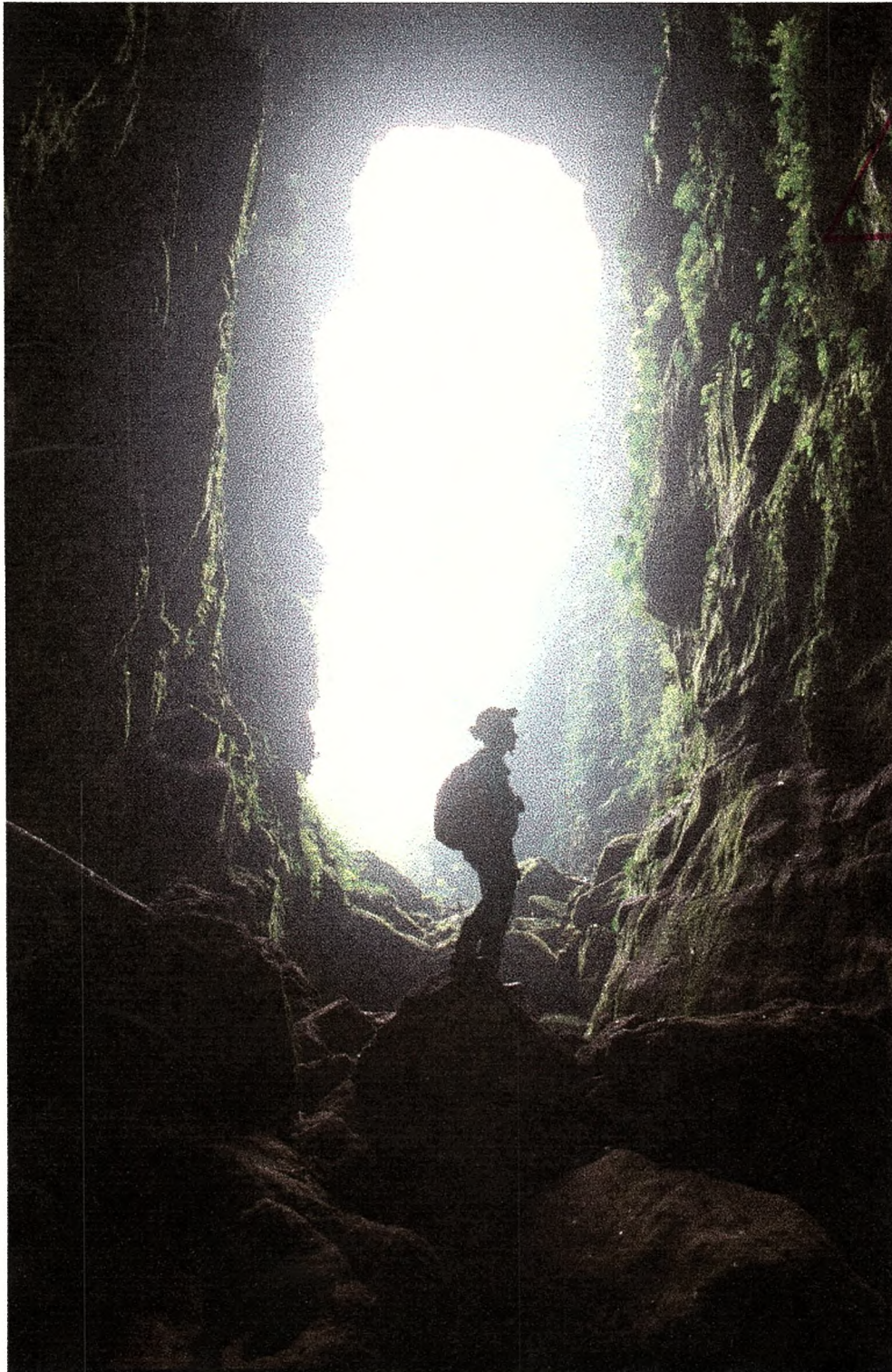


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Caving in the Abode of the Clouds – 2003



Entrance, Songitcham Kol, Borsora – Photo Simon Brooks

**Report of the 2003 Caving in the Abode of the Clouds
Project Expedition to Meghalaya, North East India.**

Report
of the
2003
Caving in the Abode of the Clouds Project
Expedition
to
Meghalaya, North East India

Edited by S. J. Brooks and H.D. Gebauer

Caving in the Abode of the Clouds Project

Caving in the Abode of the Clouds Expedition, Meghalaya, N.E.India 2003

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Caving in the Abode of the Clouds Project

Caving in the Abode of the Clouds Expedition, Meghalaya, NE India 2003

1. ACKNOWLEDGEMENTS

Since its inception in 1992 the Caving in the Abode of the Clouds Project has built up many strong links with individuals and organisations in North East India. The Caving in the Abode of the Clouds 2003 Expedition, as in the expeditions that preceded it worked in close collaboration the following; Brian Kharpran Daly and Donbok Syiemlieh and the Shillong based Meghalaya Adventurers Association, the State and Regional Tourist Departments, Meghalaya Government Agencies, Meghalaya Police and local people. The Expedition is once again greatly indebted to them for their continued support and assistance. Thanks are also due to the Ghar Parau Foundation and the Mount Everest Foundation for their generous financial support.

2. INTRODUCTION

Meghalaya has been of interest to the caving fraternity for many years because it was known that there were extensive deposits of limestone, a depth potential of up to 350 metres and a hot monsoon climate with the world record for precipitation: 26,461 mm/year 11,873 mm/year. To the caver, this is all in all a delightful mix.

3. HISTORY

The North East frontier of India has long been an enigma and constitutes one of the most picturesque and colourful parts of India. It is characterised by a backward economy, tenuous communication and difficult terrain. To the north are the Himalaya of Tibet, Bhutan and China, to the east the Arakan Yoma and Patkoi ranges of Myanmar (ex-Burma) while the plains of Bangladesh lie to the south.

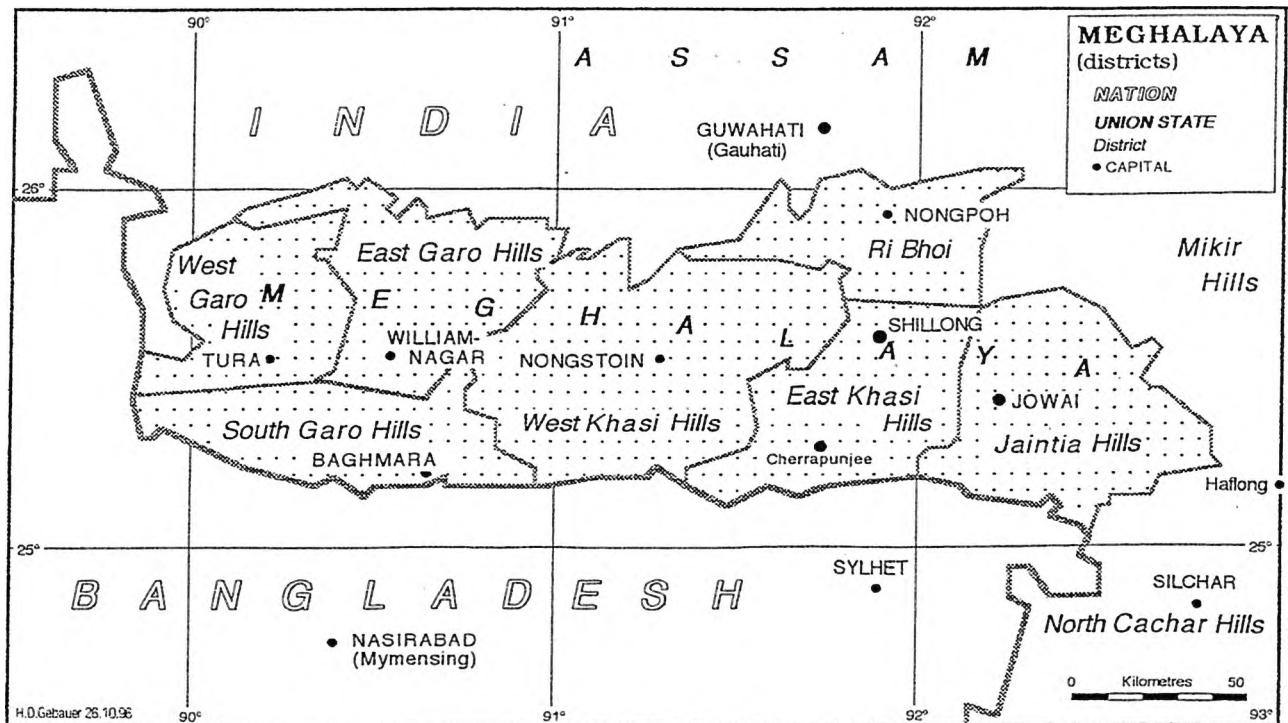
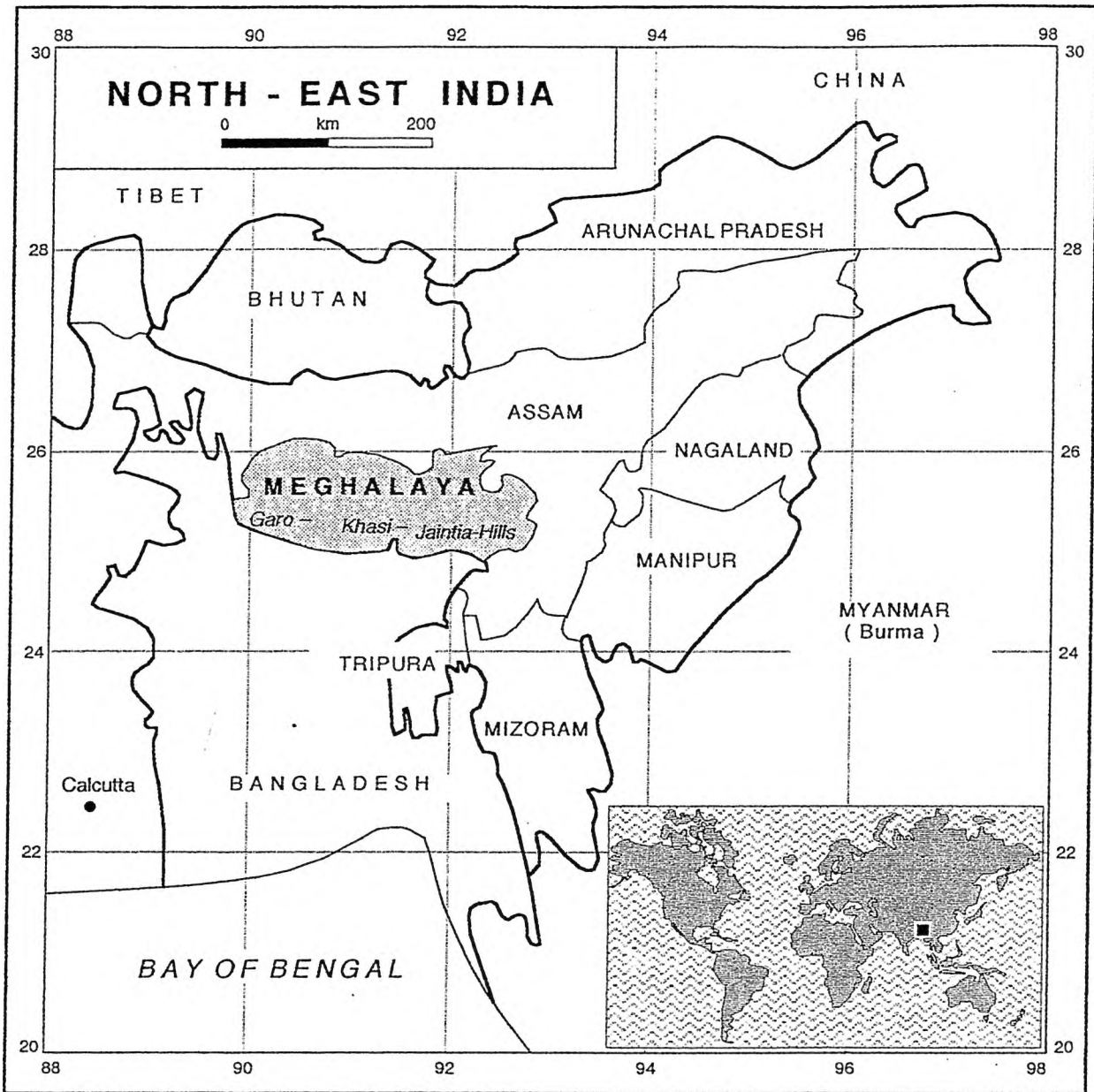
Meghalaya has a extensive oral tribal history but was brought under the sovereignty of the British during the 19th century. Prior to independence in 1947 the entire North East of India was known as the Assam Province. Independence led to a series of changes in the Province with ultimately the formation of seven Indian Union States namely; Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. The North East of India is connected to the geographically and culturally foreign "Fatherland India" by the Siliguri corridor. Into this 20 kilometre wide strip of land are squeezed the road and rail communications. Prior to independence the usual route into the North East was through East Bengal, present day Bangladesh. Free access to the area has been restricted for foreigners since the Wars of Partition and even today it is preferred that foreigners access the area by flying into Gauhati in Assam.

4. GEOGRAPHY

The State of Meghalaya lies between 25.47 degrees 25.00 degrees to 26.15 degrees 26.25 degrees of latitude north and between 89.45 degrees 89.75 degrees to 97.47 degrees 97.78 degrees of longitude east. It extends for about 300 kilometres in length from west to east and about 100 kilometres in width from north to south covering an area of almost 22,500 square kilometres. The total population of the State was, according to the 1981 census, 1,335,819 1971 census, 1,011,699 which had risen steeply to 1,760,626 1,774,778 by the 1991 census, a population density of approximately 80 people per square kilometre.

Meghalaya became an autonomous state of Assam in 1970 and was declared a full fledged state on January 21st 1972, the 21st State of India. It has at present seven administrative districts: West Garo Hills (capital Tura), East Garo Hills Williamnagar), South Garo Hills(Baghmara), West Khasi Hills (Nongstoin), East Khasi Hills (Shillong), Ri Bhoi(Nongpoh) and Jaintia Hills (Jowai).

The plateau of the Meghalaya - Mikir region stands as a watershed between the Surma valley of Bangladesh in the south and the Brahmaputra valley in the north, and is dissected by several rivers and a network of tributaries. Several rivers drain Meghalaya but none of them are navigable. The Brahmaputra River makes a sweeping curve around Meghalaya to the north, on the Assamese plains, and west, in Rajshahi, as it flows



southwards towards Bangladesh. In the Khasi and Jaintia Hills the Khri, Umtrew, Umiam, the Umkhen and the Kopili flow northwards and the Kynshi, Umiam Mawphlang and the Umngot drain to the south. In the Garo Hills the Manda, Damring and the Janjiram flow to the north and the Simsang (or Someswari, Someshwari), Rongra, Mahadeo and Maheshkhola drain southwards to the Bangladesh plains. In the terrain of the sedimentary rocks, the drainage pattern reveals tectonic structures by following extraordinary straight courses. The magnificent and world class gorges scooped out from the southern margin of the plateau are thought to result from massive headward erosion by antecedent streams.

Most of Meghalaya is covered by the geological unit called Shillong Plateau, a continuation of the Rajmahal Range in Bihar, from which it is separated, by the Brahmaputra trough (and valley) in West Bengal. The Shillong Plateau is considered to represent a north-eastern remnant of the ancient Precambrian Indian Peninsular Shield which became uplifted as a block to its present elevations between 600 and 1800 metres above mean sea level (asl). Exposed Archaean gneisses and schists at the core of the plateau are covered in the central and eastern parts by Precambrian quartzites and phyllites which were later intruded by granites and basic/ultrabasic suits. In the central and northern part the ancient Precambrian peneplane is still conserved but along the central and southern fringes it is hidden by Mesozoic traps and over the southern, south-eastern and south-western parts by Cretaceous, Tertiary and post-Tertiary sediments.

As indicated by polycyclic erosional surfaces at various levels, the physiographic configuration of Meghalaya and the adjacent Mikir and North Cachar Hills (in the neighbouring state of Assam) was attained between Mesozoic to Present through a series of geological events. The northern part of the plateau is devoid of sedimentary rocks and marked by headward incising valleys along joints in the gneissic rocks and granites. The limestone terrain along the southern to south-eastern rims of the Garo, Khasi and Jaintia Hills in Meghalaya, along with the North Cachar and Mikir Hills in Assam, provide a wealth of excellent endogean and hypogean karst landscapes.

Meghalaya is composed of three ranges of hills that have given their names to the three main tribes. The Khasi and Jaintia Hills form the central and eastern part of Meghalaya comprising a plateau of rolling grassland, hills and river valleys. The higher ridges lie in the coniferous belt and slope down to sub-tropical and tropical zones. The southern face of the plateau is marked by deep gorges and abrupt slopes. Waterfalls rush down cliff faces and carve deep north-south trending valleys through which swift flowing rivers descend to flood the plains of Bangladesh. At the foot of these slopes, a narrow strip of frequently disputed plainland runs along the international border with Bangladesh.

The northern section of the plateau has an undulating topography with a series of hills rising to almost the same height, extending northwards to slope gradually, merging with the plains of Assam. The accordant summits of these hills vary from 170m to 820m. The height of the central plateau of the Khasi hills hovers around 1500m with the Shillong peak at 1951m asl, being the highest point on the plateau, overlooking Shillong town. The Garo Hills form the western part of Meghalaya and are lower in elevation. The greater part of the Garo Hills range in height from 450m to 600m and drop steeply to the Brahmaputra valley in the north and to the plains of Bangladesh in the south. Nokrek peak (1412m), east of Tura town, is the highest peak in western Meghalaya.

Cave bearing Upper Cretaceous to Tertiary sedimentary rocks occur as discrete outliers and in an almost continuous 300km long belt of diverse sedimentary rocks occurring along the southern and eastern borders of Meghalaya. Due to tectonical dislocations of different blocks, there occur corresponding strata of sometimes transgressing sand and limestones at various elevations. The cement grade limestone deposits are regarded as a national (i.e. cash) resource, of between 4,500 and 5,000 million tonnes, and are currently processed by one of the only large scale industrial plants of Meghalaya, the Mawmluh Cherra Cement Factory Mawmluh Cherra Cement Works. This has an expected output of 1,600 tonnes/day. Apart from small scale cement plants (e.g. the Jaintia Hills Cement Factory at Sutnga, 100 tonnes/day, which processes the limestone of Nongkhlieh area of the Litién area). There are plans for two further large scale plants to produce 1,000 tonnes/day in the Garo Hills and 1,200 tonnes/day in the Jaintia Hills. These have not yet come to fruition.

GARO HILLS: In the Garo Hills, the Upper Sylhet Limestone occurs in a narrow but more or less continuous belt along the southern slope of the Tura Range. In the Simsangri valley, around Siju (Siju Arteka: N25 17': E090 43'; Siju Songmong N25 18': E090 43'), the 90m high sequence of Upper Sylhet Limestone can be subdivided into basal 25m of earthy and marly limestones which are topped by 75m of hard, massive bands and cliff-making bands. Smaller deposits of limestone have been found near Rongrengre (or Rongrengiri, N25 34': E090 33') and Jarkhre Rongthak along the Simsang valley and also along Darang Era Aning in the west Darengre coalfield (also: Darengiri, near N25 24': E090 27'). Quite common and characteristic are river caves resurging a few vertical metres above the banks of rivers: Surficial erosion proceeds subterranean

karstification. A peculiar feature of the "Garo Karst" are oval chambers more or less abruptly enlarged passages of roundish ground plan and with flat ceilings, sometimes catenated like garlands of spacious chambers separated by crawls over breakdown. These oval chambers result from collapses (incision processes) below comparatively instable shales and marls intercalated in the host rock or capping it. Fine examples of oval chambers are found in Tetengkol (Chibe nala), Chikrukol and Dangedkol (Asakgre). Occasionally, but not always, they are harbingers of terminal breakdowns.

KHASI HILLS & SOUTHERN JAINTIA HILLS: The Sylhet Formation of the Jaintia Group shows richest development within an area of 200 square kilometres between Jadukata (Kynchiang) river in the West Khasi Hills district and Lukha river on the east (Jaintia Hills) where the belt comprises all the three prominent (Lower, Middle and Upper) Sylhet Limestone members with two intervening clastic sandstone beds (Middle and Upper Sylhet).

Lower elevations: In the Khasi Hills, the limestone belt of the Eocene Sylhet Formation follows the southern border of the district. This extends from Bagli in the west via Borsora, Langrin, Lamgaon, Shella, Mawlong, Therriaghat and Nongshken to Mawshun in the east. Between Therriaghat and the Shella River, three (Upper, Middle, Lower Sylhet Limestone) beds, separated by sandstone bands, gain a combined thickness of 200m. The basal band in the lower part is at places dolomitic. Between Shella and Bholaganj (N25 11' to 25 13' and E091 41' to 091 47') plunge four limestones, again separated by sandstone bands, steeply (55 to 75 degrees) along a monoclinial E-W flexure against the Dawki fault. Here, the Middle Sylhet Limestone band is widely exposed in the area and about 65 to 100m thick. The Upper Sylhet limestone band is 30 to 60m thick and overlain along the southern margin by steeply dipping sandstone and conglomerate beds of the Oligo-Miocene Kopili Formation.

Higher elevations: In the Khasi Hills district, parts of the young Lower Sylhet Limestones (Cherra Limestone = Lakadong Limestone) have been lifted to higher elevations where they occur, thinning out towards the north, in more or less isolated occurrences in the neighbourhood of Mawsynram and Sohra (also: Churra, Cherra, Cherra Punjee, Cherrapunjee or Cherrapoonji). Near Sohra, at the hillocks Lum Lawbah and Mawsmmai, the limestone is composed of a 9m thick basal dolomite underlying a 18m thick bed of upper limestone. To the east of Sohra occur several scattered patches of Lower Sylhet limestone on the Syndai Plateau and in the areas of Nongtalang, Pynursla, and Lynkyrdem. In the Jaintia Hills district, and further east, only the two lower bands are found in the vicinities of the Lakadong - Umlatdoh Plateau and Lumshnong village. Two isolated outliers of the Lower Sylhet Limestones occur to the west of Sutnga.

EASTERN & NORTHERN JAINTIA HILLS: At Khaddum above the banks of the Lunar, Lubha and Lukha rivers, the limestone belt swings abruptly towards the north and extends with the immediate dying out of intercalated sandstone beds. A single, 80 to 140m thick limestone band composed of Middle and Upper Sylhet Limestones transgressing into Garampani Limestone (Kopili Formation) stretches from Khaddum via the Litang Valley (also: Letei-, or Liten, embraced by the Shnongrim Ridge in the west and the Nongkhlieh Ridge in the east), via the Khandong Hills and Garampani into the the Mikir Hills of Assam, where it occupies nearly the whole of the area between the rivers Kharkor and Kopili. To the west of the Kharkor are numerous scarped outliers of limestone, of which the largest is overlooking a level plain of Cretaceous rocks north of Muncha river.

The southern fringe of Meghalaya provided limestone for the Brahmaputra deltaic region (Bihar, West Bengal and Bangladesh) since time immemorial because little or no lime was produced in the plains and thus there was a great demand for the "*chunam*" (burned lime) that was used in the preparation of "*pan*" (betelnut), for building, and whitewashing.

Most extensively exploited are the foothills of the Khasi district, along the belt of Shella, Ichhamati, Therriaghat, Tangwai and Lacat, from where the limestones are brought to the neighbourhood of Pandua, Chhatak and Sonamganj. The largest quarry seems to be Kommoroh / Kommorah. In the late 18th onwards traders have bought whole hills in order to quarry them for limestone which was apparently usually taken to the plains before being burnt. The *chunam* traditionally used in India for whitewashing is unslaked lime, which would be difficult to export from the rainy hills without getting damp. This may be the reason why the contractors from Bengal preferred to deal in the heavier limestone, rather than in lime already burnt. The total estimated reserves of limestone in Meghalaya and the area covered by karst are expressed in varying numbers by different authors from 3000 mt, 512 square kilometres. 2462 mt; 4'5000 mt.

5. CLIMATE

The climate in Meghalaya is controlled by the seasonal winds, the South West Monsoon and the north East Winter Winds. The climate is moderate during winter, but gradually becomes warmer to hot and humid in summer. The Monsoon sets in from the middle of May and lasts through to October. The average annual rainfall in the Meghalaya-Mikir region is 2'690 mm but there is a great variation from south to north because the higher part, i.e. the central upland zone, renders a rain shadow effect. Consequently the rainfall in Shillong averages 2'300 mm/year while in Cherrapunjee, being located only 50 km to the south of the structural platform the average rainfall is as high as 12'000 mm/year (26'461 mm maximum). Mawsynram, a village situated 16 km south of Cherrapunjee, records the highest rainfall in the world with 13'923 mm/year (based on recent averages). The maximum for a single day was recorded in 1876, in Cherrapunjee, when 1,040 mm fell in 24 hours. Cherrapunjee also holds the world record for a months rainfall when 9'300 mm fell in July 1861. The high rainfall in the Cherrapunjee-Mawsynram region is due to the fact that the south-west monsoon laden with with great amount of moisture from the Bay blows over Bengal and is suddenly cut by the cliffs of the table land with an average elevation of 1'200 m which juts out like an peninsula from 600 m deep gorges on either side, and as a result the monsoon having reached the heads of the gorges ascends vertically upwards and causes very heavy rainfall. Jowai on the eastern ridge of the central upland receives slightly more than 3'000 mm while the northern slopes of the central upland experience 1'200 to 2'000 mm. Contrary to Central and Eastern Meghalaya, the total annual rainfall in the Mikir Hills at 1'200 mm, out of which 1'100 mm occur during the monsoon, is relatively low because the moisture-bearing winds are obstructed by the Barail range.

6. FLORA and FAUNA

A few years ago E P Philemon (1991) was able to write "The natural beauty of the forests of Meghalaya is greatly enhanced by the beautiful orchids and other flowers growing in abundance in these forests." Today the area has suffered, and the remaining total forest area of 8,510 square kilometres still suffers, from organised and unofficial deforestation in combination with shifting cultivation. The highest ridges of the state lie in the coniferous belt, gradually merging into the sub-tropical and tropical zones. A few ancient holy groves, the two National Parks and the two Wildlife Sanctuaries retain a forest cover and a thick undergrowth of thorny bushes.

Historically Meghalaya was rich in wildlife but population pressure and poaching is steadily reducing this. The state is home to a variety of animals including wild elephants, tigers, bears, wild boars, golden cats, leopard cats, binturongs, slow loris, antelopes, several different types of monkeys and flying and giant squirrels. The bird life includes hornbills, partridges, teal, snipe, geese, ducks, quail and jungle fowls, all too frequently the prey of poachers.

The underground fauna of the Indian sub continent has been little investigated. In many areas of the caves the annual monsoon flushing must severely disturb the fragile ecosystem. Human population pressure and the resulting pollution also effect the dynamics of the ecosystem. Despite this the sub continent underground environment supports a wide variety of animal life.

7. CULTURE

Meghalaya is composed of three main tribes which follow a clan system and more than 60 other tribes, many of which can be further divided into sub-tribes with their own distinctive ethnic and cultural identity. The Khasi, Jaintia, Bhoi, War are collectively known as the Hynniewtrep people and occupy central and eastern Meghalaya. They are thought to be one of the earliest ethnic groups of settlers on the Indian sub-continent, belonging to the Proto Austroloid Monkhmer race, the remnants of one of the first Mongolian migrations. In contrast the Garo people who number about 600,000 belong to the Bodo family of the Tibeto-Burman race and are thought to have migrated from Tibet in the distant past.

For official purposes English is used. The Khasi people speak the Khasi language, the Garo people, Garo language and the Jaintias (Syntengs) Pnar, a Khasi dialect. The Khasi language is believed to be one of the very few surviving dialects of the Monkhmer family of languages in India today.

An interesting characteristic of the Meghalayans is their matrilinear society. Lineage and inheritance follow the mother's line. In Khasi and Jaintia society the property is traditionally handed down to the youngest daughter. The Khasi and Jaintia women therefore represent the property owners although its control for younger women is usually in the hands of the maternal uncle. In Garo society they select one of their daughters, not necessarily the eldest or youngest to inherit but it is the husband who has control.

Traditionally people of all the three main tribes believed in one supreme God. About 50% of the Khasi people still follow the old beliefs and the practice of sacrifice. The Jaintia religion is very similar to Hinduism but includes pig sacrifices while the Garo people usually worship spirits connected with their agricultural way of life. Christianity was first introduced by Welsh Presbyterians in 1841 and is now followed by the majority of the population although several festivals throughout the year still involve animal sacrifices for the protection of crops and the well being of the people.

8. SPELEO-HISTORY OF MEGHALAYA

It is clear that many of the more obvious caves in Meghalaya have been entered for some distance by the local people. Indeed local legend has it that a cave at Syndai was used by the Jaintia Rajas to keep their families secure during times of war. This may well be the cave described as the "Brahmine cave of Sylhet" by Walters in 1820.

European style cave research started in 1827 when a certain Captain Jones measured a passage length of 1317 paces in a "Bhuban Cave" to BCRA-grade 2a and on 9th December 1828 the Misters Walters, Campbell & Terraneau surveyed another "Bhuvan Cave" by applying sort of a topofil technique. In the same year 1828 reports the East India Gazetteer a certain "Boobooan Cavern" which had been explored as far as a mile by Captain (F.A.?) Lister, etc. and in May and April 1829 Captain Lister, commanding the Sylhet Light Infantry, put his caving experience into practical use and penetrated into the cave hide-outs of the Khasi insurgents

Under British rule the Geological Survey of India noted several sites of speleological interest. Oldham in 1859 recorded the existence of caves at Mawmluh and Mawsmal near Cherrapunjee. In 1876 Ringwood described the cave at Lakadong and this was again noted by La Touche in 1890.

Under British rule several sites of speleological interest were noted. On 22nd May 1832 Mr. W. Cracroft (Officiating Agent to the Governor General since August 1831), Mr. Furnell and Col. Watson and Mr. Rhodes found on Lum Lawbah near "Chirra Punji" an «extraordinary natural well [where] a stone thrown into fell into water at the end of about three seconds from dropping it.» By then, Mr. Furnell had already discovered a large cavern with gypsum crystals near Sohra or Soharim. By 1840 relates Captain Fisher, formerly Superintendent of "Kachar and Jynta" (Cachar, Jaintia), to the "Cavern of Booban" in a way which takes it for granted that this cave is well known to the reader of the Journal of the Asiatic Society of Bengal. A few years later appears Lieutenant Yule (1844 of the Bengal Engineers to be the first who reported karst features: Four sinking streams near Cherra, of which one vanishes in a cleft below a limestone cliff. In the early June of 1848 recorded the botanist Joseph Dalton Hooker from "Terrya" (Therria) «nummular limestone, worn into extensive caverns» and «considerable caverns penetrating the limestone at Churra Poonji.» Thomas Oldham reported sinkholes at Lakadong and noted in 1856 the existence of caves at Mawmluh and Mawsmal near Cherrapunjee.

Imposing taxes in the Jaintia hills rose the Syntengs to rebellion (1860) and revolt (January 1862) but in November 1863 the last leaders surrendered to the conquest. In 1862 the hide-out of King U Kiang Nangbah in the cave Kot Sutiang near Shnongrim is said to have been stormed. In spring 1867 observed Henry H. Godwin Austen, in charge of the Topographical Survey, potholes and cave resurgences in the eastern Garo hills near Nongkulang, Nongumlai and Rongsiang river valley and discovered the underground drainage of Maheshkhola between Kutabram and Billar Dhoba. In 1875 Sanderson noted a cave called the "Bat's House" near the village of Siju in the Simsang (or Someswari/Someshwari) valley. This was later visited, for the Geological Survey of India, by La Touche in 1881. For a whole generation the cave, locally known as Dobhakol, fell into relative obscurity until Kemp and Chopra of the Indian Museum, Calcutta, organised the most comprehensive scientific project that ever took place in India. In February 1922 the cave was mapped, it's water-courses were negotiated by swimming with petrol lamps, the sumps were attempted with the aid of electric torches, samples of rock were collected, fish were caught and bugs collected. It remained the longest cave of India until 1981 and it still remains the most researched Indian cave.

In 1875 Mr. Sanderson, spent a whole day in Dobhakol (Siju) and left a message in a bottle at the furthest point reached. This bottle, with its the cork driven in and empty, was found 47 years later at a distance of 1190 m from the entrance. For the Geological Survey of India described Ringwood (1876) the cave at Lakadong (Krem Mohubon) and T.D. Latouche, guided by Bong (then a young nokma of Siju in his twenties but later an influential person in the political drama of the North East) explored in 1881 the Dobhakol at Siju and reported in 1882/83 sink- and potholes from Umrasiang and Nongtoma, in 1889 from Ranzsanobo / Rangsanobo hill (Lum Lawbah) near "Cherra Poonjee" (Sohra) and in 1890 from Lakadong.

In 1917 R. Friel, then Deputy Commissioner of Garo Hills, paid a visit to the Dobhakol at Siju and made the first collection of cave fauna. His investigations were in 1918 extended to Syndai cave and in 1921 to Lakadong cave and represents possibly the earliest systematic cave reconnaissance of the Meghalayan limestone belt which paved the way for Kemp and Chopra. During three weeks in January and February of 1922 Stanley Kemp and B.N. Chopra of the Indian Museum, Calcutta, undertook the most comprehensive scientific project that ever took place in India: Dobhakol (Siju) was mapped, its water-courses were negotiated by swimming with petrol lamps, the sumps were attempted with the aid of electric torches, samples of rock were collected, fish were caught and bugs collected. It remained the longest cave of India until 1981 and it still remains the most researched Indian cave.

From 1922 till the turmoils of 1981-1996 most of the early cave exploration was of an informal nature conducted by inquisitive scientists like Shiba Prasad Chatterjee in 1928 - 1932 (1936) and Knut Lindberg in 1947 (1949, 1960), odd casual visitors like R.N. De (1931, 1936) and H. D. Gebauer (1980) or adventurous British Officers (Allsup 1934; Roberts 1949).

It was not until 1992 that local people in the form of the Meghalaya Adventurers' Association, founded by Brian D. Kharpran Daly and Donbok Syiemlieh, started to explore caves. In November of the same year a group of four British cavers, lead by Simon Brooks, visited Meghalaya. A return visit was made in February 1994 as a party of eight (seven British and one German). Between 1995 and 2003 a series caving projects have been organised by Brian D. Kharpran Daly and Donbok Syiemlieh of the Meghalaya Adventurers' Association in partnership with cavers from various organisations in Europe, UK and USA.

By the end of March 2003 a total of 844 caves has become known. Of these were 204 explored without results and 84 were surveyed in vain (24.60 km) but 293 caves yielded a mapped survey length of 225.13 km. At the current rate (68.5m / day) Meghalaya could be one of the fastest growing caving regions of the world and in doing so firmly establishing both Meghalaya and India on the world caving map.

Meghalaya, India 2003
Caving in the Abode of the Clouds Expedition 2003

Cave exploration in Meghalaya, North East India – 2nd February to 3rd March 2003

Overview

The Caving in the Abode of the Clouds Project takes its name from the Sanskrit meaning of the word "Meghalaya" that literally translates to 'Abode of the Clouds' in recognition of the fact that Meghalaya is often enveloped in cloud and as a result has world record rainfall. This feature added to a warm climate and extensive areas of limestone has for many years made Meghalaya of interest to the International Caving fraternity. So much so, in 1992 a small team of four European Cavers visited the State to explore the caves that were rumoured to exist in the limestone rock that lies within the Khasi, Jaintia and Garo hills. During this initial visit many caves were found, but more significantly the huge caving potential of the region was realised. On the return visit in 1994 contact was made with Brian D. Kharpran Daly and Donbok Syiemlieh of the Shillong based Meghalaya Adventurers Association and since that time the systematic exploration of caves across Meghalaya has been undertaken as a partnership between Indian, European and American Cave Explorers. Through this productive collaboration the Caving in the Abode of the Clouds Project has made significant progress in a relatively short period of time. From November 1992 to March 2003 the following cave exploration projects have taken place under the umbrella of the 'Caving in the Abode of the Clouds Project'.

- 1992 – Khasi, Jaintia and Garo Hills – 9+ kms of new cave passage explored.
- 1994 – Khasi Jaintia and Garo Hills – 14+ kms of new cave passage explored.
- 1995 – Khasi, Jaintia and Garo Hills – 10+ kms of new cave passage explored.
- 1996 – Jaintia Hills – 9+ kms of new cave passage surveyed explored.
- 1997 – Jaintia Hills – 25+ kms of new cave passage surveyed explored.
- 1998 – Khasi and Jaintia Hills – 26+ kms of new cave passage explored.
- 1999 – Khasi and Jaintia Hills – 27+ kms of new cave passage explored.
- 1999 – Jaintia Hills – 4+ kms of new cave passage explored.
- 2000 – Khasi and Jaintia Hills – 20+ kms of new cave passage explored.
- 2001 – Khasi and Jaintia Hills – 35+ kms of new cave passage explored.
- 2002 – Khasi, Jaintia and Garo Hills – 22.5+ kms of new cave passage explored.
- 2002 – West Khasi Hills – 6+ kms of new cave passage explored.
- 2002 – South Garo Hills – 2.7+ kms of new cave passage explored.
- 2003 – West Khasi, Jaintia and Garo Hills – 25.7+ kms of new cave passage explored.

As a result of these projects the existence of 844 caves has become known of which 293 have been more or less fully explored to yield in excess of 225 kilometres of mapped cave passage. From these figures alone it is clear that there is still much more cave waiting to be explored in Meghalaya. A significant amount of the cave that has been found to date is impressive river cave with cave systems equal in size and beauty to any found elsewhere in the world. This rapid growth in the exploration and knowledge of the caves has firmly put Meghalaya on the world-caving map as a significant caving region.

The 2003 Caving in the Abode of the Clouds Project

The '2003 Caving in the Abode of the Clouds Project' Expedition spent most of the month of February 2003 in Meghalaya, North East India during which time 25.7 km's of new cave passage was explored, photographed and surveyed.

In an attempt to allow more individuals to enjoy cave exploration in India the multi-national 2003 project team was one of the largest that has visited Meghalaya to date. It included fifteen cavers from the UK, seven from Germany, an Austrian and a Swiss caver and nine Indian cavers from the Shillong based Meghalaya Adventurers Association. Exploration concentrated on three areas; these being the Shnongrim Ridge in the Jaintia Hills, Borsora in the West Khasi Hills and Siju/Asakagre in the South Garo Hills, with most of the exploration taking place between the 10th and 26th of February.

Shnongrim Ridge – Jaintia Hills

In the Shnongrim Ridge Area (Sutnga) the main focus of the project was to continue exploration building on the work that had been done during the very successful 2000, 2001 and 2002 expeditions (Brooks S.J. 2000, 2001, 2002 and Jeffreys A.L. 2001). Exploration on the Shnongrim Ridge in many ways represented a significant turning point regarding cave exploration in Meghalaya as prior to this time the vast majority of the caves explored were large horizontal river caves involving much walking and occasionally some significant swims. In 2000 this changed, first with *Krem Mawshun* that required the descent of an 8m entrance pitch and a 24m main pitch in order to reach the horizontal river passage. As the 2000 expedition progressed more pitches were encountered cumulating in *Krem Shreih (Monkey Cave)* with its impressive 97m entrance shaft. In 2001 this trend continued with caves such a *Krem Synrong Labbit* and *Krem Risang* requiring 60 to 70m of entrance series, broken into two or three pitches to be descended in order to reach the large streamways below. By the end of the 2002 cave exploration project the number of caves requiring the use of S.R.T. substantially outnumber the 'traditional' horizontal caves that project members had become so used to exploring in the 1990's. This trend continued in 2003.

Prior to the main team arriving on the Shnongrim Ridge an advanced party of eight spent four days sorting expedition equipment, rigging shafts into the main on-going cave systems (*Krem Umthloo*) and completing the exploration of *Krem lawe*. *Krem lawe* is an interesting site consisting of a large entrance passage that contains a small stream that flows in what would appear to be the remnants of a large and much older river passage, some high dry fossil passages and an extensive series of active inlets and outlets. In many way it characterises what is believed to be the morphogenesis of the caves on the Shnongrim Ridge whereby very old, large, and now abandon river caves are now intersected with younger active inlets and outlets. *lawe* was first visited in 1999 when it was explored for just over a kilometre in length. The following two years saw further extensions made to the cave to a point where and at the end of 2001 there was a tantalisingly open and draughting upstream lead and some unpushed passage in the downstream section of the cave. As it turned out the upstream lead proved to be disappointing, closing at a calcite blockage only 90m further on from the final 2001 survey point. Fortunately downstream proved to be much more interesting with some very fine stream passage being explored that required swimming and climbing over calcite gour dams in order to make the traverse from the original part of the cave to a new downstream entrance. Over a period of three days *Krem lawe* was extended from 2.2 kms to 3.4 kms and is now believed to be fully explored.

At full strength the Shnongrim Ridge team consisted of twenty two cavers all of whom were accommodated on the Shnongrim Ridge itself in an extensive camp consisting of thatched roof dormitories, wash areas, kitchen, stores and a communal dining/social area that had all been constructed in bamboo by local villagers a week prior to the expedition arriving on site. Fully equipped with a generator, 240v power, a good team of cooks, camp assistants and drivers this small self-contained 'expedition village' enabled the expedition to function very efficiently. At about 7-30am each morning the camp would stir and as the cooks prepared breakfast the project team packed equipment for the days caving. By 9-00am the teams loaded the jeeps and set off to various cave sites for the day's exploration with most teams returning between 6-00pm and 8-30pm. Whereupon equipment was unpacked, the evening meal eaten and the rest of the evening spend drinking beer, loading survey data onto the laptops and sitting around an open fire having a sing along or a chat to the many local people that would call at the camp each evening. Thanks to the location of the camp being right in the middle of the caving area the journey time to the caves was significantly reduced with many caves being within walking distance of the camp. This allowed 21 caves to be explored to yield a total of 15.3 kms of new passage. These included new caves such as *Krem Synrang Ngap* at 2.0 kms in length, *Krem Synrong Labbit* at 1.65 kms, *Krem Krang Moo 1* at 1.4 kms and *Krem Shreih Khaidong* at 1.0 kms in length in addition to the extension of several existing caves. The massively proportioned *Krem Liat Prah*, discovered and partially explored in 2002 was extended from 5.9 kms in length to 8.3 kms taking it from the 8th to the 6th longest cave in India. *Krem Umthloo*, India's 3rd longest cave, was extended from 12.6 kms to 13.4 kms. Also worthy of note was the exploration of *Krem Kut Sutiang*, a historical cave that the Shnongrim team were given permission to explore. The location of this site is a closely guarded secret as the local people believe that it is the ancient seat and stronghold for the Jaintia Kings of old who in 1862 used the cave as a refuge in their last and final battle with the British. Although the cave is only 100m in length it showed signs of significant human use that would seem to support the legends attached to

it. The site certainly had a 'regal atmosphere' about it and the project team were indeed grateful to the local people for allowing them access to the cave.

In similar style to caves explored during earlier visits to the area the majority of the caves explored in 2003 began with a vertical entrance series consisting of between 60 to 90m of descent broken into three or four pitches, usually giving access to many kilometres of large streamway and trunk passage. Examples of this style of cave included *Pineapple Pot* and *Krem Synrang Labbit*, the latter with its fine 25m and 55m pitches. However, in addition to this several caves explored during 2003 were found to have large pitches of up to 80m in depth, situated a good distance inside as was demonstrated in *Krem Synrang Ngap* with its impressive 76m split pitch. 2003 also offered a few surprises, *Krem Umim* initially explored in 2002, was believed to connect to *Krem Liat Prah*, as at the end of 2002 it lay only some 15m from *Liat Prah*. However, in 2003 when descended and pushed further, instead of connecting it passed under *Liat Prah* and into an ongoing wet downstream passage where long swims halted progress. Needless to say a return is planned in 2004. On the other side of the ridge a 60m pitch was descended in *Krem Umspring* that surprisingly connected it with *Krem Risang*, a large cave explored in 2001. The Shnongrim Ridge area is proving to have a very dense concentration of caves and since exploration began in earnest in February 2000 the area has yielded 77 kms of cave passage almost all of which is concentrated along the ridge itself.

Borsora – West Khasi Hills

Whilst exploration was taking place in the Shnongrim Ridge a smaller and more mobile team of eleven cavers travelling in two Sumo Jeeps visited areas in the West Khasi Hills and the South Garo Hills. Travelling first to the Borsora Area in the West Khasi Hills via Ranikor and the 'Border Road', for which special permission had to be obtained, a base was established at the Inspection Bungalow (IB) in the village of Khanjoy. Borsora, first visited in 2001 lies at the southern edge of the massive Langrin Karst area which is the largest limestone block in Meghalaya. From the convenient location of the Khanjoy IB a total of 26 caves were explored over a ten day period. This included larger caves such as *TB Chiring* with 1.5 kms of passage and *Mondel Khol* with 1.3 kms and *Umbleka 3* with 980m along with a number of shorter caves (*Songitcham Kol*) that frequently made up for their lack of length by the substantial size of the passages they contained. *TB Chiring* itself was an interesting cave with an impressive entrance that lead to a short 8m pitch that gave access to a steeply descending sandstone floored passage. The cave plunged steeply for the first third of its length whereupon it swung through 90 degrees and followed the strike before meeting a major inlet, again sandstone floored, that ran steeply uphill to emerge on the hillside only a few hundred metres from the main entrance. Below Khanjoy the impressive *Ronga Cave*, partially explored during the 2001 Expedition, was extended from 1.9kms to 2.35 kms in length. Other leads from 2001 did not develop as expected. *Umbleka Pot* that from the surface appeared to intersect a major canyon passage rather disappointingly only gave access to minor inlets. *Bagli Pot* situated at a good altitude above the impressive *Bagli Resurgence*, descended for a 45m and concluded after only some 62m in length. One area that did provide a pleasant surprise was Rong Dangi that prior to 2003 was unknown as a caving area. Situated between Maheshkhola and Khanjoy it yielded six significant caves including *Mondel Kol* with 1.3kms of passage and *Pani Gundur* with 630m of passage both of which are not yet fully explored and have the potential to be connected. This and other caves reported to exist in the area make this and Khanjoy an area that will be revisited by a team on a future expedition.

Siju/Chibie Nala and Asakagre – South Garo Hills

After ten days in the West Khasi Hills a tight schedule meant that the team had to move on to the Siju in the South Garo Hills. This area had seen three consecutive visits during the early days of the 'Caving in the Abode of the Clouds Project' (Brooks S.J. and Smart C.M. 1995) (Brooks S.J. and Gebauer H.D. 1998). Here the famous *Siju Dobhakol Cave* was visited and in the nearby Chibie Nala Valley, *Tetengkol Cave*, was extended from 5.3kms to 5.7kms putting it back into the top ten of India's longest caves. With the blessing of the Hemason Sangma the Knockma (Headman) of Nengkong Village further exploration in this latter cave entailed an overnight bivouac. Not because the far reached of the cave are particularly remote but more to do with the fact that the cave deep within the forest and walking back from the cave after dark is not recommended even for local

people as the forests in this part of Meghalaya are home to a surprising variety of large wild animals. Whilst in the Siju/Chibie Nala area a number of other leads were checked out all of which failed to produce any significant cave. Nonetheless some very long standing question marks had been answered.

After three days in the Siju area the team then travelled onwards to its final destination at Asakagre in another part of the South Garo Hills where they remained for another three days before returning to Shillong. Asakagre is a very traditional Garo village notable for the fact that it has a very intact and still in use 'mens house' within the village. This building with its bold ornate carvings and black and white decoration is where the young men from the village go to be schooled and initiated into 'manhood' by the men of the village. The Asakagre area had first seen exploration during the 2002 expedition followed by another visit in December 2002 (Brooks S.J. 2002) by a small German/Italian and Indian team. In the three days in Asakagre 9 caves were explored, including *Mathrong Kol* with 699m of passage and *Khorekol* with 330m. *Danged Kol*, partially explored in February 2002 was pushed to a second entrance (*Chining Kri*) extending the cave from 0.8 kms to 1.2 kms in length. The Asakagre area is a delightful karst area consisting of beautiful river valleys and heavily forested low hills through which the caves pass. Due to the disconnected nature of the karst the caves explored to date are frequently found to be less than a kilometre in length (with a few exceptions), with between 300 to 500m being the norm. What is clearly evident is that there is significantly more cave to be found in the area.

Conclusion

This years project once again had a scientific element to its work as two of the team based on the Shnongrim Ridge were biologists who conducted further detailed biological surveys of the caves in the area. This work is contributing significantly to the understanding of the Speleo-Biology of Meghalayan Caves that apart from the excellent study made in *Siju Dobhakol Cave* by Kemp and Chopra in 1922 has received relatively little attention until recent years. It is believed that the biological work that has taken place since 1999 has identified several new species of cave insect and blind fish that are unique to Meghalaya.

Once again more caving equipment was added to the projects purpose-built equipment store in Shillong. This store is looked after by the Meghalaya Adventurers Association and used by them in conducting their own cave exploration and when involving a greater number of local Meghalayan young people in the activity of caving. In terms of developing 'home grown' cavers the project team based on the Shnongrim Ridge hosted a visit by eight young men and four young women from Shillong, all of whom were taken caving in order to stimulate their interest in the sport and science of speleology. This strategy seems to be paying dividends as similar action in 2002 saw an increase in the number of India cavers joining the 2003 project team.

Along with the more serious side of cave exploration the expedition members once again enjoyed a busy social scene of local events and numerous parties in the company of the expeditions ever-growing number of friends from Shillong and Meghalaya in general.

As is becoming a trend with the cave exploration in North East India information of new leads (caves) collected exceeded the number of leads (caves) being investigated by a factor of well over 2:1, which would seem to indicate that a significant amount of cave passage still remains to be explored. To date the project has reference to 844 cave sites of which only 296 have been explored and surveyed. Needless to say another large multi-national team will be returning to Meghalaya in February 2004 and no doubt for many years to come.

Acknowledgements

As in previous years the Caving in the Abode of the Clouds 2003 Expedition worked in close collaboration with Brian Kharpran Daly and Donbok Syiemlieh and the Shillong based Meghalaya Adventurers Association, the State and Regional Tourist Departments, Meghalaya Government Agencies, Meghalaya Police and local people, and is greatly indebted to them for their continued support and assistance. Thanks are also due to the Ghar Parau Foundation and the Mount Everest Foundation for their generous financial support.

Running a project of this size involves a significant number of individuals in addition to the caving team. The wider team is listed below in order to give some impression of the scale of the operation that is so efficiently co-ordinated by the Meghalaya Adventurers Association in partnership with the European Cavers.

Caving Team

Sutnga/Shnongrim Annie U. Audsley, Nicola Bayley, Shelley A. Diengdoh, Franklyn 'Toki' Dkhar, Roger Galloway, Dan B. Harries, Tony R. Jarratt, Brian D. Kharpran-Daly, Michael Laumanns, Peter Ludwig, Bat Kupar Lyngwa, Gareth William Lyngwa, Thomas Matthalm, Babha Kupar 'Dale' Mawlong, Ksan Kupar 'Ronnie' Mawlong, Andreas Neumann, Derek Pettiglio, Nigel Robertson, Robin Sheen, Fraser E. Simpson, Fiona Ware, and Rhys Williams.

Borsora/Garo Andre Abele, Georg Bäumlner, Tony Boycott, Simon J. Brooks, Lindsay B. Diengdoh, Peter N.F. Dowswell, Daniel Gebauer, Herbert Jantschke, Jayne Stead, Neil Sootinck, and Katrin Zipfel.

Surface Support Team

Robin Biswa (driver, Borsora/Garo), Sushil Biswa (driver, Borsora/Garo), Bung Diengdoh (driver, Shnongrim), Bahduh Kharbuki (Shnongrim), Vincent Kharbuki (Shnongrim), Dominic Sawdong Khongwar (driver, Shnongrim), Teibor Lang Khongwir (Shnongrim), Keder Kubah (Shnongrim), Komet Marak (Khanjoy), Albert Nongrum (Shnongrim), America Phymgap (Shnongrim), Khmih Bha Phymgap (Shnongrim), Raja Ragna (Shnongrim), Corey Rews (Shnongrim), Din Sangma (Khanjoy), Amarjeet Singh (travel agent, Shillong), Ms. Selomi Sukhlain (Shnongrim), Ms. Vini Sukhlain (Shnongrim), Cordonwell Swer (Shnongrim), Bran Syrem (Shnongrim), Adison Thabah (camp manager, Shnongrim), Shamphang War (Shnongrim).

Official Resources

Tokiwaio Blah (MAA President, Shillong), Shri Debnath (Assistant Police Commandant, Nonghyllam), Shri Mehra (137th Company Commandant, Borsora), M.K. Momin (MSTD Tourist Officer, Shillong), William 'Bill' Richmond (Shillong), Ms. Dorina A. Sangma (Secretary, Siju Womens Association), Habit Sangma (Village Secretary, Khanjoy A), Hemason M. Sangma (Sirdar, Nengkhong), Jiri A. Sangma (Village Headman, Khanjoy A), Nuresh M. Sangma (Village Headman, Khanjoy B), Rimsing T Sangma (Village Headman, Khanjoy B), Donbokwell Syiemlieh (MAA Treasurer, Shillong).

Guides and Communicators

U Classba Acha (communicator, Nonghyllam), Sudeep Ray Basumatary (guide, Borsora), U Pindro Dakhar (communicator, Nongjri), Amarstong "Chenangpa" Marak (guide, Asakgre- Imandura Banda), U Arbalin Marak (communicator, Khanjoy), Dipan Ch. Marak (guide, Nengkhong), Erok Marak (guide, Asakgre), Gali Marak (guide, Khanjoy), Lohit Marak (guide, Asakgre), Moses M. Marak (guide, Rongdangkai), Ping R. Marak (guide, Rongdangkai), Ba Priya Belina Marak (communicator, Rongdangkai), Shri Pandit (communicator, Asakgre), Ba Rabina A. Marak (communicator & guide, Rongdangkai), U Ratan Ch. Marak (communicator, Maheshkhola), Sengnag S. Marak (guide, Nengkhong), Pa Heh Pajuh (guide, Rathapkung), U Horbes Patlong (guide, Shnongrim), Kai Shail Patwat (guide, Shnongrim), U Carlyn Phymgap (guide, communicator & proof-reader, Shnongrim), Hoi Mat Phymgap (guide, Daistong), U Mulda Rupon (guide and communicator, Shnongrim), Ajut M. Sangma (guide, Nengkhong), Lolit Sangma (guide, Khanjoy), Rakesh Sangma (guide, Khanjoy), Rithson M. Sangma (guide, Chibak), Timtim M. Sangma (guide, Nengkhong), Raplang Shangpliang (guide, Shnongrim), Menda Syih (Shnongrim), Gstar Singh Tangliang (guide, Daistong), Bran Syrem (Shnongrim).

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Caving in the Abode of the Clouds 2003



Knee Wrecker Pot, Shnongrim Ridge – Photo Roger Galloway



Gour Pools in Liat Prah, Shnongrim Ridge – Photo Andreas Neumann

Caving in the Abode of the Clouds 2003



Entrance to TB Chiring, Borsora – Photo Simon Brooks



Caving in the Abode of the Clouds 2003 Team – Photo Simon Brooks

KREM LIAT PRAH

Khaidong, Shnongrim ridge, Nongklieh elaka, Jaintia Hills district, Meghalaya state, India

N 25°22'32" / E 92°32'19" / ca. 960 m asl

Length: 8.912 m

Surveyed in 2002 and 2003 (BCRA-grade 4b)

Data processing by Limelight M.Heller

Drawing: M. Laumanns/H.D.Gebauer



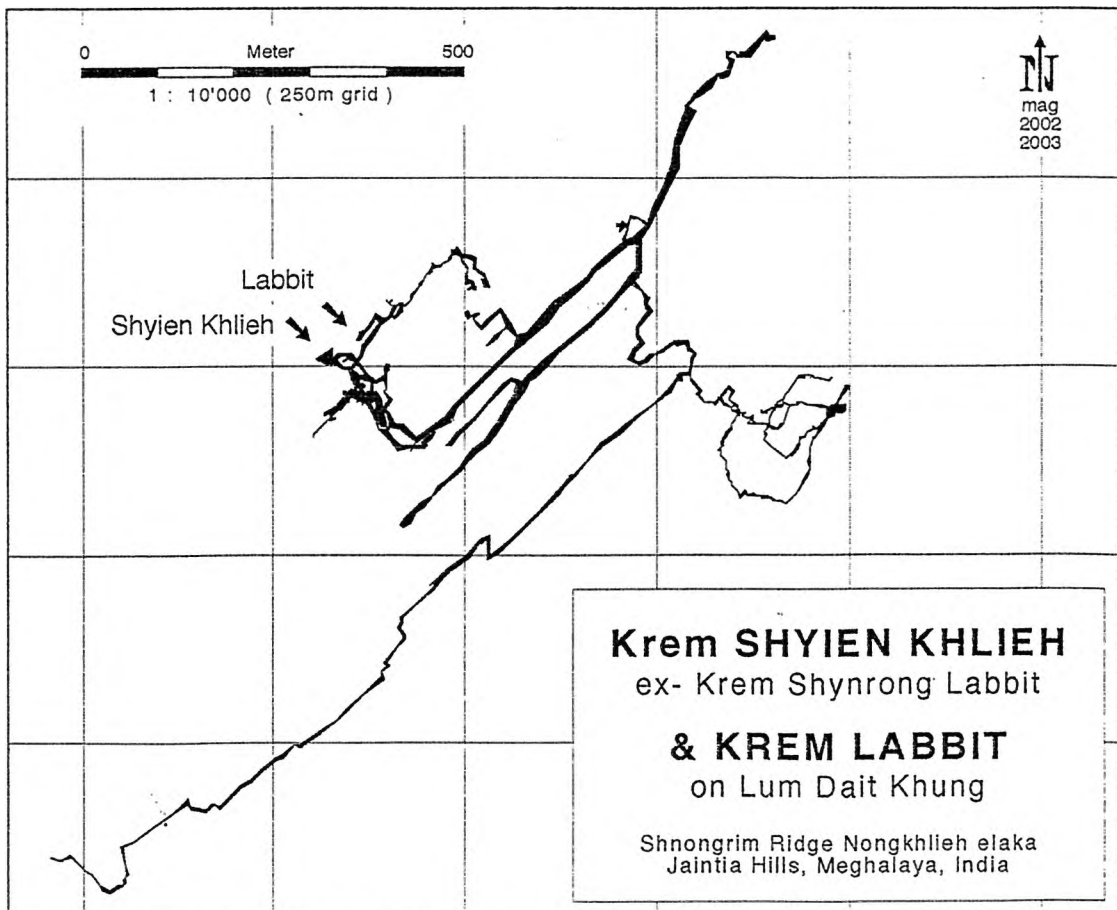
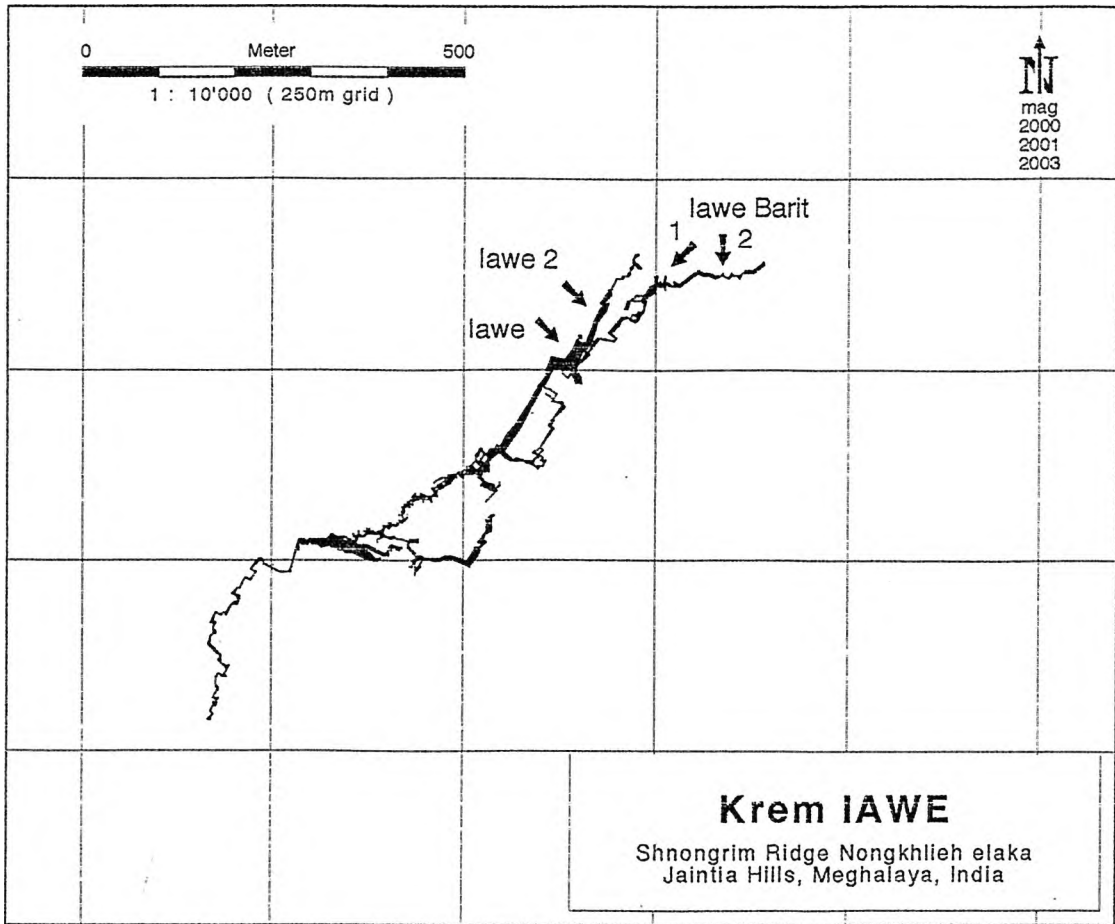
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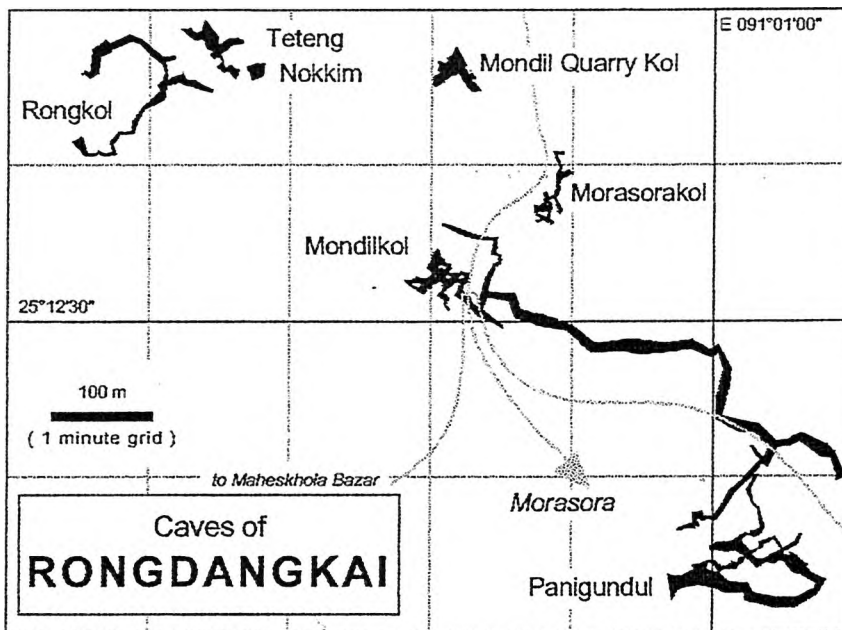
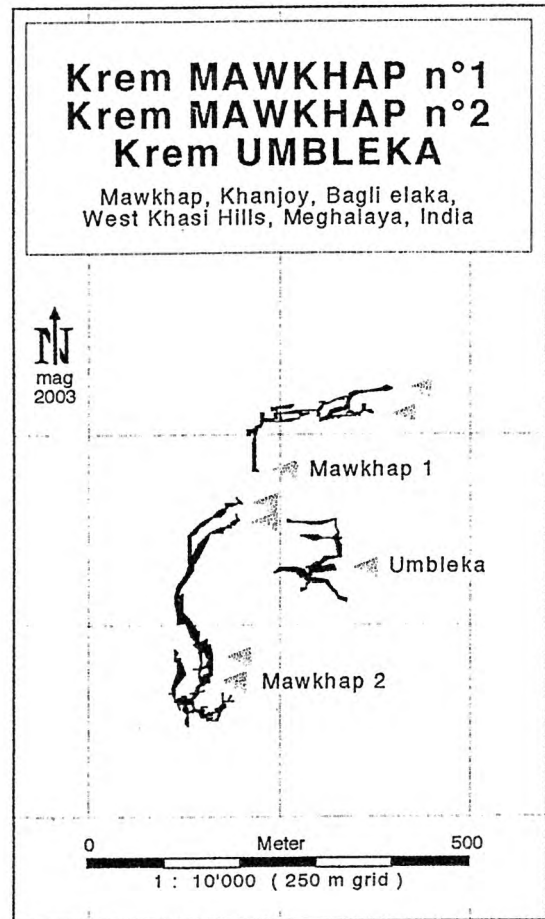
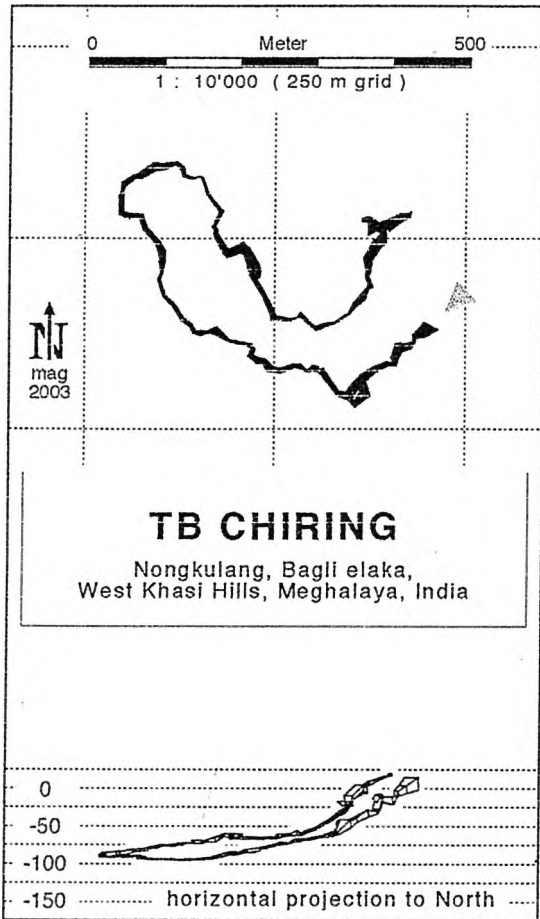
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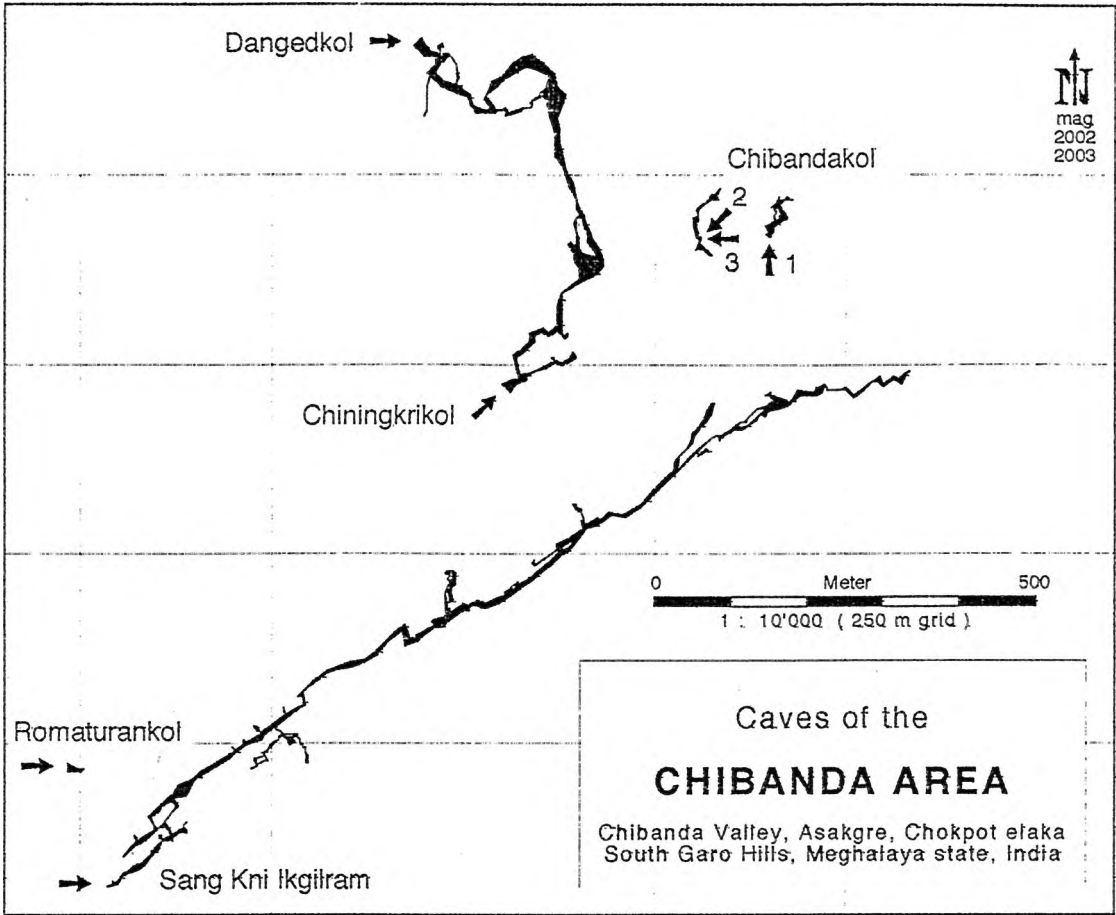
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Caving in the Abode of the Clouds 2003

Borsora/Garo

Date	Area	Cave Name	Party	Pre 2003	2003	Total Length
11/02/03	Borsora	Mondel Khol	AB,JS,LD,AA,HJ,KZ,SJB,GB,SB,		342.50	
19/02/03	Borsora	Mondel Khol	AB,HJ,		683.10	
20/02/03	Borsora	Mondel Khol	HDG,HJ,		268.40	1294.00
12/02/03	Borsora	Ronga Cave	SJB,GB,PD,	1915.68	418.60	2334.28
12/02/03	Borsora	Umbleka 2	AB,HDG,JS,NS+RB,SB		590.50	590.50
12/02/03	Borsora	Umbleka Pot	AA,LD,HJ,KZ,		447.10	
13/02/03	Borsora	Umbleka 3	PD,HDG,JS,		287.50	
14/02/03	Borsora	Umbleka 3	AA,AB,HDG		504.98	
16/02/03	Borsora	Umbleka 3	AA,HDG,KZ		187.57	980.05
13/02/03	Borsora	Wah Reman 1	AB,SJB		12.00	12.00
13/02/03	Borsora	Wah Reman 2	AB,SJB		10.00	10.00
13/02/03	Borsora	Wah Reman 3	AB,SJB		15.00	15.00
13/02/03	Borsora	Wah Reman 4	AB,SJB		10.00	10.00
13/02/03	Borsora	Songit Cham	AB,SJB,KZ,		149.40	149.40
14/02/03	Borsora	Wah Nok Chiring	PD,HJ,KZ,		48.60	48.60
14/02/03	Borsora	Gaiman	PD,HJ,KZ+Lolit Sangma		15.00	15.00
14/02/03	Borsora	Meoo	SJB,GB,LD, SB		255.13	255.13
16/02/03	Borsora	TB Chiring	SJB,AB,LD+GM,		939.28	
18/02/03	Borsora	TB Chiring	SJB,AB,LD,		554.58	1493.86
16/02/03	Borsora	Nongjiri Chuna Pathar	GB,PD,HJ+Rakesh Sangma		129.00	129.00
17/02/03	Borsora	Bagli Pot	LD,HJ,KZ,		62.10	62.10
17/02/03	Borsora	Gol Dang Gat	AB,HDG,NS		242.70	242.70
17/02/03	Borsora	Chibak Sinks	AA,GB,SJB,		20.00	20.00
18/02/03	Borsora	Morasora Quarry Kol	PD,HDG,		217.04	217.04
18/02/03	Borsora	Kubal Rong Kol	GB,HJ,		88.90	88.90
18/02/03	Borsora	Dewban	GB,HJ,		15.00	15.00
18/02/03	Borsora	Dang Yang	GB,HJ,		147.20	147.20
19/02/03	Borsora	Teteng Knokking	GB,KZ		181.10	181.10
19/02/03	Borsora	Rong Dang Ronkol	GB,KZ,		234.65	
20/02/03	Borsora	Rong Dang Ronkol	GB,KZ,		171.97	406.62
19/02/03	Borsora	Morasora Dobakol	LD,PD,HDG,		94.59	94.59
19/02/03	Borsora	Pani Gundur	AA,SJB,		396.77	
20/02/03	Borsora	Pani Gundur	AA,SJB,		232.54	629.31
22/02/03	Garo	Tetengkol	SJB,GB,LD,HJ,	5334.56	346.27	5680.83
22/02/03	Garo	Chibe Rongkol	HDG,NS,		55.50	55.50
25/02/03	Garo	Chibanda Kol	GB,HDG,NS,		134.70	134.70
25/02/03	Garo	Chibanda Kol 2	LD,HJ,KZ,		111.10	111.10
25/02/03	Garo	Chibanda Kol 3	LD, HJ, KZ,		39.70	39.70
25/02/03	Garo	Chining Kri	GB,LD,HDG,		124.50	
25/02/03	Garo	Chining Kri	NS,HJ,		83.98	208.48
25/02/03	Garo	Danged Kol	AA,SJB+Amaston Marak		366.24	366.24
26/02/03	Garo	Mathrong Kol	AA,LD,GB,SJB,HDG,HJ,KZ,		699.10	699.10
26/02/03	Garo	Bangda Pa	LD,HJ,		144.60	144.60
26/02/03	Garo	Khorekol	GB,SJB,HDG,		330.24	330.24
Borsora/Garo Total					10408.73	

Shnongrim Ridge

Date	Area	Cave Name	Party	Pre 2003	2003	Total Length
06/02/03	Shnongrim Ridge	Krem Iawe	HDG, ATB, SJB, JaS	2247.33	419.33	
07/02/03	Shnongrim Ridge	-"	HDG, PeL		195.96	
07/02/03	Shnongrim Ridge	-"	SJB, ATB, AUA		89.01	
07/02/03	Shnongrim Ridge	Krem Iawe Barit (Iawe)	SJB, ATB, AUA		206.95	
08/02/03	Shnongrim Ridge	-"	SJB, ATB		239.46	3,398.04
08/02/03	Shnongrim Ridge	Krem Labbit Lumdait Krong	HDG,PeL,AN,HJ,KZ,AA,RS,Jrat,		337.92	337.92
09/02/03	Shnongrim Ridge	Krem Krang Moo O	PeL, AN, AUA, SD		134.55	134.55
09/02/03	Shnongrim Ridge	Krem Krang Moo 1	JayRat, RS		103.49	
10/02/03	Shnongrim Ridge	Krem Krang Moo 1	PeL, AN, AUA, SD, RS		109.54	
11/02/03	Shnongrim Ridge	Krem Krang Moo 1	PeL, AN, AUA		132.39	
12/02/03	Shnongrim Ridge	Krem Krang Moo 1	PeL, AN		220.93	

12/02/03	Shnongrim Ridge	Krem Krang Moo 1	Jrat, RS, AUA	339.04	
13/02/03	Shnongrim Ridge	Krem Krang Moo 1	PeL, AN, AUA, Jrat,	299.88	
17/02/03	Shnongrim Ridge	Krem Krang Moo 1	PeL, AN, AUA, Jrat,	221.82	1427.09
11/02/03	Shnongrim Ridge	Krem Liat Prah	ML, TM, NR, RS	5979.10	267.29
12/02/03	Shnongrim Ridge	Krem Liat Prah	ML, TM, NR, FS	704.86	
14/02/03	Shnongrim Ridge	Krem Liat Prah	AN, NB, SD, FW	228.90	
14/02/03	Shnongrim Ridge	Krem Liat Prah	ML, PL, Jrat,	177.96	
19/02/03	Shnongrim Ridge	Krem Liat Prah	TM, DH, AN	514.67	
19/02/03	Shnongrim Ridge	Krem Liat Prah	RS, ML	202.92	
23/02/03	Shnongrim Ridge	Krem Liat Prah	RW, ML, AN	220.79	8296.49
07/02/03	Shnongrim Ridge	Krem Umthloo	Jrat, KZ	12660.89	111.30
21/02/03	Shnongrim Ridge	Krem Umthloo	ML, TM, AN	55.73	
21/02/03	Shnongrim Ridge	Krem Umthloo	Jrat, RS	39.39	
22/02/03	Shnongrim Ridge	Krem Umthloo	TM, Jrat, R \bar{G}	306.63	
23/02/03	Shnongrim Ridge	Krem Umthloo	Jrat, TM, DH	155.45	
25/02/03	Shnongrim Ridge	Krem Umthloo	Jrat, TM	83.65	13413.04
11/02/03	Shnongrim Ridge	Krem Shrieh Khaidong	NB, RW, SD	227.61	
12/02/03	Shnongrim Ridge	Krem Shrieh Khaidong	NB, RW, SD	309.12	
13/02/03	Shnongrim Ridge	Krem Shrieh Khaidong	NB, RW, SD	454.26	1047.99
12/02/03	Shnongrim Ridge	Raining out Cave (Krem Krang One Sheen)	FW, DH, R \bar{G}	297.28	
13/02/03	Shnongrim Ridge	Raining out Cave (Krem Krang One Sheen)	DH, R \bar{G} , FS	42.77	
14/02/03	Shnongrim Ridge	Raining out Cave (Krem Krang One Sheen)	DH, R \bar{G} , RW	133.05	473.1
14/02/03	Shnongrim Ridge	Krem Kseh Upring	TM, RS, DP	172.68	
15/02/03	Shnongrim Ridge	Krem Kseh Upring	TM, SD, AN, PL	404.63	577.31
16/02/03	Shnongrim Ridge	Pineapple-pot	RS, DH, NR	152.03	
17/02/03	Shnongrim Ridge	Pineapple-pot	RS, DH, NR, FW	358.13	
18/02/03	Shnongrim Ridge	Pineapple-pot	RS, DH, NR, FW, AN	224.50	
21/02/03	Shnongrim Ridge	Pineapple-pot	DH, NR, FW, DP	430.57	
22/02/03	Shnongrim Ridge	Pineapple-pot	AN, PL, NB	76.18	1241.41
16/02/03	Shnongrim Ridge	Nomans Pot	TM, ML, NB	109.47	
17/02/03	Shnongrim Ridge	Nomans Pot	TM, DP, NB	134.70	244.17
17/02/03	Shnongrim Ridge	Knee-wrecker-pot	RW, SD, R \bar{G}	193.39	
18/02/03	Shnongrim Ridge	Knee-wrecker-pot	RW, SD, R \bar{G} , DP	313.89	
19/02/03	Shnongrim Ridge	Knee-wrecker-pot	RW, SD, R \bar{G} , DP	165.75	
22/02/03	Shnongrim Ridge	Knee-wrecker-pot	SD, RW	136.63	809.66
20/02/03	Shnongrim Ridge	Krem Synrang Ngap	NR, Jrat, PL, FS, BC, DM, RS	361.35	
24/02/03	Shnongrim Ridge	Krem Synrang Ngap	NR, RW, SD, R \bar{G} , FS	419.77	
25/02/03	Shnongrim Ridge	Krem Synrang Ngap	R \bar{G} , NR, RW	338.69	
25/02/03	Shnongrim Ridge	Krem Synrang Ngap	RW, SD, FS	337.07	
26/02/03	Shnongrim Ridge	Krem Synrang Ngap	R \bar{G} , NR	265.96	
26/02/03	Shnongrim Ridge	Krem Synrang Ngap	TM, RW, SD	254.03	1976.87
21/02/03	Shnongrim Ridge	Kut Sutiang	TM, PL, ML	108.68	108.68
21/02/03	Shnongrim Ridge	Krem Umim	NB, R \bar{G} , AA	1046.95	220.14
23/02/03	Shnongrim Ridge	Krem Synrong Labbit	RS, NB, PL	366.62	1267.09
24/02/03	Shnongrim Ridge	Krem Synrong Labbit	NB, FW, DP	167.40	
24/02/03	Shnongrim Ridge	Krem Synrong Labbit	AA, PL, AN	118.75	
25/02/03	Shnongrim Ridge	Krem Synrong Labbit	RS, PL, AN	171.10	
25/02/03	Shnongrim Ridge	Krem Synrong Labbit	AA, NB, DP	301.08	
26/02/03	Shnongrim Ridge	Krem Synrong Labbit	PL, DP, AN	337.00	
26/02/03	Shnongrim Ridge	Krem Synrong Labbit	AA, DH, FW	191.94	1653.89
24/02/03	Shnongrim Ridge	Krem Wiar-Bru	Jrat, Ronnie, DH	7.42	
25/02/03	Shnongrim Ridge	Krem Wiar-Bru	Jrat, TM, Bat	192.64	200.06
24/02/03	Shnongrim Ridge	Krem Langshreh	ML, TM, RS	171.78	171.78
26/02/03	Shnongrim Ridge	Krem Phlangmet	Jrat, NB, PD, Brian, ML	44.00	44.00
26/02/03	Shnongrim Ridge	Krem Inram Blang	Jrat, Brian, ML	80.00	80.00
22/02/03	Litien Valley	Krem Labbit (Daistong)	ML, DP, PD	451.23	
Sutnga/Shnongrim Total				15363.10	
2003 Expedition Total				25771.83	