

A visit to Madagascar

Steve Bourne (story and photos)

I had previously been to Madagascar in 2015, to the western side of the island to a limestone area named Beanka (see ACMKA Journal 102 – March 2016) for a report on that trip). I thought Beanka took a long time to reach from Australia but it's not - compared to getting to Itampolo! To reach Itampolo from Naracoorte, it's a:

- four-hour drive to Adelaide and hotel overnight
- three-hour flight to Perth and then a five-hour wait
- eight-hour flight to Mauritius - I stayed there for four nights but an overnight stay is needed anyway
- three-hour flight to Antananarivo, capital of Madagascar, with an overnight stay
- one-and-a-half-hour flight to Tulear, with an overnight stay
- ox-cart ride to catch a boat and then a one-and-a-half-hour boat trip to Anakao
- four-hour drive to Itampolo, with an overnight stay and
- one-hour drive to a village and then a two-hour walk to the first cave!

The trip was a reconnaissance one to investigate some new caves located by local people, and to investigate a known swamp fossil site. Owen Griffiths coordinated the trip, with Julian Hume of the British Natural History Museum providing the scientific expertise, supported by Owen's local staff - Nicola, Bema, Roger, Tsivalo and Jary. A few more staff based at Besely participated but, unfortunately, I struggle to remember Malagasy names - they can be complicated. For example, Bema's name is actually Aldus Andriamamonjy and Tsivalo's full name is Tsilavo Hasina Rafeliasoa.

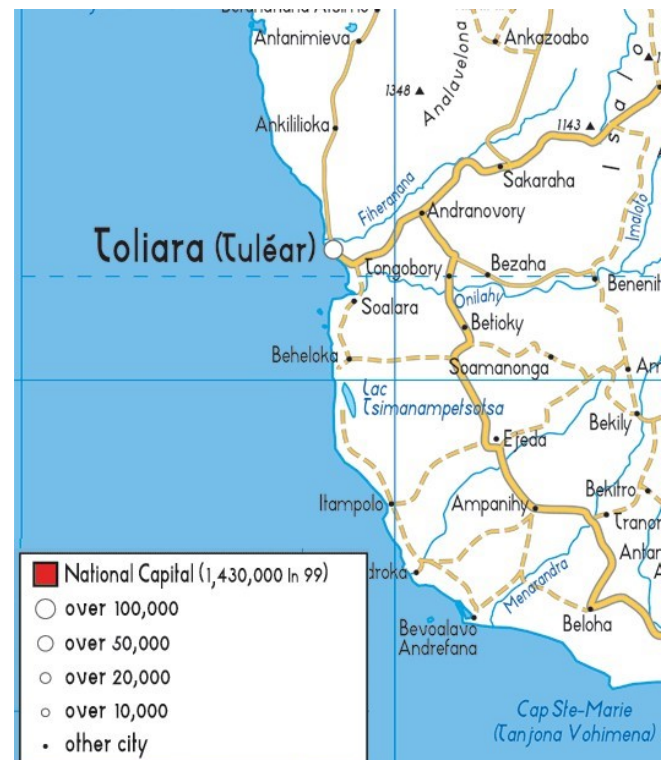
Owen operates Biodiversity Conservation Madagascar (BCM), which has established a series of nature reserves in the Mascarene Islands and on Madagascar. Besely is a reserve he has established about 20 kilometres south of Itampolo to protect Radiated Tortoises which we visited on this trip.

Owen and Julian had learnt about a swamp site near Itampolo on a previous trip to the Besely Reserve. Owen had his staff investigate possible cave sites in the region for our trip. A focus was a 20-metre deep sinkhole that had the remains of an extinct giant tortoise, *Aldabrachelys grandidieri*.

The sinkhole had only been entered by a local climbing a tree in the entrance. I was invited to attend to assist with the ropework for this and any other sinkholes we found.



Road map of Madagascar (above) and, marked in red, a close up below of the area to which we travelled. Note the lack of roads. Those that exist are generally of poor quality.



Whenever I tell anyone that I have been to Madagascar, the response is usually one of jealousy, with most people having visions of jungle and abundant wildlife. Unfortunately, this is not the case, as Madagascar has huge degraded areas with only isolated pockets of vegetation remaining. I understand the north is somewhat better, but the areas I have been to certainly do not reflect the perceptions created by David Attenborough's documentaries. It depends on the source of information, but Madagascar's population is 25-27 million and increasing rapidly in a land area a little larger than New South Wales. This places enormous pressure on the natural environment. Forest is being cleared for grazing land for zebu (cattle), with timber used for cooking or making charcoal. Hunting has had serious impacts on the local fauna in some areas exacerbating the problem. There are still pockets of vegetation where wildlife persist and NGOs such as Owen's BCM are doing what they can to preserve what is remaining.

I find the Madagascar capital, Antananarivo, unattractive and challenging. I stayed in the same hotel as my last trip, The Sakamanga, with Julian Hume and Nicola. This hotel is comfortable but once you step outside you are confronted by beggars and others pushing local crafts at you. I certainly don't blame them; these people are trying to eke out a living any way they can. I was pleased when we caught our flight to Tulear, which is also known as Toliara. We were advised the Air Madagascar flight to Tulear was delayed until 8.40 am from the scheduled 7.30 am departure when we landed at Antananarivo, which is apparently a regular occurrence. It may not seem too much, but it meant we could not catch the only daily boat to Anakao; hence, we had to book some overnight accommodation in Tulear. This turned out to be rather pleasant as we visited a family-owned arboretum that has been running for over 40 years. It contains over 900 local species of plants. We dined at their restaurant, which was a pleasant al fresco experience.

I had heard about the ox-cart ride to the boat, but wasn't quite ready for it. Wooden carts are pulled by two zebu to a depth of water suitable for the boats.



Animal welfare is non-existent and those transporting you are very demanding for tips for their services. Luggage is likewise transported via ox-cart separately from the passengers and I kept a close eye on my bags as I didn't want camera gear to go missing.

The boat ride cuts across a very wide bay, and takes about 60 to 90 minutes, depending on which boat you get. Apparently, the road route is at least nine hours from Tulear to Anakao, so the expense of 90,000 Ariary (~A\$35) for the boat trip was worthwhile. Locals travel at a much reduced rate. Owen had arranged for our drivers to meet us at Anakao so we quickly left for Itampolo. There is no road as such, just a defined sandy track. We managed to travel at between 40-60 kilometres per hour for most of the way, taking lunch at a halfway point called Ankilibory.



The Ankilibory track

Towards the end of the journey, a limestone escarpment loomed on our left, running parallel to the direction we were travelling on, the inland side. This escarpment of Tertiary limestone. It is known as the Mahafaly Plateau and rises from the coastal plain. I estimated it to be around 200 metres high. When we walked up this later, I decided it maybe a little higher than this.



Mid-afternoon, we arrived at Itampolo and settled into our bungalow-style hotel rooms. We did a quick visit to the swamp fossil site late in the afternoon to check on its condition. The site has been excavated by locals for many years. Locals sell the fossils of pygmy hippo, crocodile and Aepyornis elephant bird to the few hardy visitors that make it this far. Owen had paid the landowner a handsome sum (by local standards) to prevent further digging and it appeared this was working.

Caves were on the agenda for the following day - at last! We headed north from Itampolo, back along the route we took to get there, and then headed slightly inland to a small village. Coming from a wealthy, western country, it is difficult to fathom how these people manage in this landscape. Their dwellings are small, timber huts with a natural floor, with some having an internal timber platform. Cooking appeared to be done inside and I saw examples of fires burning inside the huts. A water supply was not obvious. A few sheep were housed in a small enclosure and chickens roamed throughout the village. Manioc is the staple diet, this being a starchy tuber that has a high cyanide content and requires careful preparation. Tapioca is its dried form - this will be more familiar to most.



Itampolo main street

Owen's staff had advised us that the first caves we were visiting were 'walk-in' caves and no gear was needed, but I suggested we take one 10-metre caving ladder and a 40-metre nylon rope as a handline just in case we had one of those awkward small drops. We engaged some local villagers to act as guides and to carry some of our equipment. I was concerned when we set off that the villagers were not

The following morning we went to the swamp site again to check prospects for an excavation, which involved stripping down to underwear and plunging into the previously excavated holes. Although the swamp was dotted with holes, there was still plenty of unexcavated sediments. I located two bands of charcoal in one hole which I was able to trace into several others at one end of the swamp. It appears there is some reasonable stratigraphy at the site. The owner of the land showed us several other swamps on his land, which had few excavations in them. These appear to sit slightly higher in the landscape, so it seems likely these would have less bone material, as this would be concentrated in the lowest pool where animals became tethered to the waterhole in dry conditions.

carrying any water and it was already very warm. Around an hour into the walk, they stopped and lifted a small rock adjacent to the path, revealing a natural hole in the limestone. One of them picked up a dried baobab seed pod, tapped it against the ground to remove any dirt, and used this to scoop water out of the hole. I was gobsmacked by this. Several more times throughout the day, they stopped at these holes to take a drink; no need to carry water when you know where you can get a drink!



Despite heavy excavation of the swamp site, careful excavation could still yield important scientific information.



The route we took was through some reasonable quality spiny forest of amazing diversity. High plant diversity is usually associated with tropical areas but Madagascar's isolation from other land masses for many millions of years has seen flora and fauna evolve to forms not seen elsewhere.



One of the most bizarre vegetation types is *Didierea madagascariensis*, commonly called the Octopus Tree (above), with several species of Baobab trees, *Adansonia* sp., (at right) also seen in the area.

The first cave had a large, steeply sloping entrance. The scree slope was very loose, with every step dislodging rocks that tumbled down and down into the cave. I was tasked with checking for a way down and, about 15-20 metres below the natural ground surface, I called for the rope for a handline. I knotted this as I descended until I reached a vertical drop of approximately eight metres. The ladder would be useful! A nearby boulder was large enough to use as an anchor and the ladder was secured to a tape around this. The steep scree slope continued, with the handline essential to move safely. I ran out of rope just as I reached a second drop similar to the first and I could see the cave extended at least 30 metres further down from where I was. Out of rope and ladder on the first walk-in cave - not a great start.

There was no sign of large bone material and any animal that had fallen victim to this hellhole would surely have been smashed to pieces by the time it reached the bottom of the cave, however far down that was.

I did locate an area of small bone material protected under a large boulder, but nothing too exciting palaeontologically.

Our next cave was a walk of another hour or so, through forest that was more degraded. This cave has a skeleton and shell of the giant extinct tortoise, *Aldabrachelys grandidieri*.

There were other bones visible, including a lemur dentary tentatively identified as *Megladapsis*, informally known as koala lemur due to its form and habit deduced from its skeleton. This identification was confirmed later by local biologist, Steve Goodman, from photos.

The third cave for the day was a spectacular disappointment. The spectacular, gaping hole was clearly not a walk-in cave, confirmed by dropping a rock and waiting five seconds for it to hit the cave floor. That makes it around 125 metres deep!

We immediately felt a sense of disappointment because this cave was well beyond the equipment we had and skills of the people present!



Entrance to a "walk in" cave - the first we visited

The following day we returned to the second cave to more fully explore and Owen discovered a second side to the cave, which we hadn't noticed the previous day. What had appeared to be a one-sided sloping cave, as per our first cave, but smaller, was in fact a large, shallow cave with a collapsed doline covered in vegetation. This second side of the cave showed huge promise for a repeat visit and detailed study.

For those unaware, owls regurgitate pellets of bone and feather, fur and skin, depending on the prey, which accumulates over time, providing a record of what was living in the area (at least of what the owl likes to eat!). We carefully followed each other's tracks to minimise disturbance and photographed key localities within the chamber and the chamber itself.



Our third day's caving was closer to Itampolo (so only a short drive) but required more walking. This time, we parked at the base of the escarpment and walked to the top and around six kilometres to our target cave. On the way, we passed another large deep cave, five seconds deep like we had seen two days previous (see front cover photo).

It appeared to be something of a tourist site with seats and a worn path to and from it.

The cave we visited was an enormous collapse, 60 metres-plus in diameter, with

some sides 30 metres deep, and the shallow side from which we accessed the cave around four-to-five metres.

We almost missed this section of the cave. It will be a focus of a future expedition

I found a complete skeleton on the floor, initially identified as a lemur but later confirmed as a cat. I am not sure what species of cat though.

I did rig up the ladder, but it was just as easy to climb a tree growing near the cave wall. It was fun to watch the locals try a caving ladder.

They are so adept at rock-hopping and climbing trees and the cave walls, but looked really clumsy on the unfamiliar cable cave ladder.

We split up and searched various parts of this large cave. Owen found the plastron (shell breastplate) of the large tortoise, *Aldabrachelys grandidieri*, and a limb bone identified as *Mullerornis*, the smaller of the two species of elephant bird.



The cave had also been (and maybe still is) inhabited by owls, nature's great biological surveyors thanks to their eating habits.



I found a few teeth plus some limb bones of a hippo. This poor hippo was either a more terrestrial species not tied to water or hopelessly lost up on the karst plateau. The team also located a few lemur bones, including partially mummified specimens, so not too old.



An unerupted hippo tooth

We enjoyed lunch in the cool of the cave rather than the glaring heat of the plateau.



We walked on to a second cave which was an even larger doline, but with only a small amount of cave development around the edge. This cave was notable for the large amount of *Aepyornis* eggshell, clearly placed on rocks by people. How did the eggs get here? Were they laid or carried in by people? We found several pieces with small holes drilled in them, which Julian informed us meant they had been used for carrying water.



The cave development was limited to cavities in rockfall, so we crawled and squeezed between large boulders.



Once again, we found mummified remains but nothing that would warrant an excavation. By the time we finished here, it was very hot and we “only” had a six-kilometre walk across the bare landscape back to our vehicles.

Many of the caves had kestrels and the Malagasy endemic Vasa Parrot nesting. Vasa Parrots are the only black parrot in the world and are a striking sight screeching at a cave entrance.

There were aspects of the caves that reminded me of some parts of the Nullarbor karst. Once on top of the escarpment, the plateau was generally quite flat. When standing at a cave entrance, it was generally possible to discern that the cave entrance was in fact the lowest point in the immediate landscape, with very large, very shallow depressions feeding water to the low point to create the caves. Clearly the caves formed under different conditions from those the region experiences today.

We did a trip to the Beseley Reserve, 20 kilometres south of Itampolo, where a research centre is under construction. We walked several kilometres through the reserve and found several live tortoises, including 'pixies', which indicate they have been breeding. Unfortunately, we also found several dead, with no obvious cause of death. The Radiated Tortoise, *Astrochelys radiata*, is an endemic species in serious decline through loss of habitat; hunting for meat; and poaching for the pet markets (primarily in China. I understand).



A reconstructed *Aepyornis* egg at The Tulear Aboretum

We also visited a sinkhole the locals told us was named 'Vintany'. This has formed in much younger limestone than the Tertiary escarpment and plateau, with the upper section barely consolidated shells. Once a popular swimming hole, the site is now regarded as spiritually significant. The blue-green algae was enough to put me off from wanting to swim there.

Itampolo was a very long way to go from Australia for three days' caving, although I very much enjoyed the other sites we visited.

I enjoyed Itampolo; our accommodation was the best in town which meant it had flushing toilets and a 'shower' - a hose with a nozzle that you could get wet under.

A generator provided light in the rooms until the owner went to bed. The meals were outstanding. We generally ordered at breakfast and the owner would collect the fish or crayfish from local fishers as they walked along the beach. You can't beat this for fresh!

We left Itampolo at lunchtime Sunday and I arrived back in Naracoorte at lunchtime on Thursday. Despite this, I hope to go back again late in 2020 as the likelihood of finding new caves and new fossil sites is high.

Palaeontologists have been working on water-filled caves in Madagascar with some spectacular finds. Information on this is easily found on the internet, but I have not been able to locate too much about the dry caves we visited. I suspect many of these deep caves may not have been entered before, so there is an opportunity for suitably skilled cavers to do some deep cave exploration.



Beseley Reserve has been established to protect and establish a breeding population of Radiated Tortoises

The beach at Beseley was literally covered in *Aepyornis* egg shell. The theory is the birds migrated to the sandy beaches to lay their eggs, as the thick shell required intense heat to incubate.

The government has very strict regulations on taking *Aepyornis* eggs out of Madagascar but, despite this, reconstructed eggs are readily available for purchase in local markets. These are of variable quality and are generally manufactured from multiple eggs, but occasionally associated material enables a single egg to be reconstructed. Rarely, intact eggs are found, with one famous egg in possession of Sir David Attenborough.