

way that has not been attempted before. As a behavioural ecologist, I begin most of my research projects by trying to make and document an original observation about the life of an organism. But many of my observations end up never being documented in my peer-reviewed manuscripts. They might, for example, raise questions well beyond my area of expertise; or it could be (especially with observations that I was lucky to make) that trying to replicate them in a scientific study is just too time-consuming or costly. But I am starting to realize that none of those reasons prevents me from turning those observations into interesting stories that can drive public interest in science, and that have value beyond the rather narrow world of academic behavioural ecology.

Take my recent research experience with ant stingers. We know little about the mechanics of an ant sting. For instance, no one has ever filmed how venom is delivered out of the stinger. So, I spent a week perfecting camera techniques to gather slow-motion video of these microscopic bits of ant anatomy in action. What I recorded were the first detailed videos of venom being pumped from the stinger. From this footage, I could assess what was and wasn't measurable, and what expertise I'd need from a collaborator to move this project forwards. Beyond that, however, this bit of observational science was a fascinating story that I had to share.

### Stinger zinger

I collated, edited and uploaded a 3.5-minute video showing the footage and explaining why I thought it was original and interesting. When it debuted, I also published a short Twitter thread (see [go.nature.com/35kjfy](https://go.nature.com/35kjfy)) summarizing the video and providing some excerpts. The thread went viral, trending on the site's news feed and gathering more than two million impressions on the platform. That week, I spoke about the footage on two local news broadcasts; and several mass-media news outlets, including *Science*, published articles embedding video of the stinger footage that I had just captured. On YouTube, the footage garnered more than 250,000 views, and messages appeared in my inbox from people who had seen the footage and wanted to work with me.

I'm not sure whether these ant-stinger observations will lead to a peer-reviewed, published piece of science. I hope they do, but it wouldn't be unusual if this project failed to progress to that stage. What I do know is that expanding my science-communication efforts to pass on more than just the end products of my scholarly work has added a lot of value to what I produce as a scientist.

**Adrian Smith** is head of the Evolutionary Biology & Behavior Research lab at the North Carolina Museum of Natural Sciences and a research assistant professor in biology at North Carolina State University in Raleigh.

## Mike Flannigan Fire researcher

**Mike Flannigan is a professor with the Department of Renewable Resources at the University of Alberta, Canada. Here he speaks to *Nature* about his work and the boom in wildfires worldwide.**

### How did you get into wildfire research?

I've always been interested in fire. When I turned one year old, I burnt my finger on the candle of my birthday cake because I was fascinated by the flame. And I've been tasting fire ever since. You might call me a pyrophile.

I did an undergraduate physics degree at the University of Manitoba in Canada and, after a one-year course in meteorology, I worked as a weather forecaster for the national weather service from 1979 to 1981. I then joined the Canadian Forest Service (CFS) as a physical scientist. After completing a PhD in plant sciences at the University of Cambridge, UK, in 1993, I returned to work at CFS for 31 years. Now I'm a fire professor at Alberta.

### What have you learnt from your research?

In Canada, the area burnt by wildfires has doubled since 1970. They previously burnt around one million hectares a year. Since 1990, we have been averaging more than 2.5 million hectares a year, and this is because of climate change. In the western United States, the area burnt has actually quadrupled since the 1970s, in large part because of climate change.



**A wildfire burns near Ashcroft, Canada.**

Q&A



### Has the increase created more opportunities for wildfire researchers?

Yes. Canada, for example, is developing a Can\$50-million (US\$37.6-million) satellite for detecting and monitoring wildfires. As a research team at Alberta, we hope that we will soon get Can\$5 million in state-funded fire research. Things have changed in the field. We are actually getting funding now.

### What kinds of scientist can enter the field?

Fire is a fairly broad topic. Meteorologists, physicists, atmospheric scientists, engineers, forestry specialists, geographers, computer-science programmers – you name it – could get into the field. But fire also has an operational side. Canada spends Can\$800 million a year directly on fire management, so there are a lot of professional positions in fire management. Federal, provincial and state conservation agencies hire research scientists, technical analysts and field technicians. Forest services, parks and land-management agencies are also recruiting. If the topic of your thesis includes something directly or indirectly related to fire, then you have an opportunity to get a job.

### What should the public know about fire?

Fire is a global issue. Around the world, 350 million to 450 million hectares of land – close to the size of India – burn every year. In many regions, we are seeing fires that are more difficult to extinguish, and we will probably continue to experience more catastrophic events and, unfortunately, more loss of life. As an international community, we have to learn to live with fire and to address it globally. Because people start some 90% of wildfires, we need to be careful and observant. If you see a wildfire, report it right away to the authorities. We should also consider volunteerism. Programmes such as Firewise USA and FireSmart in Canada help homeowners and communities to protect themselves against fire through education, guidelines and more. Such organizations are always looking for volunteers.

### Interview by Stav Dimitropoulos

This interview has been edited for length and clarity.