It is now over twelve months since FOMS was established as part of the Friends network of DEH and membership has grown over this first year to an encouraging 31. An additional 20 people, a number of whom are interstate professionals and academics with an interest in springs, are included in the FOMS communication network.

 Appropriately enough, the first anniversary of FOMS, 29 June 2007, was celebrated in the heart of the mound springs country in the course of FOMS first field trip. As reported elsewhere in this Newsletter by our Secretary Simon Lewis, the trip was a great success and there can be no doubt that there will be many more to come. Those fortunate enough to be part of the party enjoyed superb weather, many interesting exchanges of information and the companionship of a high spirited group of individuals, as attested by Anne Pye’s irreverent diary of the trip, also appearing elsewhere in this Newsletter.

 Apart from being most interesting and enjoyable, the trip highlighted a number of the gaps in our understanding of spring behaviour and management. In particular, whilst many of the springs visited are still flowing strongly with no evidence of any recent decline, others have declined recently and quite rapidly, for no apparent reason. Additionally, the continuing vigorous growth of Phragmites and Typha reeds in a number of the spring exclosures stimulated much discussion on the vexed issue of spring management and whether there is a need for intervention in the form of fire or controlled grazing. Tourism pressures were generally confined to the better known and more accessible springs, but in the wake of the field trip FOMS is following up a number of management issues with DEH.

 The work funded by the National Water Initiative and reported in the previous FOMS Newsletter should improve our understanding of spring hydrology and provide some pointers to better spring management generally, but the trip confirmed that there is a clear role for FOMS. In addition to disseminating information and maintaining a watching brief on the springs, there are many on-ground tasks – some relatively simple, others more complex – that will provide a focus for FOMS field trips for some time to come.

 Best wishes,

 Colin Harris
 President, Friends of Mound Springs
Sunday 24th June

A 3pm rendezvous at Roxby Downs for John & Leigh Childs, Sue Black, Bruce & Sherrie Gotch, Ann Gorton, Colin Harris & Elaine Smyth, Dean Harris, Simon Lewis, Rick Moore, Anne Pye, and Doug Smith & Heather Woods. Unfortunately Travis Gotch was unable to join the group for a few days because of damage to his work vehicle. The remainder of the party headed up the Borefield Road to a very satisfactory camp-site on the Gregory Creek, near the sign to New Year Gift Bore 2. We were fortunate to be joined at the camp-site by Bobby Hunter, manager of Stuart Creek station.

Monday 25th June

We met up with Justin Costelloe and colleagues from the University of Melbourne at the Borefield Road / Oodnadatta Track intersection. We also met with Reg Dodd (from the Arabunna community at Marree) who was accompanied by a group of Melbourne lawyers who are assisting the Arabunna people in their efforts to have heritage listing applied to Finniss Springs. Reg led the enlarged group in a guided tour of several points of interest on Finniss Springs. These included Finniss Spring ruins; several springs at Hermit Hill with their tall reed (Phragmites) communities; springs at West Finniss, where the group noted the very rare and isolated pipewort, *Eriocaulon carsonii* and attractive cutting grass *Gahnia trifida* (noteworthy as a disjunct species to that which occurs hundreds of kilometres to the south); and Bopeechee Spring, a spring that virtually ceased to flow as an apparent result of water extraction from Borefield A for the Olympic Dam mine, but which was “revived” through injection of bore water around the periphery of the spring to re-establish sufficient pressure to reinstate a flow. The FOMS group then headed north-west up the Oodnadatta Track. We had a brief stop at Curdimurka before venturing on to the Coward Springs Campground run by Greg Emmett and Prue Coulls where we camped for the next two nights.

Tuesday 26th June

Some of the group inspected a few of the springs in the northern section of Wabma Kadarbu Mound Springs Conservation Park – specifically Elizabeth Springs and Jersey Spring. For some, the Elizabeth Springs were one of the highlights of the trip – the springs were in fine fettle and the weather was superb. Before lunch, most of the party then ventured out to Coward Spring. This is a spring where reeds (Phragmites) have steadily encroached down the tail of the spring, displacing the bore sedge *Cyperus laevigatus*, following fencing in the mid 1990s. After lunch, the group had a look at Blanche Cup and The Bubbler. At Blanche Cup we discussed the impact of visitors trampling *C. laevigatus* around the open pool. A low board-walk or low protective fencing were two options suggested to deal with this. We then split into two parties. One group ventured to springs in the south of Wabma Kadarbu (Horse, Buttecup, and the Mt Hamilton ruins), while the other group drove into Emerald Spring. At Emerald, a search for a cone of stones, thought by Rick to be nearby, was not successful. Bobby Hunter also rejoined us and regaled the group with his memories of Coward Springs when it operated as a railway siding complete with pub.
Wednesday 27th June

We proceeded to Strangways Springs with its ruins of the Overland Telegraph repeater station. The group had a short ramble around the ruins and some of the ~450 springs at Strangways (of which, according to Travis, about 50% are active). Then on to William Creek for lunch, refuelling and a chance to check out the bar of the William Creek Hotel. After lunch we carried on up the Oodnadatta Track to Warrina Siding where Colin, under Elaine’s careful supervision, gave the Royal Geographical Society’s plaque a good going over. Doug finished the job with a rinse and a scrub with a washing-up brush. With the afternoon flying by, we decided on a quick trip into the ruins of the Old Peake repeater station. This proved to be a good decision as the ruins were splendid in the late afternoon sun. Bruce then led us to a magnificent spring nearby – clearly the pick of the Freeeling Springs. A wonderful sight with a large expanse of open water with some black swans in residence. We then returned to our pre-selected campsite on the Old Peake Public Access Route.

Thursday 28th June

Another fine day as we proceeded to the new Peake homestead where we caught up with Adam, the acting manager for Kidmans. Then down the station track to Milne Spring - with its bore, natural spring and impressive rock formations - and on to Levi Springs where the adjacent rock formations contain Aboriginal circular etchings or petroglyphs. After Levi we drove on to Spring Hill, where Rick led us to one of Stuart’s cones of stones at the top of the Hill – an impressive sight. The convoy then journeyed onto Tarlton Springs, where we also met up with Travis as well as Bruce and Sherrie (who had kindly taken Ann Gorton down to William Creek that morning). Tarlton confirmed our concerns from previous inspections – the *Typha* springs were essentially ex-springs with the *Typha* (bullrushes) dead and just a little of the sedge *Cyperus gymnocaulus* hanging on. We were interested to note, however, an active spring in the bed of Hope Creek outside of the fenced area (possibly Stuart’s “Spring of Hope”). That evening we camped at a very good site on Bulldog Creek.

Friday 29th June

Adam of the Peake Station joined the group at Outside Spring and we spent the first part of the day looking at springs nearby which had been fenced off in the 1980s. Kelli-Jo Kovac and Reece Pedler from BHP Billiton also joined us for the day. The four springs were Outside Spring showing extensive growth of *Phragmites* within the fenced area with little change since last inspection (2005), although the adjoining unfenced spring has an increased proportion of *Typha*; Twelve Mile Spring with extensive *Phragmites* with some *Typha* at top vent and a recently established area (~2 square metres) of Typha on edge of *Phragmites* near the top of Vent #3 (*Phragmites* has spread considerably at the top of the mound since the last inspection.); The Fountain which is a *Phragmites* dominated spring with little apparent change since the last inspection; and Big Perry where the *Phragmites* and *Typha* exhibited little change. With light rain developing, we drove on to George’s Creek for lunch and combined this with a walk over to the Old Umbum Station ruins. Then on to Louden Spring, once one of Stuart’s favoured camp-sites, now extinct. The group arrived at the campsite on the Douglas River in plenty of time to prepare for a camp oven extravaganza prepared by Travis, with pre-dinner nibbles laid on by Kelli-Jo courtesy of BHP.

Saturday 30th June

With final farewells, the group dispersed, some heading for home and others continuing to enjoy the region for another day or two. The week had been a resounding success: good company, great weather and plenty of interesting locations.
Is Tarlton Spring Stuarts ‘Spring of Hope’?

Explorers and pioneers are usually the people who name things in the European fashion, and those original names usually persist. However, in the Mound Springs country, that may not always be the case. The explorer John McDouall Stuart discovered many springs in his visits to this region while surveying and seeking out country suitable for grazing. On Monday May 30th 1859, he came upon:

“a beautiful spring in the bed of the creek, for which I am truly thankful. I have named this “The Spring of Hope.” It is a little brackish, not from salt, but soda, and runs a good stream of water. I have lived upon far worse than this: to me it is of the utmost importance, and keeps my retreat open. I can go from here to Adelaide at any time of the year, and in any season. Camped for the rest of the day. Lat., 28 degrees 33 minutes 34 seconds.”

However, there are no springs known today by the name Spring of Hope. They were obviously significant finds in Stuart’s opinion. So the obvious question is – just where are they? On the recent FOMS field trip, the group visited Tarlton Springs, which is protected by a fence, providing an enclosure zone. These springs are located at the foot of the Davenport Range, north of William Creek in S.A. The absence of spring activity and the death of vegetation around the five vents inside the enclosure suggests that we have witnessed the ‘death’ of the five springs inside the enclosure. Also inside the exclusion zone are remnants of a stone building; possibly a stockman’s hut on the original Mt Margaret run. There is one viable spring about 400 metres to the south, and it appears to be heavily utilised by native and feral animal species.

Here-in lies the value of field work. By noting from topographical maps that Tarlton Spring is on Hope Creek; by obtaining GPS observations which demonstrate that Tarlton Springs is at the same longitude & latitude as the Spring of Hope; and by matching Stuart’s other observations, there is a strong possibility that they are the same place. However, on our FOMS visit, there was one other clue that we sought to verify. Stuart’s journal records that he “built a small cone of stones on a reef of rocks that runs along the top of a hill about half a mile west-north-west from the spring, to which it will act as a landmark.”

A search on foot was not able to find the cone of stones, but this is not unexpected. FOMS member Rick Moore has located many of Stuart’s ‘Cones of Stones’ in recent years, (in 2004 he presented the Royal Geographical Society’s annual Brock Lecture, entitled ‘Cones of Stone’) and says that some of these would have been very low and easily disturbed by livestock over the last 145 years.

So, is Stuart’s Spring of Hope nowadays called Tarlton Spring? – very likely. If so, how did the name change come about? Ah, the small unsolved mysteries that make field work all the more interesting & challenging!

Photos & Written by Rick Moore

Hot Rocks Heat Up

Geothermal energy seems to be the next big resource of the GAB. Geothermal electricity is generated by using the naturally occurring heat of bodies of granite 3 km or more below the Earths surface which are heated to about 250ºC. This heat is trapped by overlying rocks and sediment which act as an insulating blanket. The heat or energy is extracted by circulating the superheated water which surrounds the rocks in a highly pressurised bath, in an engineered artificial reservoir or underground heat exchanger. The success of a geothermal project near Innamincka has resulted in a race for exploration licenses. By November 2006 15 companies were exploring for hot rocks in 4 states using 106 exploration licences. Consequently state and territory governments are looking to amend their mining legislation to allow such exploration licenses; and in Victoria and Queensland competitive tenders have been put out for geothermal exploration in designated areas. In August drilling started at Innamincka and that company hopes to prove the system works within the next 12 months.
Introduction to some springs

**Big Perry**

Big Perry comprises a large mound with two main vents plus a third, more minor one. At the time of fencing, it had one main vent at the top of the mound. *Phragmites* predominated at this vent and down part of the tail, then grading into bulrush (*Typha angustifolia*) which in turn gradated into an area of *Cyperus gymnocaules*. In 1991, a second major vent “broke out” of the mound. *Typha* rapidly established with some fringing *C. gymnocaules* and *Typha* now dominates the vent and tail of this outlet. The mixed occurrence of *Typha* and *Phragmites* at Big Perry is of interest. Whether it reflects differences in flow and/or water chemistry between the two main vents or just a random establishment pattern, is unclear. **Big Perry is of particular importance because of its invertebrate fauna.** Its recorded hydrobdi fauna includes *Fonscochlea zeidleri* and *F aquatica* (both widespread), the less widespread *Trochidobria smithii* and the very restricted *Fonscochlea expansolabura* and *Trochidobria minuta*. **Rabbits are present at Big Perry, but do not appear to be having major impact (but see above comment re The Bubbler).** There has been a major increase in the growth of *Phragmites, Typha* and *C gymnocaules* since fencing of Big Perry.

**The Fountain**

The Fountain comprises one spring outlet in a lime-stone mound. The vent comprises a shallow pool, approximately 12m in diameter, with a small to moderate flow into a channel that extends beyond the fenced area. At the time of fencing, the wetland vegetation at the Fountain largely comprised *C laevigatus*, with sparse *Phragmites*. The pool contained some open water, with *C laevigatus* predominant down the tail and with some clumps of *C gymnocaules*. As with Big Perry, the Fountain is recorded as having significant hydrobdi fauna. Its recorded hydrobdi fauna includes *Fonscochlea zeidleri* and *F aquatica* (both widespread), the less widespread *Trochidobria smithii* and the very restricted *Fonscochlea expansolabura* and *Trochidobria minuta*. Following fencing, the main noteworthy trend has been the proliferation of *Phragmites* at the spring vent, to the extend that *Phragmites* up to about 3m high now dominates the entire pool. It has been noted that the *Phragmites* in the centre of the pool occasionally dies off and collapses in on itself, with a new generation of *Phragmites* then pushing through. A small area of *Phragmites* (around 10 square metres) has also established in the channel near the point where the channel exits the fence.

A noteworthy episode in 1990/91 was the incursion of approximately 10 cattle into the fenced area. The cattle found their way in through the fence (at the channel exit point) and were then unable to get out. The entire area was grazed down to bare earth and the cattle then perished. Since then, bayonet gates have been established at all relevant springs and the fencing at water exit points has been strengthened. No further such problems have occurred apart from minor issues at Old Nilpinna and Tarlton. The Fountain has bounced back since this episode, with rapid recovery of the vegetation, and re-establishment of the *Phragmites* dominance.

**FRIENDS OF MOUND SPRINGS**
Twelve Mile Spring

Twelve Mile Spring comprises approximately eight vents on a large, silty, gypseous mound. Its wetland vegetation comprises a mix of mainly *Phragmites*, *Cyperus gymnocaules* and *Typha*. It is of interest that the top, now almost inactive, vent comprises about 25 square metres of *Typha*. At the other vents, *Phragmites* is predominant, along with some *C. gymnocaules*. The grass, *Sporobolus virginicus*, often associated with GAB springs, is common at Twelve Mile. Twelve Mile Spring is recorded as having the same hydrobiid fauna as Big Perry, the Fountain and Outside Springs: that is, *Fonscochlea zeidleri* and *F aquatica* (both widespread), the less widespread *Trochidrobia smithii* and the very restricted *F expandolabra* and *T minuta*. Following fencing of Twelve Mile Spring, there has been a substantial increase in plant biomass, particularly of *Phragmites*, *Sporobolus* and *C. gymnocaules*. After some initial growth following fencing, the *Typha* at the top of vent 1 has waned slightly. At the same time the distribution of *Phragmites* on the outflow of vent 1 has increased substantially, particularly since the late 1990s. Vegetation changes at vent 3 are also of interest. Following fencing, *C gymnocaulos* was predominant at the vent and approximately 30 metres down the spring tail, with *Phragmites* in the lower tail area. Over the years, *Phragmites* has steadily migrated up the tail. In the 2005 survey, *Phragmites* dominated the entire spring and spring tail.

Outside Spring

Outside Spring comprises four widely spaced low mounds over a local basin of several hectares. One of these springs has been partially fenced to include the vent and approximately 100m of the tail. Another unfenced outlet and tail is immediately alongside the fenced area. Outside Spring has significant hydrobiid fauna, including *Fonscochlea zeidleri* and *F aquatica* (both widespread), the less widespread *Trochidrobia smithii* and the very restricted *F expandolabra* and *T minuta*. The spring includes two fish species, the desert goby and the introduced mosquito fish. Prior to fencing, Outside Spring had *C. laevigatus* as the main wetland species, with some *Phragmites* and *Typha* present. Since fencing, the spring has become completely dominated by *Phragmites* to a height of about four metres. *Typha* was eliminated from the fenced area by mid 1994. In some contrast, the unfenced spring immediately alongside has mixed *Phragmites*, *Typha*, *C. laevigatus* and *C gymnocaules*, with an increase in the distribution of *Typha* in recent years. The height and condition of this vegetation has waxed and waned according to seasonal conditions (i.e., according to fluctuations in cattle pressure). The *Phragmites* and *Typha* are generally kept to a metre or less in height.

Tarlton Spring

Tarlton Spring comprises a series of vents along the eastern base of Mt Margaret. The fenced area contains five main vents. There is a suspicion that these outlets are seepages from the nearby range rather than being outlets from the Great Artesian Basin, but the actual situation is yet to be conclusively demonstrated. At the time of fencing, the vents comprised a small area of *Phragmites* at the spring outlet, with small flows down tails where *C. laevigatus* was predominant. *C gymnocaules* was also present along with the introduced *Spergularia rubra*. Following fencing in 1988, the distribution and biomass of *Typha* increased substantially, to the extent that *Typha* dominated all vents by 1994-95, with *C laevigatus* almost eliminated and *C gymnocaules* much reduced. This necessitated relocation of photopoints that had become overgrown with *Typha*. Since the late 1990s, there has been a steady decline in the condition of the *Typha*, accompanied by a reduction in the spring flows. At the most recent observation during the recent FOMS trip, the *Typha* had died off. There was no noticeable spring flows and the substrate supporting the *Typha* was almost dry. Tarlton Spring is not recorded as having any fauna of particular significance.

Simon Lewis & Colin Harris
Federal Protection for the GAB Springs and the EPBCA Recovery Plan

In April 2001 the community of native species dependent upon the natural discharge of groundwater from the GAB springs was listed as ‘endangered’ under Commonwealth legislation the Environment and Biodiversity Protection Act 1999. Also listed under the Act are individual threatened and migratory species, wetlands and those areas of Commonwealth land present in the GAB region.

It was considered that the effects of water extraction, the extinction and decline in water flow of remaining springs, the limited geographical distribution of the dependent ecosystems, and the threats posed by trampling and grazing of livestock and feral species, tourism pressures, as well as the introduction of exotic pasture and aquatic animals all threatened the continued existence of such communities. The listed community is characterised by combinations of native species that are not necessarily restricted to the GAB, as well as endemic species present at only one or more GAB spring. It is noted in the listing that not every species of the ecological community will be present at every spring.

The GAB springs and their dependent ecosystems are also listed as endangered under the National Parks and Wildlife Act 1972 (SA). The listing under the EPBCA sets up a triggering mechanism for an environmental impact assessment and approval requirement of actions considered likely to have a significant impact on the threatened community, and therefore upon the springs. Division 5 of Part 13 of the Commonwealth Act also sets out the requirement for the development of a Recovery Plan.

The Recovery Plan for the GAB springs was drafted in 2005 by Rod Fenaham and Russell Fairfax of the Qld Herbarium and was still listed in May 2007 as under review. It applies not only to Qld but to all of the GAB springs. It calls for further surveying of individual springs, collection and classification of data, as well as referring to the preparation of seven individual recovery plans for three fish and four plant species listed individually under the EPBCA. Controlling flow from strategic bores and new groundwater allocations is recommended. Improved hydrogeological knowledge of the relationship between aquifers and springs is sought. Ongoing monitoring of spring flows and endemic populations is incorporated into the Plan.

One of the key strategies to be adopted will be in the use of perpetual conservation agreements with landholders which include financial incentives for active management. The main threats to the springs can be addressed by such agreements include the cessation of excavation near springs (i.e. dredging for dams or other attempts to pond the flow), the end to exotic ponded pasture (i.e. floodplain stock fodder effects from free flowing groundwater) which are particularly problematic in Qld, and the end to groundwater extraction where it has the potential to impact or compromise the natural value of the springs. Other recommended actions include encouraging participation in the GABSI scheme. Controlling exotic introductions, facilitating the growth of endemic populations and raising awareness of the importance of GAB springs is also given priority. The Plan once implemented will be reviewed every 5 years. Hopefully the Recovery Plan will soon be adopted by the Federal Minister.

The Other Diary

Day 1: Everybody is still polite. This won’t last. Bobby Hunter shows with meat. He thought Rick and Dean might have undercatered. Day 2: Dean is already relaxed. He is seen holding a coldie at 10am. It won’t be the last time. Meeting with Reg Dodd goes well. His Melbourne fan club hover nearby hanging on every word. Justin and Menash crew excited comment about the size of their truck. It must be to do with bringing beer bottles instead of cans because all its occupants express regretful sighs about the lack of a good fridge and hence meat for their trip. At least there is enough room for firewood. Day 3: Sherrie decided nobody should win the book being run on when she was going to spit the dummy. Ratzinger calls her & Bruce on the sat phone to officially appoint them Saints, saying manna will arrive later. Day 4: Simon makes loud mental note never to camp within 500m of the campfire and Fearless Leader is silent for the only time on the trip. Day 5: Rick asks curly historical question around the campfire and Fearless Leader is silent for the only time on the trip. Day 4: Simon asks curly historical question around the campfire and Fearless Leader is silent for the only time on the trip. Day 5: Rick asks curly historical question around the campfire and Fearless Leader is silent for the only time on the trip. Day 4: Simon made loud mental note never to camp within 500m of Anarchist Anne’s tent. Snoring at those decibels is apparently not conducive to his slumber. Peasum keeps walking away from the group. Officially it is to look at birds and take photos. Really it must be to scream curses about lack of fruit since she is never heard to make noise near the group. Rick takes 100+ photo of cairn. Don’t know why since his car seems full of a never ending supply. Day 5: Fearless Leader is temporarily out of sorts when he can’t find the lint brush for his overalls. Leigh and Elaine still apparently scared of being left behind because they keep wearing red so they are easily spotted — Elaine with somewhat more reason given the spatial memory difficulties associated with her vehicle. Dean doesn’t understand why we have to drive to see old UmBum when he is already present. Heather is clearly concerned that Doug will forget to reconnect the trailer the next time he leaves it on the side of the road and refuses to leave it once she is inside. Day 6: Simon is seen to sprint into the distance over dunes without seeming to touch the ground with his feet. We must really be starting to smell… Kelli-jo arrives with a young lad so poorly paid that he can’t afford a jumper. John demonstrates clear prowess with the axe — again!! Didn’t think the group was that exasperating. Travis cooks so much meat he has to camp by the fire to keep the dingoes away. We are not sure whether he intends to fight them barehanded or scare them away with the sight of his naked chest. Day 7: The end.
Friends of Mound Springs

IF YOU WISH TO **REMAIN** A MEMBER OF FOMS or become a member, please send $10 together with your name, phone number, postal and email addresses to Tony Latz, Treasurer of FOMS, 10 Waratah Way, Stonyfell SA 5066. Membership runs with the financial year.

**SUBSCRIPTIONS NOW DUE!!!**

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**Waterbodies near Lake Eyre**