

# HFNC Excursion to the Grange Burn at three sites from Clifton Rd

on March 21<sup>st</sup> 2026

Diane Luhrs

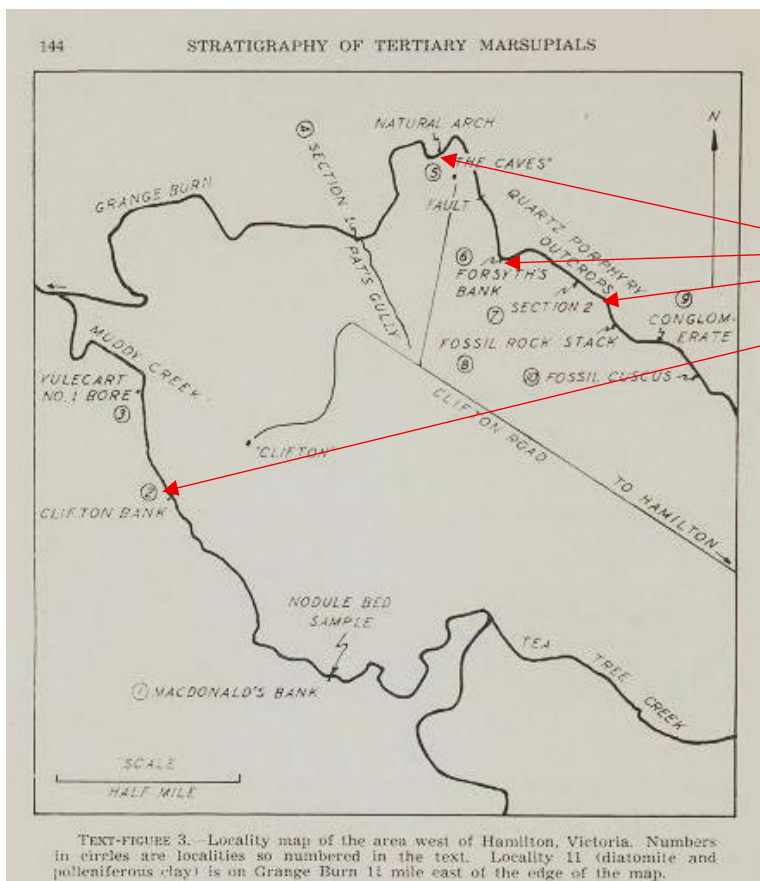
**Participants:** Rod Bird & Diane Luhrs, Geoff & Jannie Lay, Sarah Scott, Janeen Samuel, Sandy Vanrennan & Doug Gardner, Pam Lehmann, Jenni Mitchell & Mervyn Hannan, Fran Coogan Agar & Paul Carroll, Reto Zollinger & Yvonne Ingeme, Heather Ward, Wendy & Peter McDonald.

The main purpose of our excursion was to examine three local fossil sites that have been described as the richest in Australia and possibly in the world. We are grateful to the people who granted us access through their private properties to the south side of the Grange Burn – thank you to Wendy and Peter McDonald whose property borders the eastern site we visited and to the Petropoulos family and their manager John Goss whose property has The Arch and Forsyth's Bank fossil sites on it.

**Background** (An appendix follows the excursion report to provide the geological and palaeontological information about the fossil beds along the Grange Burn.)

From previous HFNC excursion reports (starting in 1960) we know of the important early- and middle-Miocene (around 10 million years ago) to late-Pliocene (4-5 million years ago) fossil beds along the Grange Burn to the west of Hamilton. There were also reports in the local *Hamilton Spectator* from the 1880s extolling the richness of fossils in the region for keen fossil hunters. The fossils link to a time when the region was a marine environment – hence the rich deposits representing marine life of the time. The life represented in the fossil remains is diverse – from microscopic forms to marine invertebrates to marine vertebrates (including mammals such as whales).

The fossils beds are exposed along the banks of the Grange Burn where it has cut through the overlying layers of basalt that date from about 4.3-4.6 million years ago (depending on the dating techniques used – see Piper *et al*, 2006). The maps below show the location of the three main fossil beds along the Grange Burn and the nearby fossil site of Muddy Creek (visited by HFNC in 2025).



Left: Map showing the fossil-rich sites of the Grange Burn (HFNC visited in 2026) and Muddy Creek (HFNC visited in 2025) near Hamilton and the places we visited on this excursion (Gill, 1955: 144).

1. Accessed from The Caves property
2. Accessed from The Caves property.
3. Accessed from Peter and Wendy McDonald's property.
4. Accessed from Yulecart Hall in 2025



Above: Google Map (downloaded 2-04-2026) Showing the places (in red) along the Grange Burn we walked this year.

These sites are a mere eight kilometers from Hamilton and hence not occasioning lengthy travel to access them. Most of us met at the Hamilton Visitor Centre and departed in convoy shortly after 9 am. We arrived at McDonald's property just on 9.20 am to meet Peter and Wendy who directed us to drive on through two gates to their northern boundary fence. They followed to close the gates to keep their sheep within the paddock.



Above: This map downloaded from Google Maps shows both the Grange Burn and Muddy Creek and their junction to the west of our excursion sites. The Grange Burn fossil sites visited are marked ★ and the junction of the burn and the creek with ★.

Wendy had kindly whipper-snipped the long grass that led down to the first of our fossil sites to make walking (and the spotting of any snakes on this calm and sunny day) easier for us. Wendy had also collected some fossils embedded in the sedimentary rock. She left this on the upper bank for us to examine (see below) before arriving at the creek bed with its layers now exposed due to the very dry year we have had.



The piece of rock with mollusk fossils below Wendy and Peter's property: notice gastropods and bivalves



Left: Walking down to the fossil bed



Right: Grange Burn fossil bed



Left: View westwards of the Grange Burn



Right: *Dianella* sp. amongst the rocks



HFNC members examine the porphyry rock stack and submerged basement rocks near McDonald's property.

After visiting the first fossil site, Wendy led the group westwards along the southern edge of the Grange Burn past their boundary fence to the boundary fence of The Caves property. Here the edges of the Burn became very steep with large pools of water forming in the Burn. A long-necked turtle rested on a rock in this section.

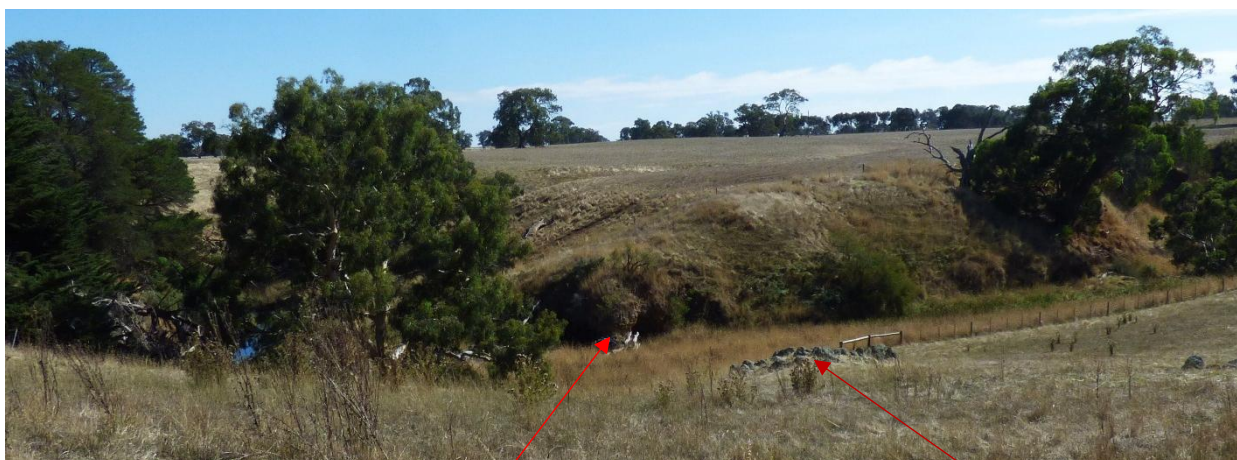
As we walked this section we wondered if we would come across the “fossil rock stack” that was referred to in the many papers we had read about this fossil-rich area. Wendy and I had previously used the GPS references given for the fossil sites in some reference articles, but they didn’t match the locations we had visited. So, we were quite unsure of what the fossil stack looked like, or of where its actual location is.



These three views show the northern bank at different sections as we head west along to Burn from McDonald’s property

After returning to our vehicles, we drove in convoy to the next property, The Caves, where we would spend the rest of our excursion. First, we walked past the homestead to a paddock west of the homestead overlooking The Arch formation. From here we were able to see the different layers of the banks of the Grange Burn as it flowed westwards and then turned south around the edge of the property.

From this top view, we walked carefully down to the Grange Burn through the very tall grass and over the rocky terrain near the Burn’s edge until we could see the fossil beds inside The Arch. Four of our members (Paul, Pam, Reto and Sarah) found a way into the space beneath The Arch and easily located the fossils in the soft sedimentary soil above the Burn.



View from The Caves homestead to The Arch over the Grange Burn with the exposed porphyry rocks in the foreground.



Left: Exposed porphyry at The Caves showing its structure and vibrant colour. Porphyry is an igneous rock with large-grained crystals (phenocryst) of feldspar or quartz embedded in a matrix of finer grained crystals. It is renowned for its hardness and deep purple colour. The process involves partial melting of different minerals deep in the crust to form large phenocrysts with crystal faces. If of a different density to the remaining melt they settle out of solution. If this partially crystallized magma is then erupted to the surface as a lava the remainder melt cools quickly around the phenocryst and forms the fine-grained matrix.

Quartz is pure silicon dioxide ( $\text{SiO}_2$ ) and feldspar is an aluminium silicate ( $\text{Al}_2\text{SiO}_5$ ) with sodium (Na), potassium (K) or calcium (Ca). The crystals have cleavages in two planes at right angles.

Below: Note the large crystals in a fine matrix in the large porphyry rock and the cleavage plane on the smaller rock.



Left: The Arch from the paddock west of the homestead

Right: The bank's geological profile further downstream



Left: Exposed porphyry downstream from The Arch

Right: Muddy Creek Marl further downstream of The Arch



View of The Arch showing the geological profile – Bochara Limestone over quartz porphyry



Left and right: Fossil mollusk shells – gastropods and bivalves



Left: Paul at the bend near Forsyth's Bank



Right: Forsyth's Bank (named after the family home above)



Forsyth's Bank named after the family home above (not shown), and the large clear pool at its base.

We finished our day with a picnic lunch at Wendy and Peter's place.



Left: Fossil specimens (in a private collection from the Grange Burn in the 1980s). They are presumed to be whale fossil fragments. The rounded tooth measures about 11 cm in length. The smaller fragments are thought to be sections of bone (rib or facial?).

## Appendix

The following descriptions are taken from publications listed below. In places where I have added an explanatory comment, I have indicated this with (DL).

### Geology of the Grange Burn at the fossil sites

- Gill, ED (1955) The Stratigraphical Occurrence and Palaeoecology of some Australian Tertiary Marsupials' *National Museum of Victoria*, pp. 135-203.

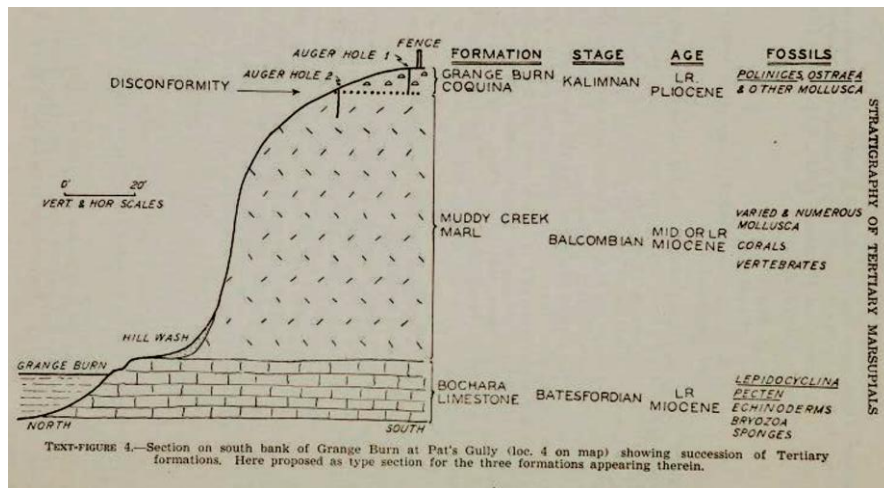
Descriptions of the Tertiary fossils from the Hamilton district appeared in the 1860s, and the localities on Muddy Creek, Violet Creek and the Grange Burn have become classic Tertiary studies in Victoria. ... Most of the type sections for the various Tertiary stages developed in Victoria are in thin shelf deposits. ... [There are] actually three formations in this area, viz.: –

Youngest Grange Burn Coquina

Muddy Creek Marl.

Oldest Bochara Limestone (here named after the parish of Bochara). ...

[Gill] has found that the three formations outcrop in one section on the south bank of the Grange Burn at Pat's Gully (see No. 4 Section 1 in Text Figure 3 on Page 1 of this report; see Text-Figure 4 below). ... The Bochara Limestone (lowest of the three Tertiary formations) is highly calcareous and is lithified so as to be crystalline in part. ...



In this section at Pat's Gully the outcrops of the three formations are rich in fossils. ... The fossils indicate a marine environment of warm clear water. ...

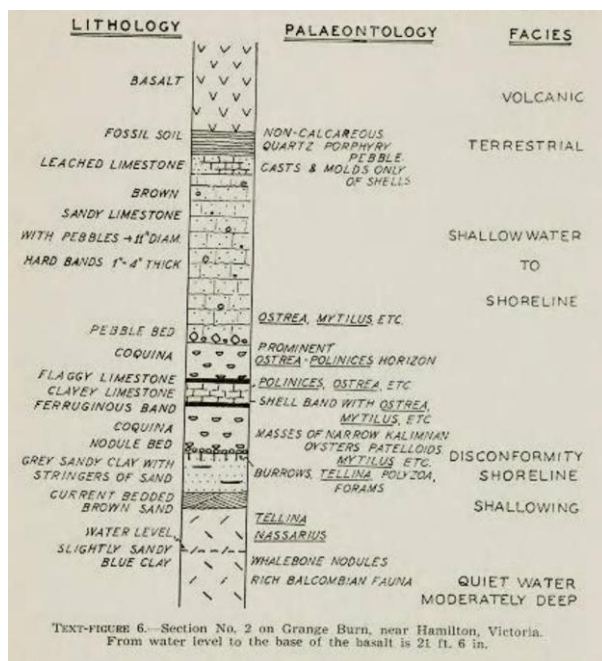
The Boundary between the Bochara Limestone and the overlying Muddy Creek Marl is a sharp and conformable one. Many springs emerge along this contact. ...

*Disconformity.* Of stratigraphical importance is the disconformity [the nodule bed] between the Muddy Creek Marl and the Grange Burn Coquina. ...

On Muddy Creek [the Grange Burn Coquina] consists of a shell bed only, while on the Grange Burn the same shell bed occurs but over it is a sandy limestone which is highly fossiliferous too. The shells are both whole and broken. ...

For the study of the disconformity, a site was selected at MacDonald's Bank on Muddy Creek where the nodule bed is clearly developed. ... A total of 208 nodules was obtained including large piece of whale bone which overlapped the boundaries of the area given. The nodules comprised [one subrectangular piece of dark brown mineralized whalebone with rounded edges; 11 waterworn fossil fragments such as pieces of mollusk shells, cidaroid [echinoid] spines, bryozoa and bone varying in size and mineralization] .... The nodule bed of the Hamilton district contains a large number of vertebrate fossils including whales, sharks and fish.

The late Mr W. J. Parr kindly drew [my] attention ... to the fact that the 1946 floods washed out a section of the Grange Burn, revealing the Tertiary further upstream than previously (see Section 2 in Text-Figure 3 on page 1 of this report). [The diagram below shows the stratigraphy of this section near Peter and Wendy McDonald's property.] ...



There are extensive outcrops of quartz porphyry on the Grange Burn opposite section 2. At locality 8 (see map on page 1 of this report), the creek flows over a small saddle in the quartz porphyry which separates the main mass from a fossil rock stack.



PLATE 3.

These photographs occur at the end of Gill's article.

**Top:** Forsyth's Bank on Grange Burn, near Hamilton. The cliff consists of Grange Burn Coquina capped by basalt. In the foreground is the Muddy Creek Marl with remnants of the Nodule Bed on it. The ruins of the Forsyth's house can be seen on the top of the cliff, and the motor-truck (top right) provides scale.

**Middle:** Bochara Limestone resting on the bedrock of quartz porphyry (left), Grange Burn, west of Henty's [The Caves] house and near the Natural Arch.

**Bottom:** Natural arch in Bochara Limestone on Grange Burn west of Henty's house. The limestone is rich in lepidocycline foraminifera [complex, large benthic (bottom-dwelling) foraminifera. Their test (shell) is generally flattened or lens-shaped composed of three layers] and other fossils.

These photographs occur at the end of Gill's article.



**Top:** Stump of fossil conifer in fossil soil covered by vesicular basalt on the south bank of the Grange Burn (No 10 in the map on Page 1 of this report). Scale given by ruler, of which five inches (13 cm) is showing.



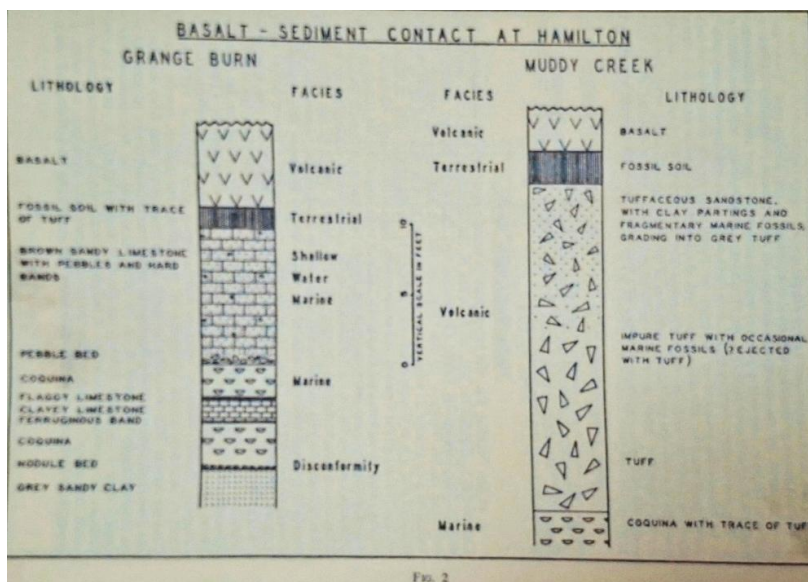
**Middle:** Locality 10 on Grange Burn Map (page 1 of this report). The fossil Cuscus tooth came from the fossil soil under the basalt. The person in the photograph is 5'4'' (1.63 m).



**Bottom:** Ferruginized sediments of the Grange Burn Coquina in crevices in quartz porphyry country rock at Locality 9 (see map on page 1 of this report).

PLATE 4.

2. Gill, ED (1964) 'Rocks contiguous with Basaltic Cuirass of Western Victoria', *Proceedings of The Royal Society of Victoria*, Vol 77, issue 2: 331-355



Gill (1964: 333) presented this diagram to show the distinction between the Grange Burn and Muddy Creek profiles. He states that no tuff bed occurs on the Grange Burn as it does on Muddy Creek – but that tuff minerals do occur in the fossil bed.

The fossil soil is overlain with basalt which at the surface is semi-laterised\*.

In this band of fossil soil, under the band of basalt, are the stumps of Celery Top Pine *Phyllocladus aspleniifolius*, now extinct on the Australian mainland but which still grows in west Tasmania and in New Zealand in temperate rainforest.

Note\* Semi-laterised basalt refers to basaltic rock that has undergone intermediate **stages of weathering** (laterization), resulting in a material that is transitioning from solid basalt into fully developed laterite. It is not fully decomposed into iron oxides and alumina but has lost significant amounts of silica and alkalis due to weathering, resulting in a ferruginous (iron-rich) clay or clayey rock. In summary, it is "in-between" basaltic rock that has lost its original structure but has not yet reached the final stage of intense weathering (to create the ferruginous laterite crust). (Google AI, downloaded 3-04-2026)

## Fossils

3. Dennant, J (1888) Notes on the Muddy Creek Beds, with brief remarks on other Tertiary Strata of South Western Victoria [From the transactions of the Royal Society of South Australia, 1888].

Perhaps, there are no fossiliferous deposits in Australia which have been more frequently visited than the Muddy Creek beds, not only by geologists, but also by those led thither by curiosity merely. Their short distance from Hamilton, the beauty of the scenery, the ease with which the fossils can be obtained, and last, but not least, the warm welcome accorded to visitors by proprietors of the land where the beds are situated combine to make Muddy Creek an especially pleasant place for a day's outing.

... Many years ago, the Rev JT Woods worked industriously at the beds, and to him we are indebted for a knowledge of a large number of [the fossils]. ... Descriptions of many species have ... been given by the Rev JT Woods FGS in the Transactions of the principal Scientific Societies of the colonies.

...

It may be mentioned here that the term "Muddy Creek" beds is used by common consent, as a convenient name for the whole series of fossiliferous strata in this locality, and must be understood, therefore, to include not only the deposits of Muddy Creek itself, but also those of the Grange Burn, close at hand.

(DL) The Reverend Julian Edmund Tenison Woods (1832–1889) was a pioneering Catholic priest, geologist, and palaeontologist whose work in the mid-19th century laid the foundations for understanding the natural history of South Australia, particularly the Southeast region and the Naracoorte Caves [and southwest Victoria]. He was a prolific scientist who named over 150 marine fossil species and extensively documented the area's geological structures. Soon after Father Woods arrived in the Southeast in 1857, he initiated the systematic scientific process of determining the age of the tertiary strata in South Australia and Victoria. (Google AI, downloaded 3-04-2026).

4. Chapman, F (1915) 'On Some Smaller Fossils from Red Limestone at Grange Burn near Hamilton, with a note on a new Species in Bolivia', *Victorian Naturalist*, Vol 32: 144-146.

[The] limestone occurring in the bluff opposite Mr Henty's homestead of "The Caves" is of an ochreous colour, but further along down the Grange Burn it is of a reddish or pink tint. Some of the material opposite Henty's was weathered and occurred on ledges and in pockets of the limestone, and to obtain the specimens it required no treatment beyond washing, drying and sifting.

[Foraminifera, corals, echinoids, vermes, polyzoa and Ostracoda were the groups of organisms represented in the smaller fossils obtained from the weathered limestone].



Left: This specimen of foraminifera was found in the limestone bluff opposite Henty's "the caves" property. It was described and named by Chapman in honour of Lieutenant EE Henty who fell at Gallipoli on 7<sup>th</sup> August 1915; and in recognition of his helpfulness to Chapman whilst on geological work in Hamilton, 1912.

It is described as being 2.07 mm long with the greatest width being near the oral end – 0.73 mm and having a thickness of 0.23 mm.

**Foraminifera**, classified within the Phylum of Protozoa, are described as being microscopic single-celled organisms possessing typical cellular structures; further classified into the Superclass of Sarcodina, they, as adults, possess flowing extensions of the body called pseudopodia that are used for capturing prey, and they are classified as an Order in the Subclass Granuloreticulosia –

described with delicate and granular reticulopodia. Chiefly Foraminifera are chiefly marine species with typically multichambered shells. These shells may be membranous or composed of chitin or foreign particles, but most commonly the shells are calcareous. (Barnes, 1968: 19 & 29)

**Vermes**, or worm shells belong to the Phylum Mollusca, Class Gastropoda and are described as starting off life with typical larvae and juvenile shells but as they grow older the whorls become completely separate so that the adult shell looks like a corkscrew (Barnes, 1968: 286).

**Polyzoa**, also known as Phylum Bryozoa, possess a food catching organ called the lophophore (along with two other phyla – the Phoronidia and the Brachiopoda). The lophophore is a circular horseshoe shaped fold of the body wall that encircles the mouth and bears numerous ciliated tentacles. These tentacles are hollow outgrowths of the body wall. Each contains an extension of the coelom. The ciliary tracts on the tentacles drive a current of water through the lophophore, and plankton is collected in the process. ... Most polyzoa are colonial, sessile animals, and the individuals (zooids) composing the colonies are usually less than 0.5 mm (Barnes, 1968: 588).

Two species were described by Tensison Woods in 1877: *Macropora clarkei* (Melbourne Museum Specimen No P. 42470.1) and *Smittia tatei* (Melbourne Museum Specimen No P.33941.13).

**Ostracoda**, belongs to the Phylum Arthropoda (hence are invertebrates that have an external skeleton) and the Class Crustacea. They are known as mussel or seed shrimps because they superficially resemble clam shrimp in having a body completely enclosed in a bivalve carapace. Most ostracods are minute, that is of less than 1 mm, but they do range to several millimeters in length (Barnes, 1968: 449).

5. National Museum of Victoria (1965) Palaeontology of Victoria: a description of fossils found in Victoria, Australia. [Reprinted from: Victorian Year Book no. 79, 1965].

Tertiary Marine fossils are found in many places in Victoria. During that era the sea invaded the valley of the River Murray and formed a large gulf there; it also covered most of the plains of south-west Victoria, the Port Phillip and Melbourne area and the Gippsland Plains. Of world fame are the richly fossiliferous marine beds that outcrop in the valleys of Grange Burn and Muddy Creek 4 miles [7 km] from Hamilton. Basalt flows cover the district, but local streams have cut through that rock to the marine beds beneath.

On a basement of hard Palaeozoic quartz porphyry lie three formations, all very rich in fossils. There over 400 species of mollusks alone present in these strata, the lowest is the Bochara limestone which contains very large numbers of foraminifera ... The rock consists almost entirely of the skeletons of marine organisms, large and small, whole and broken. There are large numbers of polyzoa and many echinoderms. ... Some mollusks, ... marine sponges and sharks' teeth [have been found in this layer].

The overlying formation is ... a muddy one ... containing gargantuan numbers of calcareous fossils. This is the Muddy Creek Marl. ... Large numbers of varied univalves and bivalves occur, many having features associated with tropical forms. Whales and sharks are represented by bones and teeth. There is thus evidence of warm waters that supported a rich fauna of invertebrates and vertebrates.

...

Above the Muddy Creek Marl is the Grange Burn Coquina with a fauna that has much more in common with the marine fauna we know today. In between the Muddy Creek Marl and the Coquina is a layer of phosphatic nodules which represent not an inconsiderable break in time when there was apparently very little sedimentation. Nodules are formed from deposition on shells, polyzoan skeletons, sharks' teeth, crab claws, and other such remains from the ocean floor of lime phosphate. The nodule bed has produced large numbers of phosphatized sharks' teeth, whale bone, some whale teeth and ear bones as well as many other fish remains. ... some of the nodules have been bored by marine borers. In places the surface under the nodules has been bored, and the fossil boring mollusks are still in the fossil burrows.

Above the nodule bed is the Grange Burn Coquina which consists of a mass of marine shells belonging to shallow water and shoreline ecologies. There are countless numbers of long narrow

oysters, sand snails, and other kinds of mollusks along with polyzoa, barnacles, foraminifera and other marine organisms. Evidence of shoreline conditions is provided by limpets (which probably grew attached to the quartz porphyry reefs and rock stacks), mussels and [other shoreline organisms].

6. Fitzgerald, EMG (2004) 'A Review of the tertiary fossil Cetacea (Mammalia) localities in Australia', *Memoirs of Museum Victoria*, Vol 61 (2): 183-204.

Australia has an incompletely known fossil record of cetaceans (whales, dolphins and porpoises; Order Cetacea). ... The majority of Australian fossil cetaceans described have been derived from only a few locations. These fossil sites occur within the Paleogene-Neogene marine sedimentary basins along the southern margin of Victoria.

...

The Australian fossil record of cetaceans is so poorly known because little systematic prospecting has been carried out. All significant cetaceans have been discovered by accident, often by amateur paleontologists or by members of the public.

[Three areas close to Hamilton have yielded cetacean fossils. For example]:

**Arch Site, Grange Burn** ... in Bochara Limestone of Early Middle Miocene ... one partial skeleton was found – *Pelocetus* sp. – an extinct Baleen whale. Associated with *Carcharodon megalodon* [This giant shark's teeth also found. In June 2025, incredible aerial footage captured a jaw-dropping moment as a helicopter surveyed a gigantic Megalodon shark that mysteriously washed ashore on an isolated island off eastern Australia. Measuring an estimated 60 feet long, this prehistoric marine predator, believed extinct for millions of years, has sent shockwaves around the globe.]

**Forsyth's Bank to Fossil Rock Stack** ... in shelly marl and sandy to pebbly limestone. ... typical of Mio-Pliocene nodule bed fossil vertebrate material in Victoria, fossils are often rolled, polished and broken. ... Typically preserved specimens include partial rostra, cranial fragments, isolated periotics and tympanic bullae, teeth, incomplete mandibles, vertebrae and ribs. *Cetotheriidae* sp. [extinct small baleen whales], *Balaenoptera* sp. [rorqual whales with streamlined bodies adapted for lunge feeding], *Scaldicetus* sp. [extinct sperm whale], *Physeter* sp. [a sperm whale but the fossil record is currently questioned *nomina dubia* – Bannister, JL (1989) in 'No 49 Physeteridae', *The Fauna of Australia* Vol 1B] fossil fragments all found with extinct shark, ray, ratfish, true seal fossils.

(DL) In cetacean anatomy, the **cranial rostrum** is the forward-extending part of the skull that forms the upper jaw and snout. It is a critical structural element that supports the whale's feeding apparatus, whether that involves baleen plates for filtering or teeth for capturing prey.

7. Turnbull, WD and Lundelius, EL (1970) 'The Hamilton Fauna: A Late Pliocene Mammalian Fauna from the Grange Burn, Victoria, Australia', *Fieldiana: Geology*: Vol 19: 8-9.

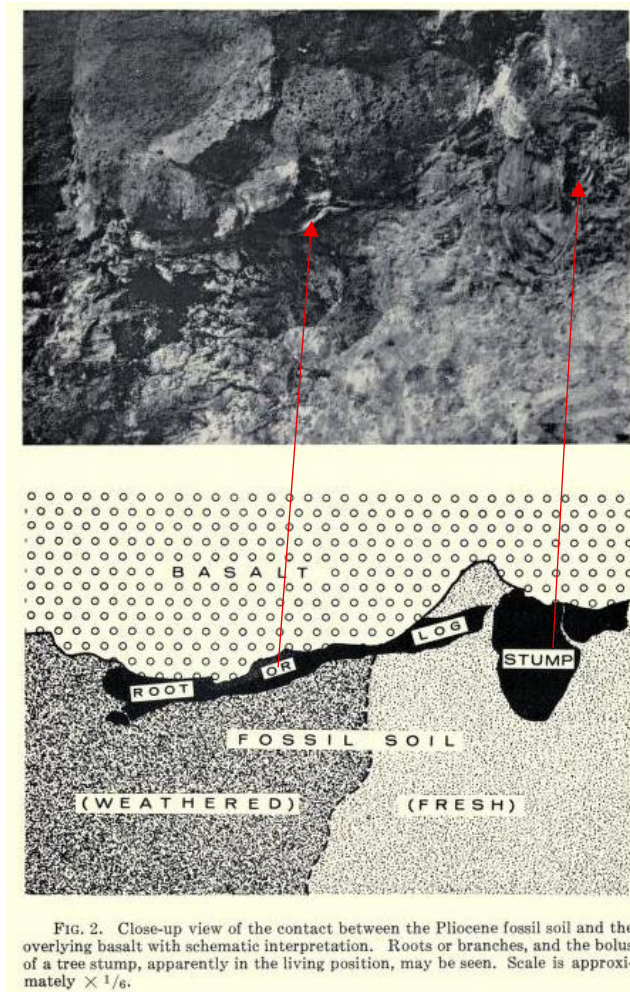
(DL) Turnbull and Lundelius visited the Grange Burn during the 1960s looking for mammalian fossils. They found both marine and terrestrial fossil deposits. And not only did they find marsupial fossil deposits underlying the basalt but also found carbonized tree stumps and roots as shown in the images below the text.

Introduction: Australian Tertiary mammals were extremely rare prior to the work of Stirton and his colleagues during the last 20 years. The few specimens known previously were noted and reviewed by Gill in a series of papers between 1952 and 1957. ...

As a result of the efforts of Stirton and his group, this meagre knowledge has been added to, and now a tentative outline of Australian mammalian evolution during middle and late Tertiary time is beginning to emerge. Thanks to their concurrent stratigraphic work, the relative geochronologic positions of the various fauna are known. ... To date only the New Guinean, Awe fauna and the Victorian, Hamilton fauna ... have been dated isotopically, and thus they will provide a key to late tertiary faunal correlations in the Australian region as well as give a chronologic correlation with tertiary faunas in other parts of the world.

Previous work: - the first find of a fossil marsupial from the Tertiary terrestrial deposits of the Grange Burn was the discovery of a single tooth of a potarine reported by Gill in 1952 and 1953 ... It was first identified as that of a cuscus. ... Ride (1964) restudied and re-illustrated the specimen, concluding that it was either a right M<sub>2</sub> or M<sub>3</sub> of a potaroo. ... this tooth was found in the "A" zone of a fossil soil which underlies a basalt flow.

The date is late Pliocene according to the time scale of Evernden *et al.* (1964). The contemporaneity of the marsupial fauna and the fossil soil with overlying basalt is indicated by the presence of carbonized three stumps and roots in living position in the upper two to three feet (0.6 to 1 m) of the fossil soil. ... Apparently, the lava flow cremated a standing forest. It is unlikely that the fossils are appreciably older than the flow because it is doubtful that they would have survived the weathering processes for any length of time.



8. Piper KJ, Fitzgerald EMG and Rich TH (2006) 'Mesozoic to early Quaternary Mammal Faunas of Victoria, South-east Australia', *Palaeontology*, Vol 49, Part 6: 1237-1262.

Hamilton. The terrestrial fossil mammals were first discovered at Hamilton in the early 1950s (Gill 1957; Stirton 1957) in an unnamed fossil soil horizon that crops out in the banks of the Grange Burn 7 km west of Hamilton. ... The fossil soil is about 1.3 to 1.5 m thick and overlies the marine marls and limestones of the Grange Burn Formation. It is overlain by basalt from the newer volcanics series. ... Subsequent collecting was carried out in 1966-1967 and 1971-1981 by wet sieving sediment from the fossil soil horizon.

The material collected consists of isolated teeth, jaws and bone scrap. Preservation is generally poor with only the crowns of the teeth being preserved, and enamel is solution-pitted. Bone is rarely preserved, and there is no trace of non-mammalian vertebrate remains.

The fauna is well documented and has been described by Turnbull and Lundelius (1970), Rich (1986) Flannery et al (1987, 1992) Turnbull *et al.* (1987, 2003), Ride (1993) and Prideaux (2004). It is very diverse. Several species are unique to the Hamilton Local Fauna, e.g. *Dorcosis wintercookorum* [this is an extinct species of forest wallaby], *Kurrabi pelchenorum* [another extinct species of macropod discovered by Tim Flannery and others in 1992. It differs from other macropods in its dentition] and *Trichosurus hamiltonensis* [this is an extinct species of brushtail possum that lived during the early Pliocene epoch. Its remains were first described by Tim Flannery and colleagues in 1987.]

## Acknowledgements

Many people and institutions contributed to the success of our excursion and to the information contained in this report. Wendy and Peter McDonald whose property borders the eastern site we visited, and the Petropoulos family and their manager John Goss whose property has The Arch and Forsyth's Bank fossil sites on it provided permission and directions to access the sites. Wendy and Peter McDonald also offered their front verandah as a pleasant spot to enjoy lunch together following the excursion.

The Shire of Southern Grampians and the Glenelg Hopkins Catchment Management Authority provided clear maps of the region showing the access points to the sites. The Hamilton Club granted me access to the references books in their library to seek out first editions of local social history of the owners of the properties along the Grange Burn and their engagement with the Grange Burn. The Hamilton History Centre volunteers, Ian Black and Marlene Greiner, provided assistance in looking through historical records of both social and geological material relating to the fossil sites.

## References

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3. Dennant, J (1888) Notes on the Muddy Creek Beds, with brief remarks on other Tertiary Strata of South Western Victoria [From the transactions of the Royal Society of South Australia, 1888].
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5. Flannery, T.F., W.D. Turnbull, T.H.V. Rich, and E.L. Lundelius, Jr. (1987) The phalangerids (Marsupialia: halangeridae) of the early Pliocene Hamilton Local Fauna, southwestern Victoria, in M. Archer (editor) *Possums and opossums: studies in evolution*, Sydney: Surrey Beatty & Sons and the Royal Zoological Society NSW, pp. 537-546.
6. FNCV (2006) *The Fossil Beds of the Grange Burn and Muddy Creeks, Hamilton Area*. Geology Group Excursion Report.
7. Gill, ED (1955) The Stratigraphical Occurrence and Palaeoecology of some Australian Tertiary Marsupials' *National Museum of Victoria*, pp. 135-203.
8. Gill, ED (1964) 'Rocks contiguous with Basaltic Cuirass of Western Victoria', *Proceedings of The Royal Society of Victoria*, Vol 77, issue 2: 331-355.
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