

Australian Bushfire Conference 2006

Professor David Stephenson
Ecologist and smoke jumper

Brisbane Convention Centre

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Final Draft

Introduction

We are very fortunate to have with us tonight one of the leading ecologists in the United States Professor David Stephens.

Professor Stephens has a keen interest in biodiversity in the face of bushfires as he is also a trained smoke jumper.

David is one of the pioneers of monitoring and managing biodiversity issues in relation to fires and I know you will find his talk tonight most illuminating.

Please welcome from Oregon in the United States, Professor
David Stephenson

The powerpoint presentation can be found [here](#)

[SLIDE] Firstly I want to thank y'all for having me at your conference here in Australia. This is the first time I have been down under and I am really excited to be here so I am going to act like a local and say geeday.

Yes, I am finally down under. I just love that term, down under. But I have to say that when I am back home in Oregon I don't feel like I am up over. So since I am down under I am going to make the most of it by [SLIDE] meeting the crocodile hunter, throwing a shrimp on the barbie and drinking one of your wonderful fosters beers.

As Cuong said in the introduction I am [SLIDE] Professor David Stephenson, an ecologist who is also a smoke jumper.

Some of you might be thinking "what the heck is a smoke jumper?" I understand that you don't actually use smoke jumpers here in Australia. So let me fill you in on what we do, what I do specifically and how it all comes together in the real world of biodiversity management in a fire prone area.

[SLIDE] I doubt I have to talk to you about the nature of fire and the effect it has on the forest.

[SLIDE] This is a photo from 2003 and as you can imagine, there was nothing anyone could do to stop this blaze. Yeah, sometimes fire is beneficial, but mostly, when a hot fire like this is left to run its course you can be pretty darned sure it's going to make an impact on the area.

[SLIDE] I understand that this conference and the associated consortium is all about investigating and understanding those effects. And so are smoke jumpers.

Just like in Australia, in the USA many, many fires are in inaccessible areas that contain valuable forests. [SLIDE] They may be valuable for a variety of reasons, commercial timber plantations, forests with high ecological values or areas of forest where a fire poses a threat to nearby people or infrastructure.

[SLIDE] Smoke jumpers are highly trained firefighters who are jump from perfectly good planes close to a fire and work to manage that fire.

Not only am I a smoke jumper, but I am an ecologist working out of the University of Oregon. I have a masters degree from [SLIDE] UC Berkley and spent the first 12 years of my career at the [SLIDE] Tall Timbers Ecology and Research foundation.

For the last 5 years until a recent accident that I will tell you about later, I have been employed by the US Forestry Service to work with and alongside smoke jumpers to ensure that their practices and activities are aligned with those of the US Forestry Service and the US Department of the Environment.

[SLIDE] Wildfire fighters are a unique breed of people who are willing to go into burning areas that many people won't even enter on a good day. [SLIDE] Smoke jumpers take it that step further and are a unique breed of firefighter.

[SLIDE] For people who don't know a lot about smoke jumping, I know there are generally lots of questions so I will try to answer them here before I move on to how we manage biodiversity in the face a huge fire. If you want any clarification, please feel free to ask questions at any time.

[SLIDE] The first fire jump was made at a fire at Bridge Creek, in the Chelan National Forest, in Washington, in August 1940 by Francis Lufkin. [SLIDE] These pictures were taken just before his first practice jump in October 1939. Lufkin was the only Forest Service employee who trained in 1939 to continue in the smokejumper program.

During World War II, many conscientious objectors served as smokejumpers. [SLIDE] Also, the 555th Airborne Battalion, all black paratroopers, were assigned smokejumper duties in 1945 to combat the threat of Japanese "balloon bombs"

[SLIDE] Without going too much off track here, this is a little known story of World War. The Japanese made about 15,000 of these balloons that had an incendiary device hanging from the bottom. They launched about 9,000 and they drifted in the jet stream with a clever but crude

mechanism for dropping ballast and finally dropping the payload. **[SLIDE]** Only about 300 were reported to have reached the US and the only incident was when some Sunday school picnicker pulled a balloon from the forest and it exploded. But you can imagine what would have happened had they managed to start forest fires all over North America, which was the plan.

The point is that in the US and Australia, since European settlement we have seen fire as a threat. **[SLIDE]** In the past we went to almost ridiculous lengths to extinguish them, but as we have all discovered, this is not necessarily the best practice.

Letting a fire burn is fraught with many problems as well, **[SLIDE]** so now as an international fire fighting community we have moved to a new paradigm of managing forest fires and the infrastructure near them based on science and using the latest tools.

So, how does this all relate to fires and biodiversity?

[SLIDE] When a wildfire breaks out in the United States a combination of technologies is used to pinpoint the location and then determine the extent of infrastructure that may be under threat and a rating of the threat level is then plotted against a variable risk management system incorporating modular functionality that inputs to a bipolar statistical analysis model which can then be plotted on a polar graph to give an objective rating that automatically activates the smoke jumpers. **[GRAPH]**

As you can see from this graph there is a clear relationship between distance and time and the ecological values of a forest, leading to a decision being made on whether or not smoke jumpers will be required. If we have more than three points in the outer ring or there is an excess of red we are good to go. So far this system has not let us down so we are beginning to rely on it more and more.

[SLIDE] As you will appreciate, a decision to send in a team of eight people by parachute to fight a wildfire is not one that is taken lightly. **[SLIDE]** Unfortunately there is a history of tragic accidents at wildfires both in the US and here in Australia and management clearly understands the risks and balances it out with the probable outcomes as we don't rely 100% on computers

[SLIDE] I'd like to give you a case-study for Sierra Crapolla National Park and you will get an idea of how the whole system operates and where I fit in as an ecologist.

[SLIDE] In April 2005, just on a year ago we had a report of a fire that was currently about [SLIDE] 10 acres in size and posing no apparent threat. [SLIDE] The area in the North Eastern United States just happens to be one of the prime bio-diverse regions of the USA, [SLIDE] the Sierra Crapolla world heritage listed national park in Western Oregon

[SLIDE] However computer models indicated that with the weather forecast in a couple of days the fire was predicted to spread to hundreds or maybe thousands of acres. The fire at this point was not going to be particularly hot, and was pretty isolated.

Normally a decision might be made to let that burn and manage the extremities, however in this case, within the park is a stand of trees on the side of Bunkum Mountain that had remained undiscovered until 1997 when they were found by a forestry survey team. Since then the [SLIDE] the Bunkum Ash as they have been called, may possibly be the most studied plants in the United States...if you [SLIDE] exclude hemp.

[SLIDE] You may like to think of this as a similar discovery to the Wollemi Pine in the Blue Mountains near Sydney, in fact we have been working closely with your National Parks officers to share ideas on preserving the species. This is one of the reasons I am in Australia right now. [SLIDE] Unfortunately, unlike you Aussies and the Wollemi Pine, we have been unable to propagate this Bunkum Ash so its existence is under constant threat.

[SLIDE] These 114 trees are under my direct guardianship. Many of us are passionate about them and they have been the cause of a divorce. Fortunately it wasn't mine, but we won't go into that.

Wildfire in the area, had historically occurred at about a 7 year frequency, however the last fire through there was around 28 years ago, [SLIDE] so there was a fair bit of fuel waiting to go up

So we have a situation with an interesting mix of stakeholders. [SLIDE] A World Heritage property that was gazetted because it contains a stand of trees, the demise of which means extinction. [SLIDE] The whole area adjoins a commercial forest that is about to be selectively harvested, which means it has an enormous economic value in dollar terms. [SLIDE] As if that wasn't enough, there are several historic dwellings in the area that are important to the national heritage. [SLIDE]

On one hand Government Foresters want a cool slow fire through there to reduce the fuel ahead of the hot summer ahead. On the other hand the commercial foresters, unusually aligned with environmentalists wanted the fire put out immediately.

[SLIDE] Personally all I cared about was that my stand of Ash trees didn't turn to ash and the only way I could see that happening was by keeping the fire out of there.

While I am not convinced fire is good for forests, I am not worried about fires. Generally I think forests have an ability to recover, though often in an altered state. But they only recover if there is sufficient stock to grow from and with the Bunkum Ash, that is not the case, but we are working on it by learning to propagate.

[SLIDE] So, the fire is coming, the loggers were pushing a track through the plantation as fast as possible so they could construct a break, but the timing was not looking good. So a decision was made to send in smoke jumpers to construct a fire line around the Ashes and along the edge of the commercial forest.

[SLIDE] Because of the location of the fire I was part of the team and at 0400 we climbed into a plane so that we could be over the fire at dawn. As you can imagine, the rest of my team were not particularly impressed with the idea of jumping into a fire zone just to save a stand of trees and there was a lot of tension.

But that wasn't the only problem. There was a lot of tension about another frightening issue. Since the summer of 2003 firefighters in the USA have had a new problem to deal with, an extreme sport that is becoming more popular due to the growing success of its website and the popularity of the movie [SLIDE] Jackass, where it was featured.

For those who have not had the dubious pleasure of seeing Jackass, they do often offensive but always [SLIDE] dangerous stunts seemingly for their own amusement but given the \$US65 million return on a \$US5 million movie production cost, it is obviously a very popular genre, though within a limited demographic that seems to peak at about 25. I am talking about age, not IQ, but who knows for sure. [SLIDE] The Jackass promotional logo speaks volumes and I don't even want to talk about [SLIDE] the patron saint of Jackasses. [SLIDE] Unfortunately for emergency service personnel, the phenomenon has led to a host of imitators trying to cash in on the craze and this is where Firediving came from.

If you are like me, you just shook your head in disbelief even at the term Firediving.

[www.FireDiving.com] There is a website that we have tried hard to get shut down but with the US right to free speech it seems there is nothing we can do about it. That's the problem with democracy, it let's any idiot say what they want.

[SLIDE] The thing is that Smoke jumping is dangerous enough in itself and we don't need the added stress of worrying about someone falling on us. In fact, there have been enough accidents in last three years that there is talk of withdrawing water bombing services this summer if any so called fire divers are in the area. The one advantage we have is that often water sources are inaccessible and even if they aren't planes can get there much quicker than people so operations [SLIDE] get started before these nutters arrive.

But we needed to come up with a solution that allowed us full use of resources and discourage the fire divers or the next incarnation of trouble out of the area and who knows what that might be.

[SLIDE] You may have heard about the US navy experimenting with trained dolphins to collect intelligence or attach explosives. We thought that a good idea, but it is pretty hard to [SLIDE] transport a dolphin and the yells of dolphin lovers just might be worse than the fire divers.

Also I don't know about you, but I think dolphins are too nice for these morons, so we came up with a better solution. [SLIDE] Trained piranha.

What we plan to do is have a collar tank full of trained piranha [SLIDE] and the first chopper to come in will draw all the water plus the piranha out of the tank and drop it into the lake where we anticipate fire divers.

Is this brilliant? Are we on the same page? [SLIDE] The advantages are obvious, the fire divers stay away and we add to the biodiversity of the forest and ultimately the planet.

We plan to do the same thing here in Australia well in advance to head the firedivers off before they even get started. How many thing this is a good idea?

Typical, we Americans come up with a great plan and you aren't even interested. Well, that is just more of a shocking day that I have had.