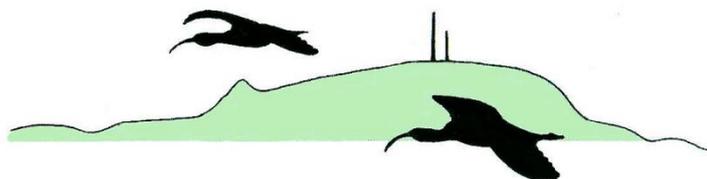


## ORANGE FIELD NATURALIST AND CONSERVATION SOCIETY Inc



NEWSLETTER APRIL 2018

### NEXT MEETING

**Thursday, 12<sup>th</sup> April, 7.30pm**  
**SPEAKER: Ron Smith**  
**TOPIC: Earthquakes**

**VENUE: Orange Community  
Information and Services Centre.**  
**(Next to Senior Citizens Centre.**  
**Enter from Woolworths carpark.).**

**Committee Meeting 6.30pm**  
**All members are welcome**

### EXCURSION

**Sunday, 15<sup>th</sup> April**  
**The White Engine historical site**  
**in Cadia Valley (details below)**  
**Meet at 9am**  
**at the Orange High Bus Bay**  
**Bring morning tea and binoculars.**  
**Wear long trousers and closed shoes**

### Please Note

Our website is having technical difficulties  
at the moment and we are looking for a  
new provider

### Next Meeting

Our next meeting will feature **Ron Smith**  
on Earthquakes, a topical issue considering  
that we are headed to Cadia for our April  
excursion (see details below).

Ron provided the following profile:

"Ron Smith B.Sc. (Adelaide 1966)

After graduating, I joined the (then) Bureau  
of Mineral Resources and worked as a  
geophysicist operating magnetic and  
seismological observatories at Mawson Base in  
Antarctica, Port Moresby in PNG, Mundaring  
in WA and in Canberra.

For 12 months I was posted to the  
International Seismological Centre at the  
University of Edinburgh in Scotland compiling  
and editing global seismological bulletins and  
for the last 10 years was at the BMR HQ in

Canberra as Manager of the Australian  
Seismological Network.

I contributed to publications including  
operational reports, isoseismal maps,  
earthquake risk maps and a Manual of  
Seismological Observatory Practice, as my  
major interest was in the development of  
improved equipment to monitor earthquake  
activity and effects. After 17 years I decided  
that I was more interested in the technology  
than the science so I became a systems  
engineer in data communications...but that is  
another story!"

### Next Excursion

Our next excursion is a special opportunity  
to visit Cadia. **Please note:** Cadia would like  
to know how many people are coming so  
please let us know if you will be there,  
particularly if you are not able to come to the  
next meeting where we will have a head  
count..The visit has been especially arranged  
by **Peter Toedter**. Peter has provided the  
information below which he would like you all  
to read prior to the excursion to make our visit  
more meaningful.

### **AN INTRODUCTION TO CADIA.**

*Peter Toedter.*

*19 February 2018*

Cadia, about 20 km southwest of Orange is  
the site of the biggest underground gold and  
copper mine in Australia. Cadia Valley, which  
comprises the valley and surrounding hills next  
to Cadia Creek and the middle-upper reaches  
of Cadiangullong Creek, has a history of  
farming and mining going back to the mid  
1800s. It was timbered country without major  
creek flats so it lent itself to grazing, timber  
getting and small scale subsistence farming.

Copper, indicated by blue and green copper  
carbonate surface staining, was noted by the  
farmers in around 1849–1850 but was not  
officially recorded until 1851 by the first NSW  
government geologist Samuel Stutchbury.  
Gold had also been located by the locals. From  
February 1851 onwards, after the first  
officially sanctioned gold discovery in  
Australia at Ophir, it was common practice for

boundary riders, shepherds, general farm workers and road builders to carry a gold washing pan to test out any waterways and gullies.

Copper mining and smelting took place at Cadia at various intervals from the late 1850s to 1917. During this time, a village was established with the normal accoutrements of hotels, boarding houses, shops, post office and school. The size and fortunes of the village depended on the fortunes of the mining. In 1865 the mine and smelters employed about 220 people and the population of the village was about 600. In 1862 an ancestor of Graham Brown called Josiah Holman was the Mine Captain for the Cadiangullong Consolidated Copper Mining Company. In those days the Mine Manager was called the *Mine Captain* and mine depths were measured in fathoms instead of in feet. After 1917 and up to 1948 gold was still being prospected and won on a small scale by individuals and syndicates.

A new and different phase of mining was for iron ore by quarrying the slopes of Iron Duke hill. The ore at Big Cadia, which is different to the Cadia Hill-East Cadia Deeps ore that is being mined now, is rich in magnetite (iron oxide) and in iron pyrites (iron sulphide) which weathers to a form of iron. Close to the surface the copper, and the sulphur in the pyrites, are dissolved by ground water and go deeper below the surface. The hill from which the iron ore was mined is called Iron Duke. The iron ore was taken to the Hoskin's iron and steel works in Lithgow from 1914 to 1927. A railway was built to link Cadia with sidings at Spring Hill, vestiges of which can be seen next to the Spring Hill road. When the works were relocated to Port Kembla near Wollongong in 1928, the iron ore was railed to the new blast furnace in Port Kembla. By the end of 1928 they stopped using Cadia ore. From 1941 to 1943, during World War 2, iron ore was again mined and sent by rail to BHP in Newcastle and to AIS at Port Kembla. A much better quality of iron ore which was normally in use was shipped from the Middle Back Ranges near Whyalla in South Australia. Shipping was being sunk by Japanese submarines and German raiders so a more reliable source had to be found. Cadia ore was not really suitable because the remnant copper and sulphur impurities affected the quality of the steel and it was not used after 1943 when the threat to shipping subsided.

The modern phase of exploration and mining began in 1968 when Pacific Copper

Limited acquired the Mineral Exploration Licence over Cadia and surrounds. Their focus was on the gold and copper beneath Iron Duke Hill and at East Cadia. Their efforts almost resulted in a mine being started at Big Cadia (Iron Duke) but they could not raise the finance. When I worked there in the mid 1970s we drilled at the site that became the big Cadia Hill open cut mine in 1998. We intersected grades of copper and gold similar to those that being mined now but at that time they were not high enough to be mineable and the company lost interest in Cadia Hill. In 1975-77, when we were exploring, we could have applied the following quote from the explorer Count Paul Strzelecki when referring to the gold he encountered near Wellington in 1839 "*Sufficient to attest its presence; insufficient to repay its extraction.*"

Newcrest bought the mining leases and the farming property from Pacific Copper in 1990. They recognised the untapped potential of the area and found a major ore body. They had the finance and knowledge of modern mining and processing methods to make previously uneconomical grades pay very well. The Cadia Hill Open Cut commenced in 1998 and various sections of the ore body should see mining well into the future.

When I worked at Cadia there were abundant remains of the old mining and smelting activity and traces of the foundations of the village houses and its public and commercial activity. Hardy feral garden plants grew on the flats along Cadiangullong Creek. The village gradually faded away and ceased to exist in the late 1940s. Newcrest Mining Limited has arranged and paid for extensive environmental, archaeological and historical studies of Cadia. They have restored the 1862 Cornish beam engine house and created a heritage precinct around it.

The Orange Field Naturalist and Conservation Society was involved in the early environmental studies for Newcrest before mining began.

The site visit has been organised by the courtesy of Newcrest staff **Rosie Pritchard** (Senior Community Relations Specialist) and **Jack Bowen** (Environmental Officer). **Graham Brown** who used to own *Tunbridge Wells* property next to Cadia and whose family has been involved in mining and farming around Cadia since 1862 will also be accompanying us.

We will be looking at the White Engine historical site. Bring binoculars as not only are

there birds but the site presents a good panorama of the current mining activity on the other side of the valley. Appropriate clothes are long pants and closed shoes.

Two good books which detail the life and times of Cadia, of mining, farming and people, with lots of pictures and diagrams, are:

**TREASURES OF CADIA** - 160 years of memories about life in the Cadia District. 2012. This may no longer be available.

**GEMS OF THE VALLEY** – A Chronicle of Stories and Memories of past and present district, residents and friends from circa WWII (1940–2000). 2016.

Available from Collins Bookstore.

### Last Meeting

*Summary by the editor*

They say that a change is as good as a holiday so, for the last meeting, we had a holiday to the RFS headquarters on Forest Road because somebody forgot to pick up the key to our usual venue and Geoff kindly arranged for us to use the RFS facilities for the meeting. This also gave us the opportunity to have a stickybeak around the new building.

The talk was by **Cilla Kinross** on Hawai'i, A Natural History. Hawai'i is a fascinating remote group of islands way out in the middle of the Pacific Ocean. Because of the volcanic origin of the islands, all the terrestrial life has descended from colonists. New arrivals on the islands were infrequent and the gene pool was low. As new islands were formed, so they were colonised by organisms from the older islands. As they age, the islands have shrunk meaning that overcrowding has become an issue and some species, like the scarlet honeycreeper, are starting to decline.



Scarlet honeycreeper or i'iwi

New species have evolved from the original colonisers and some groups, e.g. spiders, have radiated into numerous species with adaptations unique to the islands.

With the arrival of Polynesians in the 10–13C, agricultural organisms were deliberately

introduced and pests like rats came in accidentally causing the extinction of a number of island endemics, including Endemic eagle, Bird-eating owls, Giant ducks (moa-nolas) and one of only two bat species *Synemporion keana*. The moa-nola included four species of superducks which had evolved along the same lines of other giant island birds which were flightless, like the Dodo and the NZ Moas. They weighed up to 7.6 kg and were the principal herbivores of the islands. With rats eating their eggs and humans eating the adults, they followed the Dodo and Moa into extinction...and then came the Europeans who arrived as missionaries and sugarcane growers bringing in labour from Asia and Puerto Rico along with diseases like smallpox. The local indigenous Polynesians were oppressed.

The effects of native forest clearing, introduced animals like rats, pigs and slugs, hunting and fishing meant that the local fauna, unused to such predation, suffered immensely. Hawai'i has 25% of the threatened species of the entire USA. Half of the Hawai'ian bird species are now gone. The invertebrates are even worse off with one family of land snails, the Amastridae, which had evolved into 325 species has now dwindled to just 15 extant species, representing 14 extinctions per decade. Further pressure has been applied with the high level of tourism attracted to the islands. Many of the plants are highly specialised and unable to adapt to rapid change.



Uhiuhi, *Caesalpinia kawaiiensis*

Only one tree remains in the wild on Kaua'i

Cilla outlined what was left of the original habitats on the islands, including tropical dry and moist broadleaf forests, high island shrublands and grasslands. There are national parks with volunteers working to restore them to their pristine best.

She then worked through the various groups of plants, mammals (terrestrial and

marine, fish (marine and freshwater), reptiles, amphibians and birds. There are only two native terrestrial mammals, one a seal and the other a bat. Introduced mammals include rats, goats, sheep, pigs, donkeys, horses, cats, dogs, deer, rabbits, hares, wild boar, red fox and an Indian mongoose.



The endangered Hawai'ian monk seal  
[photo: Cilla Kinross]

Hawai'i is an important overwintering refuge for shore birds which breed in Alaska and Siberia. The native land birds are now extremely rare and limited to restricted sites that are hard to reach. Cilla said that she has visited Hawai'i twice and has yet to see a native forest bird. She was excited one day to see a beautiful little bird with a long tail but it turned out to be an introduced species from Asia, the white rumped shama. Other visible species are red crested cardinals, native to Central and South America, and the ubiquitous common myna.

There are still some native invertebrates to be found, including the Hawai'ian Happy Face spider and some beautifully marked native snails.

There is some good news amidst the gloom. Conservation efforts to recover a native crow which became extinct in the wild in 2002 have successfully bred the bird in captivity, restored their habitat and taught the birds to avoid predators so 17 birds released into the wild in 2017 are now doing well. The Hawai'ian state bird, a goose called the "nene", *Branta sandvicensis*, was almost extinct in the 1950s but was bred in captivity in the UK

and successfully reintroduced to the islands.



The Hawai'ian happy face spider,  
*Theridion grallator*

Cilla ended her talk with some advice for travellers visiting the islands: Don't expect to see native birds unless you are prepared to trek into the remote parts, pick your island and plan your visit around that, focus on the sealife (which is less depressing), see the whales from a sailing boat, try the local fruits at the markets and listen to some music...

### **Creature of the Month**

Heliotrope moth

*Utetheisa pulchelloides*



(image: J. Tann, Wikipedia)

This delightful little moth is common in the Central Tablelands where it feeds on plants of the family Boraginaceae, including Paterson's Curse. At around 15mm in length, it is easily recognisable with its white wings covered with red and black dots. It belongs to the family Erebidae, subfamily Arctiinae, which includes the tiger moths. The caterpillars are black with small orange spots and cream lines. Adults are

reportedly capable of long migratory flights and the species is distributed throughout the Australian region from Indonesia to New Zealand.

## NOTICES

### 1. Subscriptions.

Payment of Annual Subscriptions is due following the Annual General Meeting in February. Please send your cheque or money

order made out to "OFNCS" to the Hon. Treasurer, Dr Dick Medd, OFNCS, PO Box 369 Orange NSW 2800.

### Subscription rates:

Single member – \$25

Each additional family member – \$5

Concession rate (emailed newsletters) – \$12.50

Concession rate (printed newsletters) – \$25

Note: concession rate is for *bona fide* pensioners and students only

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## **Mullion State Forest - Survey of site to be burnt v control (unburnt site).**

Sunday March 11<sup>th</sup> - C. Kinross, plus other OFNCS members\*

and Nikki Bennett, Forestry Corporation

*Report by Cilla Kinross 21 March 2018.*

\*Other members who helped with the survey and report: Helmut Berndt, Jenny Medd, Kerry McGann and Hai Wu.

OFNCS members spent about half an hour at each site (mid-late morning) for about a 30–50 m radius from a photo-point transect, identifying plants, listening for birds and taking photographs of transects. The sites were very similar, so will make for an interesting comparison of before and after the burn proposed for April 2018. Both sites contained an abundance of *Acacia meiantha*.

Very few birds were seen or heard until we arrived at the picnic area near the creek where there were (in addition) sulphur-crested cockatoo, crimson rosella, galah, striated pardalote, white-eared honeyeater, yellow-faced honeyeater and pied currawong.

### **SITE 1 (CONTROL).**

Lat/Long. WGS84 lat N - 33.3' 58.68" long E: 149.8' 46.24" Elevation: 920 m

Directions: Boshes Creek Road (?). Drive to sign 4. Walk 18 m SE along the road, passing large culvert. Then 28 m NE into bush. Site marker (steel with orange head) is just NE of two leaning pines. A second marker is about 7 m to the NW and is used for the photograph, putting the 'head' of the marker in the centre of the frame. See diagram below

### **Description**

Open forest, primarily *Eucalyptus dives*-*E. mannifera* association, trees 10–20 m tall, with shrubby understorey and about 50% litter cover. Little grass or other ground covers, but Lomandra and some forbs.

The only bird heard here was spotted pardalote

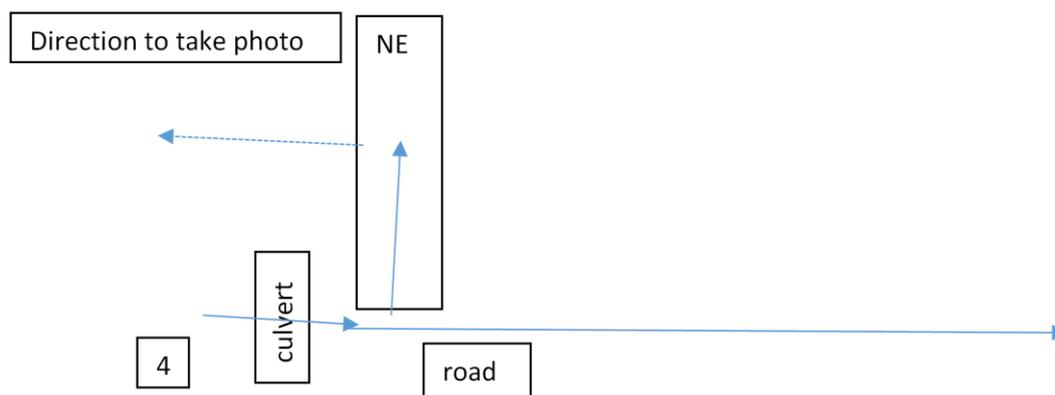




Figure 1. Site 1 Control site



Figure 2. Site 1 Control site (close)

### Directions to site 2

The shortest route is to return back along Boshes Creek Road about 500m and turn left onto Boshes Park Fire Trail, just before the creek crossing. About 500m along the trail you'll come to the intersection with a trail on your right. Make a U-turn and drive back about 50 metres. The site is on your right. The longer route is to continue along Boshes Creek Road to the top of the ridge and turn right onto Black Mountain Road and then right again after 1 km onto Cactus Gully Road. Head east for 500 metres, keeping the eucalyptus forest on your right until you come to a new coup with pines. Turn right here (the eucalypt forest is still on your right) and proceed about 400 metres and turn right onto Boshes Park Fire Trail. Do not turn left at the intersection in the middle of the coup but head more-or-less straight ahead at the sign and proceed about 50 metres. The site is on your right.

### SITE 2 BURN SITE

Lat: -33.3' 52.64" Long: 49.9' 3.50" Elevation 921 m

Just on the right, after round left hand bend, heading south on the road leading towards picnic area.

### Description

Similar to Site 1, although litter might have been a bit thicker, and there were more rocks and fallen logs and some noticeable hollows in trees.

**Birds heard here:** white-throated tree-creeper, Australian raven, eastern yellow robin.



Figure 3. Site 2 Burn Site



Figure 4. Site 2 Burn Site (close)