

TASMANIAN CAVES AND KARST

– LOOKING FORWARD, LOOKING BACK

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PHOTO: GARY K. SMITH

The 49m bottom pitch in Midnight Hole.

Since the last Tasmanian ASF conference in 1993 we have greatly expanded the known boundaries of Tasmanian caves and karst in space, time and in our knowledge of how karst systems operate. Rather than focussing especially on caves, mapping of karst hydrological systems has greatly expanded the relevance of karst processes to land management in areas where few accessible caves are found.

Over 300 areas of potentially karstic carbonate rocks have now been mapped in Tasmania, some within the last ten years. Perhaps half of these contain significant cave systems. Weathering caves in sandstone and other sedimentary rocks, sea caves, seasonal snow caves and boulder caves in hillslope deposits are widespread.

Perhaps the most intriguing of these non-karst systems are found in extensive dolerite talus deposits where large closed depressions, underground stream systems, boulder caves

and major springs comprise rare examples of well developed pseudokarst in non-carbonate rocks.

The diversity of Tasmanian cave biota has long been recognised, with many rare species now listed on State threatened species legislation. New species and communities are being constantly identified and described. However Tasmanian karst workers are keen for this recognition of biodiversity to be complemented by an equally strong commitment to proper management of karst geodiversity – the full range of abiotic processes and features found in karst. Reserve categories declared under the *Nature Conservation Act 2002* all contain reference to the State's commitment to the protection of geodiversity along with biodiversity. However, legislation specific to geodiversity across all tenures and similar to that used to protect rare and threatened biological communities and species, is still not currently under consideration. Formal

protection of geodiversity is only possible on land reserved under the *Nature Conservation Act*. Yet, as can be plainly seen in caves and karst, many of the most fragile and non renewable elements of karst systems are abiotic and are found within a variety of land tenures.

Research is constantly expanding the boundaries of our understanding of the development of karst ecosystems. Much can be applied to landscapes surrounding karst. Recent PhDs addressing climatic and environmental history (using high resolution mass spectrometry to date and analyse environmental isotopes in speleothems) have relevance far beyond the boundaries of karst systems themselves. Subjects as wide-ranging as temperature and bushfire histories interpreted through analysis of straw stalactites, to interpretation of changing climatic patterns since the last glacial stage from flowstone cores have all been studied over recent years, using Tasmanian cave deposits. Original research into the nature of microbiotic processes in Tasmanian caves has recently been completed by local microbiologists.

Tasmanian cavers and karst scientists are beginning to work with the Aboriginal community to try and slowly unravel the cultural and environmental history of the island. The Southwest is a patchwork of landscapes whose vegetation distributions have been essentially controlled by fire. Much

of the Southwest, particularly the buttongrass sedgelands and the major river valleys which formed communication routes, are largely cultural landscapes which were likely to have been maintained by Aboriginal fires. On the other hand, areas such as the New River basin, where fire has been excluded for many hundreds of years at least, form invaluable reference points for essentially natural systems. Karst systems are found throughout these areas and the knowledge contained within them will be invaluable in developing a new perspective on Tasmanian landscape history, integrating science with traditional practices.

Many Tasmanian karst areas form the basis of a complex mix of rural industries. Intensive agriculture, forestry, limestone mining, tourism and urban uses are carried out in the context of the vagaries of karst processes. Managing these highly productive lands in a way which conserves the integrity of the natural processes which underpin them will rely on developing an excellent knowledge base along with careful discussion and negotiation between all of those with an interest in using and caring for karst.

The Australian Speleological Federation will continue to play an important role in providing advice in all of these areas and in the active collection and documentation of factual information on which wise management will be based. ■