Tracey Peake ([00:01](https://www.rev.com/transcript-editor/shared/gYtRbPparmc38aeGrY6jeE6ziLmDV1Xy8lWZCV4rBZkYJqrSvKn2cziGbJnnupRhqmho-QiLU_cb540GFew7bZyartU?loadFrom=DocumentDeeplink&ts=1.53)):

Hello and welcome to NC State's Audio Abstract. I'm your host, Tracey Peake. Wildfires have been a constant this summer, from the enormous blazes across Canada, to the recent deadly Maui fires. Are wildfires becoming bigger and more frequent? And if so, why? We're speaking today with Rob Scheller, a Professor of Landscape Ecology, here at NC State, about what's feeding the fires and what, if anything, we can do to prevent them. Welcome, Rob.

Rob Scheller ([00:51](https://www.rev.com/transcript-editor/shared/6A6bqnne8-ZHfbqJyIb48CAort-ZuFjNdegf4rANP8KX7jN6VfGQDpbQ9YxnyuRXZ5rVpuYrI_zLQSWB3oYN-aZX6hc?loadFrom=DocumentDeeplink&ts=51.06)):

Thanks, Tracey. Happy to be here.

Tracey Peake ([00:52](https://www.rev.com/transcript-editor/shared/0GMq9LrWpLq8OO2BH5HpfThrqbwjqNxfG3-L_I73qRV8oX_cuTv9qkfJRec7ESzP5DMz9IqvG53qHfLIVkn4pJV4gtY?loadFrom=DocumentDeeplink&ts=52.65)):

I'm super glad you're here, because this is a very timely topic and it's something that we at NC State work on and with quite a bit. So let's start by putting this year in perspective. On average, how many wildfires do we see across North America in a given year?

Rob Scheller ([01:22](https://www.rev.com/transcript-editor/shared/Iqzxnw7B37dlZuqs7mHjlk6xc-I6NNSqv-E3cUPRVuEE-rBrehjtYhjhLryWKtJ61SuKePVUItmNmfpDvm1qa8DTZp4?loadFrom=DocumentDeeplink&ts=82.83)):

That's a tough question to answer, because wildfires are so variable. They are anything from a tiny little backyard fire that gets a little out of control, to half a million hectares.

Tracey Peake ([01:33](https://www.rev.com/transcript-editor/shared/RwHmlyuPaUKH8RWCUJvY_-O_67f-txPlhNcyHSWImMFRSmVScr3RwT8O-KwDLG0PLUcTvA40UYCgG9VFR0dIPWxNxQg?loadFrom=DocumentDeeplink&ts=93.9)):

Okay.

Rob Scheller ([01:35](https://www.rev.com/transcript-editor/shared/jCv6b2vR6MaT3KrXIOguR0Kqc80wrQVjbiT3PueBGKVqmYw4UPylHOUUWeOCjzesfVmr_JocRo38XaSnm4SmKd2f5BU?loadFrom=DocumentDeeplink&ts=95.58)):

So anything from those tiny little ones that almost no one measures, but they always have the potential to spread and become something bigger, to these big blowout fires that you see in the news. Huge variation. And so, I'm afraid I don't have an exact number for you.

Tracey Peake ([01:52](https://www.rev.com/transcript-editor/shared/WvdlNDY4Fpfxw47EZIPFgC3Rf0qtDK6RME7HhVOIx5UvEUmIrFVZgrSW8zfnbrHnHLjOFuJ5IhgEASN3cHli_TKIZco?loadFrom=DocumentDeeplink&ts=112.38)):

Okay, but you generally would see more than five or 10?

Rob Scheller ([01:57](https://www.rev.com/transcript-editor/shared/NdChdDziz4ZZLkLP8cbb24aTD7CxjdB7Hx_S4FnB2RbV8Wz9A3ontPd8uWs3Qf2z7OiXvpfovXQGns_R-yv53wiOOwQ?loadFrom=DocumentDeeplink&ts=117.18)):

Yeah.

Tracey Peake ([01:57](https://www.rev.com/transcript-editor/shared/nb22XwHfh5q6I58Lk9BqOVstVNL8WfhMSoQSw7JMCIQuQ_Qn0zFbaGfPPhAyYfaXcm5d-ZYaBzvi8gSOcjPL1gp-XQo?loadFrom=DocumentDeeplink&ts=117.18)):

Okay.

Rob Scheller ([01:57](https://www.rev.com/transcript-editor/shared/G54ET7SE8zbibsmX0ly1AjLWPBR4JW4zgIemw9ArPgEtkWYtECyFlsF313rBq-nX30j0Y7OBppGgdHmX8CFoNCvjf-s?loadFrom=DocumentDeeplink&ts=117.18)):

More than 10.

Tracey Peake ([01:59](https://www.rev.com/transcript-editor/shared/OHjEZmWc-dJFHTQVl-yebrrDR0vaPV9Co2hel_4U3L5RXyWJfjb4LsRrV-NF5geZ-ZM5itR3tEr4c86DyLIUB86EkyU?loadFrom=DocumentDeeplink&ts=119.28)):

More than 10.

Rob Scheller ([02:00](https://www.rev.com/transcript-editor/shared/HxhxaPQX74sFToXHqa_Ud4LbRp5kgHakjyt-zCAP180_hOiNJBJOxp69e2MTG21gM9CDHR9UbpMG-ocJmgpE-WCW7gQ?loadFrom=DocumentDeeplink&ts=120.12)):

And less than a million.

Tracey Peake ([02:03](https://www.rev.com/transcript-editor/shared/x7A-ZkpiIJ2otUK0sJ3Bh0ojvJr_jp6MrQcZVqNDmMAMl4fxGRLyQPRpIExvEEbiu9VK4Q2iTJFHs7HyLkVu87-6b5Q?loadFrom=DocumentDeeplink&ts=123)):

Less than a million, okay. But they are a natural... Are they part of the landscape?

Rob Scheller ([02:11](https://www.rev.com/transcript-editor/shared/Tp3eB7FrOmiU445NAcI3dcZ4eLB95Mr_4F7G_C3EOHKGPX8Q5pwgyi7htN4SGRX4Dd7bz1Wp1ZvmqbAMLZzRd9jIqLM?loadFrom=DocumentDeeplink&ts=131.19)):

So that really depends, and it depends on location. In the United States in general, about 80% of fires are caused by humans.

Tracey Peake ([02:22](https://www.rev.com/transcript-editor/shared/Y0LfWHx13fbolRFmSOuPqb50cpwVLdhEDzjxASYFSL250D23kRXRdCssStlvyZyO7bvJb9kbbSNUaWygvCjtW-eknAQ?loadFrom=DocumentDeeplink&ts=142.17)):

Oh, okay.

Rob Scheller ([02:23](https://www.rev.com/transcript-editor/shared/-8qt87DTnCPMB_4EZsHgQ9pQdoHHyzAeroTzetE4AG99fUnySgO5Jmyo03aF12j8UkuAdQL1RULBof5bibn6-1-L6IY?loadFrom=DocumentDeeplink&ts=143.31)):

So usually accidental ignitions. Occasionally you get some arson, but normally just an accidental, I don't know, cigarette thrown out the window or bonfire got a little out of control, that kind of thing.

Tracey Peake ([02:38](https://www.rev.com/transcript-editor/shared/gVgSBGRY_nlR4Rh-ZIPqcQLuB8hGCKildTsoNEIC0IGTNuOIkOglZ3nbARGx8bezPaJaW97haMjmIdhJHyHbVKoEQdY?loadFrom=DocumentDeeplink&ts=158.79)):

A gender reveal party gone [inaudible 00:02:41].

Rob Scheller ([02:40](https://www.rev.com/transcript-editor/shared/XnylFQyO5Md-vUbd6TYoJeVjqfpmK1fFPiQWrcfBGBwfLf6vyuGU1P1YiQpQ9UQEYpS-78_MFAjnIr9J4N-xox9dNZM?loadFrom=DocumentDeeplink&ts=160.62)):

Gender reveal party gone wrong, could be teenagers playing with fireworks. That caused a big fire in Oregon six years ago.

Rob Scheller ([02:49](https://www.rev.com/transcript-editor/shared/yrhXKbyMHjpouZ-ghMtApeH7SIDvXXm4ay9ktH4n84IGQkxB434jvKAoS5LU1fGYIS-67R0IstOy2C96MKB_M3bwQUA?loadFrom=DocumentDeeplink&ts=169.29)):

So humans accidentally cause most of the fires in the United States. In Canada, it's the reverse. It's mostly lightning ignited in Canada.

Tracey Peake ([02:57](https://www.rev.com/transcript-editor/shared/DDwziEHs33TEu8FhfL0tX9JqR2h-WzZsm6Yngw1n2CALMMkeBS4q5oXi4l4fIQRguky3B7yOxa4iFWYo3hbDvo5nK0M?loadFrom=DocumentDeeplink&ts=177.81)):

Is there a reason for that? Just that we're mostly, we're more... I don't know, flagrantly disobeying proper rules with fire?

Rob Scheller ([03:10](https://www.rev.com/transcript-editor/shared/RER2m60vXHHPFuMqSGq6nvbrZTWnQ0OAAkhFXA6FfusmJsk7WJDvEfiaweshKp29ZQ0P0kptmBRieKK0uuNaQKuIFe4?loadFrom=DocumentDeeplink&ts=190.56)):

No, I'd say it's just a function of, there's far many more people in the United States, higher density of people in the United States. There's a lot more people who live in what we call the wildland-urban interface, which is, your house is neighboring to the woods, but perhaps close to roads. So it's somewhat in between, not exactly the suburbs, whatnot, way out in the country either. And that's where we see a lot of the ignitions happening. And we have a lot more of that wildland-urban interface in the United States, particularly in North Carolina, as compared to Canada.

Tracey Peake ([04:40](https://www.rev.com/transcript-editor/shared/MsJeQtqP-EurqEXGnW58kIK4c0cDTlHegNNlqzTYzkGMQ1hyhtQxSn-0uSBMMwCmOljXHRgqePBkHZPJV2x0N-8wTnI?loadFrom=DocumentDeeplink&ts=280.77)):

It just seems as though this year there've been a lot more bigger fires.

Rob Scheller ([05:07](https://www.rev.com/transcript-editor/shared/pMQeShDyg0o2trl16ksvbbPkIRhcpbnJGEUs1LC8Wgxxayh_pBLAhd3ZPNkVLu9EFQDSrGSJvITk49sYj9mP4_ww_64?loadFrom=DocumentDeeplink&ts=307.11)):

Well, Canada I would argue is not an outlier this year. It's just a function of the weather we're experiencing.

Tracey Peake ([05:14](https://www.rev.com/transcript-editor/shared/GHvP3ZbPRqUA5x9uOG5WXRzQPuU7Cam6wu5WCe3cOd8yP4oHvt5i2316ywSLwTG0nL07KFQJyhc-_rR_lZo3CsB5cHw?loadFrom=DocumentDeeplink&ts=314.64)):

Okay.

Rob Scheller ([05:15](https://www.rev.com/transcript-editor/shared/DeJxm1A_rYC7PzcjhAE6NbhXI5Hhb_uiw_aR8xZ_7Ie18XipOKIecHOLJLNXdBiV17LBM-vv7XkPs2WhDRSuQduJ3dQ?loadFrom=DocumentDeeplink&ts=315.24)):

So Canada this year has been extremely dry and the fire season started really early. So the fuels that are necessary for fire to burn, think of pine needles and little branches on the ground, that kind of thing. They dried out really early this year. So that is when the fire season begins, is when those fuels get dry enough to burn. And the fire season began really early this year, and it's been very dry in Canada this year. So that's a function of climate change. And layered on top of that is El Nino weather patterns that we're experiencing right now. When you get the El Nino pattern, tends to be the northern latitudes in North America, Canada, Minnesota tend to be drier. And then where we are in the South, Southeast, tend to be wetter on average. So it's this combination of weather and climate change is just making the fire seasons earlier, just amplifying what usually happens with El Nino.

Tracey Peake ([06:16](https://www.rev.com/transcript-editor/shared/UB-XCXkR3rGf5lfcnV52Do01rTbiaUCUfvvSBOdCHLk5qj4FiE9GgJXCzBdkS0B7pAQh4utLH_28etBN-zVeNoE3fjA?loadFrom=DocumentDeeplink&ts=376.53)):

Okay. And so, that was what I was getting at with what's making this year different. Can we back up a little bit and talk about what is considered fire season? I know you said it started earlier this year. So for example, you got hurricane season that goes May through November. So what is fire season?

Rob Scheller ([06:37](https://www.rev.com/transcript-editor/shared/jyARCftmZyKMnC6oycLy2Xnlcr2EOfsoeuscXSxYfQ_frkNRcVk85ki5Z0vUOd1G7GG3vAKgjV9ngCmrbpOAwN4Dqro?loadFrom=DocumentDeeplink&ts=397.86)):

Well, yeah, it varies all across the United States. So in Canada it's when those fuels dry out, can be as early as April, and that's as soon as those fuels are dry enough that they can burn and carry a fire. That's when fire season begins and it ends when it's too cold or too wet to carry a fire. And that the duration of the fire season varies a lot by location and from year to year, just huge year to year variation. So let's take California as an example. California had experienced many horrendous fire years over the last decade, because the same phenomena you're seeing in Canada where the fire season starts earlier, things dry out really fast. You have layered on top of that, really high temperatures, and that creates a long fire season. This year however, California so far, has not seen hardly any fires, and it's because they had such a huge snow pack this year.

([07:39](https://www.rev.com/transcript-editor/shared/Lt5DkJJmzsCG2vUHJUXfJuOej50hhqQdTlUbC_OGHrVtAy0Xo-YF2l-qzz6wZqI2E4jSvsMCIo5Xt_NE4esdKVg_Hgw?loadFrom=DocumentDeeplink&ts=459.99)):

So you had all those atmospheric rivers dumping precipitation in California, high altitudes that comes down as snow. So they had many, many feet of snow, and that snow is still melting. So that's keeping things pretty wet in the mountains of California. And so, their fire season has barely begun. Now a little farther north, in Oregon and Washington, they didn't get nearly as much snow. They haven't seen a lot of fires yet, but they're experiencing heat dome right now, and people are really worried that we could see some big blow up fires in the coming weeks in Oregon and Washington.

Tracey Peake ([08:27](https://www.rev.com/transcript-editor/shared/3m0aiuvielwgx2hma_3XnZC5VW7yx--CZ27sI7X0vcosVPwEESH8pPLcGJplCm16mVlFueb3ypCRvnbQEX5kMp2HFwE?loadFrom=DocumentDeeplink&ts=507.03)):

So I guess the question then becomes, we know that with climate change, you're thinking that things are going to get hotter and drier.

Rob Scheller ([08:39](https://www.rev.com/transcript-editor/shared/UIcUjlnCK7CY456NLFftpVrU5T-WAdNIPtvlDLzTOEwAdV4BF-bL6b4nKYH18IxexV-rjCBV33Fp4xLOqUo_VYi0GxY?loadFrom=DocumentDeeplink&ts=519.69)):

Not necessarily drier though, so it's going to be variable from year to year.

Tracey Peake ([08:43](https://www.rev.com/transcript-editor/shared/4fI654NYMOoJEhHRZ-mi0juUtZfHi1H3ec1Zc3dmy0Poyn4V7mCnvK64i_2l6L-LOQ_ERA4mFt9XKeFzHAzEvOnp2iY?loadFrom=DocumentDeeplink&ts=523.35)):

Okay.

Rob Scheller ([08:43](https://www.rev.com/transcript-editor/shared/XO6InIEqlBpMzkCf5LfP_ckDoK7lMBNH8PLUpdU2LH7B6nBiSlFfN4nVoqtKE9340Smbw_iSn9ukEmGdywuenfXJalk?loadFrom=DocumentDeeplink&ts=523.68)):

You can see some really wet years, California this year, and then some really dry years, but it only takes one really dry year and a hot dry year for those fuels to dry out and be amenable to a big fire. So North Carolina, we experienced, or the Appalachians I should say, experienced a big fire in 2016, the Chimney Top fire. And that was in December, at the very end of the fire season. But the conditions were just perfect, where it was a dry year, things got really dried out. And then in the fall, you have a lot of leaf litter and you had some good winds carry the fire quite a long distance, ended up 30 people dying.

Tracey Peake ([09:29](https://www.rev.com/transcript-editor/shared/J0bMxasBtpefxjtZdBJWqQfA4kq2ptvCv7ace-L17yv-noTbs0FQAEFX2BRSeoMbQoO0GBQ7mste3SE-8uUrUpAzVhM?loadFrom=DocumentDeeplink&ts=569.22)):

Wow.

Rob Scheller ([09:29](https://www.rev.com/transcript-editor/shared/qGntFIryLP-jXw_Ucr8hOs4h1IBc7HXfxoASURq23etE8V9g2GwRT-J_6-0vaEjgbGnqDqMjz5tOHiHf3eq2EIYC2Ls?loadFrom=DocumentDeeplink&ts=569.7)):

If I said 2017, I meant 2016.

Tracey Peake ([09:35](https://www.rev.com/transcript-editor/shared/2bWOU5nPBd0WJ7JevB1mzmJ8fH16Xv6hG9OXKqBBUkfa8cUo5EYNxH4Pd4u6NyshFfwvK2qGfIRsi47zlqwPymGtraY?loadFrom=DocumentDeeplink&ts=575.73)):

Chimney Top fire. I guess, are there fire management techniques that forestry folks do or ecologists do to try to... Obviously you cannot go through a national forest and rake up the leaf litter. That's not going to happen. But in these urban interfaces where we're interfacing with the wilderness and where an out of control fire could be devastating to human life and infrastructure, are there things that we can do to manage the risk at all?

Rob Scheller ([10:15](https://www.rev.com/transcript-editor/shared/rAXLSfUoAfHifA0rxowCaS59Zkuo8irCdOp7U-nWTb15uDP3qMl0jvjn-Acw-CI9Ipuxibl9Vxa5Cq5WBtbw6ACdJtE?loadFrom=DocumentDeeplink&ts=615.36)):

Oh yeah, 100%. There's a lot that can be done. A few things, right next to a home or a building, people practice what's called fire scaping or you want to really clear out all the brush quite a ways away from the home and just make sure there aren't any really flammable bushes right next to your house. So backing the vegetation away, creating a safe space around the house. That helps a lot for individual buildings. You can also do some thinning around the forest generally, that can reduce big crown fires from happening. That's a little more... It's also very expensive and you can only do that immediately right around homes and structures or in that wildland-urban interface, where you just don't want a big crown fire, is not compatible with other uses, right?

Tracey Peake ([11:14](https://www.rev.com/transcript-editor/shared/fsQ-x8BWw28ZS0Zld55tAkvHMlv-Jv3-vTRPrBV5RxIxm8O73o3Kh_UJzs81u2M3yojKgeeBW6BHXTBeqpooVyXhVCU?loadFrom=DocumentDeeplink&ts=674.34)):

Right. What is a crown fire?

Rob Scheller ([11:16](https://www.rev.com/transcript-editor/shared/WjCyhZCpCrvYuygyJsB1SQyrEQd3RDTV4JqOy8tM5WZjHRFbeevb7zyDzJX8II04UR7r2FLAaA4R1LpCQJG9NqgZ2_c?loadFrom=DocumentDeeplink&ts=676.83)):

Yeah, sorry. A crown fire is when the fire jumps up into the canopy of, particularly conifers. So when you see fires in Canada or California, you see the ones that make the news are the ones where the top of the trees are on fire and flames shooting up 40 feet into the air. That's a crown fire.

Tracey Peake ([11:41](https://www.rev.com/transcript-editor/shared/y9GKbnSWgRf9VWk7JqlGGHsPnx9xaJV8_WfwtfYKlE0uti-u8QAY1Q1CYCU-x89gTsN5H-akxGH7ANYi2zwGPMWdzCg?loadFrom=DocumentDeeplink&ts=701.19)):

And that's what we want to avoid.

Rob Scheller ([11:43](https://www.rev.com/transcript-editor/shared/RuXsCbjgAR33Xou6q4gZHAD1cewXjR084YiFMBRCD83cNlkon-ZQE1r7HR0dZ0-yR5Mx1QKoN0Uw9ASI4Lfn8MS_anQ?loadFrom=DocumentDeeplink&ts=703.17)):

Around humans, definitely.

Tracey Peake ([11:45](https://www.rev.com/transcript-editor/shared/sRw3u_ELI6fU0A2ugM5gWvpnDMZHB4XY94jDHROOAhUJDJXVFe9rz0rRFwPoYxN5T3loFFIZObBWL92fw2yFciBe5Gc?loadFrom=DocumentDeeplink&ts=705.09)):

Okay.

Rob Scheller ([11:45](https://www.rev.com/transcript-editor/shared/3vcOqeyj5kcv1z-H6iFN270FBTKZI7vk18uMkjACFDu6lA78nnBBbpcChYwxV9hfgXxWbXG9f3UFz26TWx79PCjbdcA?loadFrom=DocumentDeeplink&ts=705.69)):

Now the other thing you can do to help manage fire is prescribed fire, where you're preemptively putting out some fire when the weather conditions are safe for low intensity fires and you have a crew out there carefully managing it, making sure it doesn't escape. Sometimes they do escape, but generally prescribed fire is a little bit cheaper than thinning or doing that fire scaping right around the house. You can cover quite a bit more area with prescribed fire. And the idea is to have that prescribed fire remove some of those pine fuels that carry fire, and get rid of those fuels that help fire get up into the canopy and that cause crown fires.

Rob Scheller ([12:28](https://www.rev.com/transcript-editor/shared/skLQoRxI4LM0r4RYwhthED_wyqhKPjtZVxzcV8PfGDueJxjRZRSdYI_DvA_dhdFhOcztiI_4c9KZwc5DPbVve4SapZA?loadFrom=DocumentDeeplink&ts=748.74)):

So doing prescribed fire, you need to do it pretty frequently, anywhere from every two to five years, but that can really reduce the risk of the bad fire.

Tracey Peake ([12:39](https://www.rev.com/transcript-editor/shared/K6y8y8iKak9I3PPTAR-20eZY9JlYJP_ITOmNqp4US_rOPEIRVEnUpvSeuVDx-5VUJTbgecYJ69vasRfpNSVFC5JFyT4?loadFrom=DocumentDeeplink&ts=759.09)):
Do they do that a lot out west, particularly where they [inaudible 00:12:43], or do they do that here?

Rob Scheller ([12:43](https://www.rev.com/transcript-editor/shared/51X-W-e0yizVD5Nzm-YgJVVchJvPBA0GdyQmo6aklRbptiXbArHb9sSRu0N-qoHmVeEeidxHSBVZbmNd4JcAMNEvzJ0?loadFrom=DocumentDeeplink&ts=763.23)):

They do that a lot out west. We also do that a lot in North Carolina.

Tracey Peake ([12:46](https://www.rev.com/transcript-editor/shared/5zjv28OmtycWOCxFB1qo1WJXTcgTfS6Zv9zrEqdJOnipET9RbFr5RRXEuFLiHF-OvK9P7wBguhyGK72cbrlBr07MFOs?loadFrom=DocumentDeeplink&ts=766.17)):

Okay.

Rob Scheller ([12:47](https://www.rev.com/transcript-editor/shared/0Ta37YueSiiszJXF-4ZC9c9CSwHFjSxSqMGsXD4FjjbIkxdFuLa9lmrC_SEompVokv4qsvtP570fFLxGg1yqDK4DTYw?loadFrom=DocumentDeeplink&ts=767.34)):

People are doing it for restoration purposes in the Appalachians. So prior to European settlement, Native Americans practiced prescribed fire on a very regular basis, and those forests were fire adapted forests. So in the Appalachians they're trying to use prescribed fire to restore it back to those conditions before Europeans excluded fire. In Eastern North Carolina, we currently use prescribed fire a lot just to help manage the forest. So it is a forest management technique, but also used for restoration. So I've done some research in Fort Bragg, down by Fayetteville, and they use prescribed fire a lot to maintain habitat for endangered species. So they go out there with basically flamethrowers and burn every parcel of land every two to three years. So really aggressive prescribed fire regime there. Again, they're using it in this case to maintain endangered species habitat.

Tracey Peake ([13:47](https://www.rev.com/transcript-editor/shared/XiZteiMGo4e-jAmfPGiCt9XwjlsQ8KPsSGMp1vOk4sHR9l8S7u1buqdo7rtlq80m17a97q25sQYYm0XuRd1XKhLTFL8?loadFrom=DocumentDeeplink&ts=827.88)):

What species need to be living in a burned out area every two years.

Rob Scheller ([13:53](https://www.rev.com/transcript-editor/shared/qt0TcncPLccfsiUFENkku3Y-kXvS5tYJ4EC137rfPNMUxe7EnloT6_w7eX2-KYEoWMjis2vd4aBFLSJ6CvnANqNRj2A?loadFrom=DocumentDeeplink&ts=833.22)):

In particular, the red-cockaded woodpecker, which is on the endangered species list. And Fort Bragg is the largest intact piece of land with red-cockaded woodpecker habitat. So it's a really important place for the woodpeckers and they do a great job down there of maintaining it.

Tracey Peake ([14:14](https://www.rev.com/transcript-editor/shared/DsPSZOOtsLBH5Jw45q1YoJJ-PZ-CWyFCYh98f0bp4WCV5LTI2MvSF7i3T8Y9wH1LskFqvxX2LOjE0r2xMmU92-oWz2U?loadFrom=DocumentDeeplink&ts=854.85)):

And if they didn't do the prescribed fire, I guess you mean that they would lose the trees that these [inaudible 00:14:19] nest in?

Rob Scheller ([14:19](https://www.rev.com/transcript-editor/shared/mQmrNhJJuAafnQRzUgYngRceig9L_KT4kyQhIyl0qUUG-uapMVrnutKPh5_zVLJDY8vO39-FA3pMhHnqUw6dkUIU3uI?loadFrom=DocumentDeeplink&ts=859.44)):

No, what would happen if you get rid of the prescribed fire is, you just get a lot of shrubs and understory, small trees coming up. And the woodpeckers really like to be able to fly through nice open understory. They don't like all the dense shrub and small trees. They like a more open understory, and so you need the prescribed fire to keep it open.

Tracey Peake ([14:42](https://www.rev.com/transcript-editor/shared/mK5L93lC--4EBfWVZ83VechXSTe_hXI7i8-bWHXmPK47mt2ifXsPcAqyiAgKn4GRR_L88j1F5PII0tYO47CUovaoBoU?loadFrom=DocumentDeeplink&ts=882.78)):

So those woodpeckers do not like a cluttered landscape.

Rob Scheller ([14:46](https://www.rev.com/transcript-editor/shared/dRhSW1cvwyBRGDGZ1zzSdy9-cD5OL0msElGGjh6HgjBTR3yiTpwen6WVurWDAS_fav4Lsumzof7dZ2QBSBXDATWL1SM?loadFrom=DocumentDeeplink&ts=886.38)):

They do not like a cluttered landscape.

Tracey Peake ([14:47](https://www.rev.com/transcript-editor/shared/Yq93WBp2joOtlx3Us5egHqWPVPDEg2IXZ3k85ywd1yD38RzFQBrsKZSxhjrXNvKE-f2j9oVp4WPn3m_IGaKzHdyf9pQ?loadFrom=DocumentDeeplink&ts=887.73)):

Tree to tree, wide open spaces between the spaces.

Rob Scheller ([14:50](https://www.rev.com/transcript-editor/shared/8Y8Ptxg8Iol08SaOoVmxiuiFsriTpHUXrWKKX2IYwb2al4h9RvT6LdUS-r62PBR7vEoHHw0pcq5wttyn8OEGMZF-bUY?loadFrom=DocumentDeeplink&ts=890.73)):

[inaudible 00:14:51] a condo of woodpeckers, I think.

Tracey Peake ([14:53](https://www.rev.com/transcript-editor/shared/EqqmdWTWbR0uARV6ebr5JqBHcUiXZQqLCpmWZ1YnjQ7dQOiuyRjr_Gtf79NmhqHg_WQHr1CzttWgL3ltPxBTPojkAmQ?loadFrom=DocumentDeeplink&ts=893.58)):

Okay. So what about fire prediction?

Rob Scheller ([14:58](https://www.rev.com/transcript-editor/shared/hDtQGURbCBUTSCg8BbZCb1zL5zLiLIWOMJC-DYLdcZVCbprY_S-hw3-YQvNTM4KZIEA0mww8psT0m0GjTU8--brD1qo?loadFrom=DocumentDeeplink&ts=898.41)):

Yeah, well of course we would like to know how much fire there's going to be.

Tracey Peake ([15:02](https://www.rev.com/transcript-editor/shared/xtQVPTJ_BFbjxdKiw7DoLRKuNOErco4GFs1Y-79p5DpUWmKrt1l-x0SaGHons11gOndqiK8Unuut5wW4Xv_e2yy_QJA?loadFrom=DocumentDeeplink&ts=902.22)):

Right.

Rob Scheller ([15:04](https://www.rev.com/transcript-editor/shared/4W9Gjt_6v-ZDuJ7BRQZSVYRaDqINN54pK-8LyUyDNWLHwwH70-9RSTDo-R-jLzCd7n5sKFmqPMsVM-I9YWWni6rD9WM?loadFrom=DocumentDeeplink&ts=904.8)):

It's a challenging business. It's what we do in my lab, is try to understand how fire regimes will change as climate changes. Yeah, it's tough. It's always tough to predict the future, because we don't know exactly what the climate's going to be like, and we don't even really understand fires as well as we thought we did. We're seeing fires now that people really thought of, if you went back in time 10, 15 years ago, people would've said, "That's not even possible, these mega fires that we've been seeing." So in California, just these giant fires. So they're so powerful, they're sucking in air from around the surrounding landscape. So these giant mega fires are incredibly intense, just incredibly high temperatures. They spread to huge areas. We just have no experience with this. And so, sometimes it's hard to predict the future when the past doesn't give you any clues about what the future might be like.

Rob Scheller ([16:08](https://www.rev.com/transcript-editor/shared/KpZ6BCBK9_ICGAO-Ymd8faN966Wg8c9HUxveejrTVHq7RWnYZG1jEgzLy1WoQEwcVfbMugxc5ocWkq1WkCZMsbOERK8?loadFrom=DocumentDeeplink&ts=968.73)):

So we use these rare, really huge fires. They're rare now, but probably will become more frequent in the future. We use those rare mega fires to help us understand the future under different climate conditions. So we train our models using these exceptional fires.

Tracey Peake ([16:27](https://www.rev.com/transcript-editor/shared/ChfTilUK-KMu6CnqaAga759r86MSBXxyj8yB4FTE2gRBerqXQNybnL_CZgU8um3GXyRJOHoH91snQ18o6h8qs6AlGRU?loadFrom=DocumentDeeplink&ts=987.48)):

So you're feeding basically, fire data into computer models, and then-

Rob Scheller ([16:33](https://www.rev.com/transcript-editor/shared/Htz_sFCrtRU-gtUqM08WsifLgC1839vwcWSk-H4PAFj9c-c_K0C3jYBRJzV4GyxXNT6usxiCRVEFctdGf_NpHKLzMF0?loadFrom=DocumentDeeplink&ts=993.21)):

Pairing that up with potential future climates to see, okay, given this climate, given this vegetation, if there's an ignition, what might happen?

Tracey Peake ([16:43](https://www.rev.com/transcript-editor/shared/EuKXNQK2BJLV01D_x2VUakpmF_bI3452GspPILa4trKg_E-s7PfFgzezQYoRgYDOkecPZgdPE-KDYKL02DiSstt8v-Q?loadFrom=DocumentDeeplink&ts=1003.65)):

Okay. So it's not going to tell you necessarily the likelihood of an ignition, because that would just depend on the weather that particular year, right?

Rob Scheller ([16:51](https://www.rev.com/transcript-editor/shared/rA0qLimxM04R1NiXwUAXgS0y51dm6Ic727RwAitVR_gGMvWHrkXz_Oi2AJy4uVqk5UTVgOus6dDwA4w7ERDNKaO6xik?loadFrom=DocumentDeeplink&ts=1011.45)):

Yeah. Ignitions depend on both the weather and then those random human variables about-

Tracey Peake ([16:56](https://www.rev.com/transcript-editor/shared/8fFtE-BW75ast_SZQJ2CrtdMye7n2ncpgn35UaoSx19Z3q6IHsSmq48kDhCrbHVsw1AOuJTO1eyPa0uQol2zkYo6mrI?loadFrom=DocumentDeeplink&ts=1016.04)):

And then people being dumb.

Rob Scheller ([16:57](https://www.rev.com/transcript-editor/shared/E96m4pyU-VrhPmwU3xjDxQxDUllVKFRZB834nEsZkr94jAykIMC617kEcWfyoQiXHYg5JzoHTQr0K4_KBTjSANyunGE?loadFrom=DocumentDeeplink&ts=1017.27)):

People being dumb, the teenagers with the fireworks and all that. So ignitions, it's really hard to pinpoint where ignition will happen. We can see general patterns on the landscapes, which is where you have more people, you have more ignitions, but that doesn't tell you exactly there's going to be ignition this place on that day.

Tracey Peake ([17:19](https://www.rev.com/transcript-editor/shared/x_NyQLYouuV-4WmnbRN-7d2UAx8PvQzN9B-kzbGE0U3gCh0DpbfKauMfdWNBWIOLFgcckNQ1WW1yOAibvwv908y3ZIs?loadFrom=DocumentDeeplink&ts=1039.08)):

Right, next June we're probably going to have 15 fires in this particular stretch of land. It's not that. It's more, if an ignition happens in this place, with these conditions, this is what we can expect to see, depending on the intensity?

Rob Scheller ([17:32](https://www.rev.com/transcript-editor/shared/r4njIvEpUVFeOZgZxDJFiTNEG0pWTZpCBNEGfClYzGQp-RwCWGYrjgRBvJYoqBrAN8lOb60-CrfEh1pwSpzOYXVuHrA?loadFrom=DocumentDeeplink&ts=1052.4)):

Yeah. And we try to understand really long-term patterns, looking at decades, not next year per se, but we can see these long-term trends. And so, I'll just give you one example. In the Southern Appalachians, we've been looking at what is the future of fire in the Southern Appalachians? And it really depends a lot about how drought and weather will vary in the future, but we could see up to 500% increase in fire in the Southern Appalachians if things get drier, and they will almost certainly get drier, or the fuels will get drier. And we see more climate variability, more of that big swings from year to year. And if you've been following the weather recently, it does seem like we're seeing a lot more variability where it'll be really dry one year, really wet the next. And so, if you see this combination of things getting drier, the fuels getting drier because of temperatures as well as precipitation, and big year-to-year variation, you could see five times as much fire in the Southern Appalachians.

Tracey Peake ([18:41](https://www.rev.com/transcript-editor/shared/4fmjsQhbX32P87fZ0ozTnM8nm5ONkWGJ2D3bCbWao49AJ7KCBnlHVdevs65adGkvFmijAvFXfQPZwfslqhfS7XBfznc?loadFrom=DocumentDeeplink&ts=1121.73)):

So with your predictions and a lot more fire in the Appalachians, and there's a lot of Appalachians to burn, because yes, people live there, but there's a lot of Pisgah National Forest and other preserved areas. Does this work in form, the way that state and local governments should be preparing for this? What about firefighting techniques? Are they going to have to shift as well? If you've got some enormous fire that's basically creating its own weather system, how do you deal with that?

Rob Scheller ([19:17](https://www.rev.com/transcript-editor/shared/INvykJxNG8hV0BHqDHjiP5dAU-kF9NG9lRT8AoojjBtwdonCWlf-XYW78DnBtt-A3kdB4xY9uMxZzm1-CjYvvtmw4fs?loadFrom=DocumentDeeplink&ts=1157.79)):

Yeah. Well, sometimes... Well, we'd like our work to always be informative to management. That is the goal, but it's not a one-to-one relationship where, oh, we publish a paper and people are going to run out and buy expensive aircraft. It is a process of helping people understand the potential futures and just giving them the information and the tools to make better decisions. But it's not always possible to manage a situation. What you're seeing in Canada, just these enormous fires, and I don't even know how many tens of millions of acres we're up to now in Canada, and there's a lot of fire season left to go up there. A lot of that is just uncontrollable. It's such a vast area. And these fires are burning in very remote areas and the firefighting force is stretched to the limit. There's only so many firefighters in North America that are available to help with these enormous fires. And so, sometimes the best you can do is keep people out of the way, try to protect property where you can, and sometimes you just have to let it burn.

Tracey Peake ([20:29](https://www.rev.com/transcript-editor/shared/9aP4FyZd82Na3o-E4f6RG88II82GsRvLjFZNe_095vwBPaSV4zIxGgc7zbC7G59aoi9I-1Fx-65dDiabK8pq5UDbLow?loadFrom=DocumentDeeplink&ts=1229.01)):

And so again, going back to your average suburban home, so the mulch beds right up next to the house with a shrubbery, not a good idea. Not that I'm asking from personal experience or anything, like we don't have pine straw. We're not using the pine straw around the house.

Rob Scheller ([20:49](https://www.rev.com/transcript-editor/shared/Wz_66DAo7EuZXq0I6sor09ggsh3F_xyeT4GG8-ypr4TII3u0442pAUaO44sUbLqOv8flMR3B2kMMFuCRtrJbYHmQZt0?loadFrom=DocumentDeeplink&ts=1249.08)):

Well, shrubbery in North Carolina, actually... Well, it depends on the shrubbery. It could be a benefit. So some shrubbery creates a green buffer. So if your shrubs remain nice and green, not all shrubs are super flammable. That can actually reduce the probability of a fire getting up to the house. In other places, not so much. So farther south, where you have palmetto, those shrubs that have palm leaves, maybe you're familiar with that. Those are really flammable and you really don't want those next to your house. Those dry out really good and they're just highly flammable. And where you see the fire escaping, that's more in remote areas, particularly in the western United States, where we just want to keep the fire away from the homes. Now, your house in the suburbs of Raleigh is probably safe from fire. We have a pretty good road network. Where you have a lot of roads, it's pretty easy to drive a firetruck right up to it and keep the fire out.

Tracey Peake ([21:50](https://www.rev.com/transcript-editor/shared/gbaBIDM4u3Pj9cjjcgjf5gBj926BmURu6bz1_FdXikuvACKG9kIciTHuPruvY3Bd2SNYopqBca8LEOib7hpQGW5BwZY?loadFrom=DocumentDeeplink&ts=1310.22)):

Right. I always ask this question. So it's my, what's the coolest thing you know, question.

Rob Scheller ([21:58](https://www.rev.com/transcript-editor/shared/isLDyGGNKkyw6h2U1I1WNuxNCLbt6nhauxmIHgpxBdYUYQzKEykHRcZBrO32dD6iCgPQWNggDysMBM0VHsqZVpC66BY?loadFrom=DocumentDeeplink&ts=1318.17)):

Yeah.

Tracey Peake ([21:58](https://www.rev.com/transcript-editor/shared/zaNKZvvSvA74AbklHk0Gzs2PmQEQIJiJWE6jqpstYKHAdyHAufvdDUZGMHeQGlwYTHOeOB3mm50e75amNqlhFeMHaF4?loadFrom=DocumentDeeplink&ts=1318.44)):

So what is the most interesting or the coolest factoid that you have discovered about fire or fire management while you're doing this work?

Rob Scheller ([22:08](https://www.rev.com/transcript-editor/shared/nfYopDly7vMnRuEz9we0_lHEdU5NQ5GcFaZA5zii1cXntsXnagQ0h9zqvE6GHPUF8mVgpZkEsgfEbtF_0uB_HDYEkuc?loadFrom=DocumentDeeplink&ts=1328.22)):

Yeah, my work isn't specific to fire. What I study is how climate change is going to affect forests, and wildfire is really one of the most important things as far as what can happen to forests, given climate change. And we're seeing that play out around the world right now. In general, and I don't know if this is a cool thing or if it's more like a new reality that I've learned about over the last 20 years that I've been studying this. There is a lot we can do. Management can be pretty effective of helping forest adapt to climate change. There's just tons of things. It's not just about wildfire, it's about planting different tree species and trying to prevent insect mortality of trees. There's a lot we can do, but it's going to take a huge effort, a huge investment. And I think people need to internalize this.

([23:05](https://www.rev.com/transcript-editor/shared/IrH-_7vl-7WzKWvCcNOo-5HzsX0b-GmN3cJGRxJdUxWpMIUL3BKAUakcTQ-cdeQ-BnCVq4zqRgckDOYiQaolXSCVWC8?loadFrom=DocumentDeeplink&ts=1385.85)):

If we want to keep forest into the future, we want to keep California forested. We want to make sure all our forests are healthy, even given climate change, it's going to take a lot of money and it's not going to be a one and done kind of thing. It's going to be investment over decades into the future. We just don't even know when climate change is going to start slowing down, much less reversing. And so, it's just going to take a huge effort on our part globally, and I mean everyone, in order to keep forest healthy, so that we can keep benefiting from forests.

Tracey Peake ([29:15](https://www.rev.com/transcript-editor/shared/S2avkli-XMYwNuqU16x-q3zyRcykwDoxrP-7rSJvUiad7cWUFpy1y13yj9EplTFKR2ttERHBRfJySvdzr0zR4_yb6HU?loadFrom=DocumentDeeplink&ts=1755.36)):

Well, thank you so much for being here today.

Rob Scheller ([29:19](https://www.rev.com/transcript-editor/shared/4VGI6m2fyEY5QNr9-vo2Eh5huVy0TweWKGU2meR2VzbbjgZXVrtZov-zeYgO5kFevrz5so_7_pAAfiNzK24RamyGux8?loadFrom=DocumentDeeplink&ts=1759.74)):

You're welcome.

Tracey Peake ([29:20](https://www.rev.com/transcript-editor/shared/6TNmOUABB9hA4Lc2OYXVxOFc8Zv3B8r_Vd22s37yvgMDWhiLaiODQKQNquYvg1ZGDg5I60Q7U7LT6hkatGeaiU2ArlQ?loadFrom=DocumentDeeplink&ts=1760.85)):

I think this has been very informative and very helpful.

Rob Scheller ([29:22](https://www.rev.com/transcript-editor/shared/Sy8GuA81-hJfUKpB5fNco84LiWND1LIv66O-Xvy1HL8hvOY0oqw6_8fOHUcjEZ4O56_TVMqlTmUOgGp_fnvU7PeWEHc?loadFrom=DocumentDeeplink&ts=1762.41)):

Excellent.

Tracey Peake ([29:24](https://www.rev.com/transcript-editor/shared/8kxsDfGm13iX41-GKjNNtoSqP0h_PinDkcshSnqauiVkjjryRzB5Y8lx-uwlqLbZUnUXofKADoJupsfYdG-63Lb0h60?loadFrom=DocumentDeeplink&ts=1764.33)):

We have been speaking today with Rob Scheller, Professor of Landscape Ecology, here at NC State. This has been Audio Abstract. I'm your host Tracey Peake. Thank you so much for listening.