start to be adopted and integrated into climate

change work in a grass roots way, that could make a big difference in a region and could scale up over time," he said.

Citizen scientists also have an important role to play in pitching in with data collection, he said.

Working with citizen scientists offers "an opportunity to get huge amounts of data, and it\\'s foolish not to take advantage of it," Zollner said. "The data might not be as rigorous and needs to be treated differently, but it\\'s one more source of

valuable information.

Reread this excerpt from Passage 2 in the attached text.

"Working with citizen scientists offers "an opportunity to get huge amounts of data and it\\'s foolish not to take advantage of it," Zollner said. "The data might not be as rigorous and needs to be treated different, but it\\'s one more source of

valuable information." Which statement best describes what the phrase "citizen scientists" most likely means?

A. Citizens of the United States or other country belonging to the UN and who work as scientists in their own or another country.

B. Trained scientists who may not currently work in the field of science but who have a university degree in a scientific field and whose research can therefore be relied upon by current scientists.

C. People with a passion for science who may not have specific scientific training but who can gather information that can be used by trained scientists in their research and study of environment.

D. Students who have not yet earned their degrees in science, but who are training for a career in science and who understand the basics of scientific research.

Correct Answer: C

QUESTION 2

A student is writing an article about safety in high school athletics. Read the draft of the article and complete the task that follows.

Just how safe are high school athletics? Critics would argue that most sports are highly dangerous to those teens who participate in them. Recently football has been the most closely scrutinized. The dangers of the high school gridiron are many: head injuries, knee injuries, and heat exhaustion. It seems as if every year more studies are released implicating the immediate and long-term effects of this highly physical sport. Football, however, is not the only sport that has drawn attention. Any sport that involves contact (basketball, hockey, lacrosse) can leave its players vulnerable to injury. The question then becomes: what is being done to prevent thee injuries?

Steps are being taken to reduce the most serious complications of all sports. One way that these issues are being addressed is through the development of new equipment. Another way is through more stringent rules that govern practices as well as game time situations. Most importantly, educating players, coaches, and parents to the real dangers of athletics has taken a new priority. Through education, regulations, and equipment, high school sports can continue to be a source of entertainment, not danger.

Choose the two sentences that provide the best evidence to support the main idea of the paper.

A. It has been estimated that nearly half of all high school participates in athletics on some level.

B. This school district reports that each high school has a minimum of five varsity sports; this number does not include junior varsity or community leagues.

C. Bob Jones, Southern High\\'s athletic director, added this comment: "We had a very successful season; injuries did not play a measurable role in our record."

D. District wide data indicates that students are injured on school property at a relatively low rate; last year only thirty-three accidents were reported that resulted in student injury.

E. One of the most visible educational campaigns has been launched by the National Football League (NFL); it is entitled "Heads UP" and trains coaches and student athletes on techniques to avoid head injuries.

F. In a 2010 study, American University found that close to 80 percent of high school athletes had reported injuries during their athletic careers; approximately 25 percent of these injuries were considered serious.

Correct Answer: EF

QUESTION 3

Jason is using a recipe that requires 3 teaspoons of salt for every 2 cups of flour. He needs to use 9 cups of flour to make enough for everyone. How much salt should he use?

A. 4.5 teaspoons

B. 10 teaspoons

C. 6 teaspoons

D. 13.5 teaspoons

Correct Answer: D

QUESTION 4

Rachel is going to buy a coffee-maker for her apartment. After some research she found 5 different coffee-makers for these prices:

$62.99 $77.99 $43.99 $17.99 $66.99

Her aunt advised her that spending about the median amount will be a good deal, while spending about the mean amount will just be average. After looking at the prices, she decided that average will be good enough.

Read the attached description of a purchase decision process. How much did Rachel save by spending closer to the mean than spending closer to the median?

A. $10.80

B. $8.20

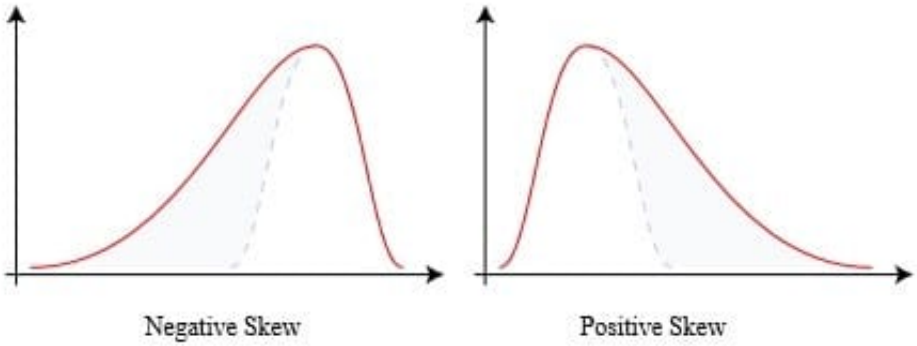
C. $0 because it was the same unit

D. $19

Correct Answer: D

QUESTION 5

For the distributions shown in the attached image, which will be the better measure of the center of the data set?



A. mean or median

B. median or mode

C. mean only

D. mode only

Correct Answer: B