

Meredith Briggs introduced the Mt. Buffalo Field Naturalist Group and the speakers.

**Felicity Brooke** - 15 yrs a ranger in 5 different Parks in Victoria.

Enzo Brotto – 18 yrs on Buffalo is in the audience for questions.

The NRE website has a lot of information on fire and fire effects.

85 fires started in NE Vic on Jan 7 and 8. from the massive lightening storm. About 49 of these started in the Ovens Fire District on one day.

Felicity understands that there is usually a 4% ignition rate from lightening strikes. On this day the figure was about 46-49 %, due o the drought and fuel moistures.

All three fires started on the west side of Buffalo (the prevailing winds come from here)

Fires at (i) D8 spur (bottom of Sugarloaf), (ii) Nug Nug, (iii) Lewis Ck. South of Buffalo.

The D8 fire: concern that it would go up the front of the gorge. In 2 days, 85 fire fighters put it out. The Lewis Ck fire was also extinguished

Sandy Ck/Anderson Peak was unable to put it out. The first approach was by helicopter repel crew (Tracey Culhane), but after a number of hours they were helicoptered back out.

The plan was to contain this between Rocky Ck on the Mt. Macleod 4WD road, and Nug Nug Wah Creek on the northern side (which was running) and back these lines up with fire-bombing. On 17<sup>th</sup> this could not be direct attacked as resources not available (40 fires going), and had reached Mt Macleod, where strong westerly winds and wind effect of steep country had their effect.

About 4 o'clock it spotted over to Stakers LO and came up the front of the mountain. It had also jumped the Rocky Creek fireline and was coming over Macs Point, and spotting to Long plain and Lake Catani.

The fire burnt much of the plateau over 30 hours, and over the next week the southern side of the mountain burnt, with spotting to the Buckland Valley.

25,000 Hectares or 93-94 % of the park burnt. The main bit that didn't burn was Buffalo Creek.

Mosaic effect – south slopes relatively spared.

Less than 10% was a crowning fire. There were high scorch heights where trees lost their entire canopies. However, there were very few places where there are just sticks. Mt. Macleod was one of these.

There are lots of unburnt areas, of patchy understory bums with full canopy etc. and this is the basis for recovery and is typical of fire effects.

All land types were burnt: stream sides, subalpine, montane and foothill forests. Bog and fen communities were burnt, but not assessed as seriously degraded (cf. High Plains) and are still holding water. This will be monitored, but will not need much active intervention. Uni groups, friends and consultants will be involved in this.

**Neville Walsh:**

Senior Conservation Botanist, Melbourne Herbarium.

Neville did mapping work in the high country including Mt. Buffalo in the early 1980's and he re-visited these sites after the 1985 fires. As they had somewhat recovered by 1999, they drew a line under the study. Now they can start again!

We will photos of some sites which have had a re-burn after 18 yrs. Is this long enough? For sure Neville will be returning to study this. His main information is about the effects above the tree-line, but he will also talk about the vegetation more generally.

Lower reaches are mixed species, Peppermint Gum forests, (Roger said eucalypts had been observed re-sprouting 5 days after the fires. [this was on the plateau – I am not sure that it was the Eucalypts RSB]) Ferns often re-sprout first. Few deaths will occur of trees that are left standing in this area. It is a good chance to get familiar with these trees as the coppicing leaves are very different.

Probably Candlebarks and Narrow-leaf Peppermint in the next photo.

Understorey of ti-tree etc will re-grow, but the speed depends on the plant's fire strategy, eg. obligate seeders and re-sprouters.

Re-sprouters will have an early advantage. Reasonable forest will come back reasonably quickly to achieve good visible cover. With obligate seeders, if we get another lousy year we may get an obvious species shift.

Bracken, Tree Ferns and Rainbow Ferns re-establish early.

Peas, a lot of Wattles, Goodia, Daviesia, most Proteaceae: (Grevillea, Lomatia, with some exceptions), Boronia family incl. Pheblaum are killed by fire by and large, so will have a slow response.

Myrtaceae (ti tree etc) are often good re-sprouters.

Further up, we have the Montane forest – Woollybutt often mixed with some Mountain Gum (*E. dalrympleana*).

Virtually all the Woollybutt (Alpine Ash) whose crowns are brown are likely to die.

Had the 1985 fires taken out a lot of the woolly butt forest we would have a "Woollybutt free zone" as 18 yrs not long enough to develop a good seed bank. Some will coppice and some will survive, but the leaves are frost sensitive (Neville doesn't know why they bother really) This is a characteristic of the Ash trees. 15-20 yrs they start producing seed. They trickle out a bit of seed harvested by ants. They retain a lot of seed in the canopy which is released in a fire; too much for the ants to use.

The standing sticks will last for a long time and provide habitat for other animals.

Mountain gum coppice with opposite waxy blue leaves.

Cicadas survived the fire in the ground and crawled up after the fires to a strange looking world.

Monocots – orchids, lilies, grasses – generally do quite well. Soil is a very good insulator.

Dianella (Tasman Flax Lily) given as an example. Elderberry *Panax* is shown surprisingly as a re-sprouter.

Granite slabs at Mackeys. Shallow soils – initially moss and dust rolling down the mountain.

Dry peat – <math>\approx 100\%</math> organic. A lot of these would be completely removed by fires. It will take a long time for this process to occur again. This results in a fabulous vegetation including *Kunzea parviflora*, *Calitrix*, *Grevillea alpvaga* (a Buffalo endemic which is already very rare).

*Drosera* (sundews) has a tuber which is resistant to fire unless peat soil goes. Always some deep crevices will remain with some plants. Slight fault lines will catch soil and allow mosses then annuals, then "fair dinkum" plants can get a foothold and form the heath communities again.

Lichens on rocks will be cooked. These are very slow growing, especially in alpine areas, and important in rock degradation.

Fairies Aprons are another classic plant of these moist areas on the rock slabs.

Some spectacular flowerings due to lack of competition over the next few years until other plants start using up the sun-light. *Thelionema caespitosum* (Tufted Blue-lily) is another characteristic species of these rocky peats. An intense blue flower in other areas of the state, it is generally a white or cream flower on Buffalo

Patchiness demonstrated in a photo from the horn. Drainage lines often have the most flammable vegetation – *Baeckea gunniana*, *Richea* - even though growing in sphagnum. Sphagnum being so dry was not much help. Grasses burn less.

Only a handful of Snow Gums would be killed by fire. They always sprout from the ligno-tuber at the base. Very few sprout from above ground.

*Grevillea australis* is like an exploding shrub. Grassland surrounding the bush will not burn.

Perhaps grass is so thick that the air does not move through it.

*Grevilleas* do not sprout from roots. They normally fall apart with age after 50-60 yrs anyway.

Plants 18 yrs old would have produced lots of seeds.

In the short term grasses re-sprout, then there is an increase in shrubs; as they senesce forming a more even grass/shrub mix.

Snow grass puts on growth very quickly, especially in the moister areas.

A low closed heath with little grass was shown with a lot of burnt grevilleas. Snow Daisies (*Celmisia*) are just about indestructable and seem to stop the progress of the fire. Moist sphagnum would act the same way.

Seedling recruitment in open heaths is not common. Most recruit from rootstock. Relatively short-lived plants which reproduce by seed may be more common in the early stages – eg Geranium seedlings and Violets (*Viola fuscoviolacea*).

Pairs of photos 3 weeks after 1985 fires cf. 1999:

One pair of photos showed recovery of the Orange Everlasting.

Alpine soil freezes and is pushed up, and cannot settle on the rocks, and this contributes to bare soil being unstable.

Sphagnum suffers from the plants growing in it; the Baeckneas and Richeas draw the fire down into the peat. Then the peats may burn for a month or two, (six weeks on the high plains this year)

Sphagnum moss genus grows pretty much throughout the world. In other places, they usually produce a spore capsules, but this is not common in Australia. It needs to spread by fragmentation.

Rope Rush takes off like no-body's business after fire, sphagnum finds it harder, and still not back at its previous dominance at 18 yrs in his photos.

Sloping bogs in Bogong H.P. is a more difficult issue. This is a listed community on the flora & flora guarantee. Mts. Buffalo and Baw Baw are good spots for sphagnum bogs due to the absence of grazing.

Along rocky creek lines the shrubs grow back surprisingly quickly. Exotic willows grows back (re-sprout).

*Orites lancifolia* is an exception in the Proteaceae family, and grows from the base, It is almost un-killable.

Photos of a dense shrub-lands have become a bit more open and more grassy than before.

Photos of a low shrub-land on Wild Dog Plain show recovery of a pretty good cover of Alpine Boronia, *Grevillea alpivaga*, *Acacia alpina* etc.

The Eucalypts show their different adaptations: Snow Gum from the base cf. Mountain Gum from the canopy.

Snow Pratia was initially described at Mt. Wellington north of Licola by Von Mueller in the 1850's and not seen at the original site until after fires a few years ago. Buffalo plant grows in cultivation much more easily. Hospice plain – Crystal Brook is a typical habitat. It should be OK. However, washing down of gravel can be a problem (eg. from the Reservoir road).

*Babingtonia crenulata*: will probably re-sprout. Does so after vicious pruning. (Enzo: did re-sprout after 1985) Pretty much confined to the Rollasons Falls – Eurobin Falls area.

*Acacia phlebophylla* (Buffalo Sallow Wattle): He was in a survey of the Back Wall by helicopter a few years ago. Surprisingly, these areas burnt, but Neville would expect good re-growth from seeds. Probably all areas of this plant has burnt this time cf. very little in 1985. It may be an opportunity to clean it up. The gall fungus was causing plants to struggle in the Mackeys Peak area, and this may assist. Before the fire, only a trickle of seedlings only were coming through.

Nutrient effect as well as the opening up of the canopy will help *Caladenia gracilis* for the first 3-5 years. Buffalo is one of the best places in Victoria to see the Elbow orchid. Neville explained the biology of these flowers.

The Eyebright *Euphrasia crassiuscula* – a rare plant – a root parasite ?on grasses. If the host is killed, it needs to re-grow first.

Buffalo Mint-bush (*Prosthanthera monticola*) recruited well from seed after 1985 and may become more abundant.

Turquoise Coprosma – first finding off Baw Baw found here early 1980's. Grows in the very moistest sphagnum bogs, and did recur after the 1985 fire.

Veined Sun-orchid – classically a common species of sphagnum bogs – did not recur after the fires in the plots studied after 1985.

Questions:

Acacia phlebophylla regeneration after fire Blackwoods and Lightwoods generally will regenerate. Enzo had noted suckering of A. phlebophylla behind the Chalet. Certainly he had not seen any sign of the related Acacia alpina suckering. Hybrids between A. phlebophylla and alpina were remarked on.

### Dean Heinze

Currently doing PhD in the Mountain Pygmy Possum

2 days after the fire started Dean went to Tasmania, and had no idea how bad the fires were until he returned.

With the mosaic effect of the fires, some animals would have been badly affected, whilst others would have found refuges or have been in areas which escaped the fire.

Fire is devastating to most animals unless they have good shelter among the rocks or in moist gullies, or if they are highly mobile. Most birds are able to escape the front. Some kangaroos and wallabies also are able to escape.

Birds of preys are attracted by smoke, as many small animals are exposed or running out in front of the fire.

Dean will mostly talk about higher alpine areas, where most of his experience is.

Peregrine Falcons, Whistling Kites and Collared Sparrowhawks – not often seen in these areas – were in high numbers immediately after the fire. Even while the fire was still burning and for at least 8 weeks after, they were picking up bush rats, lizards, small birds.

Now animals have got through the period with little cover, they have to get through the winter.

This will determine the survival of a lot of the populations of the animals.

He will talk mostly about the Mountain Pygmy Possum. It was discovered in 1966. As there have been no major fire event like this in the Alps since 1939, we have no idea how they will respond.

Dean has been commissioned by DSE and Parks Vic to look at various populations of this animal on the Bogong High Plains and Mt. Hotham after the fires – firstly to discover whether it was still present in known habitats; secondly to get an idea of how many animals were still surviving, and thirdly to assess the habitat in general.

The habitat is boulder fields, which occur in a patchy way in the alpine area. They are natural congregations of rock formed in the peri-glacial period when there was a lot of freezing and thawing occurring and lots of rocks falling off the outcrops to form these boulder fields.

The main shrub is the Mountain Plum Pine.

There is also a habitat with a mosaic of various heath species, (Olearia, Orites, Grevillea) all important for providing various food. These sites were affected badly by the fire.

Mt. McKay was badly effected. This area has been studied quite a lot in recent years. 50-100 animals were known to live here, which is not bad considering the overall population in NSW + Vic was about 2000

The fires on Mt. McKay devastated this habitat, stripping it of all its vegetation. Protective cover was removed. There are not well-developed boulder fields here, so the animals were left out in the open. Trapping results suggests the current population since the fire is 5-10 animals. The winter period will be difficult. They are hibernators so they need to put on some good fat before winter, and need some good cover to survive.

Of known Victorian sites, taking Mt. Bogong, Bogong HP and Mt. Hotham (excluding Mt. Buller) probably 80% of the sites have some sort of burning – mostly around the edges, but has completely stripped the vegetation in some sites.

Mountain Plum Pine (*Podocarpus*): The part that looks like a fruit is actually a leaf scale and the animal eats that, but the critical part is the little green bit on the end which is the fruit or seed which the possum caches or stores away from bush rats, and they rely on this to get through the winter.

He showed the only photograph of a Mountain Pygmy Possum nest from the wild, taken at Mt. Buller. There won't be so many nesting sites for the next few years or even decades, and this could further deplete the population levels. He feels that this will only be a trough in the levels and they will re-bounce in future years.

Predators (cats and foxes) need to be kept at low levels.

Dean found this nest while radio-tracking an animal. He thought the animal was dead as it had not moved for about a week, and it was in a disturbed area, so he tried to dig it up to retrieve the collar. He elected to continue digging after the animal moved, and was able to secure some valuable coverage over the ABC, as this was new information. It is a well constructed nest including mosses and grasses, which will not be so readily available.

There are 4 babies, at this stage all blind. At this stage they are then restricted to the nest. When they get their sight, they are more curious and start to wander about and are more vulnerable to predators.

Snow and long winters will affect the recovery rates of plants as well as the animals.

The Bush Rat is one of the most widespread mammals in SE Australia, and therefore must be good at surviving fires.

In some areas that Dean has trapped, even where all but stubs of *Orites* have been removed, bush rats have managed to survive. They are a generalist in diet and this helps. A week or two after the fires, fungi were popping up all over the place. He does not know what species they were, but Bush Rats, an opportunist, would be able to eat them.

The Agile Antechinus would be widespread on Mt Buffalo and the rest of the alps, but not so much at high elevation. These only eat insects and small vertebrates (lizards) so their numbers would be pruned right back by the fire. They have 10 nipples and can produce 10 young and could re-populate quickly once vegetation and insects come back.

The Dusky Antechinus is quite a lot bigger and has 8 pouched young. This is also insectivorous and will be knocked back, but could probably survive winter a bit more easily as it is a bigger animal.

We don't know how many animals respond to fire, because fire events in the alps are quite rare. Presumably bats would be able to fly out, but he does not know whether they do. Shelters in bark would have been burnt, so their numbers could have been affected.

Copperheads are common in alpine areas. How well they survive depends on how well their refuge or nest site is insulated. He has seen a number of snakes out in the open in the middle of the day foraging in badly burnt areas since the fires, but their numbers would be depleted. At least they are surviving.

A slide of the Southern Water-skink was shown. The Alpine Water-skink is probably not on Mt. Buffalo. It is restricted to sphagnum bog areas. Some areas of these bogs, which have been burnt quite badly, still have some of these animals. They must have found some deep burrows as a refuge. Winter will be the telling factor.

The Tambac Rock Slink – ?not recorded for Buffalo but probably is there. It lives in rocky areas and deep soil. It builds burrows into embankment. Some of these at Falls creek survived in intensively burnt areas presumably in these holes

The Alpine She-oak Skink ? not recorded from Buffalo is more of a grassland species. The burning here was patchy and animals from unburnt areas should have survived.

The Spotted Tree Frog was at Buffalo some years ago, and then disappeared and it has since reappeared. It has been found since the fires on Buffalo. Protective cover has been lost – *Carex* beside the stream etc, but it also uses the rocks. Sediment and ash coming down the creeks will

have some impact on tadpoles and eggs - we don't know to what degree. It will be interesting to see how they go over the next couple of years with the extra sediment coming down the streams. Insects – Dennis (in the audience) could answer questions.

Lyre-birds: lots of them have been seen since the fires. Some people have seen them using wombat burrows. These would make good refuges. Long-footed Potoroos, Long-nosed Bandicoots and other animals could use these as well.

Enzo: Observed lyre-birds to fly very high up in the canopy, usually where the fire was not high in the trees, and would find an area where it was not too hot on the toes.

Dean: Kangaroos + wallabies can hop over the fire-front into areas that have been burnt.

#### Questions:

Possums and gliders: Felicity: Greater Gliders around Buffalo: Rollasons Falls area suffered a very hot burn. Animals died of ?smoke inhalation or burnt. Eurobin track has a stable population of Greater Gliders, and this survives, also around Noonameena.

Dean: Lower altitude animals tend to be better adapted to fire than those specialised to the higher altitudes.

Mt. Buffalo is like a huge island habitat so if the Spotted Tree Frog goes, it is unlikely to be able to get back.

Fish: Dean: Trout died in large numbers in the forested areas at Falls Creek with the influx of ash. Native fish are affected by trout predation. If the sphagnum is cleared out, the trout could get into these areas that the galaxias survive in. No solid information.

Contemplation of active management of MPP or other animals. Dean: For the Mountain Pygmy Possum, it was decided not to intervene, as in putting out food, as it could produce an imbalance. Also, there are known to be in several small populations (a meta population) between Mt. Hotham and Mt. Bogong. Although some populations may be eliminated, juvenile animals that get kicked out of their colony will move back into these unoccupied habitats. Some genetic evidence (Paul Metrovski) using hair samples show that some animals get through between Timms Spur and Mt. McKay which are 6-7 km apart in a straight line. There is a captive breeding colony at Healesville sanctuary, which also makes intervention less of an imperative.

Fox and Cat: little evidence of them post fire (tracks, scats etc). Dean did see a fox carcass.

Felicity: In two successive years of direct targeting caught about 80-90 foxes in the first year, then 10 foxes in the second year at Hotham

Enzo: In the past 4-6 weeks there has been a predator control program, using trapping and shooting. This is focused around pigmy-possum sites

At Falls Creek, a contractor in 1 week of predator control, brought in 36 hares, and no foxes, cats, or wild dogs were seen.

Clyde: Fox and Dingo prints (or large feral dog) seen behind the Chalet in the last week – apparently visiting the Chalet. There are always opportunities for them to move back up the hill.

Opening up of vegetation ? allow larger animals up. Enzo: A kangaroo was seen once at the Buffalo Lodge carpark, chased by two dogs. Sambar Deer at Hotham have been grazing up high as lower vegetation is burnt. Probably have moved down now. As native wildlife increase with the vegetation recovering, so feral animals will respond. Parks have concentrated on feral animals, especially to protect endangered animals. If this is continued, the native animals will have time to increase.

Dean: surveyed 18 sites known to have Pigmy Possums, all but one still had possums present, although probably at much reduced levels. This work will continue to be funded for a year or two.

Corroboree Frog in NSW: Some of its area was severely burnt. Charlie: No species have been lost. Neville: the southern species of Corroboree Frog at Bogong swamp on Kosciusko would be OK: the fire stopped 300 m short of the swamp.

Meredith Briggs thanked the speakers for an interesting and informative evening.