

Campbell Dr

Campbell Drive

Campbell Dr

Boyne Pl

Browns
Field

(Jurassic
Diatreme)

Rainforest

*Browns Field Wahroonga NSW
Jurassic Diatreme Ancient Rainforest
Modern Sportsground*



*Diatreme Eruption
Alaska*

Foreword

I write as the trustee of the Georgina Brown Estate which subdivided its Wahroonga lands (85 acres), in the 1960s, when the area known as Browns Field was surrendered to the Ku-ring-gai Council for public recreational purposes.

The area, (Browns Field,) had always been known as “the Island” to family members, and I first set foot on it in about 1930 when my uncles would visit it to dig out its rich chocolate soil for screening and delivery to local bowling greens. They also cut stone from the surrounding hillside outcrops, and felled suitable trees as telephone poles for the Postmaster-General’s Department. These activities ceased in about 1932, when a number of family members formed a contracting company which undertook road and earthworks in the Municipality for the next 60 odd years. But about that time, Uncle Jack Brown, drove a pipe down into the soil at the bed of one of the creeks surrounding “the Island”, and struck bedrock at about five metres. Knowledgeable opinion suggested that this base rock was “basaltic” in character, and that it, and the surrounding soil were volcanic in nature. In the later years of the 1930’s, I often visited “the Island” with a rifle, to stalk a numerous rabbit population which had extensive warrens in its deep soft soil. War came in 1939, and by 1942 I enlisted, and spent four and a half years in the AIF. After the war, and up to the time of the disposal of the land about 1962, the volcanic nature of what was now known as Brown’s Field was only a background memory. And so it continued through the following years. But recent online forays have disclosed information that Browns Field originated as a volcanic diatreme of the Jurassic era, some 200 million years ago, and that an ancient rainforest inhabited one of its creeks. These are the subjects of the essay now before you, which extends to include local fauna and flora ,which have been listed as existing at the present time.

But it has to be accepted as a layman’s interpretation of a large amount of scientific reading, which I hope is successful. The professional stories have contained a plethora of technical terms. I have simplified those into everyday English, and in my discussion and illustrations of fauna and flora of the area, I have used common names. There is a Wikipedia entry entitled “Browns Field”, which contains material which I have used as guidance in this essay.

I have found this to be a fascinating journey, which hopefully, will be followed and enjoyed by others.

John R. E. Brown

Creek running diagonally at centre, cut into deep chocolate soil, shows locality of volcanic diatreme 200 metres wide, which erupted 200 million years ago.



Original Brown's orange orchard viewed from Brown's Field. Modern Comenarra Parkway proceeds along distant ridge. Volcanic soil spread across orchard.



BROWNS FIELD MAAR-DIATREME – WAHROONGA – AND AN ANCIENT RAINFOREST

Before proceeding to matters which are essentially scientific, a little more history must be told. The 85-acre Brown Estate where Browns Field is at the centre, had been in the family for more than 100 years at the time of its disposal in the 1960's, following its original purchase from the Crown in 1857 by John Brown, a northside timber getter, who proceeded to convert its timber over sawpits. This was followed by the planting of orange trees, which in the rich volcanic soil, delivered fruit in five years instead of the customary ten.

John Brown died in 1884, and by 1890, one of his younger sons, G. E. A. E. (Ernest), had taken up the 85 acres as part of his beneficiary entitlements, and moved on to the land with his young wife Georgina. Over the years, they had 11 children, and I am their grandson. Family subsistence came from the sale of oranges and the disposal of other inherited lands. About 1920, the rich volcanic soil was exploited, together with stone, and timber as poles, as I have previously mentioned, but by 1932 a contracting business was established which would continue for the next 60 odd years. With the subdivision of the land in the 1960's into 220 residential lots, Ku-ring-gai Council acquired a central section which it named Browns Field, and which is the subject of this work.

MAAR DIATREMES

A maar-diatreme is a special volcanic event differing from the typical operation of traditional volcanoes, where in the latter case, lava and other substances are directly ejected. A maar-diatreme is created, when vagrant streams of molten magma escape upwards through near-earth-surface cracks, and encounter water-laden sedimentary rocks where steam produces explosive events which force an expanding path to the surface.

Maar-diatremes are relatively common throughout the world, and the one at Wahroonga, (the only one in the Municipality,) is deemed to have occurred in the Jurassic Period of some two hundred million years ago. In the immediate Sydney area, there are some 25 diatremes. There is a well-known one at Bondi, a very large presence at Wallacia, and a heavily-exploited example at Hornsby, which has supplied concrete aggregates and road-surface materials for a considerable number of years to Sydney as a whole.

Magma is the active material, combined with water, in the creation of a maar-diatreme. When water supplies are no longer available in surface rocks, the diatreme becomes inactive, and is wholly or partially filled with magmatic material which then hardens and seals the crater. Magma forms as a crustal presence on the surface of the Earth's molten core, and provides the basic materials of most of the Earth's igneous rocks.

THE OPERATIVE LIFE OF A MAAR-DIATREME

The best formal description I can find in explanation of this subject, comes from an article by David Roots, based on a work by C Herbert (1993) entitled: "Igneous Rocks in Geology of the Sydney 1:100,000 Sheet 9130, Geological Survey of NSW, Mineral Resources of NSW)".

The maar-diatreme diagram supplied, should be used to help understand the above article. It will be seen that all such geological phenomena are upwards-facing cones. The shape indicated, is formed by the continuous eruptive action of the diatreme, hurling rocks and brecciated (broken rock) material vertically, in an abrasive process which may extend for years. The article's sub-title is: "Volcanic Explosions".

Mature Maar-Diatreme

Original surface

bedded diatreme facies

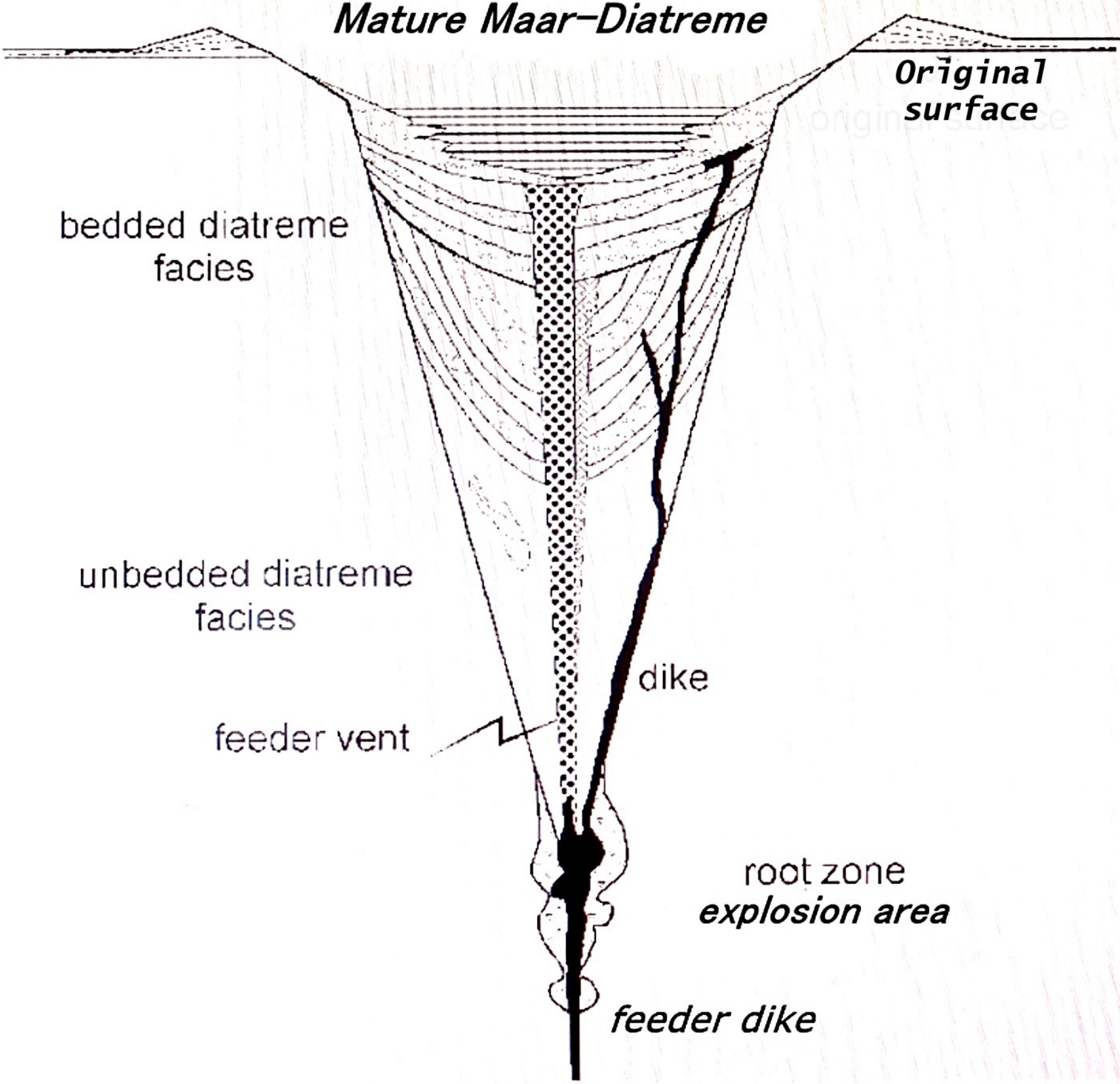
unbedded diatreme facies

feeder vent

dike

root zone
explosion area

feeder dike



Diatremes are relatively rare and most unusual volcanic structures. They are only found where hot magma has risen into horizontal sedimentary layers that contain groundwater. Vertical jointing is a likely prerequisite as well, as the famous diatreme areas in Germany, Australia and South Africa all have this common pattern.

For diatremes to form, magma must enter horizontal sedimentary layers, encountering water. Diatremes develop as hot magma flashes groundwater to steam, and the steam finds a way through the joint system to the surface. Once the steam begins to escape at the surface, the temperature along the escape path progressively increases. Accelerated weathering occurs along the narrow vent path, breaking down the country rock, allowing particles to move upward, increasing the cross-sectional area of the vent. The vent path may have started as an irregular alignment of joints, poorly connected between superimposed sediment layers. However, as the steam flow increases, abrasion increases the size of the vent, and straightens out the kinks.

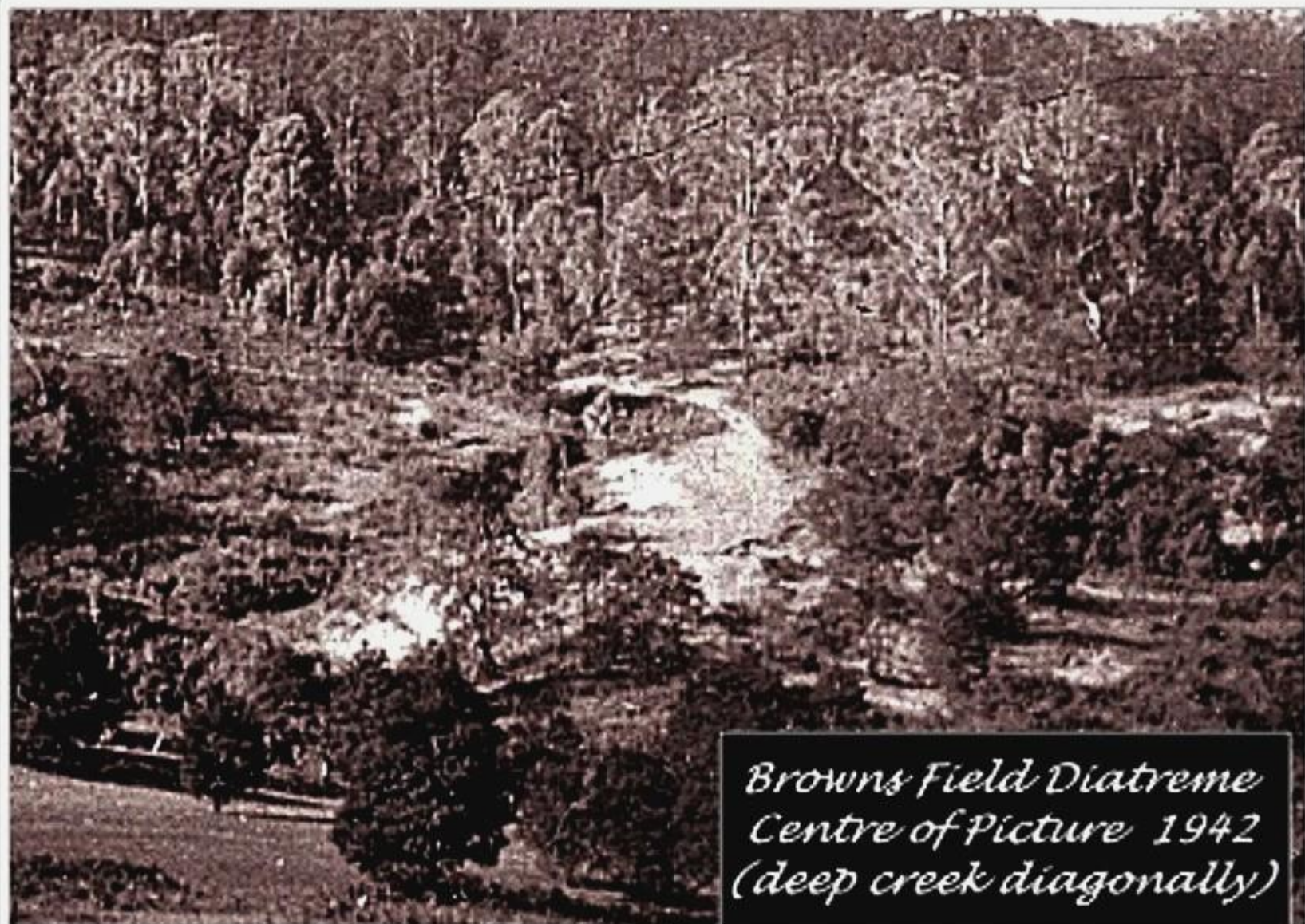
Rock fragments are stripped from the side of the vent, and rattle upwards to escape at the surface. The movement of such rock through the vent abrades the sides, progressively increasing its diameter, and shaping the mouth of the vent like that of a trombone. Steam now roars out of the vent, and rocks are flung high into the air accompanied by an extremely loud noise.

The shape of the vent mouth determines how much can escape from the pipe. Much of the material that is ripped from the sides and flung upwards will leave the vent moving vertically, only to fall back into the vent again. Some, however, will fall just outside the vent, creating a ring of debris called a maar ring. What falls back into the vent is then flung out again and again.

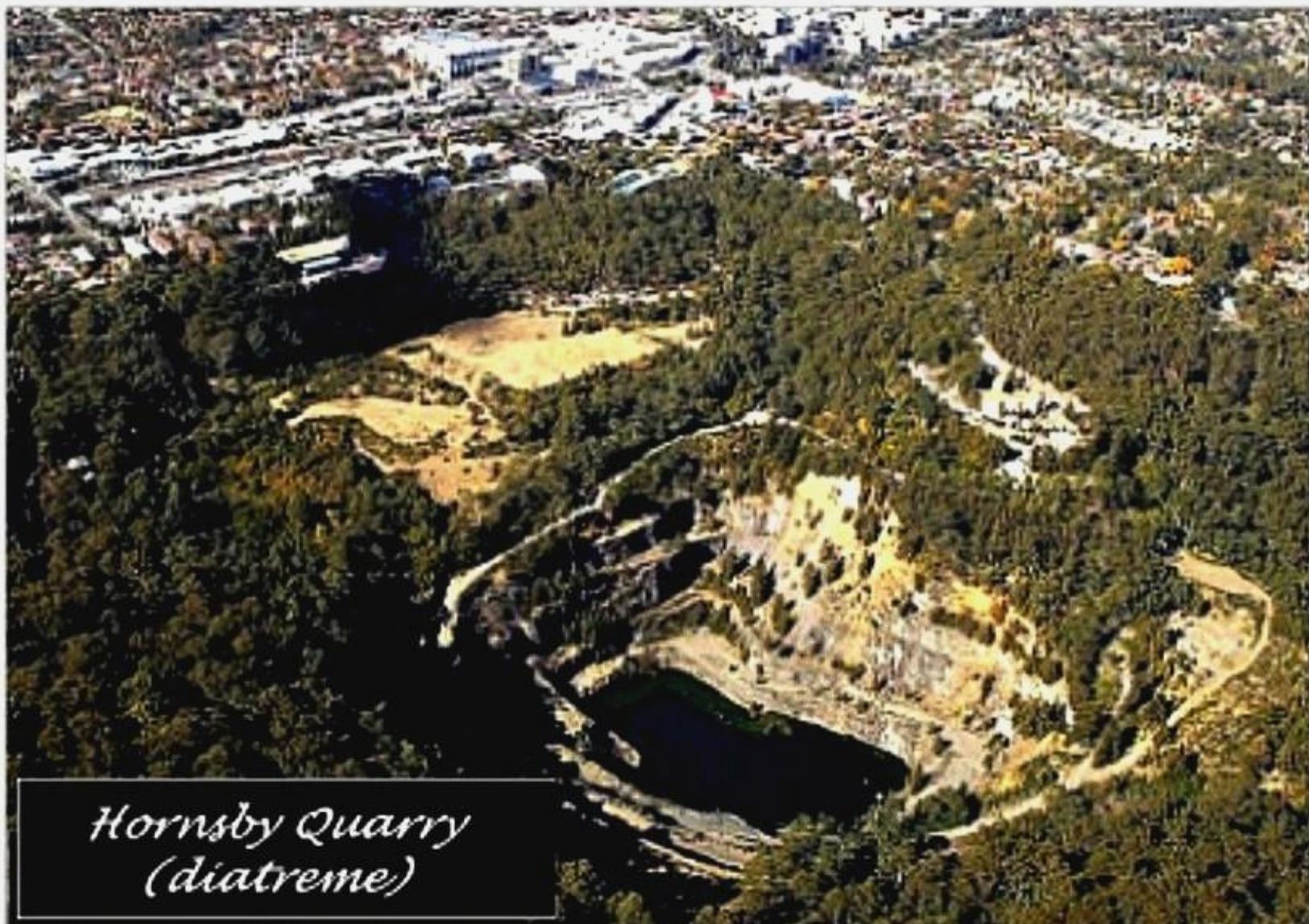
A very turbulent situation develops with a vast amount of material being recycled in and out of the vent. This would be a fearful thing to witness, but even worse to hear. In addition to bedrock debris being ejected from the vent, magma is being introduced at the bottom of the vent, and is mixed in with the rest.

The power and the life of a diatreme depend upon the temperature of the magma and on the water supply. The water supply is probably the limiting factor, being controlled by the permeability of the surrounding bedrock. When the diatreme starts to form, the nearby sandstone is saturated with water, providing a considerable local reservoir. As the process proceeds, this local water is consumed. Additional water arrives only after travelling an increasing distance through the sandstone of restricted permeability.

When the water supply diminishes to the point where the system begins to dry out, the steam pressure drops and the circulating debris in the diatreme vent starts to settle down to fill the bottom of the vent. At the same time molten magma may enter the bottom of the vent without encountering water, but usually comes into contact with broken up (brecciated) diatreme material. The magma will intrude into the accumulating debris in the bottom of the hole and solidify, plugging the bottom of vent. This marks the end of the diatreme as an active entity. Water will slowly seep into the half-sediment-filled diatreme and turn it into a maar lake. The sediment that settles into the bottom of the diatreme will progressively compact, more in the middle than at the edges, producing the typical basin shape of diatreme fill.



*Browns Field Diatreme
Centre of Picture 1942
(deep creek diagonally)*



*Hornsby Quarry
(diatreme)*

MAAR-DIATREMES

The above expression will have been seen on a number of occasions in this work so far. The addition of the word “maar”, is meant to associate this type of volcanic structure with water, based on a word for water which reaches back to Latin roots. Most diatremes around the world, when exhausted, usually leave a crater at the top which commonly fills. A static water level may be maintained if there are adequate groundwater supplies available from the surrounding district. However, it is probable that the maar-diatreme’s connection with water, rests in the fact that explosive steam is an essential requirement in the functioning of such a violent volcanic event. Several maar-diatremes are included in my illustrations, and the Mount Gambier Blue Lake – with its intriguing colour changes – is used as a town water supply.

BROWNS FIELD MAAR-DIATREME

There is no indication that a lake ever existed at the top of the Wahroonga diatreme, nor at Hornsby, and our diatreme seems to have completely filled with ejected volcanic material, which has weathered over 200 million years into a chocolate-brown soil. Moreover, that soil is also found some distance westward - in the area which later became an orange orchard. In the little information provided to us, that soil is defined as “mafic”, which means that it is substantially endowed with both magnesium and iron – which are useful in a modern agricultural soil profile.

Some of my reading suggests an answer to this apparent contradiction in maar-diatreme formation at Wahroonga. After a violent event at its birth, creating a conical crater of some 200 metres wide, the strength of the water-magma combination could have declined in terms of availability, size and temperature. Consequently, Brown’s Field diatreme could probably now only produce volcanic ash, which became an umbrella-cloud over the crater and its adjoining area to the west. This process could have continued for days or years to have brought about the quantity of deposits which occurred. It all came to an end when the base magma intrusion, with associated material, finally solidified. In the life of a diatreme, explosions were originally thought to have occurred only in the “Root-zone” of the crater, but more recent opinion suggests that these may have occurred at different levels of its conical height.

Maar-diatremes are monogenetic, which means confined to one life only. Once the “volcanic neck” is sealed by magmatic material, the life of the eruptive event is at an end. While most diatremes occurred in prehistoric times, a few do occasionally erupt in the modern era. Alaska and Iceland are mentioned, and one of my illustrations is of an apparently recent event in Alaska.

The second unusual characteristic about Browns Field, making it unique in Ku-ring-gai, is the presence of a localised rainforest in one of the boundary creeks, which has tree and fern species not seen elsewhere in the Municipality. I have expanded on this subject in the second part of my essay, with appropriate illustrations.



*Diatreme
Mt. Hypipamee Qld,*



*Blue Lake Mt. Gambier
Diatreme recent origin*

Time span and etymology of system/period names

Name	Time Span	Etymology of name
<u>Quaternary</u>	<u>2.6 to 0 million years ago</u>	First introduced by Jules Desnoyers in 1829 for sediments in France's Seine Basin that appeared to be younger than Tertia, ♦1 - rocks.[11]
<u>Neogene</u>	<u>23 to 2.6 million years ago</u>	Derived from the Greek words νῆος (neos) meaning 'new', and γένεα (genea) meaning 'genesis' or 'birth'.
<u>Paleogene</u>	<u>66 to 23 million years ago</u>	Derived from the Greek words παλαιός (palaios) meaning 'old', and γένεα (genea) meaning 'genesis' or 'birth'.
<u>Cretaceous</u>	<u>145 to 66 million years ago</u>	Derived from <i>Terrain Crétacé</i> used in 1822 by Jean d'Omalius d'Halloy in reference to extensive beds of chalk within the Paris Basin.[13] Ultimately derived from the Latin creta meaning (chalk).
<u>Jurassic</u>	<u>201.3 to 145 million years ago</u>	Named after the Jura Mountains. Originally used by Alexander von Humboldt as 'Jura Kalkstein' (Jura limestone) in 1799.[12] Alexandre Brongniart was the first to publish the term Jurassic in 1829.[17][18]
<u>Triassic</u>	<u>251.9 to 201.3 million years ago</u>	From the <i>Trias</i> of Friedrich August von Alberti in reference to a trio of formations widespread in southern Germany.
<u>Permian</u>	<u>298.9 to 251.9 million years ago</u>	Named after the historical region of Perm, Russian Empire.[11]
<u>Carboniferous</u>	<u>358.9 to 298.9 million years ago</u>	Means 'coal-bearing', from the Latin carbo (coal) and fero (to bear, carry).[20]
<u>Devonian</u>	<u>419.2 to 358.9 million years ago</u>	Named after Devon, England. [11]
<u>Silurian</u>	<u>443.8 to 419.2 million years ago</u>	Named after the Celtic tribe, the Silures. ♦
<u>Ordovician</u>	<u>485.4 to 443.8 million years ago</u>	Named after the Celtic tribe, Ordovices. [23][24]
<u>Cambrian</u>	<u>538.8 to 485.4 million years ago</u>	Named for Cambria, a latinised form of the Welsh name for Wales, Cymru. LeJ.
<u>Ediacaran</u>	<u>635 to 538.8 million years ago</u>	Named for the Ediacara Hills. Ediacara is possibly a corruption of the Kuyani words 'Yata Takarra' meaning hard or stony ground. —
<u>Cryogenian</u>	<u>720 to 635 million years ago</u>	From the Greek words κρύος (kryos) meaning 'cold', and γένεσις (genesis) meaning 'birth'.@J
<u>Tonian</u>	<u>1,000 to 720 million years ago</u>	From the Greek word τέτνος (tēnos) meaning 'stretch'._@)
<u>Stenian</u>	<u>1,200 to 1,000 million years ago</u>	From the Greek word στενός (stenos) meaning 'narrow'.rn
<u>Ectasian</u>	<u>1,400 to 1,200 million years ago</u>	From the Greek word ἐκτάσις (ektasis) meaning 'extension'._@)
<u>Calymmian</u>	<u>1,600 to 1,400 million years ago</u>	From the Greek word κάλυμμα (kalumma) meaning 'cover'.rn
<u>Statherian</u>	<u>1,800 to 1,600 million years ago</u>	From the Greek word σταθῆρις (stathēris) meaning 'stable'.@I
<u>Orosirian</u>	<u>2,050 to 1,800 million years ago</u>	From the Greek word ὄρος (oros) meaning 'mountain range'.m
<u>Rhyacian</u>	<u>2,300 to 2,050 million years ago</u>	From the Greek word ῥήγας (rhyax) meaning 'stream of lava'._@J
<u>Siderian</u>	<u>2,500 to 2,300 million years ago</u>	From the Greek word σίδηρος (sideros) meaning 'iron'.@I



*The Jurassic Era
was
Warm and Wet*

BROWNS FIELD RAINFOREST

FLORA

Rainforests covered most of Australia for much of the 40 million years after its separation from Gondwana. However, these rainforests contracted as climatic conditions changed and the continent drifted northwards.

Tropical and subtropical rainforests are found in northern and eastern Australia in wet coastal areas. Warm-temperate rainforests grow in New South Wales and Victoria, and cool-temperate rainforests are found in Victoria and Tasmania and in small areas at high altitude in New South Wales and Queensland.

It will be seen from the above, that Brown's Field is a warm-temperate rainforest. As it is the only rainforest in Kur-ring-gai Municipality, and quite isolated, it has obviously been able to perpetuate itself for an immeasurable length of time. Because it has carved itself deeply into the local volcanic soil, it has survived countless bushfires and droughts, and in my lifetime I have never known this creek to run dry.

The trees which exist are warm-temperate subjects which are seen nowhere else in the Municipality, and I have researched them from a list supplied in Wikipedia's online article on Brown's Field and its natural phenomena. That list includes Golden Sassafras, Jackwood, Scrub Turpentine, Wild Quince, Koda and a number of ferns.

GOLDEN SASSAFRAS

This particular species is the largest of the Brown's Field rainforest group, and elsewhere in NSW and Queensland it can grow to 35 metres in height with a straight trunk. It is a softwood which flowers attractively from May to July, followed by a fruiting phase, as do the other species which will be described. It has been extensively exploited on the NSW north coast, where it has been cut for furniture and turnery, and its straight barrels have been rotary-cut into veneers. As found in Browns Field the specimens are not large.

JACKWOOD

This subject which is often found growing with Sassafras, is a member of the laurel family but has a variety of common names, including Native Laurel, Brown Beech, Brown Laurel, Bolly Laurel and Silver Sycamore. It can have buttressed roots and grows to 35 metres. While from the same family (Cryptocarya), as the esteemed Queensland Walnut, there is no listing of it as being commercially useful, other than mention that it is immune to powder-pest borer. Its shiny fruit is popular with rainforest birds.

SCRUB TURPENTINE

Otherwise known as Scrub Stringybark or Brown Malletwood, this tree is a rainforest species growing to 25 metres in height. Its base can be channelled or fluted. It has a "stringy" bark and is similar to its relative the true Turpentine. Its fragrant flowers formed in August, develop into small berries and are popular with birds including the Rainbow Lorikeet. No commercial use is indicated. Seemingly its existence is threatened by a disease known as "myrtle rust".

WILD QUINCE

This is a small tree growing to about 20 metres and is found in different kinds of rainforest. With smooth bark patterned by lichens, it is similar to Coachwood but with a fluted irregular bark. No practical uses are indicated but it flowers from January to May, with fruit popular with a number of birds including the King Parrot.



*Browns Field
Rainforest*



KODA

An interesting tree. A native of Asia, from Japan southwards to Australia, it is a deciduous subject found in various types of rainforests. A medium to large tree, it can reach 30 metres in height and can be fluted at the base. Flowers are white and sweetly-scented, being produced from September in the southern hemisphere. They produce sweet fruit, 4 to 5 mm in diameter which are edible by humans as well as numerous birds. Chinese medicine is also extracted. Practical uses include roadside plantings, and as a timber for building and furniture.

FERNS

A list includes three ferns worthy of note as being uncommon to the area. They are Giant Maidenhair, Fishbone Water Fern and Strap Water Fern. All of these trees and ferns are assisted by an average annual rainfall of some 1400 mm as measured at Kissing Point Road.



*Ring-Tailed
Possum*



*Brush-Tailed
Possum*

BROWNS FIELD RAINFOREST FAUNA

It is said that ring-tail possums, brushtail possums and grey-headed flying foxes are common, and as there is a Powerful Owl which nests in the rainforest and includes all of these in his diet, there is a symbiosis here.

It is significant that this area is close to Lane Cove River National Park, which has remained relatively undisturbed from timber-harvesting, and would include old-growth Eucalypt with holes in their trunks from historic limb breakages. A forest with this character can be 200 years old, and is absolutely essential in providing homes for possums and gliders. An astounding piece of recent research, discovered that a Powerful Owl can consume between 250 and 300 Ringtail Possums in a single year! Obviously untouched bushland is a vital environmental resource, and any kind of clear-felling should be prohibited wherever Powerful Owls are working a hunting domain which can be three or four metres square.

BRUSH-TAILED POSSUM

Brush-tailed possums are the most abundant, widely distributed, and frequently-encountered of all Australian marsupials. They are about as large as domestic cats, they have sharp claws used for climbing, and are nocturnal in nature. A thick fur caused them to be extensively pursued by indigenous peoples of south-east Australia, who made them into the warmest of rugs, which could also be used as a cloak. It can be found in forests and woodlands all along the east coast. Quite commonly, they also thrive in urban areas where their incursions into domestic roof-spaces are not particularly welcomed by home owners.

They are territorial and generally solitary. As a marsupial, early life is in a mother's pouch for about 5 months, then for a period on its mother's back. Fully grown at 10 months, breeding can commence at 12 months. They can be defensive of a "home range".

Their numbers were reduced in the 1950's by forest-clearing, but are now considered to be back to normal. The Brush-tail is a favourite food of the Powerful Owl, remarkable because of their similar size.

RINGTAIL POSSUM

Common Ringtail Possums are found along the eastern coastline of Australia, Tasmania and the southwestern corner of Western Australia.

They feed on a number of plant species, with a preference for eucalypts, and prefer dense forests where they can construct dreys (nests), where a number of generations may live in a colony. The nests are typically spherical, about the size of a soccer ball, but sometimes tree hollows may alternatively be used. The faecal material from a eucalyptus diet is typically re-consumed to extract further nutrients.

As marsupials, they carry their young in a pouch, and litters of two is the typical situation. Most young are born between May and July. The Ringtail is a slow grower, but in adulthood they are territorial and live in groups. Like the Brushtail, the Ringtail is nocturnal, and in its movements it is assisted by a long prehensile tail. Despite heavy predation by Powerful Owls it does not appear to be a threatened species.

GREY-HEADED FLYING FOX

The Grey-Headed Flying-Fox is the largest Australian bat, with a head and body length of 23 - 29 cm. It has dark grey fur on the body, lighter grey fur on the head, and a russet collar encircling the neck. The wing membranes are black, and the wingspan can be up to 1 m. It can be distinguished

*Grey-Headed
Flying Fox*



from other flying-foxes by the leg fur, which extends to the ankle. Grey-headed Flying-foxes are generally found within 200km of the eastern coast of Australia, from Rockhampton in Queensland, to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations.

- It occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps, as well as urban gardens and cultivated fruit crops;
- Roosting camps are generally located within 20km of a regular food source, and are commonly found in gullies, close to water, and in vegetation with a dense canopy;
- Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young;
- Annual mating commences in January and conception occurs in April or May; a single young is born in October or November;
- Site fidelity to camps is high; some camps have been used for over a century;
- Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km;
- It feeds on the nectar and pollen of native trees, in particular, Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines;
- It will also forage in cultivated gardens and fruit crops.

The locality name “Fox Valley”, is presumed to have been named because of the presence of flying-fox colonies. I have never seen a colony in the district, but in my childhood, I well-remember the roar of shotguns at night around the Brown home where fruit-trees were being raided by this creature.



*Powerful Owl
Ringtail Prey*

THE BIRDS OF BROWNS FIELD LOCALITY

Again, I shall use the list provided in the Wikipedia entry. These are: Powerful Owl, Tawny Frogmouth, Crimson Rosella, King Parrot, Rainbow Lorikeet, Pied Currawong and Koel.

THE POWERFUL OWL

One of Australia's most iconic birds, this most successful predator has only been fully understood in recent decades, with a recent discovery that a single owl can consume between 250 and 300 Ringtail Possums in a year. It can also deal with the much larger Brushtail Possum, which has a body-size similar to a domestic cat. Its huge talons, in one convulsive action can extinguish the life of a victim, which can include bats and ground-dwellers such as rabbits and hares. Birds are not immune, and famed zoologist David Fleay, has recalled two most noisy events, where a kookaburra was seized by a Powerful Owl. Tawny Frogmouths are even taken. This owl maintains a large home range of an area of possibly several kilometres square, and defends that range, It prefers humid forests ranging from Queensland to Western Victoria.

Living in breeding pairs, they are usually nocturnal hunters who roost in tall open trees in the daytime, evidenced by noticeable whitewash (faecal material), at the base of the tree, together with bones and other remnants. Unlike some other owls the male is larger and dominates the pair.

At breeding time, the female does all of the incubation with the male continuing to hunt. Two eggs are usually laid. Because of its large territorial demand, this owl is not frequently seen. It is not however on the list of threatened species.

TAWNY FROGMOUTH

The Frogmouth, once called a Mopoke is one of Australia's most unusual birds, with its ability to camouflage itself by colouration, and by appearing to be part of a roosting tree. Facially, it has an owl-like appearance, but it is only distantly-related to that part of the avian family. It is distributed uniformly throughout Australia and Tasmania, except for desert areas. Three different species cover the range.

It is quite a large bird, up to 53 cm in length, but its feet and claws are not an major hunting factor, and it relies on a large beak for the capture of prey. In build, it is stocky with rounded wings.

Carnivorous by nature, it is considered to be an excellent pest-control bird, and is omnivorous, feeding on insects, spiders, bugs and moths. Small mammals, reptiles, frogs and birds are also eaten. They are nocturnal feeders.

Pairing for life, they stay in the one territory for up to a decade. They become closely bonded, and a clutch of 3 eggs is incubated jointly, and the emerging chicks are fed cooperatively. They huddle closely in cold weather.

Their ability to appear to be part of a tree is remarkable, and a large, pointed beak can be posed to give the appearance of a broken tree or branch. While they are not on the endangered list, they do absorb poisons from rats which have ingested pesticide. An iconic Australian bird!

PARROTS

Before individual discussion of the three species of parrot found in the subject area, it is appropriate to mention that Australia was described in early charts as "The Land of Parrots" (translated). Of an original listing of 57 parrots and cockatoos, two are now extinct.

CRIMSON ROSELLA

*Tawny
Frogmouth*





JHarrison

*Crimson
Rosella*

This attractive bird is native to eastern and south-eastern Australia and while it is said to have 7 sub-species, at Wahroonga we are only concerned with one, which has the commonly accepted name of Crimson Rosella. It was also introduced to New Zealand and Norfolk Island. It is a medium-sized parrot of some 36 cm in length, much of which is in the tail.

They are common in forests of varying natures, but they prefer older and wetter environments. But they will feed right down to the shoreline, and in southern NSW, I have seen flocks of up to two dozen feeding on seed near the surf-beach high-tide mark.

Generally, they have limited movement in a selected area. Monogamous, they will feed exclusively with their mate in the breeding season, and when noisy flocks are encountered, they will usually be found to be juveniles. While generally feeding on fruit, seeds, nectar and berries, they will also eat termites, aphids, beetles, weevils, caterpillars, moths and water boatmen. Nesting sites are in hollow tree trunks and limbs, at a depth of a metre or more. The eggs are laid in shredded material from inside the hollow.

In the breeding season, from September to February, only the mother incubates a clutch of 3 – 8 eggs of which 3.6 hatch successfully. Predators include the Peregrine Falcon, Grey Goshawk and Powerful Owl, and domestic animals. Many eggs however are also destroyed by female Crimson Rosellas, who will carry out raids on nearby nests. The Crimson Rosella is not a threatened species.

AUSTRALIAN KING PARROT

The King Parrot is a species endemic to Eastern Australia, ranging from Cooktown in Queensland to Port Campbell in Victoria. While preferring heavily forested upland regions of the eastern portions of the continent, I have seen them at sea-level in southern NSW. Adults of both sexes are of a similar size (43 cm), but with different colouration. The male has an all-red head, while the female's head is green, and in other respects she varies from the male. The birds are encountered in pairs or family groups.

In a breeding season from September to January, pairs (like the Crimson Rosella), require deep tree hollows with nesting material made from decayed wood. The clutch-size is usually five.

Together with other parrots, (particularly the Rainbow Lorikeet), King Parrots become quite tame in certain bushland areas visited by tourists. I have selected some notes on wild-bird-feeding, which will be shown at the end of this section..

Some are kept as pets, and while they are not fond of being handled, they do bond to humans, and can be quite devoted. Life expectancy in the wild is unknown, but in captivity they have lived as long as 26 years.

The Australian King Parrot is not threatened as a species, and is in fact fairly common on Sydney's North Shore.

RAINBOW LORIKEET

The last of our three subject parrots is probably the best-known in the Greater Sydney area. It is common on the whole eastern seaboard, and inhabits rainforest, coastal bush, and woodland areas.

A medium-size parrot of some 25 to 30 cms, its colourful plumage is seemingly identical between sexes, and DNA testing of a feather is used to provide a sex-determination. They often travel in pairs, sometimes flocking in pairs, and then reverting to a single couple.





Rainbow Lorikeet



Feeding mainly on fruit, pollen and nectar, the tip of the Rainbow Lorikeet's tongue is provided with an appendage for gathering its foods. Nectar from eucalypts is popular, and these birds once gathered in huge flocks around Pymble on the North Shore, where pioneer settlers harvested them with shotgun blasts, for a favoured "parrot pie". They will also eat fruit, and visit suburban gardens where bird-feeders are put out. At Currumbin Sanctuary on Queensland's Gold Coast, they exist in thousands and will come at designated times to be hand-fed by tourists.

They breed at times which vary with the location: Nesting sites are variable, and can include tree hollows, where occasionally a number of pairs will inhabit the same tree. The egg clutch size is one to three, with all of the incubation being carried out by the female. Its population status is in the affirmative, and it is said to be the most commonly observed bird in Australia.

My final note on parrots, is to record that bird conservationists now make a strong plea against wild bird feeding. The view is held that birds are best served by allowing them to feed naturally. If there is a wish to have bird visitors to a suburban garden, appropriate plantings should be made of seed and nectar-producing subjects.

PIED CURRAWONG

Australia and Lord Howe Island are the home of the Currawong. Its close relatives are the butcherbird and the Australian Magpie. Six sub-species are recognised. A bird of solid build, it has a crow-like appearance. It averages around 45 cm in length, and is generally black or sooty black with a white undertail. Of indigenous origins as to its name, it is recognised from its melodious call.

It usually enforces a limited personal range, preferring old-growth forests for breeding, but parks and gardens can be included in its domain. While eating seeds and berries, it is carnivorous, eating invertebrates, bird eggs, juvenile birds, and young marsupials. It generally lives in trees where it also carries out its reproduction.

KOEL

The Koel is a true cuckoo with a number of sub-species, and one of these is known as the Australian Koel. They are large birds with colour variations between species.

They eat fruit and insects, and have a call which is repetitive in nature. Their bodily camouflage assists in the parasitising of other birds' nests with their eggs, and a number of ruses can be adapted to deceive intended foster parents. Noisy miners and wattlebirds are known to be among their victims.

They fly to Australia usually in September, from New Guinea, Indonesia and possibly as far afield as the Philippines.

My observations on Browns Field and its geological and natural phenomena, are now at an end. I also wish to add that the Brown family traces its origins back to the First Fleet and beyond. The story is told in the "Brown Family Chronicles", of which copies are held by Ku-ring-gai Historical Society, State and National Libraries, and the Society of Australian Genealogists.

John R.E. Brown
Tweed Heads
September 2022

*Pied
Currawong*



Koel

