

A History of Cave Exploration in the Judbarra/Gregory National Park

Bob Kershaw

15-56 Duke St., Woonona, NSW 2517, Australia



Abstract

The caves of the Judbarra/Gregory National Park were known to the Aboriginal tribes of the area who used them for art and ritual sites. The initial work by Northern Territory Parks and Wildlife Commission Rangers Keith Claymore and Keith Oliver was followed by the Operation Raleigh Expedition from the UK in 1990, which made the first maps of the caves. Starting in 1991 regular exploration and mapping expeditions by Australian cavers were coordinated by Top End Speleological Society and Canberra Speleological Society. The surveyed passage length of all caves in Judbarra/Gregory National Park is almost 220km and the longest single connected system is the 122km Bullita Cave System in the Central Karst Area. Studies of the geology and biology of the caves were also conducted during this time and are reported on in separate papers in this volume.

Keywords: History; cave exploration; surveying; Australia.

INTRODUCTION

The Judbarra/Gregory National Park (J/GNP) lies within the Victoria River Region of the Northern Territory (NT) and is the largest park in the Northern Territory Parks estate. The largest section of the J/GNP is located south of Timber Creek extending from the Victoria River 170km south to the upper reaches of Depot Creek and the Wickham River, an area of 1 132 200 ha. A second section of the park (151 850 ha) is located 80km to the east, along the Victoria River and adjacent to the Victoria River Roadhouse.

In the northern section of the park, west of Bullita Homestead, prominent areas of dark grey dolomitic limestone form a distinctive karst landscape which 'crops out' of the surrounding round stepped hills of the Skull Creek Formation (Figure 1). The East Baines River cuts through this geological formation, and a few rock shelters and caves can be found alongside the river. Rock shelters and some cave entrances have been used by Aboriginal people for millennia and many art sites (evidence of habitation) have been found in the area. A cultural link with some of these sites still exists today and the cultural significance of some sites has restricted access to them to certain Aboriginal groups or sexes.

Systematic exploration of the karst areas began in 1990 with an expedition from the United Kingdom, and Australian speleological groups have run expeditions every year since then. The Top End Speleological Society (TESS) and the Canberra Speleological Society (CSS) continued exploring and mapping in the region from 1991 to 1996. The CSS trips in particular often included members from other groups in the Australian Speleological Federation (ASF). After 1996 annual expeditions were organised by an informal Special Interest Group (SIG) involving cavers from all over Australia. The SIG was formalised by the ASF in 2005.

The largest area of continuous surveyed passage is referred to as the Bullita Cave System (BCS) and is located in the Central Karst Area (CKA), which also includes Jalaman, Wadija and BAA-22 (Figure 3). The name *Bullita Cave System* was introduced in the mid-1990s by park management authorities and CSS.

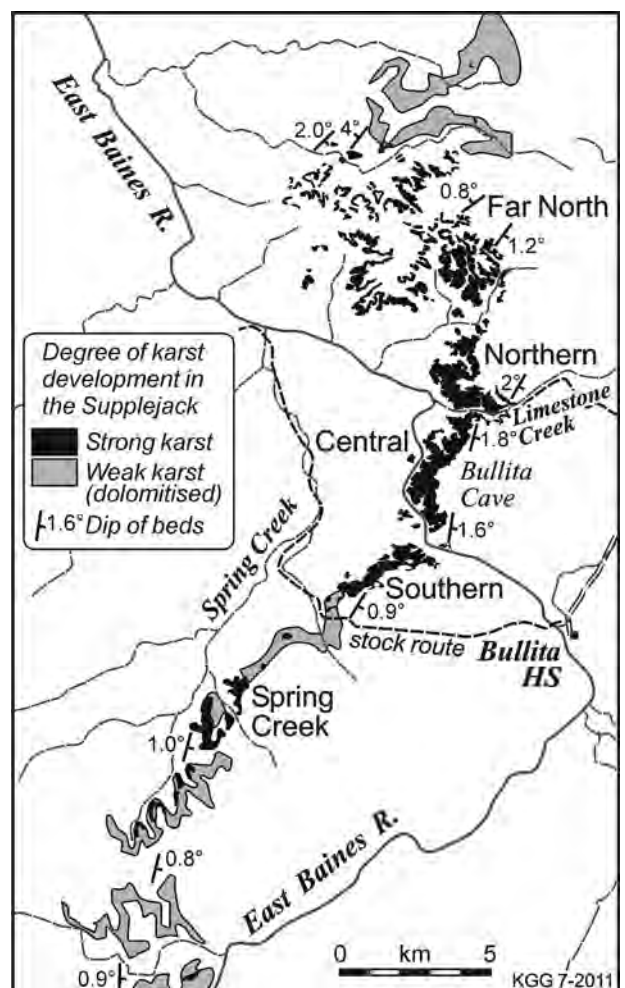


Figure 1: The Judbarra / Gregory Karst Region, showing extent of karstified rock and named sub-areas. From Martini & Grimes (2012).

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The history of systematic exploration, mapping and scientific studies of the numerous karst areas and blocks is summarised from 1990 to the present. Figure 1 shows the main named areas within the karst region and Figure 3 shows the progressive mapping of the caves in five year increments. A more detailed map of the BCS appears in Martini & Grimes (2012).

A great deal of introductory and summary information was presented to speleological and geological conferences by Dunkley (1993a, 1993b), Bannink et al. (1995), White (2001), White & White (2009) and Grimes & Martini (2011) describing the regional setting, the caves and their development. Several general articles have highlighted speleological activities within the park over the past 20 years (Brush 1994, CSS 1998, Sefton 2004 and 2006, and Kershaw 2005). The CSS made several unpublished submissions to the NT government concerning the caves (Anon, 1992, 1998). Much additional information was gleaned from the annual expedition log book that is held with the original CSS survey data in Canberra.

Collections of cave invertebrates were made by Peter Bannink (between 1992 and 1994) and Tim Moulds (in 2006), the results of which are published in this volume (Moulds & Bannink, 2012). Following the early geological interpretations by Dunkley (1993a,b) and Bannink et al. (1995), geologists Jacques Martini, Susan White, and Ken Grimes conducted extensive geological and geomorphic studies of the karst and caves (White & White, 2009; Martini & Grimes, 2012; Grimes, 2012a,b).

REGIONAL HISTORY

Prior to European involvement in the Victoria River Region, nine Aboriginal language-based groups inhabited the area of Judbarra/Gregory National Park: Ngarinyman, Ngaliwurru, Bilinara, Malngin, Nungali, Karangpurra, Gurindji, Jaminjung and Wardaman. However, it is the Ngarinyman who lived predominantly in the region of the karst along the East Baines River. A few cave entrances have paintings decorating their walls and the cliffs outside them and there is at least one painting within a cave.

In 1839, Captain J. Wickham and John Stokes named and explored the Victoria River. Following the favourable reports by Wickham and Stokes, Augustus Gregory led the 'North Australian Exploring Expedition' in 1856-57, exploring along the Victoria River to its source, and he later recommended that the area be opened to pastoralists (Parks and Wildlife Commission, 2001).

The area around Bullita Station was used for cattle grazing from 1905 until it was purchased in 1984, along with parts of adjoining properties, by the Northern Territory Government for inclusion into Gregory National Park (Parks and Wildlife Commission, 2001). In the mid-1980's, Keith Claymore (Figure 2) and Keith Oliver, of the NT Parks and Wildlife Commission (PWC)



Figure 2: Keith Claymore near the entrance to BAA63 in 1993. [photo: P. Bannink]

staff, conducted a surface survey of the karst and found several cave entrances.

On 17th July 1984 the concept of The Gregory National Park was approved and the park was declared on 14th August 1990. In 2010 the park was handed back to the Traditional Owners (Parks and Wildlife Service, 2010). This process was driven by the *Parks and Reserves (Framework for the Future) Act 2003* wherein the Traditional Owners leased the park back to the NT Government on a 99-year term. The name of the park changed to 'Gregory (Jutpurra) National Park' in the first months of the handover, and then to the current 'Judbarra/Gregory National Park'.

SPELEOLOGICAL EXPLORATION IN THE JUDBARRA/GREGORY KARST REGION

Almost every year since 1987 various speleological activities occurred in the caves of the J/GNP. These were mostly exploration and mapping but also included some geological and biological studies (see above). These activities are summarised below and some of the places named below are shown on the maps in Figures 1 and 3. Table 1 gives the general locations of the tagged entrances with BAA numbers.

Arthur Clarke (pers. comm.) reports that in 1968 he and geologists of the Bureau of Mineral Resources survey party explored quite a few caves and entrances in the course of their geological mapping in the area.

1987

Two members of TESS, Bruce Swain and Rod Silburn made a brief trip to Limestone Gorge but no entrances were tagged or explored.

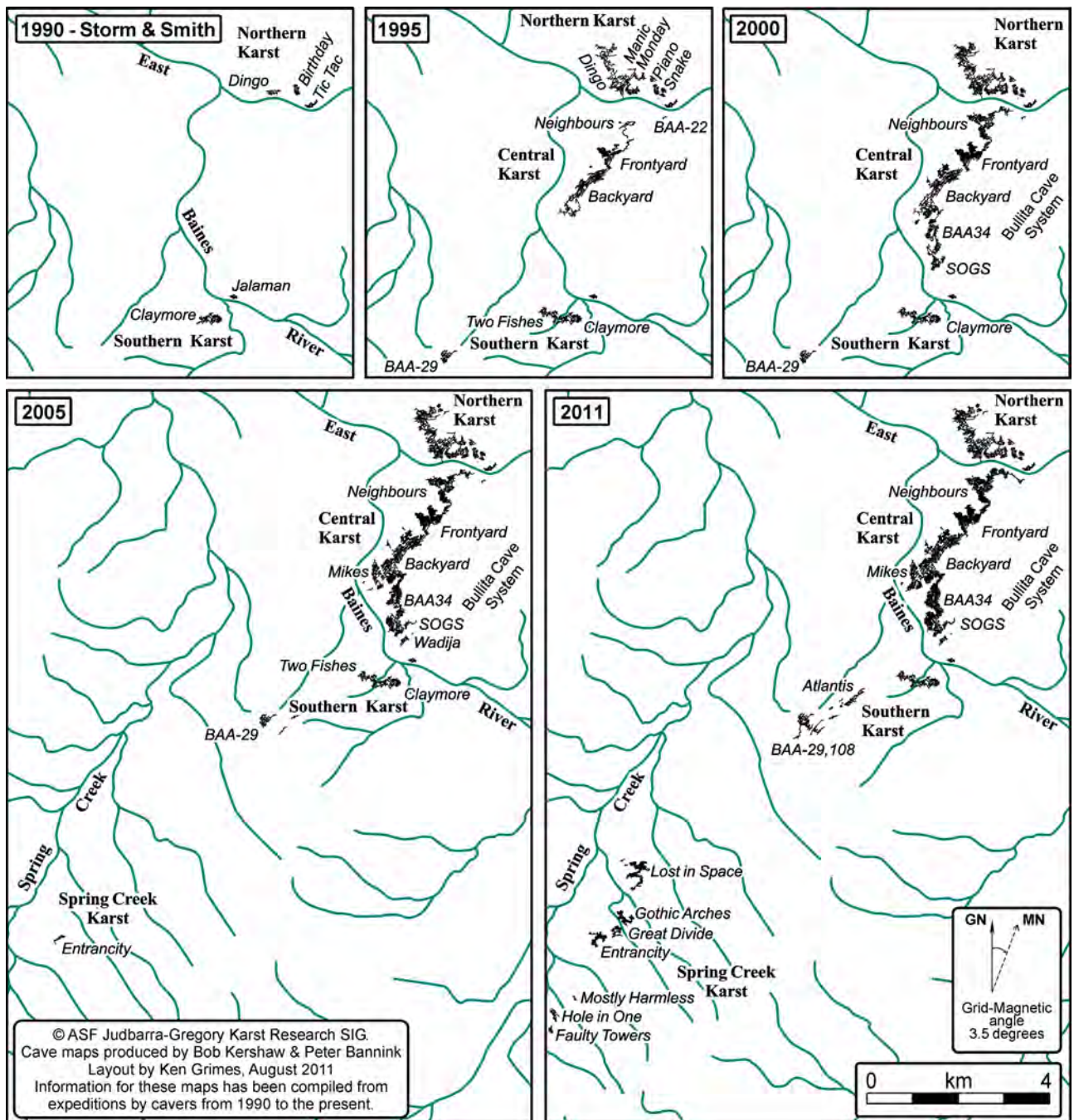


Figure 3: Progressive mapping of cave passages from 1990 to the present, in five year increments.

July 1990

The Operation Raleigh Expedition from the UK found and surveyed four caves north of Limestone Gorge (Storm & Smith, 1991): Tic Tac Cave with a surveyed length of 500m, Lost Cave (1600m), Birthday Cave (1750m) and Dingo Cave (1640m). Later in this expedition, two caves were mapped further south, adjacent to the East Baines River: Jalamang Wangar Jarin Cave (1340m) in the Central Karst Area and Claymore Cave (6200m) in the Southern Karst Area.

TESS members (Rod & Cathy Silburn and Guy Bannink) visited the Operation Raleigh Expedition during this time and were shown several of the caves.

1991

CSS initially mapped BAA5-BAA6 Snake Cave (1358m), BAA7 Piano Cave (850m) and BAA8 Dongo Cave (600m) in the Northern Karst area, and BAA10-BAA11 Two Fishes Cave (4600m) located to the north-west of Claymore Cave in the Southern Karst area. 'Two Fishes' refers to the two fishes painted on a rock outside the entrance of this cave.

A TESS trip located and tagged several cave entrances in the Northern Karst Area (BAA17 – BAA27 named 'Manic Monday'), and caves in the Central Karst Area just south of Limestone Gorge (BAA22 and BAA23). On a second trip TESS began mapping the master cave system, Manic Monday, in the Northern Karst Area.

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Table 1: Key to general location of caves (see Figures 1 and 3 for locations of main karst areas/blocks)

Feature Number*	Cave name	Karst area
BAA1	Tic Tac	Northern Karst Area
BAA2	Lost Cave	Northern Karst Area
BAA3		Northern Karst Area
BAA4	Birthday Cave	Northern Karst Area
BAA5	Snake Cave	Northern Karst Area
BAA6	Snake Connection Cave	Northern Karst Area
BAA7	Piano Bar Cave	Northern Karst Area
BAA8	Dongo Cave	Northern Karst Area
BAA9	Claymore Cave, West Entrance	Southern Karst Area
BAA10	Two Fishes Cave, East Entrance	Southern Karst Area
BAA11	Two Fishes Cave, West Entrance	Southern Karst Area
BAA12	Claymore Cave, East Entrance	Southern Karst Area
BAA13	Jalaman Wanga Jarin Cave	south of Wadija in the Central Karst Area
BAA14-21		Northern Karst Area
BAA22 and BAA23		Neighbours Block in the Central Karst Area
BAA24-28		Northern Karst Area
BAA29	BAA29	Southern Karst Area
BAA30		Southern Karst Area, links with BAA29
BAA31	Dingo Cave	Northern Karst Area
BAA32		BAA34 Block in the Central Karst Area
BAA33		BAA34 Block in the Central Karst Area
BAA34	BAA34	BAA34 Block in the Central Karst Area
BAA35		Backyard Block in the Central Karst Area
BAA36		Neighbours Block in the Central Karst Area
BAA37		Neighbours Block in the Central Karst Area
BAA38	Manic Monday	Northern Karst Area
BAA39		Far South Karst Area
BAA40	Ball Cave	Far Northern Karst Area
BAA41	Ant Lion Cave	Far Northern Karst Area
BAA42		Far Northern Karst Area
BAA43		Far Northern Karst Area
BAA44		Far Northern Karst Area
BAA45	KUQ Cave	Far Northern Karst Area
BAA46-48		Northern Karst Area
BAA49	Razzle Dazzle Cave	Northern Karst Area
BAA50	Raafies Cave	Neighbours Block in the Central Karst Area
BAA51, BAA53 & BAA76		Neighbours Block in the Central Karst Area
BAA52, 54 56-60		Northern Karst Area
BAA55	Dead Goat Cave	Northern Karst Area
BAA62	Harmonica Cave	Northern Karst Area
BAA61, 63, 64, 65		Backyard Block in the Central Karst Area
BAA66, 67, 74, 79, 85-88		Northern Karst Area
BAA69-73		Frontyard Block of the Central Karst Area
BAA80	Flea Circus	BAA34 Block in the Central Karst Area
BAA81	Golden Arches	Backyard Block in the Central Karst Area
BAA82	SOGS	SOGS Block in the Central Karst Area
BAA83	Corner Cave	BAA34 Block in the Central Karst Area

Feature Number*	Cave name	Karst area
BAA84	Fig Cave	Odyssey between SOGS and BAA34
BAA89	Elle Entrance	Odyssey between SOGS and BAA34
BAA90 and 91		Neighbours Block in the Central Karst Area
BAA92 and 93		Frontyard Block of the Central Karst Area
BAA95		West of Backyard Block in the Central Karst Area
BAA96	Skeleton Key	Backyard Block in the Central Karst Area
BAA97	SWB	Backyard Block in the Central Karst Area
BAA98	North SOGS	SOGS Block in the Central Karst Area
BAA99 and BAA100	Mikes Cave	Mikes Block in the Central Karst Area
BAA101	The Efflux	SOGS Block in the Central Karst Area
BAA102	SGL Entrance	SOGS Block in the Central Karst Area
BAA103	Tinison entrance	SOGS Block in the Central Karst Area
BAA104	Wadija	South of SOGS in the Central Karst Area
BAA105	Sooty Owl Cave	Mikes Block in the Central Karst Area
BAA107		Neighbours Block in the Central Karst Area
BAA108 and 110,		Southern Karst Area
BAA109	Effigy Cave	Southern Karst Area
BAA120	Fig 'n Elle	BAA34 Block in the Central Karst Area
BAA111 and 121	SOGS	SOGS Block in the Central Karst Area
BAA122	Death Adder Cave	BAA34 Block in the Central Karst Area
BAA130	Atlantis Cave	Southern Karst Area
BAA201, 202, 209, 225, 226	Gothic Arches	Spring Creek Karst Area
BAA204, 207, 210, 211	Entrancity	Spring Creek Karst Area
BAA205	Eccentricity	Spring Creek Karst Area
BAA212 and 218	The Great Divide	Spring Creek Karst Area
BAA213, 215, 217, 219, 220, 221, 222, 223	Lost in Space	Spring Creek Karst Area
BAA214	Flour Power	Spring Creek Karst Area
BAA216	Hole in One	Spring Creek Karst Area
BAA224	Mostly Harmless	Spring Creek Karst Area
BAA227	Faulty Towers	Spring Creek Karst Area

BAA77, 78, 85-88, 94, 106, 112-119, 123-129, 203, 218. Unallocated BAA numbers

* Note that some caves have more than one numbered entrance, and not all caves have names.

The cave entrance tag is prefixed by a letter code which uniquely identifies the cave area in Australia.

In the Northern Territory the area code is assigned by a method developed by the Top End Speleological Society (Bannink & Magraith, 1992), based on the ASF numbering code (http://www.caves.org.au/s_numbering_code.htm). The first two letters in the prefix refer to the name of the 1:100 000 AGD66 map sheet that the caves are located on. In the case of the caves in Judbarra/Gregory National Park, the majority of karst currently explored is located on the *Baines* 1:100 000 topographic map sheet.

When considering the large number of map sheets in the NT with similar first and second letters (such as Baines, Barkly, Barrow etc.) a third letter is required to differentiate these sheets, and this third letter is based on a simple alphabetical sequence. In the case of the 'Ba...' map sheets, Baines is the first name in the list of 'Ba' so the first letter 'A' in the alphabetic sequence is appended. If caves are documented and tagged on subsequent 'Ba...' sheets, they are assigned the next terminal letter, for example Baines (BAA), Barkly (BAB) or Barrow (BAC).

1992

Early in the year, TESS continued mapping Manic Monday and linked a new entrance BAA28, (and later BAA38) into the system. TESS were shown an entrance in the Southern Karst Area by Keith Claymore which

was tagged BAA29, and explored the system towards the east to a second entrance tagged BAA30. Dingo Cave in the Northern Karst Area was belatedly tagged as BAA31. After an examination of aerial photographs, Guy Bannink and Karen Magraith located two entrances, BAA36 and BAA37 in the Neighbours Block of the

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It wasn't all easy walking passage. Guy Bannink in Neighbours Block, 1992. [Photo: P. Bannink]

Central Karst Area, and with Peter Bannink explored a major rift 2.5 km further south of Limestone Gorge (between the Backyard Block and the BAA34 Block). Large caves extending from this rift into both of these blocks were explored and four entrances (BAA32 to BAA35) were tagged (P. Bannink, pers. comm.).

CSS members commenced mapping BAA29 in the Southern Karst and recorded 3900m of passage. They also mapped BAA37 in the Neighbours Block of the CKA. BAA39, located near Crisp's Grave site 20 km to the south of Bullita Homestead, was explored and mapped. A few small caves BAA40-44 were mapped in the Far North Karst Area, 5 km to the north of Limestone Gorge (Brush, 2011; not shown on Figure 3). Two Fishes (BAA10) was further explored and surveyed.

1993

TESS continued mapping BAA38 the Manic Monday system (to a length of 9 km), and began exploring and mapping BAA35 in the CKA with Tasmanian Caverneering Club visitors Stuart Nicholas and Chris Davies. TESS also surveyed BAA22 and 23, just south of Limestone Gorge (see 2005 information below). A CSS expedition discovered 'Berks Backyard' to the north of BAA35 and mapped an impressive 11 km of cave passage in one trip. It was named Berks Backyard as it was in reasonable walking distance from the campsite and the ferns and trees gave it an aura of being in a garden (Brush, 1994, 2011). Keith Claymore guided Peter Bannink and others from TESS to one of the big sandstone sinkholes on the Newcastle Range (see Grimes, 2012b).

1994

TESS was shown a cave by some members of the RAAF who were camped at Limestone Gorge, this cave was later referred to as 'Raafies Cave' (BAA50, in the Neighbours Block).

TESS and CSS overlapped their expeditions and together located and mapped a new cave BAA51, an entrance at the southern end of the Neighbours Block that

later connected to BAA50, BAA36 and BAA37. TESS extended a survey of BAA35 to link to Berks Backyard. In the Northern Karst Area, TESS surveying linked the Manic Monday area to BAA31, Dingo Cave, originally surveyed in 1990. This became the Dingo Cave System, with a total length of 17 km.

1995

The three-person trip of Don Glasco, John Dunkley and Veronica Schumann surveyed 10 km and joined Berks Backyard to the 'The Frontyard', a new block between Berks Backyard and the Neighbours Block, showing that an underground connection between three major karst blocks was possible. Glasco commenced using the Compass Cave Survey Program, then exporting the data to ESRI GIS software to produce maps, and these procedures are still used today (Kershaw, 2005, 2012). The length of the combined system in the Central Karst Area was increased to 29 km making it Australia's longest cave. Guy Bannink presented TESS's work on the Northern Karst Area to the 20th ASF Conference (Bannink et al., 1995).

1996

Bruce Swain, Peter Bannink and John Dunkley (pers comms.) indicate that the two clubs discussed splitting the exploration areas and agreed that CSS should continue mapping and coordinating karst areas south of Limestone Gorge and TESS would continue coordinating and mapping the Northern Karst Area.

CSS resurveyed BAA35 and continued in the karst of the Neighbours Block, linking Neighbours to the Frontyard, giving a connected Bullita Cave System length of 42 km.

In the Northern karst, TESS members joined the BAA27/BAA38, Manic Monday, area to Dongo and Razzle Dazzle Caves mapped by CSS in July 1991 and 1994 respectively. The total length of the Dingo Cave System was extended to approximately 23 km in length.

Peter Bannink submitted an invertebrate and vertebrate fauna study to the PWC by which concentrated on fauna found in the Dingo Cave System (Bannink, 1996).

1997

BAA36 and BAA37 were joined to the Neighbours Block, and two separate caves, BAA96 Skeleton Key and BAA97 SWB, both located west of Berks Backyard, were located and surveyed. Mapping continued in The Frontyard Block. The total continuous survey length of the Bullita Cave System was now 54 km.

1998

In 1998, BAA97, SWB, was connected to Berks Backyard. Mapping commenced in BAA34 which was

soon connected to BAA35 just inside a new entrance named 'The Flea Circus'. Another new cave, BAA81, in the northerly reaches of the Backyard Block with a beautifully lit entrance series was found and named 'The Golden Arches'. This too, was later linked into the Backyard Block, taking the length of the Bullita Cave System to 60km. Some additional mapping was conducted in the BAA38 system of the Northern Karst Area, extending the Dingo Cave System to approximately 29 km in length.

1999

BAA34 and Berks Backyard were extended and a new but isolated cave, BAA82, a kilometre south of BAA34, was found and named 'SOGS' (Silly Old Goats) in honour of Nicholas White and Lloyd Robinson who continually walked the area. Lloyd and Nicholas also found BAA101 and named it 'The Efflux' as it was thought to drain the SOGS system. But it was not until 2003 that The Efflux was entered, mapped and confirmed to link to the rest of SOGS, as it was impossible to enter The Efflux prior to that year due to its very small entrance. The length of the Bullita Cave System was now 65 km.

2000

Work continued in the BAA34 Block and other parts of the system, and to incorporate shorter mapping days in between long walks, 'fill-in' work in the Neighbours Block occurred bringing the length to 76.5 km. For the first time a small party camped out near the Spring Creek Karst Area and visited BAA201/BAA202 Gothic Arches Cave then mapped a kilometre of cave passage in BAA207 Entrancity Cave, leaving plenty of passage to explore on future expeditions.

2001

The year of the 'Space Odyssey', and many days' work resulted in SOGS being joined to BAA34 via a new cave called 'Odyssey Cave'. Expedition members relocated an entrance, now BAA99, previously discovered by Michael Coopes with Bruce Swain in 1999 to the west of BAA35. It was named 'Mikes Cave' in honour of Michael, after his death in an accident in Switzerland. They also found a new entrance, BAA98, in what is called NW SOGS and a drain at the bottom of a multi-level (5 level) area that headed in the direction of The Efflux. More fill-in work occurred in the Neighbours Block. The Bullita Cave System now followed all of the continuous karst from north to south (a direct distance of four kilometres) and the length stood at 80.5 km.

Some further mapping was undertaken in BAA38 cave of the Northern Karst Area extending the Dingo system to approximately 34 km in length. Four additional caves were located and mapped in the Northern Karst, but they are not yet connected to the Dingo Cave System.

2002

A great deal of work was undertaken in BAA34 and NW SOGS around the drain which was connected to SOGS, taking the Bullita Cave System length to 85.8 km. Some new entrances, yielding more cave passages, were found just beyond the known extent of the BAA38 Cave in the Northern Karst Area. A return was made to BAA29 in the Southern Karst Area.

2003

The survey teams joined what had been two isolated caves, Skeleton Key and Mikes into the Bullita Cave System. The length now was very close to 93 km (Sefton 2004). A study of the geology and geomorphology of the Central Karst Area was commenced by Jacques Martini.

2004

Exploration continued to the NW of Mikes and leads were followed up in a part of the Berks Backyard Block that were previously left unsurveyed. Another 1.2 km of passage was surveyed in the SOGS Block. A new isolated cave BAA104, south of SOGS in the Central Karst Area, was found and mapped to a length of 1.3 km. The cave was named 'Wadija' by a Traditional Owner because the karst surface reminded him of the bark of the Nutwood tree that resembles the skin of a crocodile. Martini continued his study of the geology of the Central Karst Area and surrounding caves. BAA29 was again revisited and the length extended.

An important milestone in the Judbarra / Gregory Karst Region was reached on 15th July 2004 (the last day of the 2004 expedition), when Station '04100km' was constructed to celebrate achieving 100 km of continuous surveyed cave passage in the Bullita Cave System (Figure 4, Kershaw, 2005).



Figure 4: The 100 km cairn. L-R: Bruce Swain, Nick White, Jacques Martini, Mark Sefton, Deb Hunter, Bob Kershaw, Carol Redpath. [Photo: C. Redpath, 2004]

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2005

A great deal of time was spent working in the northern area of Mikes Block as well as BAA34 and SOGS and in joining new areas west of the Backyard Block into the BCS. Expedition members commenced and completed a resurvey of BAA22 and 23, at the northern extent of the Neighbours Block: the lowest numbers of the Central Karst Area which had been 'lost' since their original survey in 1993. Ken Grimes studied the surface karrenfields, and mapped four profiles across the Bullita Cave System.

During 2005, as CSS members' interest in the region waned and TESS was not functioning as a speleological society, members of the Australian Speleological Federation Inc (ASF) who had participated in previous expeditions formed the Gregory Karst Research Special Interest Group (GKRSIG) to continue the expeditions and other studies into the karst of this region. The GKRSIG was formally recognised in August 2005 by the ASF Executive to:

- Survey, explore and produce maps of the karst in Judbarra/Gregory National Park in the NT;
- Undertake geological, biological and other scientific investigations of the karst in Judbarra/Gregory National Park;
- Encourage Australian speleologists who have an interest in the karst of Judbarra/Gregory National Park to be associated with the GKRSIG;
- Encourage Rangers of the NT Parks and Wildlife Service to be involved in the scientific processes of the Group.

2006

An invertebrate study was conducted by Tim Moulds in various places of the Central Karst Area. The expedition continued mapping in BAA34 and BAA36 and a great deal of work was done in the SOGS and Wadija Cave blocks.

2007

A new area in the northern Neighbours Block was mapped, yielding 1 km of passage. Exploration and mapping in the northern SOGS Block continued. A return to the Spring Creek Karst Area was made, where mapping commenced in earnest in small isolated blocks such as BAA201 Gothic Arches, BAA204 Entrancity and BAA205 Eccentricity. For the first time, the exotic cane toads were found inside caves of the region and they have been observed on every subsequent expedition.

2008

Further exploration in the Spring Creek Karst Area was undertaken, with teams on site for the two weeks, adding several kilometres of passage to fragmented karst blocks in Entrancity and Lost in Space (Figure 3). Cavers finally linked BAA32 and BAA33 into the BAA34 Block of the Bullita Cave System. Mapping continued in the

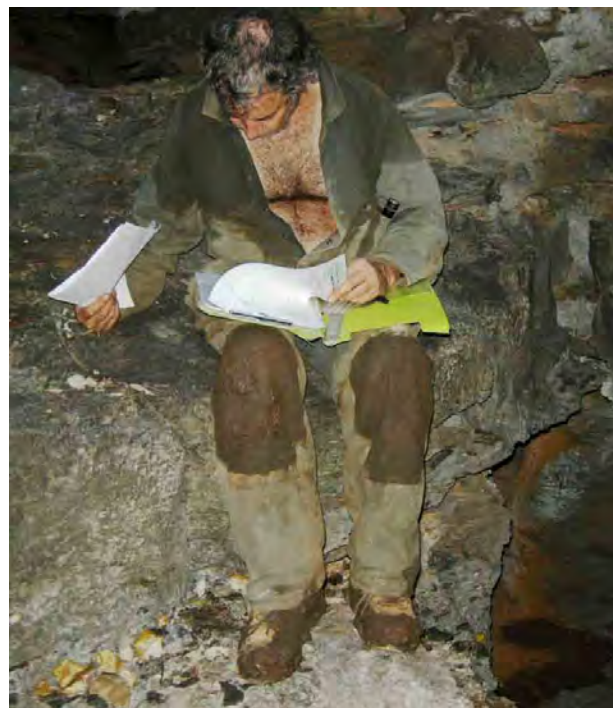
Mikes Block to join up previous surveys. Fill-in work continued in the north of the Frontyard Block. In the Southern Karst Area, members relocated the western entrance, BAA11, of Two-Fishes Cave and a new cave BAA109 was found between Two Fishes and BAA29. Also, BAA22 and BAA23 were linked by a surface survey along the southern cliff line of Limestone Gorge to BAA37 of the Neighbours Block but it was decided that there is no underground connection to the main BCS.

2009

In the Southern Karst Area, mapping of the relocated BAA30 cave and to the east of BAA29 commenced and followed cave passages to the east and south east. Continued investigation in the Spring Creek Karst Area yielded more cave passage in the isolated karst blocks bringing the total length to 13.7km. A major project in this year was to start an accurate survey traverse in the Neighbours and SOGS Blocks, with forward and backward instrument readings being taken, to assist in rectifying previous survey anomalies. An extension westwards in the Neighbours Block added several hundred metres to this complex area and more mapping was undertaken in Mikes Cave.

2010

Further work continued in the Spring Creek Karst Area, increasing the surveyed length of the isolated blocks to 19.5km. The resurveying of the traverse in Neighbours was completed and resolved most of the previous anomalies in that block. Further examination of the areas near the junctions between the the Frontyard and Neighbours and the Frontyard and the Backyard yielded many more passages.



Is this where we can break through?

Verifying the Neighbours-Frontyard connection in 2010
[Photo: D. Hunter]

In the Southern Karst Area, the area east of BAA29, now tagged BAA108, was extended westward and should eventually join with BAA29. During 2010, many duplicated survey legs not previously noticed in the Compass program were uncovered using the ESRI ARCGIS software (Kershaw 2012) bringing the length of the Bullita Cave System to 119.2 km of continuously surveyed passage.

2011

Increased effort was directed at the Southern Karst Area and 2.5 km of passage was surveyed within isolated caves, and the major cave BAA130, named 'Atlantis Cave' after the last space shuttle flight, yielded an additional 2.5 km of passage. A traverse in the SOGS Block from north to south and east to west was continued and has shown up further mapping issues that need to be corrected using the computer software programs. A further 2.5 km of new passage was surveyed in the Bullita Cave System in the BAA34 Block, taking the BCS to 122 km. The Spring Creek Karst Area team added over 7.7 km of new passage in new blocks of BAA227 (Faulty Towers) and BAA224 (Mostly Harmless) and the other isolated blocks to bring the total to over 27 km of surveyed passage in that area.

CONCLUSIONS AND THE FUTURE

Over twenty years of cave exploration and mapping has resulted in a total of 122 km of surveyed passage length in the Bullita Cave System, making it the longest cave in Australia, and the 15th in the world at the time of writing (<http://www.caverbob.com/wlong.htm>). The Dingo Cave System (Northern Karst Area) has 34 km of surveyed passage with potential for extensions to its north and would be ranked approximately 100th in the world today. In total, almost 220 km of cave passage has been mapped in the Judbarra / Gregory Karst Region as a whole since 1990.

Exploration and mapping in the main Central Karst Area is now slowing and future work will focus on adding local detail. A large block of karrenfield west of the Golden Arches is still largely unmapped and may have the potential to contain more cave passage, although this will probably never be connected to the Bullita Cave System. Future exploration will focus on isolated karst blocks in the Far North, Southern and Spring Creek Areas but access to the Far North is limited as some areas are held sacred by Traditional Owners. In the Far South a new block has been located on aerial photography. The potential for finding caves there has been verified by the NT Parks and Wildlife staff doing aerial survey work in 2010, and the block could yield 1 to 2 km of cave passage.

From current exploration and mapping it appears that the distribution of caves in the region is limited to major outcrops of the Supplejack Member of the Skull Creek Formation (as discussed by Martini & Grimes, 2012).

The geological reports and preliminary inspection of satellite imagery suggests that most of the Supplejack outside the karst region shown in Figure 1 has been weakly dolomitised with poor surface karst expression and little potential for cave development. The *Gregory (Jutpurra) National Park and Gregorys Tree Historical Reserve Draft Joint Management Plan* (Parks & Wildlife Service, 2010) encourages further speleological research in the park but the research must be endorsed by the Joint Management Committee.

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