An introduction to Cape Range caving and (very brief and very basic) geology

Darren Brooks
Western Australian Speleological Group Inc.

The Cape Range karst consists mainly of three types of limestone. The uppermost, and thinnest layer, the white Trealla Limestone, is mostly dissolved and eroded away. Some significant patches occur on the flanks of the range and it does contain some small caves. It is a hard, crystalline limestone tending to fracture into sharp shards and caves in this limestone are small and difficult.

The layer below is Tulki Limestone. This is the layer that will most interest cavers as it is the main cave-bearing limestone. Again, it is a hard crystalline limestone that shades from white in the uppermost layers to pinkish in the lower regions. It varies from about 50 to 100 metres thick. The caves in this limestone are mainly vertical shafts, occasionally with crawlway sized and, less occasionally, with walking dimension tunnels leading off for generally short distances. There are a few exceptions to this rule. Wanderers Delight has been surveyed to nearly 7 kilometres length along a multi-level and multi-branching network of crawlway passages. Chambers of standing height and higher give regular relief to sore necks and knees. Good knee and elbow pads are a must for serious explorers in the Capes caves. Many tiny leads remain to be explored in Wanderers Delight but these are season-dependent due to long-term standing water pools. The remaining leads are many but are also very small and difficult.

Some of the caves require a degree of technical expertise in vertical techniques although many are simple shafts consisting of a single pitch. Conversely, some of the caves require several pitches to be negotiated and as most of the caves are in the national park, there are virtually no fixed artificial anchors and all caves must be negotiated via temporary rigging, eg tape and cord slings, tricams etc.

The third main layer of limestone is the Mandu Calcarenite. This limestone can be seen in the lower regions of the gorges, particularly along Shothole Canyon, where high exposures of it are easily accessed from the nearby road. It is a whitish, chalky and relatively soft limestone.

A keen eye will easily spot fossils of shells and echinoids in all the limestones.

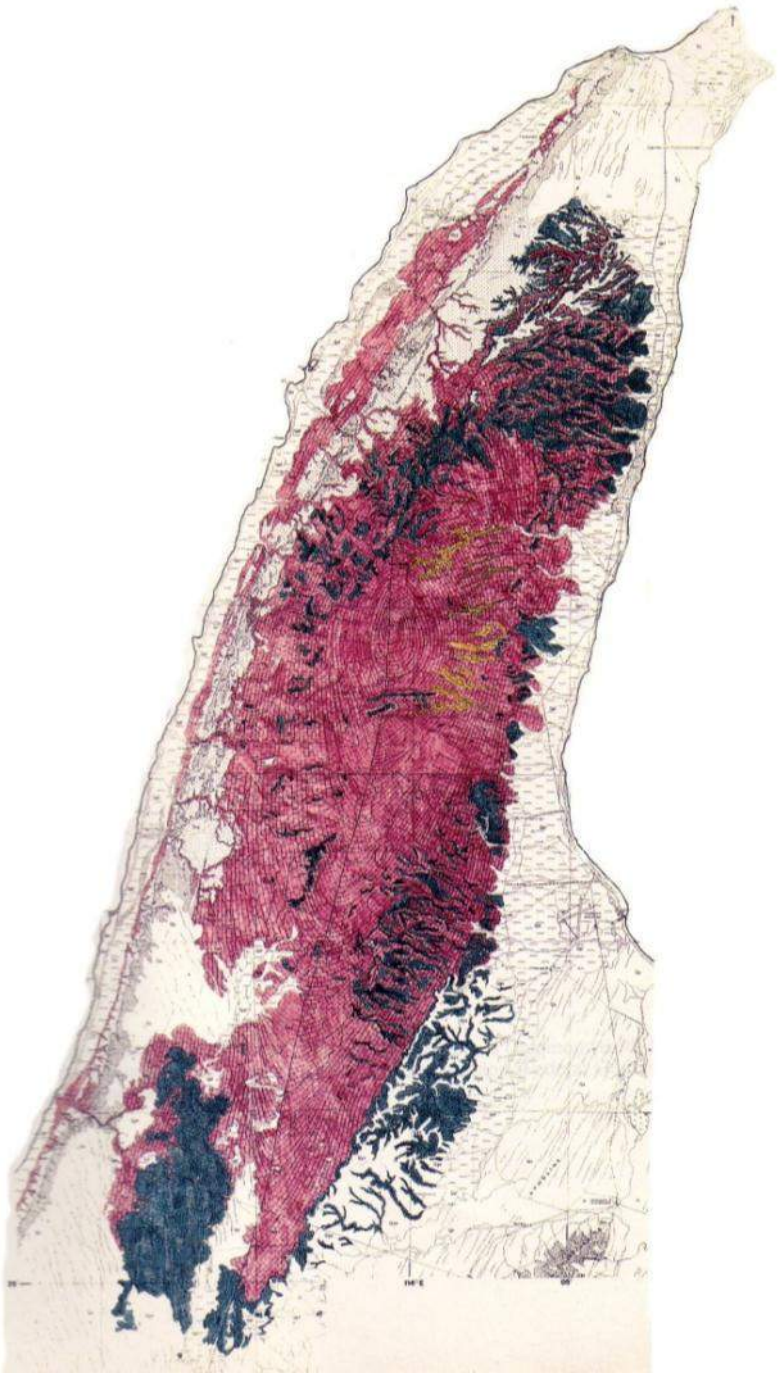
In the deeper caves the temperatures are generally up around the 27°-29°C mark. If wearing knee and elbow pads, it is generally more comfortable to explore in shorts and t-shirt. The temperature, coupled with the high humidity, makes the cave environment a taxing, tropical adventure and caving in overalls could potentially assist in causing heat exhaustion. Frequent rest breaks and cool water are recommended on the longer trips. If overalls are preferred then the lightweight version are all that is required.

Many areas of the range have had little visitation and there is always a very good chance that keen walkers will find new, unexplored features. When walking in the ranges, the locals generally wear shorts coupled with sturdy canvas gaiters. Gaiters, useful not only for protection from the fangs of venomous snakes, are wonderful for warding off the spikes of the ever-present spinifex. This spiky grass can be a real torment to tender legs.

The caves are rightly famous for their wonderful and varied array of troglofauna and stygofauna. They can be observed in the deeper caves where the humidity and temperature are fairly constant, and in some of the caves that contain water. Schizomids, millipedes, crickets, spiders, fish, eels, all blind, are commonly spotted during cave visitation.

There are many rock-shelter type caves on the western flank of the Cape Range. Many of these were used by the Jinigudira, the original indigenous inhabitants. A cave in Mandu Mandu Gorge returned a date of approximately 34,000 years BP and furnished 22 shell beads and many hundreds of stone artefacts.

Slide 1 Intro page. Photo of Paul Brooks on spur north of Badjirrajirra gorge.

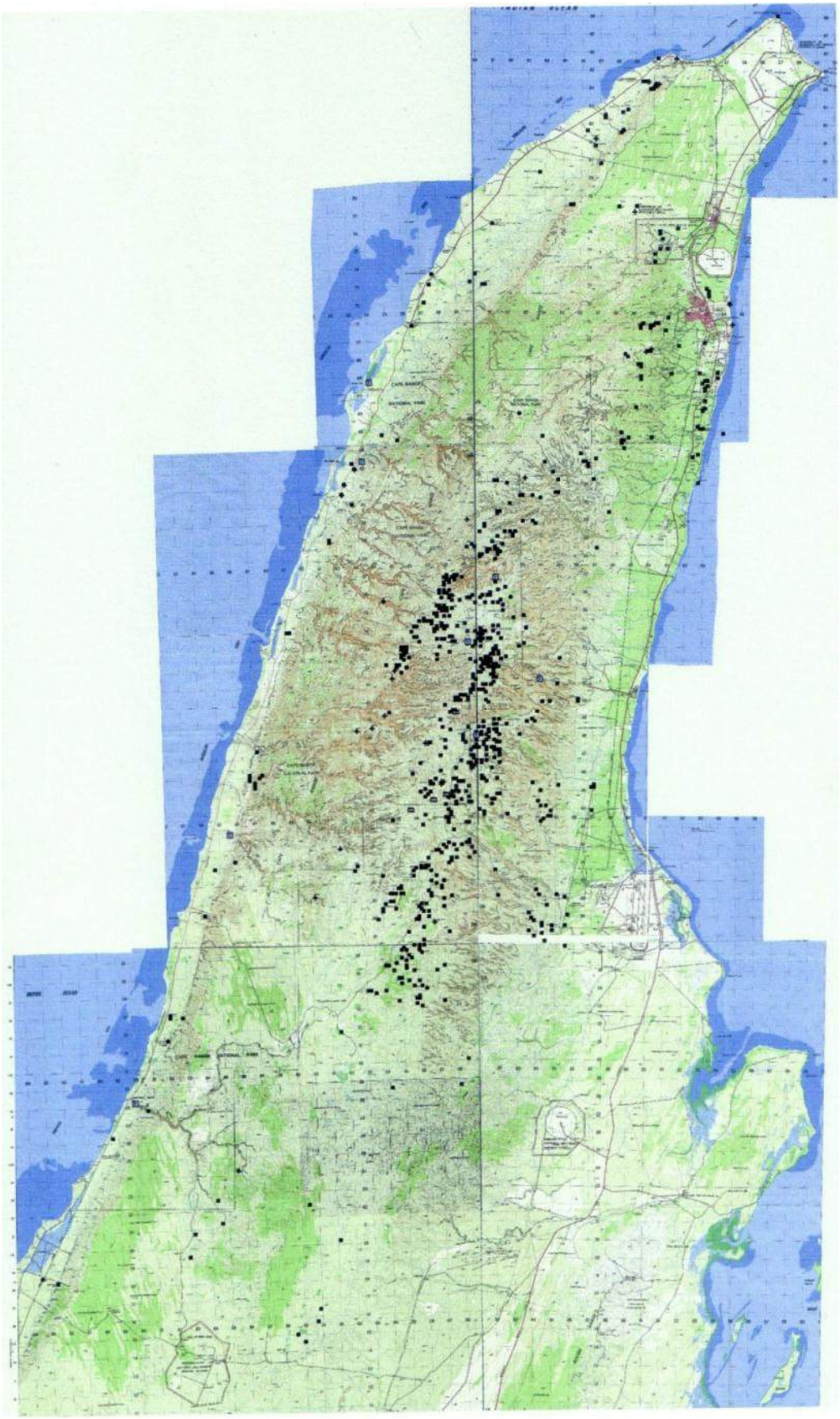


Slide 2 The exposed areas of native limestone.

Trealla Limestone is depicted in dark green. This limestone is the uppermost member of the three main limestones. It occurs patchily in some higher areas of the range but particularly most strongly on the northeastern side in the region of the Exmouth townsite. It is a white, crystalline limestone which doesn't seem to offer much in the way of actual caves, although there is one feature near the town that is exclusively in this limestone.

Coloured in pink we can see the middle layer and main cave-bearing Tulki Limestone. Although depicted in pink, and in fact often found in its pink form, it does grade from pink in the lower portions to white in the upper region. During the field trips this will be the limestone that bears the caves the conference participants will be caving in.

In yellow we can see the outcroppings of the Mandu Calcarenite. This soft, marly limestone is very thick but is only found in the lowest accessible areas in the bottom of the deeper gorges. The best place to view this limestone in Shothole Canyon.

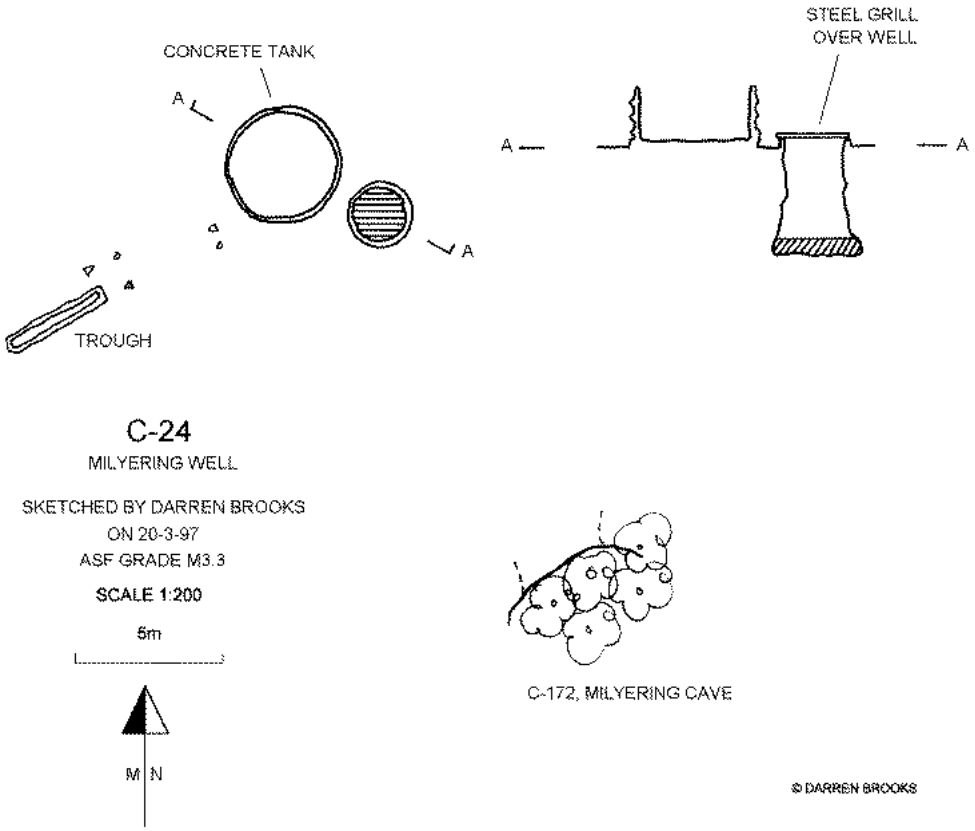


Slide 3 Map depicting the distribution of the caves and karst features. The distribution of the features can clearly be seen to mainly follow the faulting of the limestone running from southwest to northeast. A smattering of small caves are found on the coastal plains.

Slide 4 A typical karst feature as would be seen on the Cape Range. This feature and the nearby cave is in the Tulki Limestone.

Slide 5 Mandu Calcarenite, Shothole Canyon.

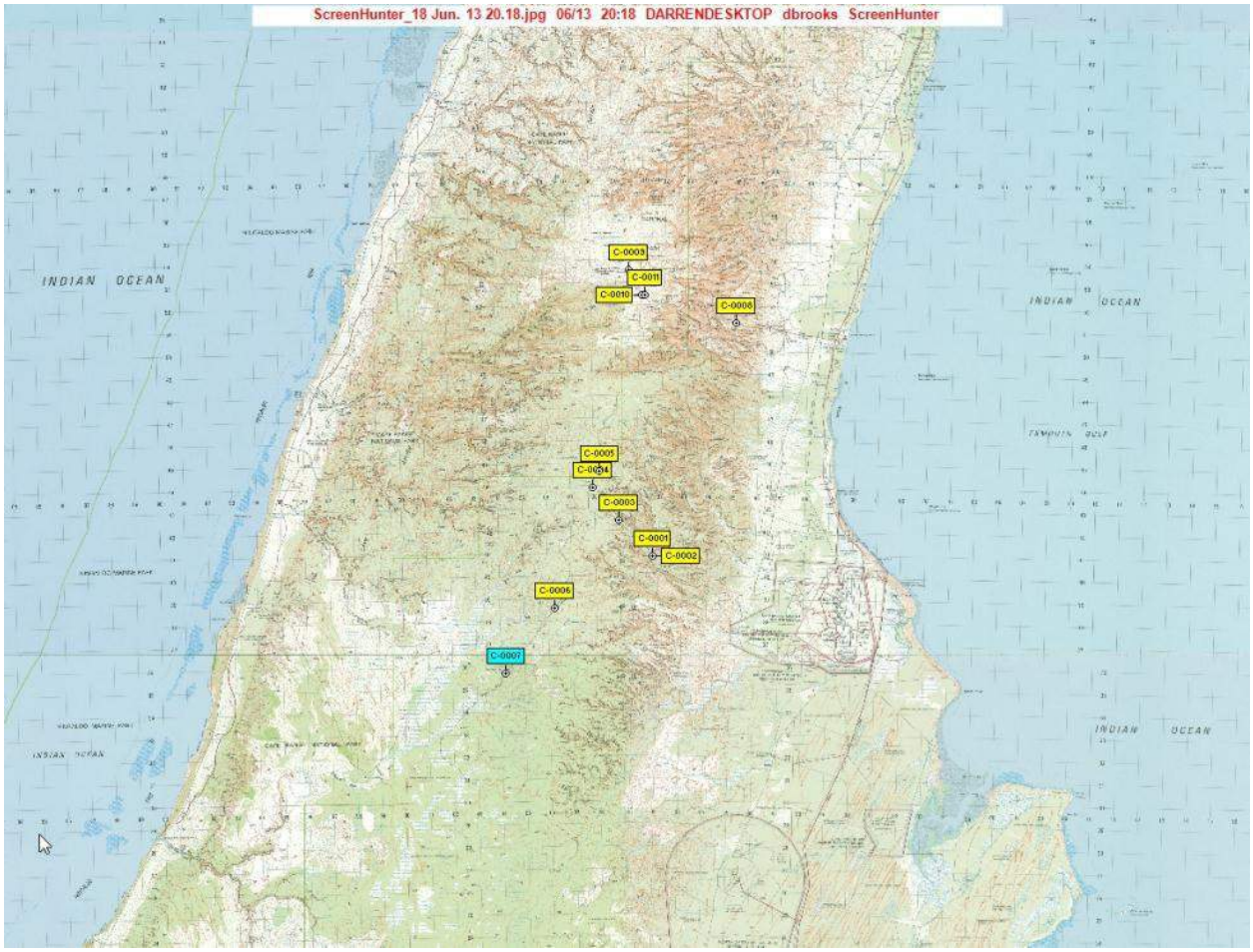
Slide 6 The first 'well' recorded investigation into the Cape Range karst occurred back in 1945 when blind fish were recorded in a well on the west coast. Although this generated some interest at the time the cape was still so remote that it was quite a few years before further investigations took place. In more recent times the Milyering Well was numbered as C-24. It was, in fact, dug in that particular place because there was a small cave nearby known to contain a reasonable supply of water.



Slide 7 Map of Milyering Well.

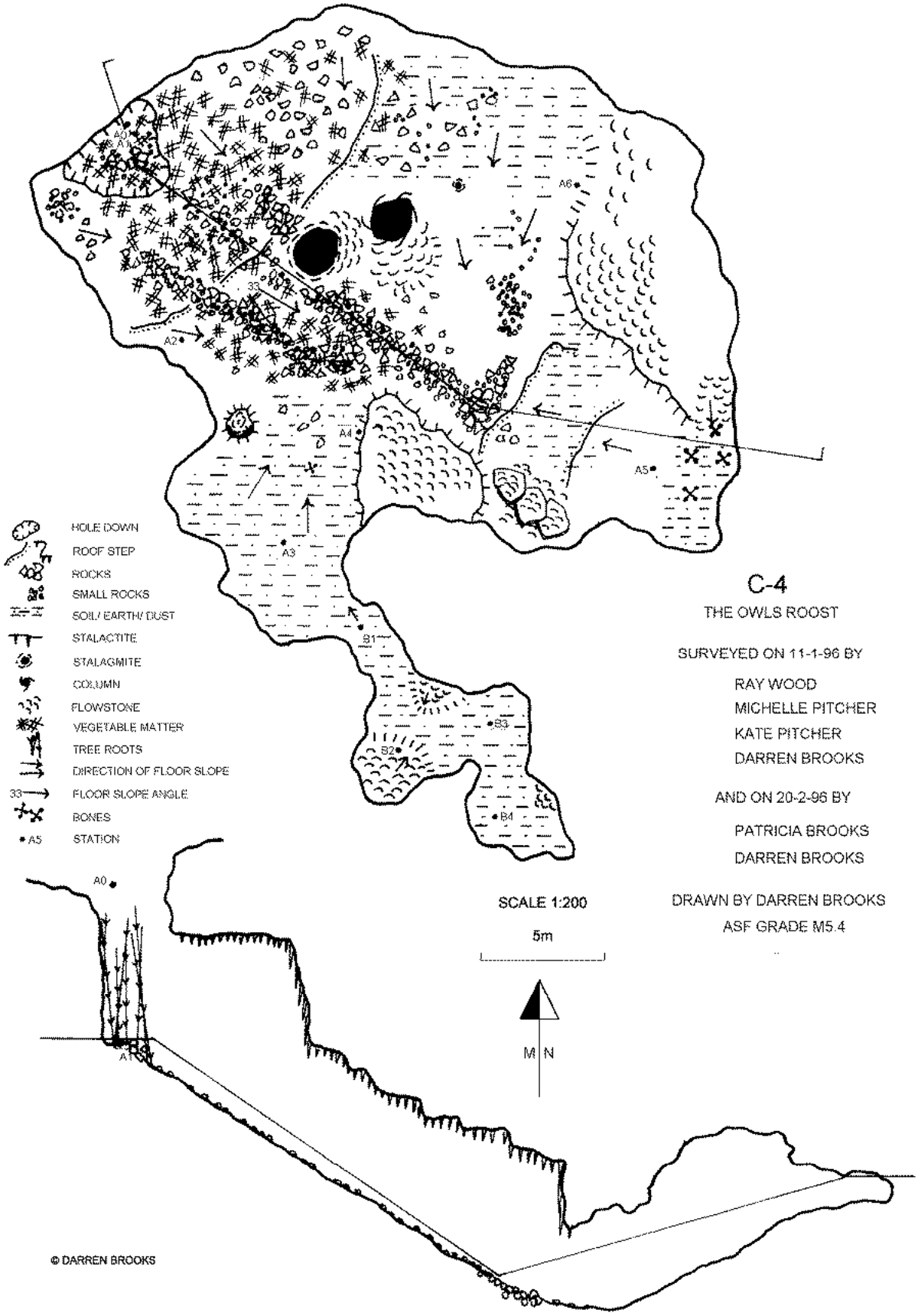
Slide 8 Brooks and Humphreys peer into the murky depths of Milyering Well.

Slide 9 Mylroie and Humphreys take selfies. Probably the first time anyone has ever had their selfie photo-bombed by a blind fish.



Slide 10 The first investigations into the caves of the area undertaken by real 'speleos' was back in 1962. David L. Cook and Tim Fry headed north from Perth for a very short trip to search for the rumoured caves reported by drillers and construction crew that worked on the roads and drill rigs of Western Australian Petroleum (WAPET). The roads were made back in the mid-fifties so it still took some time for cavers to reach the area. Naturally enough the first recorded features were all next to the road and are still easy to spot today. And some of the caves they found were quite exciting finds, for example, The Owl Roost. The modern incarnation of the features they numbered are seen here as C-1 to C-11.

As an aside, Peter Cawthorn and Paul Symons visited later in the same year, explored several caves and collected blind fish from Kubura Well on the east coast. Exmouth townsite now abuts very close to Kubura Well but of course back then there was no town at all. Unfortunately it seems he left no clear record of most of his discoveries.



Slide 11 Map of C-4, The Owl Roost.

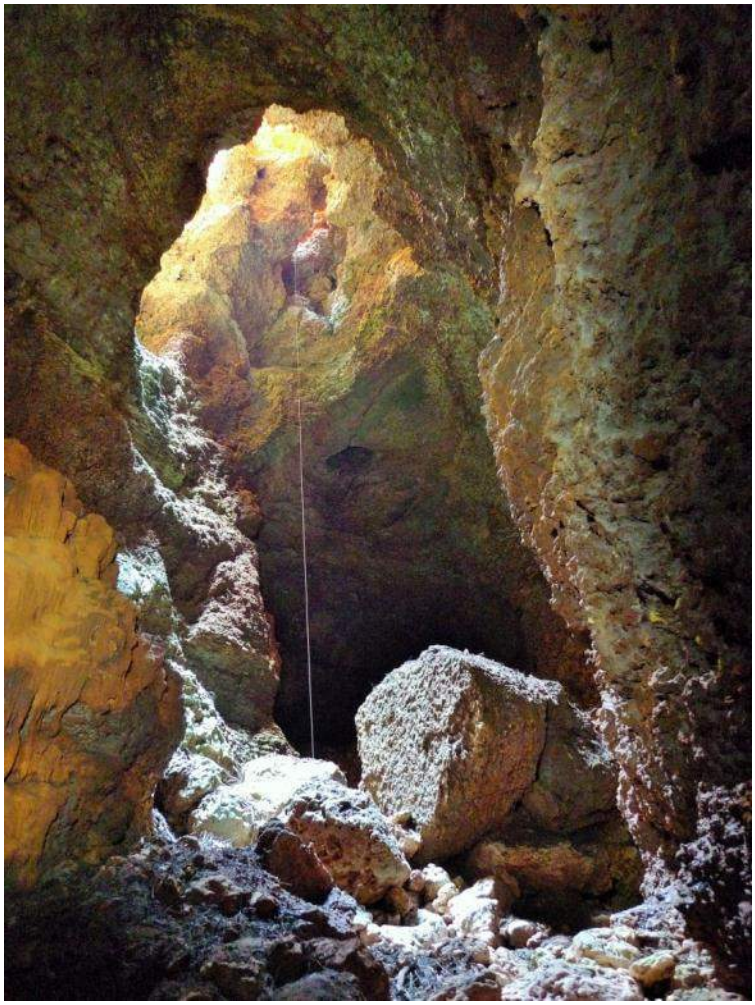
Slide 12 Entrance to The Owl Roost.

Slide 13 Steve West striking a rather stunning pose in the entrance of The Owl Roost.

Slide 14 Large column in The Owl Roost.

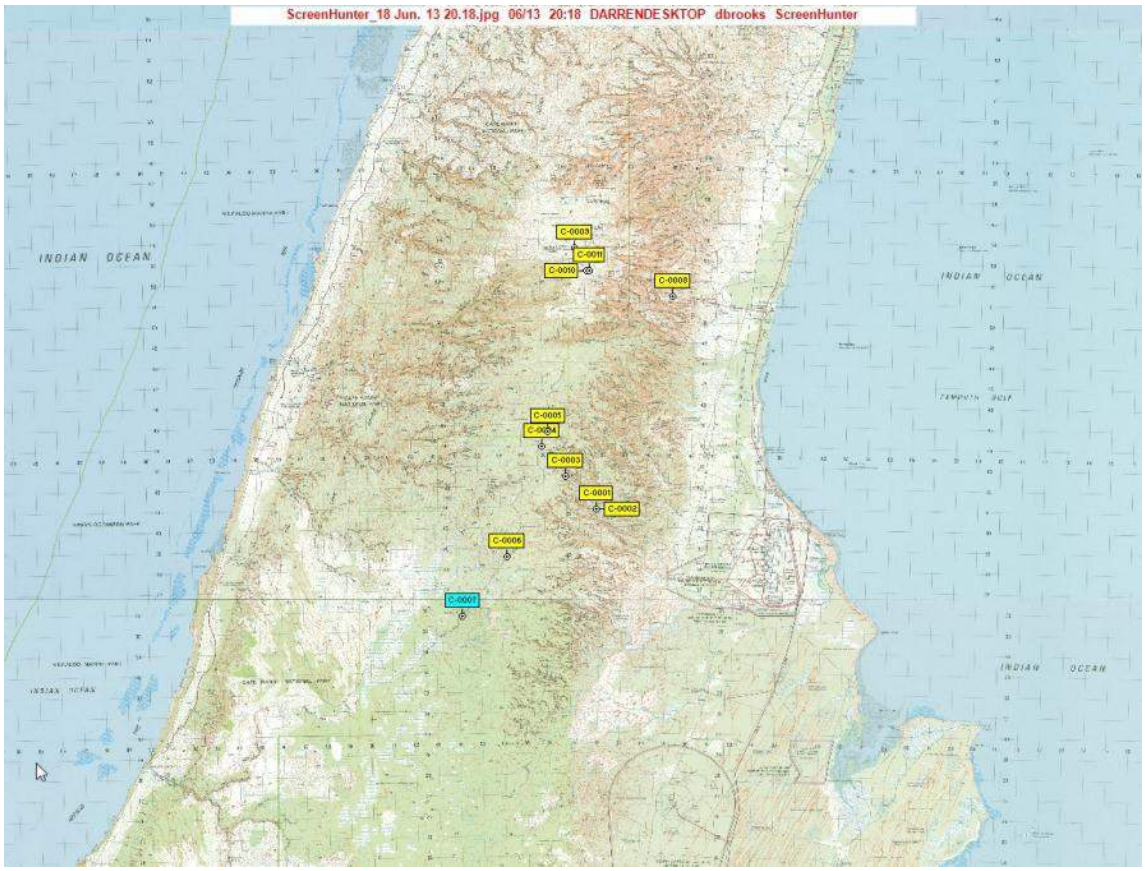
Slide 15 C-18 Dry Swallet. One of the caves discovered and explored by Cawthorn and Symons.

Slide 16 Entrance to Dry Swallet.

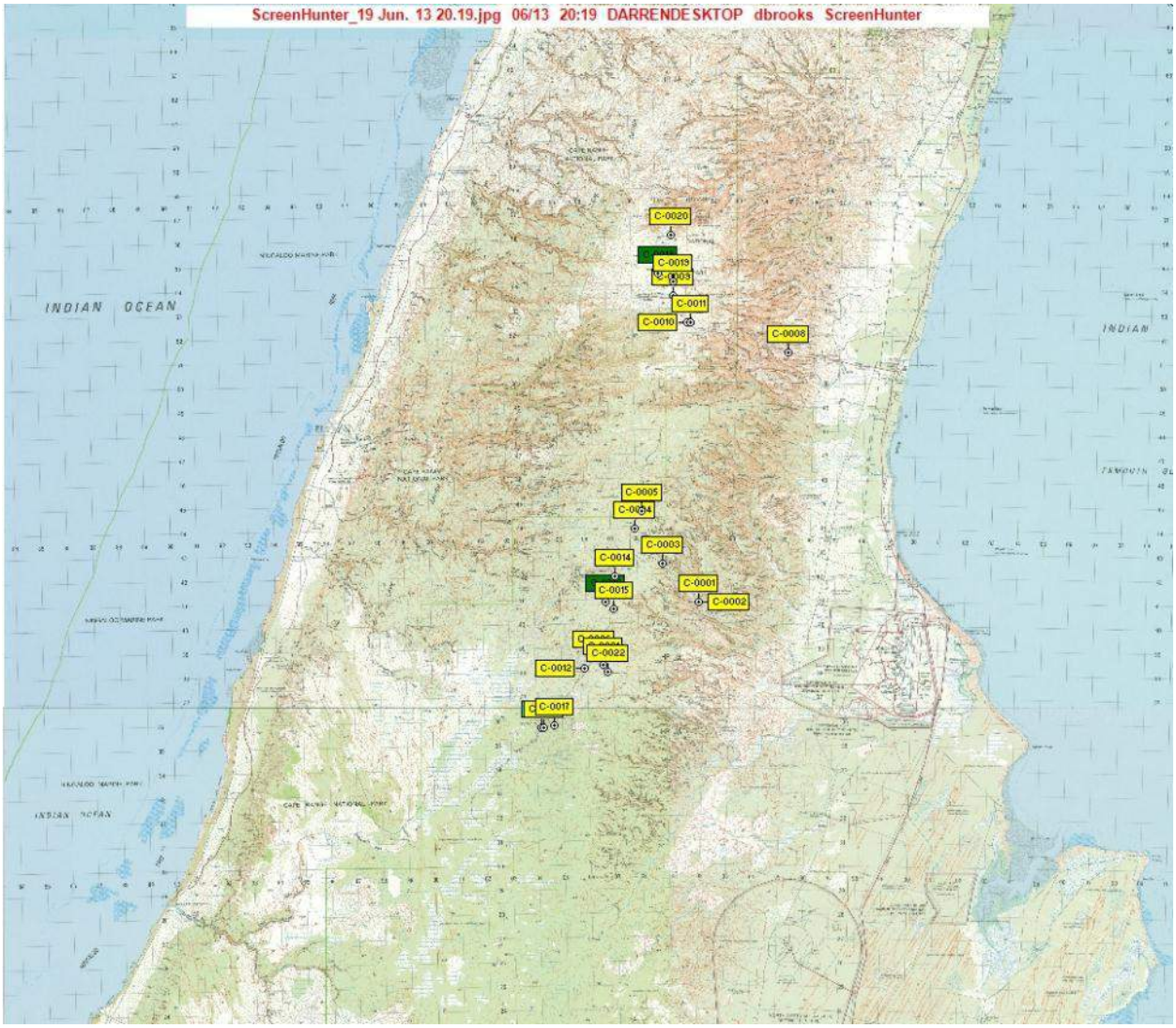


Slide 17 Entrance of Dry Swallet.

Slide 18 Cave fauna. Blind millipedes on mudbank in Dry Swallet.



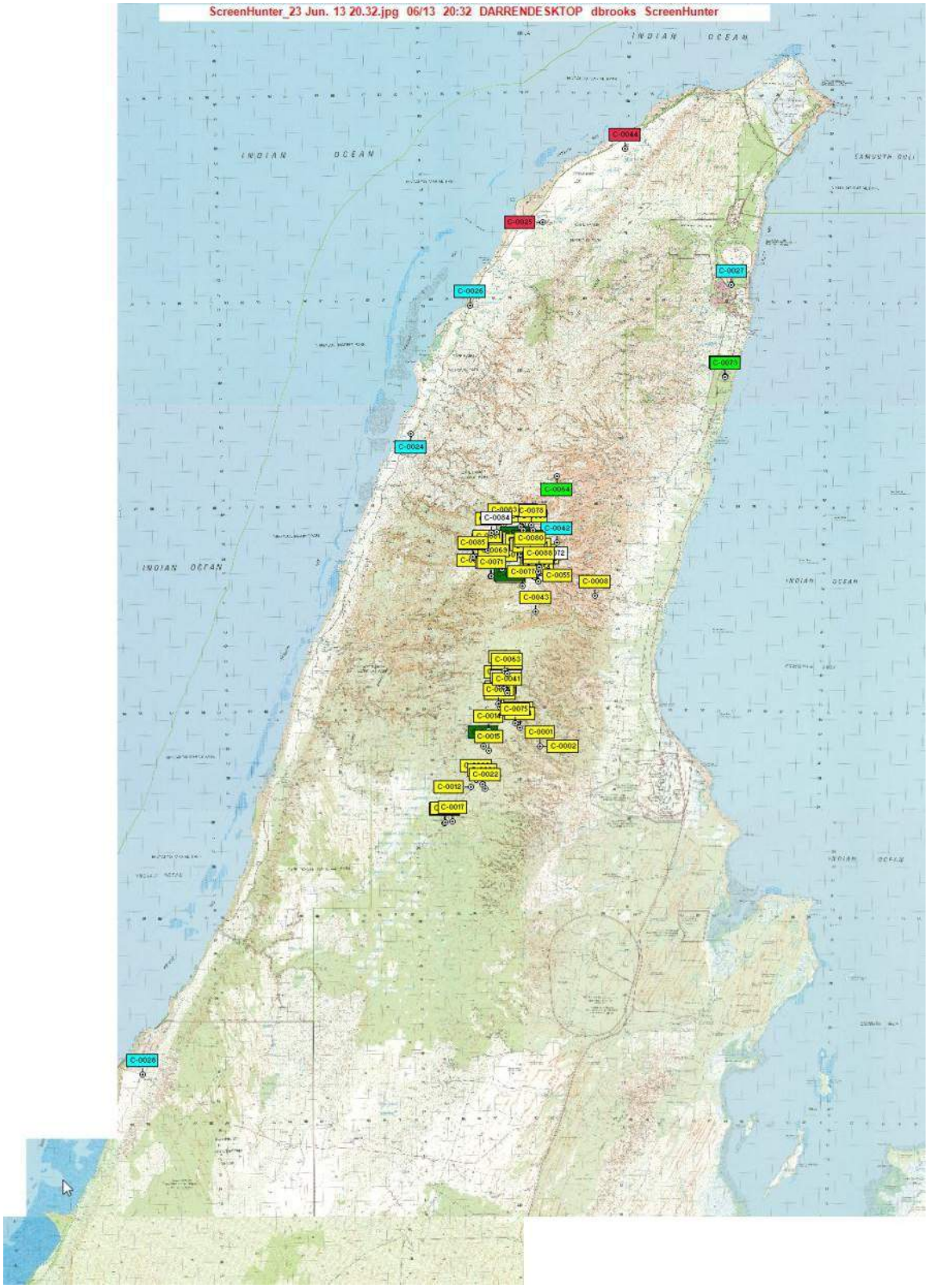
Slide 19 Refresh of Cook and Fry explorations.



Slide 20 In 1965 George W Kendrick, of the WA Museum, visited the Cape Range. The trip was particularly interested in collecting bones from the caves. They made a large collection from The Owl Roost. Their contributions to the record include C-21, Monajee Cave, where a small bone from a thylacine was collected and they noted several fragment of shells from the genus' Melo and Syrinx, shells typically used by aboriginal women for the transport of water. Monajee is the name 'conch shells used as utensils'.

Slide 21 Truncated stalactite in Monajee Cave.

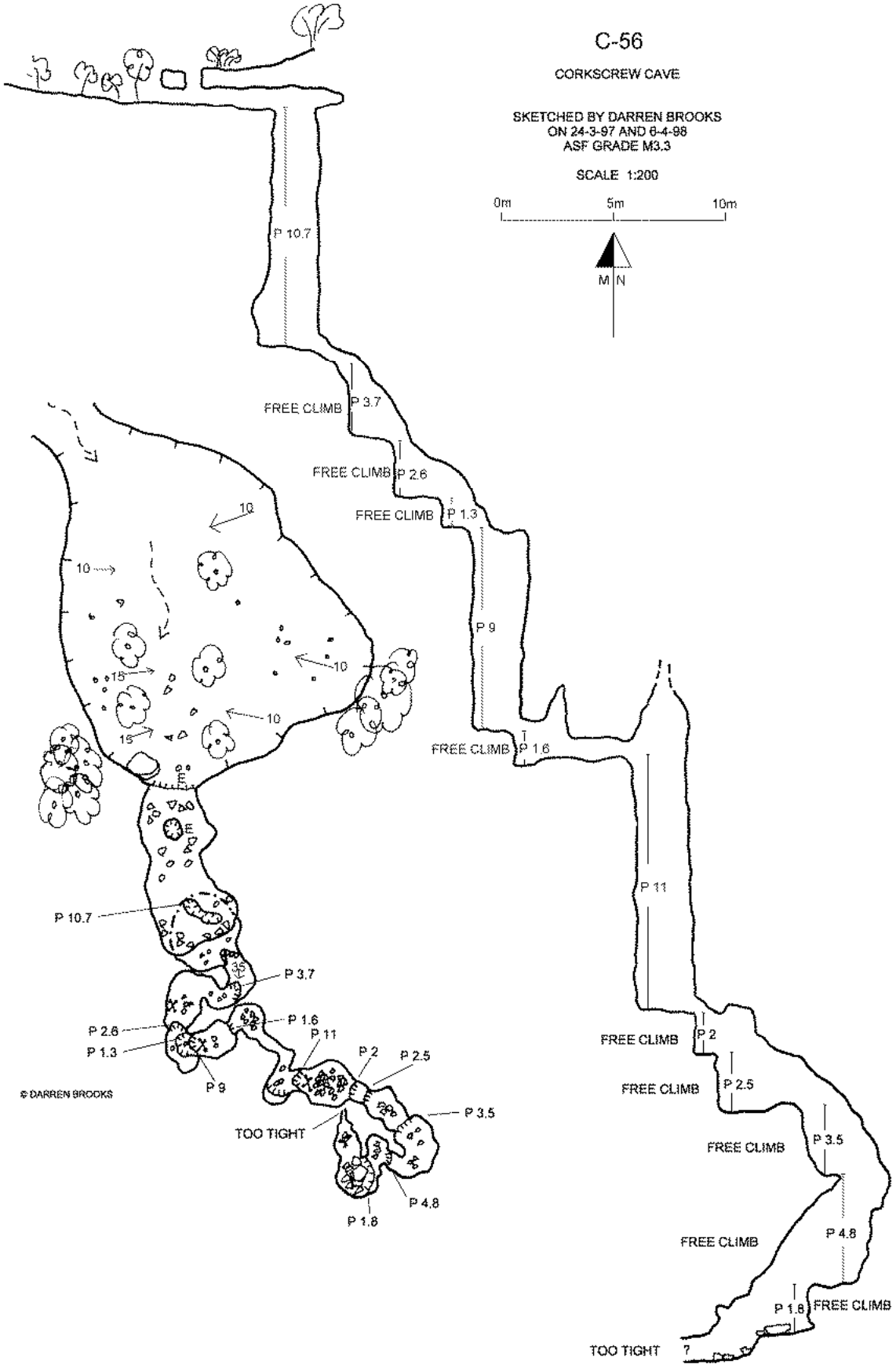
Slide 22 Roots from fig tree in Monajee Cave.



Slide 23 Bridge and Scott, with contributions from Janicke. In 1968 Peter Bridge led an expedition to the range to try and smash the Australian cave depth record. Needless to say, they didn't succeed in this indeavour. Steven Janicke was on this trip, along with several other WASG members.

Janicke returned in 1971 to continue exploration with a few new finds and explorations.

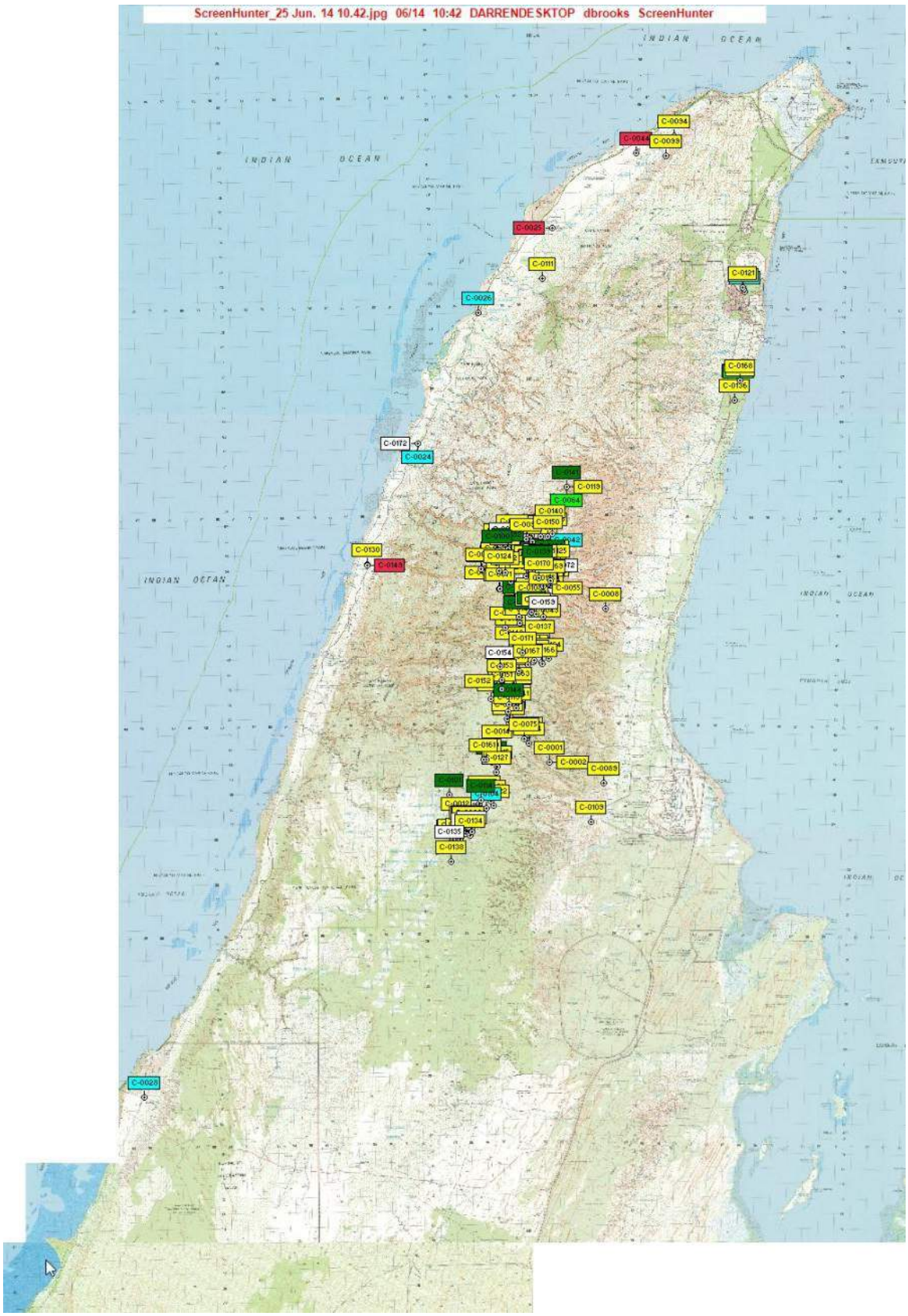
The big contributor in this era was Roger M. Scott, who led a team of 9 participants which, although not discovering a lot of new features, did actually start to organise the systematic location and recording of many of the known features.



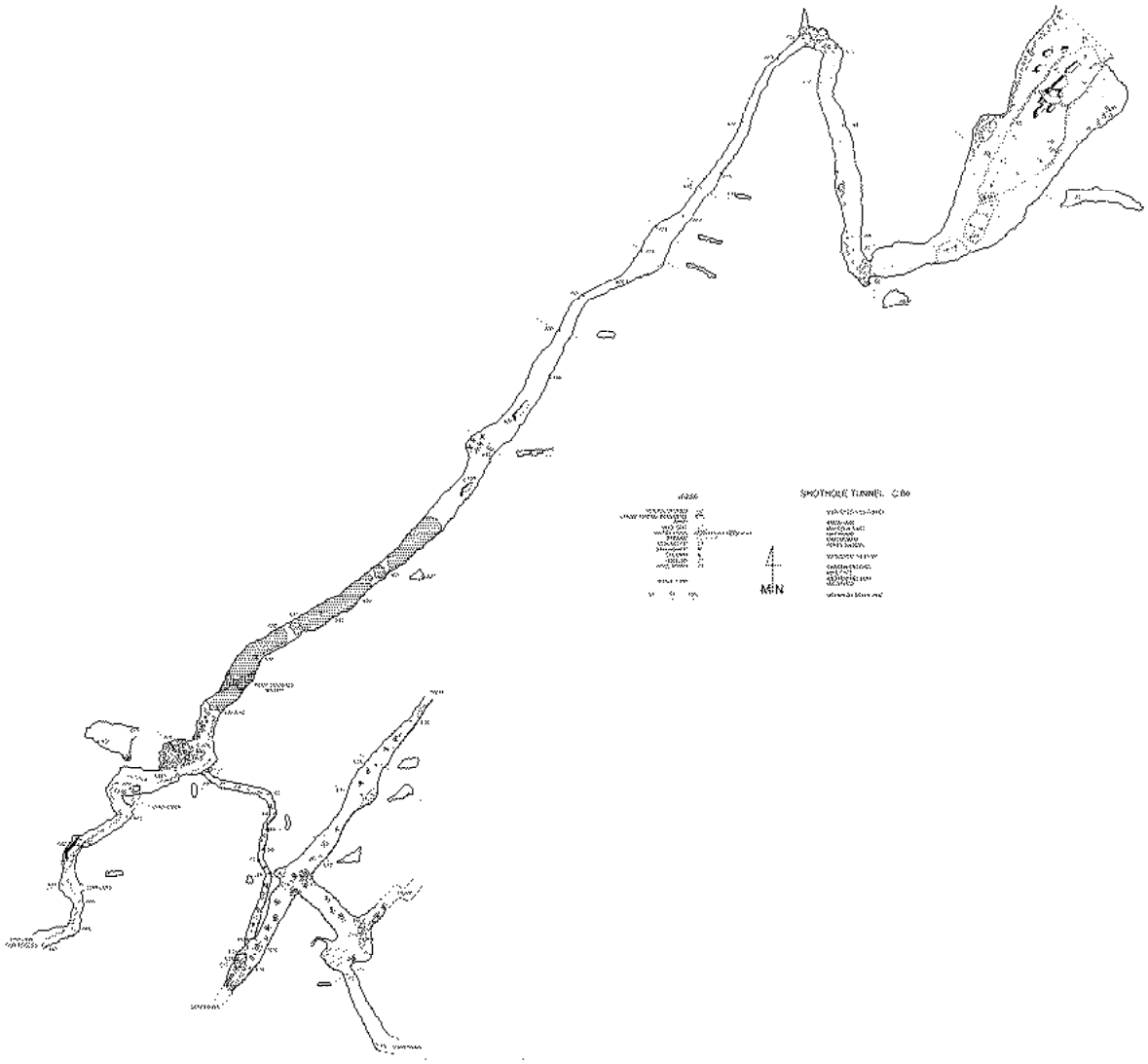
Slide 24 C-56 Corkscrew Cave. One of the finds of Scott expedition and one of the caves to be visited during the field trips.

Slide 25 Entrance to Corkscrew Cave.

Slide 26 Entrance to Corkscrew Cave demonstrating proximity to road.



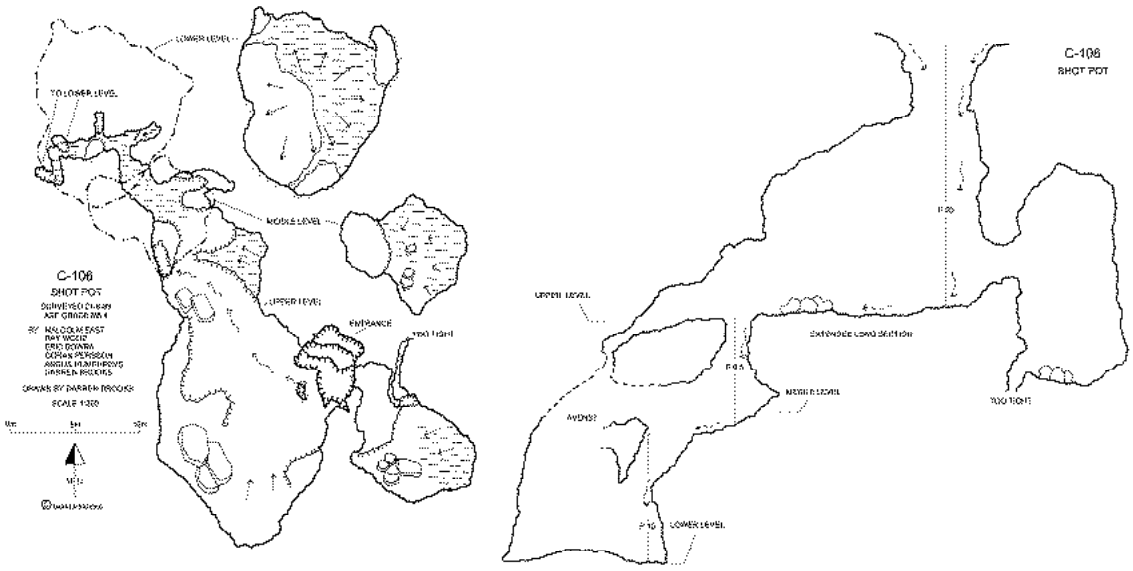
Slide 27 The Vine Period. Brian Vine instituted a program of systematic identification and exploration of as many of the known and of as many new caves as possible. He introduced many locals to the joys of caving in their own backyard and also entertained cavers and investigators from Perth and further afield. He made a great many significant discoveries and it was his observations of cave fauna that, in part, led to later investigations into the troglobitic denizens of the caves.



Slide 28 One of Brian's great and significant discoveries, Shothole Tunnel, the first resurgence cave known on the cape.

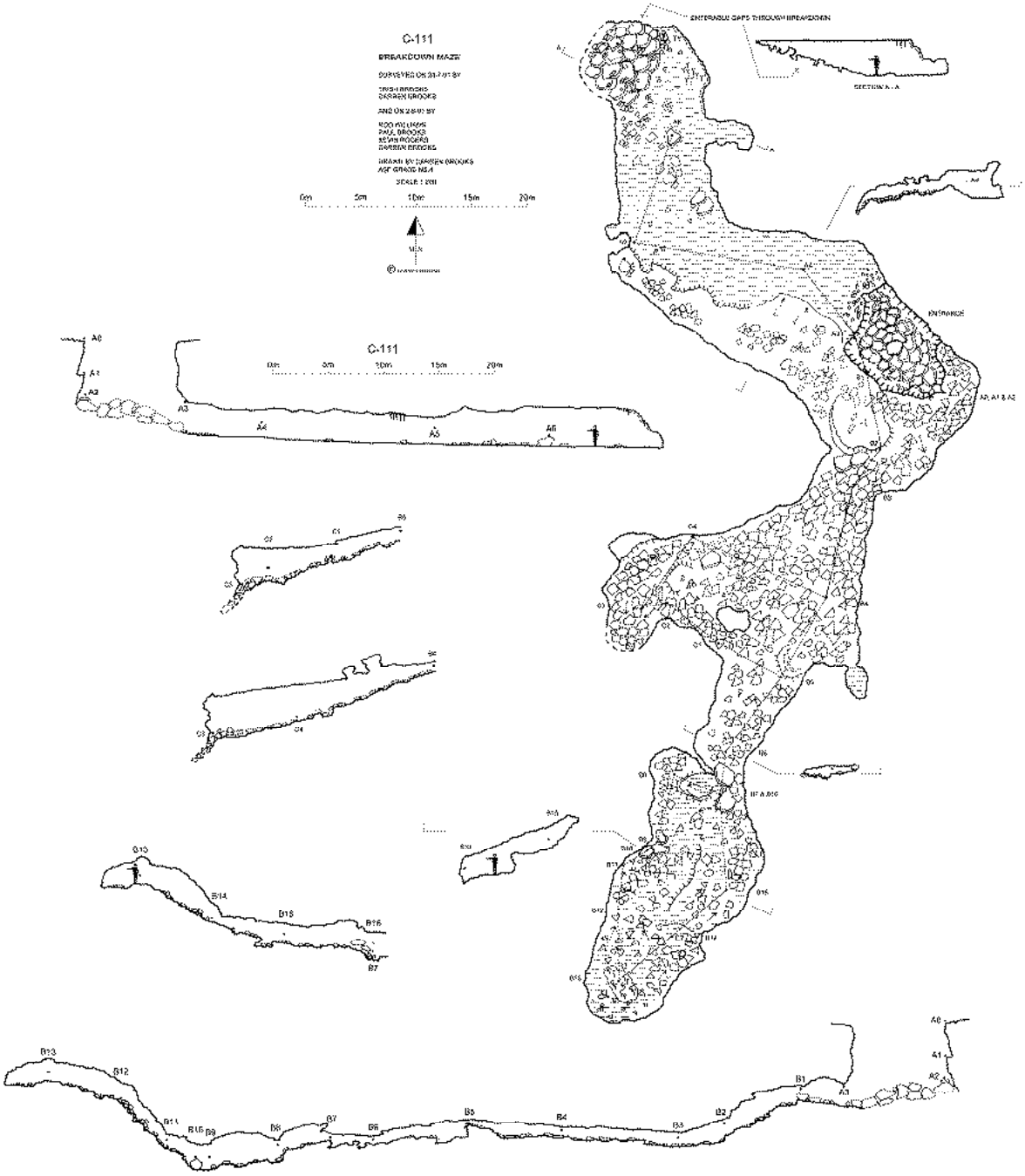
Slide 29 The resultant carnage after a trip into Shothole Tunnel.

Slide 30 Our own Tim Moulds graces the entrance to Shothole Tunnel.

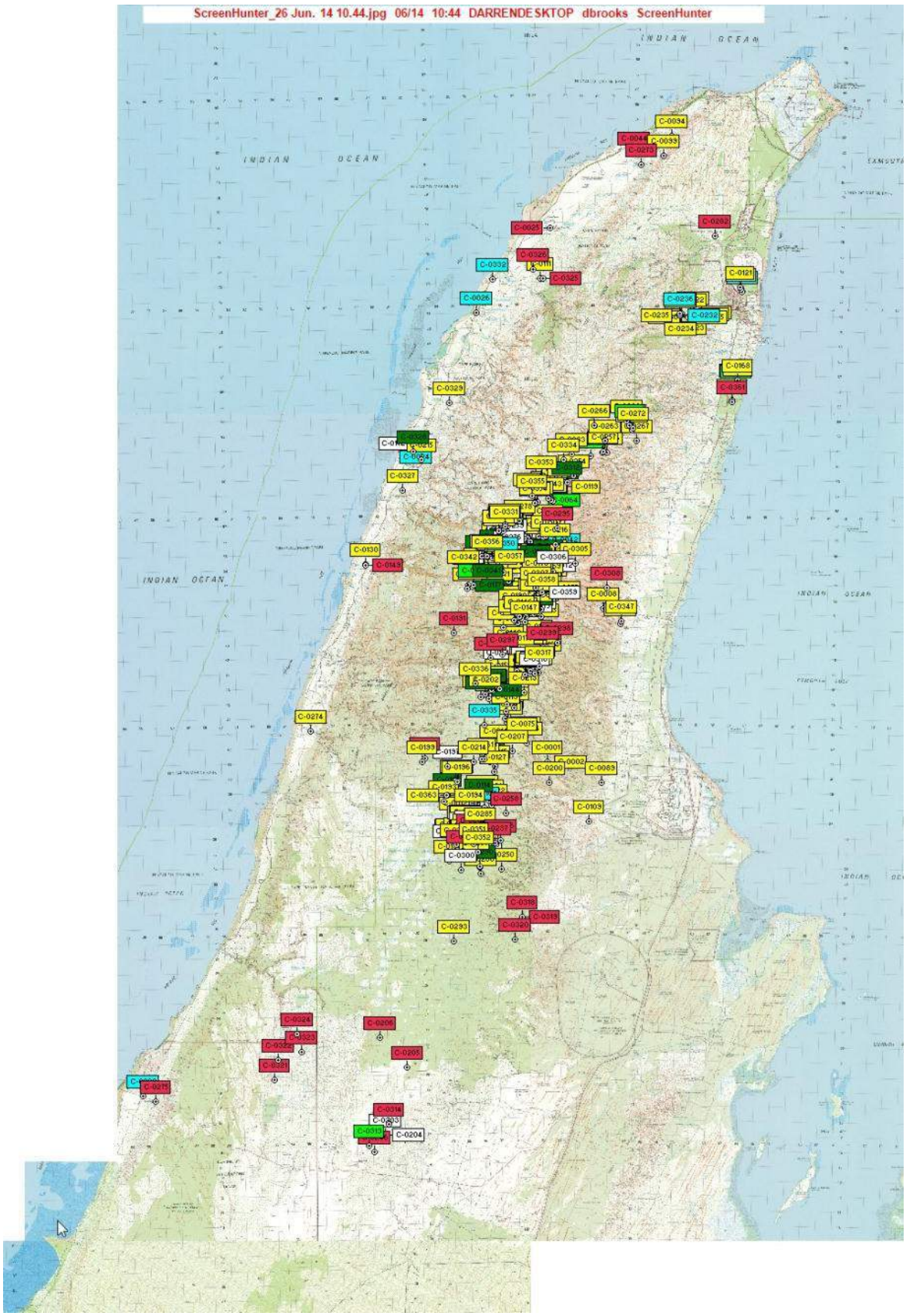


Slide 31 C-106, Shot Pot. Another of Brian's most significant finds, and the location of many of this troglofauna observations.

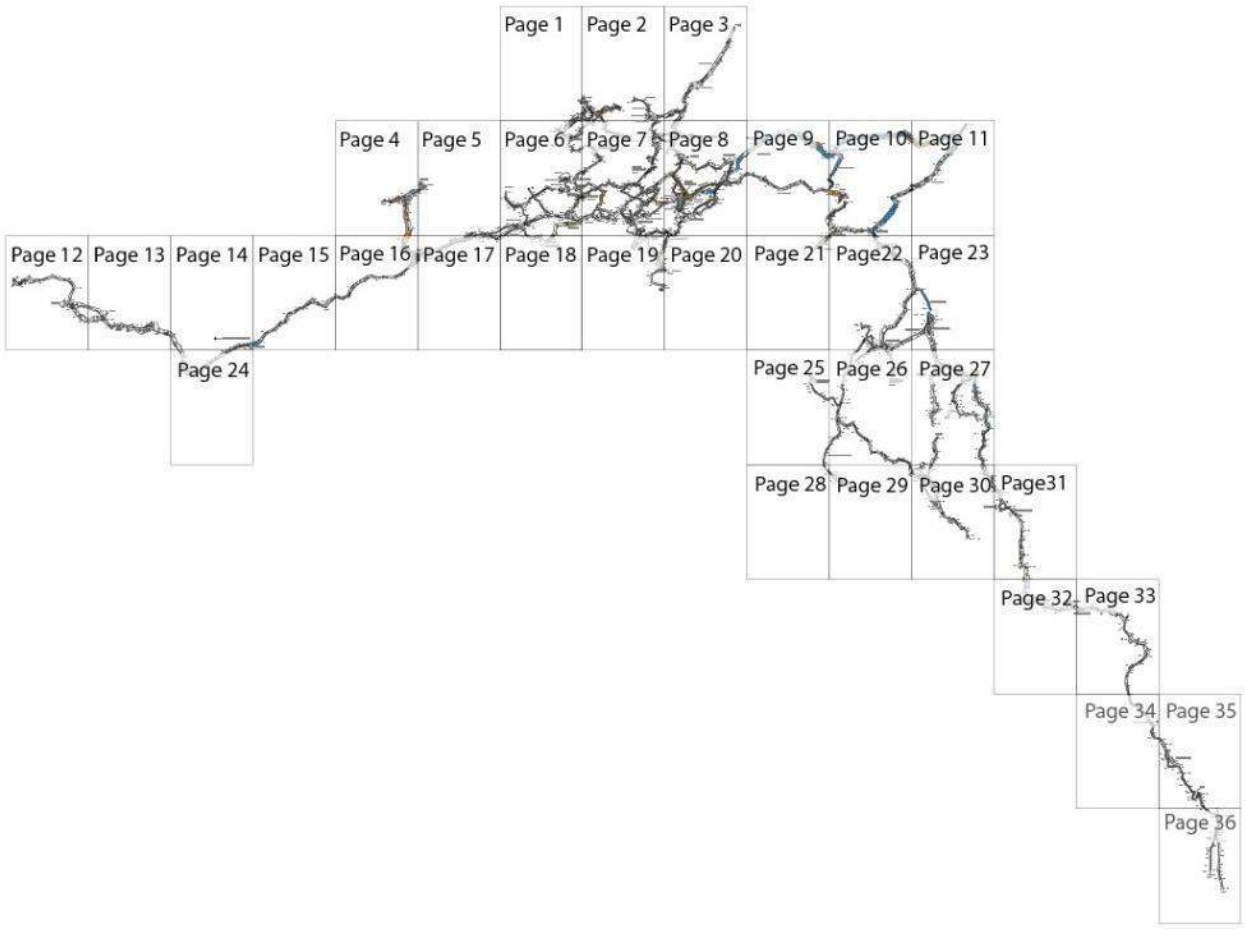
Slide 32 Entrance to Shot Pot.



Slide 33 C-111 Breakdown Maze. Another significant fauna cave, this one located on the western coastal plain.



Slide 34 The East Period. An overlap of the Vine Period, Malcolm East was the first to put his budding computer skills to use and create a transferable electronic database of the caves and karst features. The East Period includes the 1987 WASG and 1988 WA Museum expeditions whereby the numbers of new features discovered increased dramatically, particularly due to the use of very good quality aerial photos coupled with a high magnification stereoscope.



Slide 35 In 1987 Malcolm's colleague, Ray Wood, discovered Wanderers Delight, the first really long and challenging cave in the area. In the first two years of exploration they and others surveyed over three kilometres of mostly low, crawly tunnels.

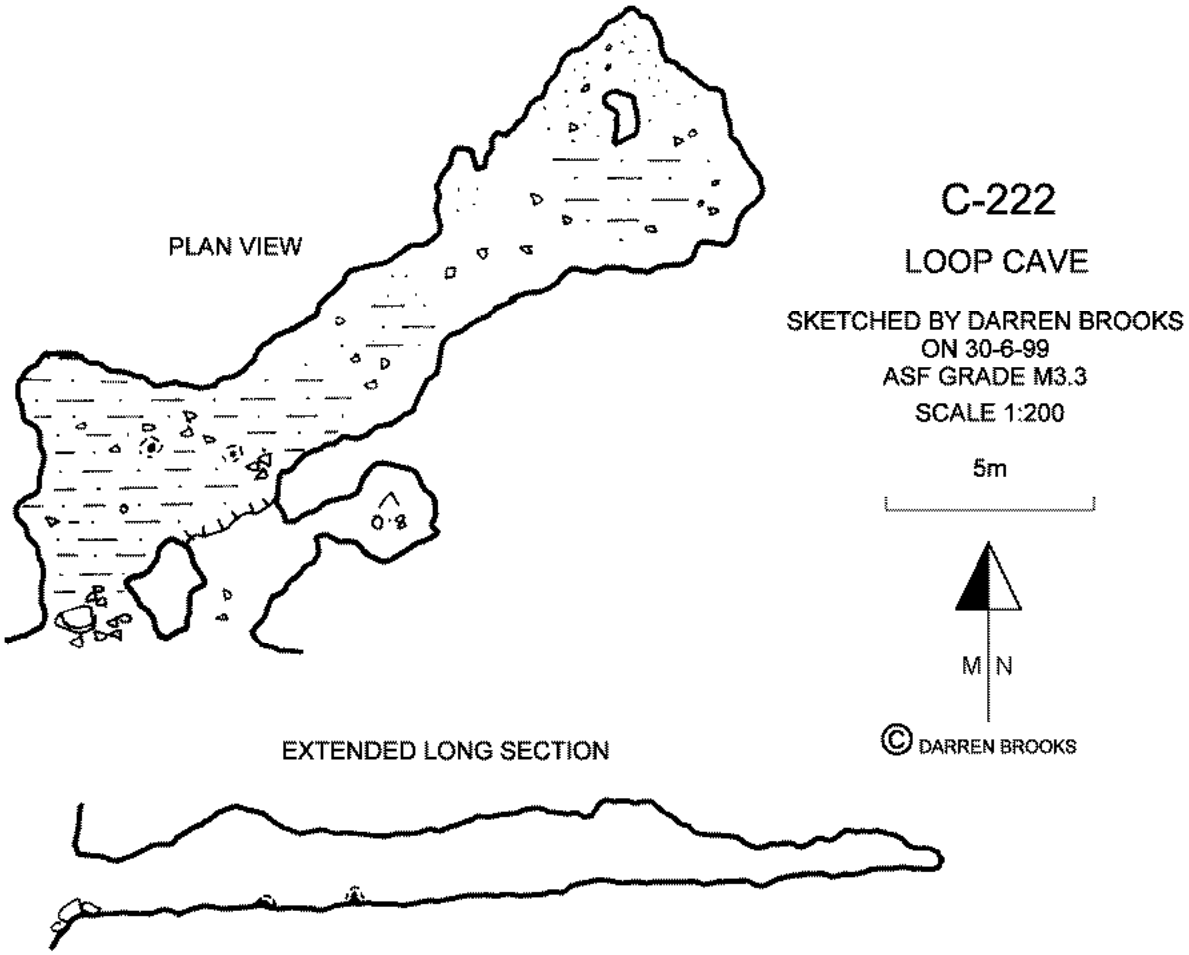
Slide 36 Greg Thomas gives a cheery salute before entering Wanderers Delight.

Slide 37 Typical passage in Wanderers Delight, delightfully adorned by my wife, Jackie.

Slide 38 Canal section in Wanderers Delight.

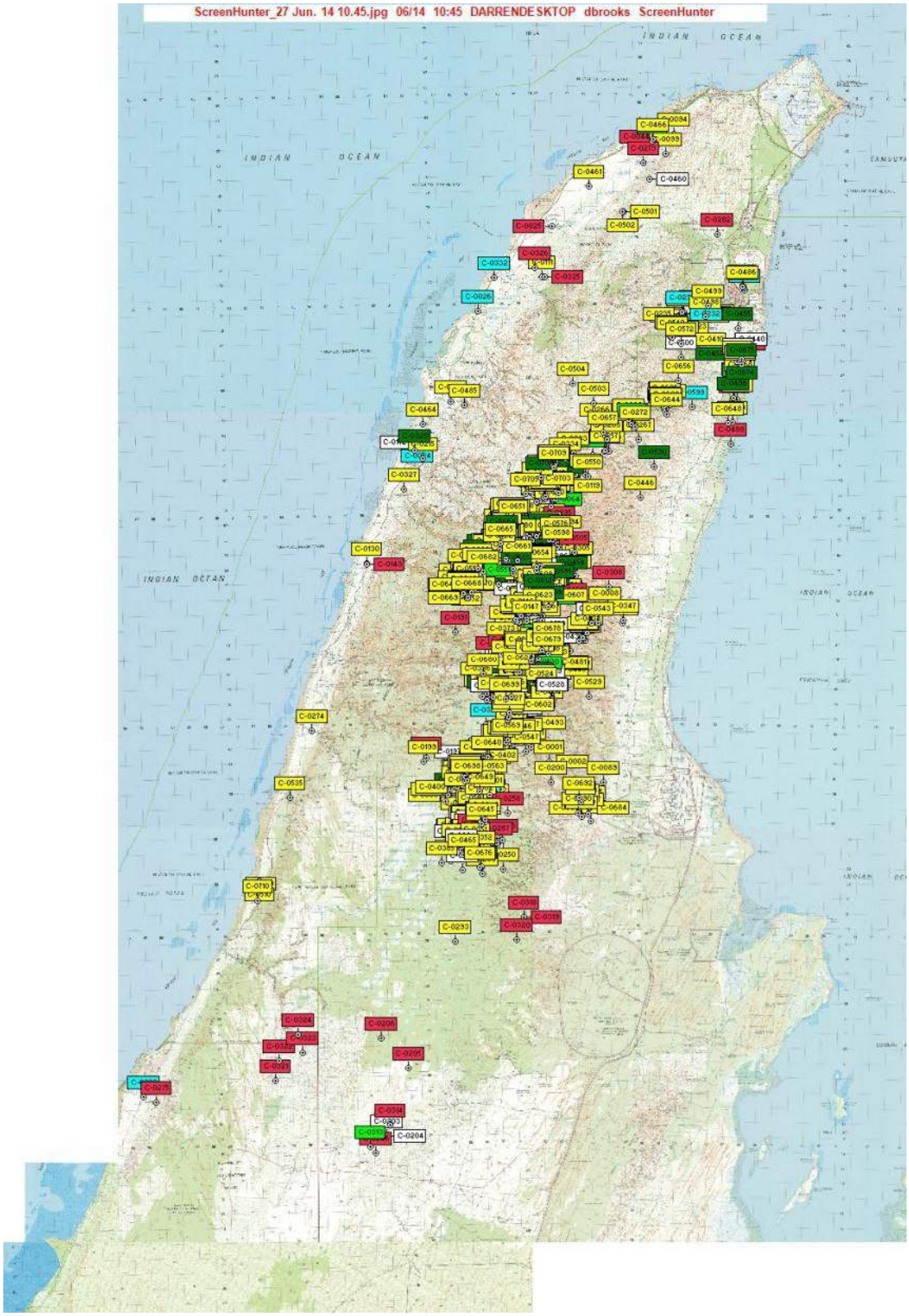
Slide 39 Pineapple Junction in Wanderers Delight.

Slide 40 Fossils abound in the caves and Urchin Chamber in Wanderers Delight is no exception.

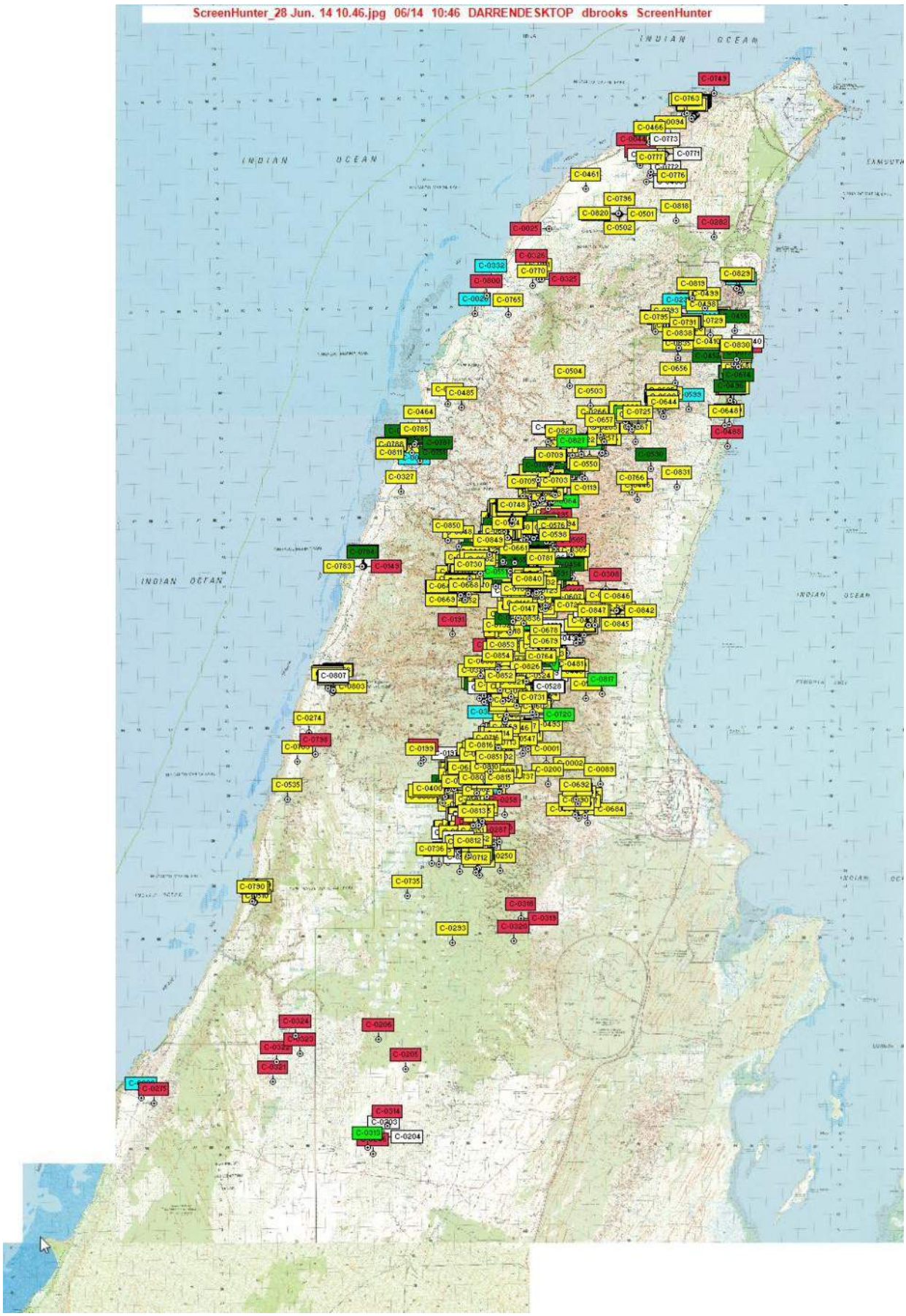


Slide 41 C-222 Loop Cave, a small but significant fauna cave located in the foothills west of Exmouth townsite.

Slide 42 Bill Humphreys, accompanied by John and Joan Mylroie, on one of his many forays into Loop Cave searching for the elusive blind millipede *Stygiochiropus isolatus*.



Slide 43 The Research Period. The WA Museum expeditions to Cape Range lent a new focus to karst investigations. Whereas the earlier expeditions were mostly, but not always, about discovery and exploration, this new era was more focused on systematic recording of karst features along with collection of cave fauna, plus delving into other, deeper, areas of cave science. Irrespective of the new focus though, the karst feature numbers climbed higher and higher from a couple of hundred in 1988 to over 700 in the year 2000.



Slide 44 The years 2000-2015 saw a continuation of the Research Period and the growth of newly allocated numbers to over 850, and the number continues to rise.

Slide 45 To complete our journey through time, a shot of probably the best decorated cave known on the range, C-127.