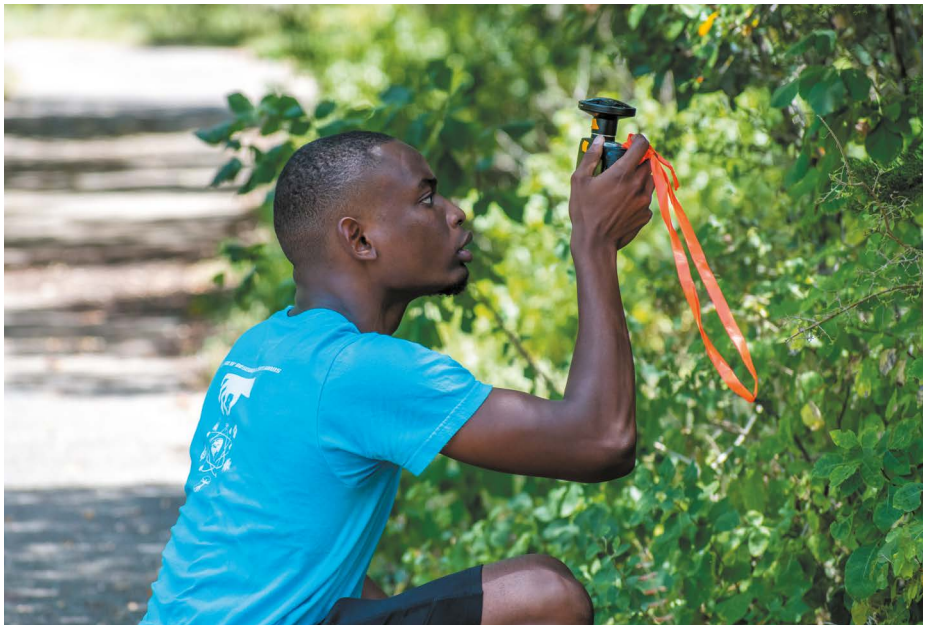

ZOË BERMAN

Josh Anadu has been caught up in racially charged situations in the field.

SCIENTISTS SPEAK UP ABOUT HARASSMENT IN FIELD RESEARCH

Universities should offer inclusive policies to make fieldwork safer, researchers say.

By Giuliana Viglione

Josh Anadu had been at the receiving end of uncomfortable stares before. As a Black environmental-science undergraduate, he had become "pretty used to" being regarded with suspicion while collecting field data in the predominantly white areas surrounding his institution, Oklahoma State University in Stillwater. But he never expected to come face-to-face with white supremacists.

One day in June, while mapping subterranean-soil composition during a summer internship in Springfield, Missouri, Anadu and another Black scientist found themselves blocked into the parking area of a local business by a crane. As they waited for the machine to move, they noticed the hostile stares of other men in the area — one of whom was driving a truck decorated with white-power symbols. Unable to leave, they radioed for backup. "Just get yourself out of there," Anadu recalls his supervisor saying. After the event, the company Anadu was interning for held several safety meetings to discuss how to handle such incidents in the future.

Anadu isn't the first scientist to be caught up in a racially charged situation during fieldwork. But he and others have begun speaking out since late May, when George Floyd, an unarmed Black man, was killed by police officers in Minneapolis, Minnesota. On the same day that Floyd died, Black science writer Christian Cooper was birdwatching in New York City's Central Park when a white woman called the police on him.

Anadu and other researchers in fieldwork-intensive disciplines, including ecology, geology and palaeontology, are asking their supervisors and universities to think critically about how to make such work safer for everyone. Many researchers in positions of power have probably never had to confront the ways in which identity — such as race, sexual orientation or religion — can lead to danger in the field. These conversations are long overdue, say those who are speaking out. And they think that changes will help field-intensive scientific disciplines to retain researchers from marginalized groups.

> **"I don't feel comfortable calling the police. Safety definitely looks different depending on who you are."**

"Until we actually think about that, we're going to deal with losing very talented scholars because the field is not a welcoming space," says Robin Nelson, a biological anthropologist at Santa Clara University in California.

Guidelines for safety

Many universities and professional societies have already implemented policies to help protect scientists from sexual harassment in the field. But few have considered other aspects of identity. "I don't think it's ignored," says Amelia-Juliette Demery, a comparative evolutionary biologist at Cornell University in Ithaca, New York. "It's just not even considered."

In June, Demery and Monique Pipkin, an ecologist also at Cornell, began writing a set of guidelines to protect researchers from identity-based harassment during fieldwork. The graduate students were dissatisfied with the lack of guidance from their department, institution and professional societies.

They hope their guidelines, posted before peer review on the preprint server Preprints.org on 2 August[1], will help students, principal investigators and universities to establish a safer, more inviting research environment for all scientists. The guidelines suggest that, before initiating fieldwork, researchers should conduct a comprehensive risk assessment that takes into account the identities of the researchers, local laws and customs and the historical context of the field site.

Demery and Pipkin developed the guidelines with the support and contributions of their advisers and other Cornell faculty members. They have been approached by individuals at several other institutions and societies about how best to implement their advice.

This interest hints that identity-based harassment is common in fieldwork, although there has been little research on its extent. In 2014, Nelson and her co-workers published the results of a survey[2] that focused on gender-based harassment and assault; 70% of women who responded had experienced harassment in the field. But the team was unable to collect meaningful statistics on the harassment of Black researchers or those from other under-represented groups, because the number of respondents in any of those groups was too small.

To Nelson, that highlights the need for a more-inclusive environment in field science. A 2018 study[3] of geoscience PhDs awarded in the United States found that little progress had been made in increasing racial diversity over the previous 40 years. An average of 86% of the degrees went to white scientists over that period; in 2016, 85% of them did so.

Deja Perkins, an ecologist at North Carolina State University in Raleigh, agrees that universities need better guidelines for fieldwork. Field preparation is "often geared towards

rural environments — how to protect yourself from nature", she says. "They don't really cover urban field safety — what to do if you're getting harassed by the public."

And the advice that is often offered to researchers working in towns and cities — to call the police if they feel unsafe — isn't practical for everybody, Perkins says. "I've never called the police; I don't feel comfortable calling the police," she says. "Safety definitely looks different depending on who you are."

As a woman, Perkins has been cat-called, and because she's Black, she's been stared at warily by residents of wealthy neighbourhoods she's worked in. To minimize these risks, she prepares herself for a day in the field by wearing university-branded clothing, carrying literature describing the project and letting residents know in advance when she'll be conducting research in their area.

Course collision

Some students have had to confront potentially unsafe fieldwork courses at their universities when their identities weren't taken into consideration. At Imperial College London, the master's degree programme in petroleum geoscience used to include a compulsory field course in Oman — one of the more than 70 countries around the world where same-sex relations are criminalized. No guidance or alternatives were provided to scientists from sexual and gender minorities (LGBT+) who might have been endangered by the trip. This didn't sit right with Chris Jackson, a geoscientist at Imperial.

He was met with resistance when he first brought his concerns to the department, in late November 2019. But the department eventually agreed to allow students to opt out if they had any safety concerns ahead of the trip in February. The programme also pledged to prepare explicit guidance for assessing risks to LGBT+ scientists.

But that solution wasn't good enough, Jackson says, so he, along with others at the university, kept pushing. In late June, the department responded to the efforts by replacing the trip with a classroom experience using data from Oman, along with a machine-learning course to address skills used in the modern energy industry. A spokesperson for Imperial says that the university is committed to creating an environment where all students "feel safe, included, and able to be themselves".

It's not enough to consider the hazards that field scientists think of as "classically risky", Jackson says. "We need to take a slightly more full-spectrum view for all the population demographics."

1. Demery, A.-J. & Pipkin, M. Preprint at Preprints https://doi.org/10.20944/preprints202008.0021.v1 (2020).
2. Clancy, K. B. H., Nelson, R. G., Rutherford, J. N. & Hinde, K. *PLoS ONE* **9**, e102172 (2014).
3. Bernard, R. E. & Cooperdock, E. H. G. *Nature Geosci.* **11**, 292–295 (2018).

JOSE COELHO/EPA-EFE/SHUTTERSTOCK

The risk of dying from COVID-19 increases significantly with age.

THE CORONAVIRUS IS MOST DEADLY IF YOU ARE OLD AND MALE

A slew of detailed studies has now quantified the increased risk the virus poses for various groups.

By Smriti Mallapaty

For every 1,000 people infected with the coronavirus who are under the age of 50, almost none will die. For people in their fifties and early sixties, about five will die — more men than women. The risk then climbs steeply as the years accrue. For every 1,000 people in their mid-seventies or older who are infected, around 116 will die. These are the stark statistics obtained by some of the first detailed studies into the mortality risk for COVID-19.

Trends in coronavirus deaths by age have been clear since early in the pandemic. Research teams looking at the presence of antibodies against SARS-CoV-2 in people in the general population — in Spain, England, Italy and Geneva in Switzerland — have now quantified that risk, says Marm Kilpatrick, an infectious-disease researcher at the University of California, Santa Cruz.

"It gives us a much sharper tool when asking what the impact might be on a certain population that has a certain demographic," says Kilpatrick.

The studies reveal that age is by far the strongest predictor of an infected person's risk of dying — a metric known as the infection fatality ratio (IFR), which is the proportion of people infected with the virus, including those who didn't get tested or show symptoms, who will die as a result.

"COVID-19 is not just hazardous for elderly people, it is extremely dangerous for people in their mid-fifties, sixties and seventies," says Andrew Levin, an economist at Dartmouth College in Hanover, New Hampshire, who has estimated that getting COVID-19 is more than 50 times more likely to be fatal for a 60-year-old than is driving a car.

But "age cannot explain everything",