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Dalene T. Perrigo - Editor
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Cover Photo: From the floor, stalactites on the ceiling appear in a sunburst formation. Photo credit: Alan Murray

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Alaska prefix is 907
Author examines logs about 3,000 years old preserved in a cave in the Tongass National Forest. Photo from author's collection.

**SIGNIFICANCE OF THE SE ALASKA KARST**

E. James Dixon, Ph.D.
Curator of Archeology
Denver Museum of Natural History

Less is known about the archeology of southeastern Alaska than any other comparably sized part of the United States. The area is part of the northwest coastal rain forest of North America which is characterized by hundreds of islands, heavy rainfall and steep, thickly forested terrain which makes field research difficult, dangerous, and expensive. Northwest Coast cultural origins and development are poorly known because of the difficulty of excavation and poor organic preservation in the acidic heavily forested soils. The paleoecology, glacial and sea level history, and cultural chronology of this unique environment is largely unknown. Consequently, it presents one of the last major scientific frontiers of its type in North America.

The caves of the Tongass National Forest and their associated deposits provide an unparalleled opportunity to discover and interpret what may be possibly the earliest evidence of humans in North America. In the temperate rain forest, the caves provide a unique context in which abundant organic remains necessary to interpret and date regional paleoecological and cultural developments are preserved. Preliminary reconnaissance of a small portion of these karst areas has documented numerous caves and rock shelters which contain evidence of past human use including human burials, dramatic cave art, wooden implements, and habitation sites with associated middens. This and subsequent research suggest that as early as the late Pleistocene, or ice ages, the region played an important role in human population movements and the exchange of species between Alaska and the more temperate regions of North America. During the Pleistocene sea level was lower than it today and much of the outer continental shelf along...
the Northwest Coast was exposed as dry land. Sea level history has played a critical role in the geographic and biotic history of the region. Its interpretation is essential to understand the history of formation and occupation of wave-cut caves and rock shelters and former connections between islands.

It is clear from the brief field reconnaissance recently undertaken by researchers supported by the USFS that initial cave exploration holds great potential for the discovery of spectacular archeological remains and particularly for the critical period of the late Pleistocene, when humans first entered the Americas. In one cave alone, more than 60 individual paintings have been observed.

Organic remains such as wood, fibers, feathers and bone are also well preserved. During a one-week survey in June 1994, an extensive obsidian quarry and two associated elevated sea caves were documented on one of the islands.

During the same survey, well-preserved examples of Northwest Coast art on split wood planks and what appeared to be a fish club were collected from two different localities within the same cave on another island. These artifacts were subsequently radiocarbon dated to 1200 BP and 1340 BP for the planks and 4440 BP for the club. Also, during the same survey approximately 10 additional caves were documented during aerial reconnaissance of two other islands.

Subsequent investigation of some of these localities revealed additional surface organic artifacts, as well as additional examples of cave art. A spectacular rock shelter with wooden artifacts preserved on the surface with an associated midden estimated between 3-4 meters deep was also documented. Few, if any, regions remain in North America in which spectacular and important discoveries can be made in such a short period of time.

Fragile bones, from thousands of years ago, were found on the floor of a southeast Alaska cave. Photo: E. James Dixon

One reason the region has received comparatively little scientific attention is that early geologic interpretations suggested that during the late Pleistocene the Northwest Coast had been covered by glacial ice extending westward from the continental mountains to the edge of the continental shelf. However, more recent research indicates that sizeable areas of southeast Alaska were probably ice-free along the inner continental shelf during and toward the end of the last glacial maximum. Vast areas along the coast may have been deglaciated beginning about 16,000 BP possibly providing a coastal corridor for the movement of plants, animals and humans. More recently Dan Mann and Dorothy Peteet have suggested that except for a 400-km coastal area between southwest British Columbia and Washington, the northwest coast of North America was ice free by c. 16,000 BP.

Geological and paleontological research over the past two decades suggests to many scholars that the northwest coast of North America was ice free and suitable for human colonization and occupation by at least 12,000-13,000 years ago and possibly earlier.

Recent discoveries described by Timothy Heaton Ph.D., Department of Earth Sciences and Physics, University of South Dakota at Vermillion and F. Grady, Department of Paleobiology, Smithsonian Institute in Washington, D.C., document the remains of three individual brown bears in the caves on Prince of Wales Island which have been radiocarbon dated to 9,760 BP, 9,995 BP and 12,295 BP.
The earliest radiocarbon date for black bear on Prince of Wales Island is 11,565 BP, and another early date, 10,700 BP for the black bear in the region has been reported by Risa Carlson. Timothy Heaton has interpreted this information to suggest that black and grizzly bears coexisted on Prince of Wales Island for at least 1,800 radiocarbon years.

Recent DNA analysis of the grizzly bear bones by Gerald Shields at the University of Alaska in Fairbanks suggests that these individuals appear to be genetically more similar to modern polar bears rather than to contemporary brown bears. This evidence suggests that the brown bears from Prince of Wales Island, which are now regionally extinct, may be the remains of an ancient population separated from the northern polar bear population by the Bering Land Bridge during periods of lower sea level during the last ice age. If this hypothesis is correct, it may suggest that there were substantial unglaciated refugia that existed on Prince of Wales Island and possibly other areas of the Northwest Coast during late glacial times.

Approximately 20 years ago Knut Fladmark, a Canadian archeologist, postulated that the first human colonization of America occurred by boat along the Northwest Coast during the last Pleistocene. He further theorized that with the use of watercraft people gradually colonized unglaciated refugia and areas along the continental shelf exposed by lower sea level. The remains of brown bear discovered, analyzed and dated from Prince of Wales Island strongly support Fladmark's hypothesis because this evidence demonstrates that the environment was sufficiently productive to support these large omnivores by c. 12,000 BP. If the environment was capable of supporting breeding populations of brown and black bear, it is reasonable to postulate that it was also capable of supporting human hunters and gatherers. Although the region has been largely ignored as a corridor for biotic and cultural dispersals, the recent paleontological discoveries underscore the imperative need to understand the region's past in order to interpret more encompassing concepts relevant to the development of North American biogeography and cultures.

As deglaciation progressed, the vegetation and the resource base for mammals and humans changed. The prehistoric distributions and range of species can be documented as a result of cave survey and scientific excavations coupled with radiometric and other dating techniques. The excellent preservation of organic remains characteristic of karst deposits and foraging adjacent terrestrial and marine environments by prehistoric humans using the caves combine to provide an unparalleled record timing the local occurrence and disappearance of various species throughout the region.

This record will provide important insights into the development of North American biogeography, ecosystems and culture history. The caves of Southeast Alaska are important environmental features which are recognized for their intrinsic beauty and ecological importance. Furthermore, they are rare and unique vaults of scientific information documenting the history of life along the Northwest Coast of North America.

E. James Dixon, Department of Anthropology, Denver Museum of Natural History, 2001 Colorado Blvd., Denver, CO 80205-5798.

E. James Dixon, Curator of Archaeology at the Denver Museum of Natural History, was Curator of Archaeology at the University of Alaska Museum from 1974 to 1994. He received BA and MA degrees in anthropology from the University of Alaska and a PhD in anthropology from Brown University. When he retired in 1994, his teaching career spanned his 20-year career at UA. Over the years he was awarded 20 research grants including awards from the National Geographic Society and the National Science Foundation. Dr. Dixon is senior author and contributor to 20 major research reports and has presented more than 27 papers and published abstracts. He has been an invited lecturer in the United States, Canada, Australia and Japan.

Selected Publications:


EXCHANGES

The Speleograph Vol. 30 No. 12, Dec. 1994, p.147. The recent removal of bolts and restoration work done at Derrick Cave, while by most standards would be considered modest, sets an important managerial and conservation precedent. The Bureau of Land Management is the first Central Oregon land management agency to take a stand against climbing in caves, prohibited the activity, and removed climbing paraphernalia. Even though a precedent has been set, the problem is not solved. Climbing in caves is increasing in Oregon and probably in other parts of the country as well. Cavers are encouraged to remain vigilant and report cave climbing activity to the ACCA, the NSS Conservation Chairman, and local authorities.

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Cleveland Grotto News. Vol 40 No 4, August 1994, p.34-37 The Cleveland Grotto celebrated its 50th anniversary with a celebration Oct. 1 at Camp Cheerful, in Stongsville, Ohio. History of the organization, including anecdotal items, were collected for a Grotto History book that is under consideration. The event featured a franks-&-beans lunch, a buffet-style dinner, lots of activities and a chance to catch up on the news of old friends.

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The CIG Newsletter. Vol. 39, No. 4, April 1995. p.42 Carlsbad Caverns National Park won the prestigious Garrison Gold Award for accomplishments in its educational and interpretive program during 1994. The award is given to one park each year in the five-state area making up the Southwest Region and carries with it a $2,000 stipend to the park's budget for 1995. Accomplishments announced with the presentation include: (1) new daily tours through portions of the cave to enhance critical protection of formations, (2) new exhibits; (3) workshops conducted for American and Mexican school teachers, (4) a shadow program for junior high school students, (5) a major expansion of the visitor center bookstore, (6) changes in the park's active volunteer and publications programs, and (7) other partnership projects with the local community.

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B.C. Caver. Vol. 8, No. 3, May-July 1994, p.17. Close to the Edge Cave, in the Dezaiko Range of northern British Columbia, Canada, has apparently been edged out as the deepest single shaft in Canada or the U.S. According to reports in Descent and The Journal of Subterranean Metaphysics, the excitingly named P6083 in Hawaii is now 263 meters deep, as against 244 for CTTE. To add insult to injury, Arctomys Cave, on the eastern border of northern BC, has been pipped as the deepest US/Canadian cave by another Hawaiian cave - Kazumura Cave, which has a total depth of 644 meters, as against the 536 of Arctomys. Honor can be salvaged by stating that CTTE and Arctomys are still the respective deepest north of Mexico, or that they are the deepest limestone caves (the Hawaiian caves are lava tubes). Kazumura Cave could also be said to be a bit of cheat, as it is never more than 20 meters below the surface, and gains its depth over 31.6 kilometers.

Virgin passages should give cavers the willies!

HOW TO CRAWL

by R.R. Knotts

Traveling through virgin passage for the purpose of mapping is a risky business, particularly in the smaller caves.

Think about that for a minute. Say you're mucking through a muddy crawl on your hands and knees and suddenly the passage dries up a bit and formations begin to appear on the ceiling and walls. Your first thought is usually, "Thank God this is finally over with." When in fact, it should be more along the lines of "Holy-cow! I'm covered in mud and this passage is pristine."

Virgin passages should give cavers the willies. Every inch of the cave must be treated as a potential hazard, ready to explode at the first misstep. You have to pause every few meters and do a visual inspection of the area you intend to cross; starting on one side and looking in a 360 degree radius. Equal attention must be paid to the passage ahead and the area just traveled, as well as the immediate surroundings. No feature can be dismissed, you must catalog every one of them in your mind as either dangerous or not.

Wishbone Cave is a classic example of this. You can count the number of cavers that have entered Wishbone Cave on one hand. (Or maybe one hand and a couple of fingers). Moonmilk covers the walls like cottage cheese and hundreds of opaque little soda-straws are on the ceiling. Helectites and stalagmites are everywhere, and stalactite draperies block the passage at every turn. Throughout the cave you will notice

Continued on page 5

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WISHBONE

by Robert R. Knots

Wishbone is a really neat little cave. From the entrance you can look across the confluence of two passages with islands to the left and right and by turning your head, you can see El Capitan Peak and Caulder Mountain in snowy haze. The cave entrance is located at the base of a steep face. From the road below, it appears to be a tall fissure in a cliff, but up close the dark stain on the rocks above the entrance is obvious. The face appears to have been made from quarried blocks stacked vertically and tilted 22.5 degrees to one side. Almost 6 feet in diameter at the bottom, the opening quickly slopes up to three feet and remains that size and smaller throughout.

From the very start there are helictites and soda straws and the formations get better, deeper into the cave. The first junction is marked by a stalactite drapery, and two large, single stalactites surrounded by moon milk. Five feet further into the passage a bear track shows in the moon milk that also covers a pile of boulders. From this point it is a muddy, wet crawl through 6 inches of water until the passage turns a corner.

As the slope changes direction, it begins to run back into the cave. At the corner is a very nice ramp, covered in moon milk. The floor is very muddy and sily at this point, with large cobbles scattered on top. A pair of beautiful stalagmites nearly fill the center of the passage. Soda straws are everywhere. A tiny alcove that angles up past the stalagmites, has bat guano in a thick layer on the floor and at the base of the opening. We found bat bones all along, and now we knew where the bats rested. One of the most interesting things, though, was the charcoal. We noticed little chunks of burnt wood throughout the cave, but once we passed the slope change, there were large chunks of it all over the place. In a couple of spots I even found charcoal covered in calcite.

The B-survey ended just past the biggest charcoal deposit, in a strange little mud hole. It was a 16-inch slot about 6 inches wide that was at the bottom of a contorted little twisty crawl. The mud on the wall and in the plug was very fine, and almost looked dry. But one small touch and it was instant slime. We stopped there. In five hours we mapped 121 feet of passage, and both of us were pretty wet by this time.

There is still one more solid lead to be mapped, and I can say for certain that it goes 100 feet, maybe more, who knows? I scooped it back to a water-drawl that had a foot or so of head room, and decided to leave the lead for another day.

The passage which continues past the water, is definitely bigger, big enough for a caver to sit up anyway.
While on this trip I visited several grottos, and schools where I presented a slide show on caving, and living in Southeast Alaska. I was pleasantly surprised to find almost everyone I talked to was very interested in the karst and caves of Southeast as well as our unique life styles. They were also interested in seeing slides and hearing about the three major industries within Southeast - tourism, fishing and timber.

The comment that I heard most frequently, paraphrased went like this, "Wow! I had no idea about the caves in Alaska and I had no idea about what was going on with logging. The slides you showed us of clear cuts looks like a nuclear waste land." This was usually followed by several questions about caves, the impacts of logging on the karst, and protection options. I found that people from all walks of life were concerned that the caves be protected and that the Tongass National Forest be managed in a way that would protect it for future generations. I even had hard-core business-people say the Tongass and the caves should be protected at all costs.

As a person who generally thinks the USFS, (at least in the Ketchikan Area) is trying to do a good job, I found it hard to explain why timber interest rules in Southeast. It's hard to explain how the Federal Government got involved with the long term contracts with the timber industry. Many people found it hard to believe that public lands could be placed in jeopardy by these contracts. Many didn't understand why the Federal Government didn't cancel the last 10 years of the 50 year contract with KPC in order to protect wildlife and karst. Many wondered why the Federal Government continues to subsidize road building to the logging areas when balancing the federal deficit is such a priority.

One of the main reasons I decided to give this presentation was to let people know what is happening on their lands. Alaska is often misunderstood by the people in the lower 48. Alaska is often out of sight, out of mind. If there are going to be lasting changes to protect our wilderness, including caves and karst it is will take Americans from the lower 48 to help persuade Congress to make responsible decisions. The one thing that I came away with was the overwhelming desire by American Citizens in the lower 48 to protect the Last Frontier.

Dear Marcel,

Once again, on behalf of the Northern Colorado Grotto, I would like to thank you for the slide presentation at our March 14 meeting. The photography was excellent as well as the dialog. You did a good job putting it all together.

As fellow cavers, we have an obligation to protect cave areas that are threatened or being destroyed. At our last meeting, we decided to donate $25 to help the Glacier Grotto with expenses related to the Tongass Cave Project.

One of our members threw in $10 of his own money for the same purpose. We realize that it's not a lot of money for the area, but we hope it will make a difference.

Good luck and success in this upcoming season.
Cave Consciously,
Randy J. Macan, chairman-Northern Colorado Grotto

May 3, 1995

Dear Marcel,

Thank you again for the fascinating slide show you gave at last month’s Black Hills rescue class. We enjoyed it a great deal and, I think, learned a lot. The newer cavers in the group especially appreciated it.

Good luck in your negotiations to protect the karst - and thank you (and the others) for all the work you’ve done so far. Happy caving this summer. We look forward to reading about your new discoveries.

Sincerely, Cori Giannuzzi
PahaSapa Grotto/Jewel Cave N.M.

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**NOCTURNAL BALANCE**

Fledermause flutters in nights' darkened sky,
searching for moths whose short lives know why,
while naked-toed owls search for night chilled cicadas
and flying squirrels follow olfactory trails to truffles,

Boreal toads howl with ritual mating trills,
where tree frogs have already laid their egg caches,
and water shrews search for soft bodied aquatics,
while ermine stores yet more voles in stashes.

The forest at night is no passive arena,
it thrills to many lives both short-spanned and long,
yielding no passion to the thrills of the chase,
while binding all parties to perform their function.
NEW OPPORTUNITIES

UPDATE ON NORTH CAROLINA COASTAL PLAIN KARST source..Der Fledermaus, March 1994, DC Speleograph Vol. 50, No. 07, July 1994

Susan and Cato Holler (Flittermouse Grotto) picked up Bill Farlow in Asheboro (he's one who has created his own man-made cave in his yard), then headed east to check out some leads. During the course of the weekend a couple of old cave favorites were visited including Old Blacksmith's Cave in Jones County (which was carrying quite a bit of water at this time), and Brinson's Rockhouse in Onslow County, a unique 350-foot cave system containing several karst windows, impressive outcrops of vuggy Castle Hayne Limestone, and a tannin-stained brown coastal plain stream. Unfortunately word has it that the Rockhouse and 500 acres of adjacent land are soon to be targeted for quarrying by Martin-Marietta Aggregates. It is sad to think that this, the finest example of Tarheel Coastal Plain karst, may soon disappear.

The Fort Fisher Coquina outcrops, the bluffs at Snow's Cut, and the small caves in the nearby sandy-peat deposits were also visited while the unusually balmy February weather was more than cooperative. One of the highlights of the weekend was the location of a new cave in a very unusual setting: smack dab in the middle of a Jones County cottonfield. The property owner told us of a new sinkhole opening up and nearly swallowing his tractor. Sure enough, several sinkholes and nearby springs were visited, and one pit led into a Blue-Hole-like flooded passage approximately 7 feet wide, 2.5 feet high, leading downward at a 45 degree angle. The passage continued as far as our high-intensity dive lights would penetrate the crystal-clear waters. Anyone for cave-diving a cottonfield?


After a fine trip to Papoose Cave, Jim Harp and I drove to the Palouse Falls State Park for an overnight stay before returning to Seattle. We arrived and set up camp mid Sunday afternoon. Around dinner time an interesting man came by the table and was having a problem with the registration envelope. Jim began a conversation with the man and asked him where he was from. He told us he was from Alabama. Jim said there were lots of caves down there, and asked if he had ever been in any caves there? "Yes, that's all I do", he replied. Carl Craig, NSS 12044, is from Huntsville, AL. Carl said he was 65 years old and had been caving in TAG country all his life. After dinner that night, breakfast the next morning and all the caving discussion, this southern cave man packed his van and headed for California to meet his four children and climb Mt. Whitney.

THE DEPOSIT BOX source.. B.C. Caver, Volume 8 No 3 May-July 1994 Article by G Heslop

This time I've found some deposits along the CN between Prince Rupert and Smithers. Near Shames (between Mile 78.5 and 82.5 east of Prince Rupert) is a large deposit of white and light coloured limestone. It is in the form of a band reported to be from 400 feet to 2600 feet in width, dipping vertically and trending southwest from the Shames River for 3.5 miles. At its western end it is one mile north of the railway and has an elevation of 300 feet; to the east it rises steadily until it achieves a height of 3000 feet and then trends back down to 100 feet at the eastern end (only about 800 feet from the railway here). Overburden is reported to be very light and in places the limestone is exposed in high, vertical cliffs.

At Moricetown is a high calcium deposit near the headwaters of Zymoetz River (west of Moricetown). This limestone occurs on the north side of the pass followed by the old trail from Moricetown to Hankins' Camp on the Zymoetz River and near the summit. As the only outcrop seen was in heavy timber it was impossible to ascertain the thickness of the bed, but it would appear to be of good size. These reports date from 1912 and 1908 respectively.

Also on the CN railway but nearer Prince George are deposits at Hansard and Urling. Now these deposits may be well known but as I'm not sure I've decided to write them up anyway.

Hansard. One mile west of Hansard is a ridge, in places 200 feet high, of fine grained, pale-blue and dark-blue limestone, running parallel to and south of the highway. The limestone has a light soil covering and a dense growth of trees; outcrops are infrequent except in the area from 1-1.5 miles west of Hansard. Other similar deposits are reported to occur six miles south of Hansard and also in the vicinity of Hansard Lake.

Urling. Two miles east of Urling on the east bank of Parrmugan Creek is a horizontally bedded deposit of fine-grained limestone pink and light brown in colour. An old quarry was opened just below a high falls; the face was 250 feet in height; this was connected to the CN with a spur track. Outside of the quarry, dense bush and heavy overburden made it impossible to estimate the size of the deposit.
BLUE MARBLE CAVE
WATERWORKS CAVE
TONGASS NATIONAL FOREST
PRINCE OF WALES ISLAND
ALASKA

Compass, inclinometer and tape survey, July 1993 and July 1994,
by the Tongass Cave Project of the National Speleological Society.
Data collection by M. Sowa, F. Smith, D. Lowe, K. Allred and P.
Survey length of Blue Marble Cave- 3,471.4 feet
Survey length of Waterworks Cave- 659.3 feet
Survey depth of Waterworks Cave- 111.2 feet
BLUE MARBLE CAVE
Prince of Wales Island, AK • Preliminary Report #180, Addendum to Report #124
Tongass Cave Project • National Speleological Society

by Kevin Allred
November 17, 1994

ADDITIONAL EXPLORATION:
On July 9 and 10, 1994, Paul Hadfield and Kevin Allred continued a survey of leads in the "Carbonate Labyrinth". "Broken Buckle Pit" is a 50-foot drop to a trickle stream which connects in two places above Haystack Pit. Both connection points had been inaccessible and/or obscure during the previous survey of Haystack Pit. A second lead required a 20-foot climb into the ascending canyon-like vadose passage. It pinches after 160 feet. This passage contains foamy moonmilk and pretty white formations. The trickle which flows through this canyon emerges from a pool at the upper end.

The third lead investigated has a streamlet and was named "Black Shiver Pit" which actually consists of two drops of 15 and 30 feet respectfully. Black organic residue coats the walls and floor in this spacious passage. In the chamber below, are outstanding speleothems. A muddy canyon continues downwards, divides, but soon becomes tight with unstable looking mud. The branch deemed most safe was pushed to the end and named "Mud Sucker" because of the fissure's tendency of swallowing wallowing cavers.

Total length of Blue Marble Cave is now 3471.4 feet and total depth is 391.8 feet. Other possible leads were not practical to enter due to being too high or delicate. Management's recommendations remain the same as Report #124.

WATERWORKS CAVE
Prince of Wales Island, AK • Preliminary Report #180, Addendum to Report #124
Tongass Cave Project • National Speleological Society

by Kevin Allred
November 17, 1994

DESCRIPTION:
Waterworks Cave's obscure entrance is in rubble at the base of a waterfall swaller of a sizeable stream running off muskegs above. Large enough entry was originally dug out by Kevin Allred when discovered by he and Mark Fritziek in 1992. Fragments of marble containing garnets were discovered at the entrance and a quick look above the waterfall failed to find the source.

This Silurian Marble cave is quite complex, with numerous streamlets pouring into the various canyons and tubes. Several ropes should be on hand for complete exploration of this cave. The furthest rope drop would probably be about 50 feet and is accessible through a small fissure approximately 60 feet from the entrance. This pit was not dropped, as the passage below was accessed easier via 40-foot deep "Plumbers Pit" (see profile map). Below Plumbers Pit is a long loop passage called "Septic System" which empties into "Sewer Line" (a wet, muddy tube). All this drainage flows on down a 15 foot drop and past "Shower Stall" which comes from the entrance drainage of the cave. Still another drainage called "Wet Dream Pit" and "Draino" enter the Shower Stall flow. Finally, everything flows into the terminal sump, "The Drain Plug". The Drain Plug plots out to be about 11 feet above Caddis Fly Creek Sump in Blue Marble Cave, and is believed the same stream.

Total surveyed passage in Waterworks Cave is 659.3 feet and it is 111.2 feet deep. This cave contains beautiful banded marble and is very sporting. It requires warm clothing, vertical gear, and a knowledge of how to use it.

MANAGEMENT RECOMMENDATIONS:
The location of Waterworks should only be shared with those prepared for cold, vertical alpine caving conditions. In order to protect biological, geological and recreational resources, the surrounding area should not be harvested for timber.
KITSIE PIT

Prince of Wales Island, AK • Preliminary Report #174
Tongass Cave Project • National Speleological Society

by Kevin Allred
November 15, 1994

DESCRIPTION: Kitsie Pit was discovered by David Klinger. The cave appears associated with a cave system beginning with Annie's Cave (see report #177) and ending at Wood's Cat Cave with it's resurgence. Kitsie is a 40-foot deep pit which becomes too tight at the bottom. A rope and vertical gear is needed for this pit. Total surveyed length is 34.3 feet and the depth is 44.9 feet. No speleothems were noted.

MANAGEMENT RECOMMENDATIONS: The area is heavily karsted, and to protect the underground hydrologic and biologic integrity, there should be no logging or road building, even in the uphills recharge areas. The area has great appeal aesthetically, and for recreation. Cave location could be shared with those having vertical equipment and skills to use it.

WOUNDED KNEE CAVE

Prince of Wales Island, AK • Preliminary Report #176
Tongass Cave Project • National Speleological Society

by Kevin Allred
November 15, 1994

DESCRIPTION: Wounded Knee Cave was discovered from the air by Forest Service Geologist Jim Baichtal and first investigated by David Klinger and Peter Branson who injured his knee in a clear-cut near the cave. A streamlet runs from adjacent muskegs to enter and partially fill the entrance at high water, judging from water marks on the sides of the entrance sink. The entrance passage runs southerly 30 feet with one tight side passage. At this point is a large room containing breakdown. A too-tight pit drops through the breakdown, but no air flow was reported. Total surveyed length of the cave is 99 feet and depth is 11.9 feet. The resurgence for this system is unknown.

MANAGEMENT RECOMMENDATIONS: No further logging should occur in this area or recharge area to protect the remaining hydrologic and biologic resources. There appears no reason not to release the cave location to the general public.
ANNIE’S CAVE
Prince of Wales Island, AK • Preliminary Report #177
Tongass Cave Project • National Speleological Society

by Kevin Allred
November 15, 1994

DESCRIPTION: Annie's Cave was discovered and named by David Klinger on July 13, 1994. Formed in an unmapped mass of Silurian Marble, Annie's Cave seems to follow a fault down the slope of the mountain side. A parallel ravine which carries overflow runoff probably defines the surface edge of this fault. Fifty feet into the 140-foot entrance pitch, a side passage "The Barracks" heads upwards 60 feet to become too tight with blowing air. The remainder of the drop enters a large room "Klinger's Cathedral". At the bottom of the drop a stream originating from muskegs above the cave formed a canyon called "Colonel Crawl" which leads several hundred feet to an intersection. To the right, the muddy way becomes too tight after 20 feet. A side passage 100 feet from the bottom "Give Me Ten" ends in a mud choke after 35 feet.

Annie's Cave is very beautiful with marble walls and various speleothems. It provides excellent recreational opportunities for those prepared vertically and ethnically. Total surveyed length is 586 feet and the depth is 217.1 feet.

MANAGEMENT RECOMMENDATIONS: Annie's Cave has been included in a planned and flagged timber harvest unit laid out by unknown parties. One well flagged boundary runs directly over the very obvious entrance pit. To protect the karst system of Annie's, other known caves downslope, and yet, unentered drainages here from hydrologic changes and sediment buildups, we recommend no road building or logging activities either in this heavily karsted area, or on the drainage recharge slopes above. This area has excellent aesthetic and recreational qualities in a wilderness setting.

DIVER BAY CAVES 1994
CHANGES IN WATER LEVELS FROM 1993

Dall Island, AK • Preliminary Report #210, Addendum to Reports #162, 163, 164, 165
Tongass Cave Project • National Speleological Society

by Steve Lewis
November 7, 1994

The summer of 1994 was relatively dry for southern southeast Alaska, but not dry as that of 1993. This statement is based on personal observation and has not been confirmed with weather records.

On July 10, 1994, Kent Carlson and Amy Russell entered Die Hardymon Hole to collect invertebrates. They pushed into the drop above the Diaper Duck Passage and noted that water levels were about 60 to 75 centimeters (2-2.5 feet) higher than during last year's exploration. This confirms last year's supposition that portions of the cave beyond this point are inaccessible without diving equipment except in exceedingly dry seasons. Whether or not water emerges from the entrance during periods of heavy precipitation or snow melt is still unknown.

Also on July 10, Kent and Amy visited Platy Cave and found water flowing out the entrance even though there had been no significant rainfall for at least a week.

This again confirmed our hypothesis that this cave is extremely active hydrologically, with an active stream at cave level most of the time. Although there must be a small system taking some water at deeper levels, the cave is an important drain.

It would be extremely interesting to examine both caves during heavy rainfall to determine the volume of water that emerges.

On July 21, a large group of cavers visited both Te Ana Rawere and St. Peter's Privy Chamber. Roman Motyka of the state geological survey was also there. He was in the process of mapping these caves for studies of seismic activities. Te Ana Rawere was flooded to an unknown depth, probably to about the 80 centimeter (4 feet) waterline that we had noted during last year's expedition. St. Peter's Privy Chamber had no standing water in the cave although drips did seem somewhat more active than last year.
Initial Reconnaissance of Carbonate Units Adjacent to Waterfall Bay, and Gold Harbor, Including Twin Peaks, With Preliminary Recommendations for Future Inventory and Management

Dall Island, Alaska • Preliminary Report #200, Superseding #167
Tongass Cave Project • National Speleological Society

by Steve Lewis
October 27, 1994

According to geologic maps, carbonate rock extends from north of Waterfall Bay, across to Rose Inlet, curving south to include most of Grace Mountain, then back north to the south side of Gold Harbor. It includes Twin Peaks and the unnamed mountain to its west, extending well out onto the peninsula between Waterfall Bay and Gold Harbor. It is also exposed in a band extending from Grace Mountain, across Grace Harbor, and south to Ham Cove. According to Gehrels 1991 Geologic Map of Long Island and Southern and Central Dall Island, this entire unit is composed of massive to thick bedded marbles of pre-middle Ordovician origin. "It is common to see pure marble sections thicker than 100 meters."

Three days of exploration between Waterfall Lake and Waterfall Bay in the areas portrayed as strips of limestone on geological maps revealed no significant karst.

However, unlike the north side of the bay, initial reconnaissance of the east and south of Waterfall Bay revealed well developed karst throughout. The contact as shown on Gehrels 1991 Geologic map of Long Island and Souther and Central Dall Island appears to be quite accurate in section 10, to the east of Waterfall Bay. However, this map is apparently in error on the western contact. Contact points on the beaches of Waterfall Bay and Gold Harbor are approximately correct. However, our initial reconnaissance suggested that the contact does not follow the straight line portrayed on the map. Rather it bulges to the west. The extent of this bulge has not been determined but may encompass up to a quarter section.

Epikarst on Twin Peaks is highly developed and numerous shafts drop 5 to 25 meters (16-82 feet) before plugging with frost shattered limestone. We were unable to relocate the large shaft just off the northeast end of the bare pavement during our one day walking in the alpine. The helicopter reconnaissance had to be canceled due to low clouds. However, it appeared from the air during our fixed wing flight in to be well worth checking out again in the future. Several small caves were noted but not mapped in the karst plateau near the center of Section 10. This area is well forested in places and seems to offer the best potential for access to high elevation karst and caves that we saw. Although we only quickly walked over the north end of the alpine karst, most of the area appeared to be quite similar, with bare pavement, highly sculptured but invariably plugged with breakdown and frost shatter. We did not get a chance to examine the south or west flanks of Twin Peaks except from the air. This entire area warrants further exploration - the karst appears to be highly developed throughout, with similar characteristics to that of the Rose Karst Forest across the valley to the southeast (Report #167).

Karst was well developed but covered with a layer of shattered limestone along the broad bay on the south side of Waterfall Bay. Resurgences were numerous but no entrances were located in a relatively thorough search of the slopes below 1000 feet in Section 16. This area is very steep and has blowdown throughout, making it a very difficult area in which to travel. We did not have time to explore the draw between Twin Peaks and the 2100 foot (640 meters) summit to the west. However, exploration from the large lake up to the closed basin on the west of this peak revealed high potential. The closed basin is mostly plagued with the same shattered over burden as much of the area, but there are holes and the karst appears to be much clearer of debris along the ridges to the north and south of the basin. The contact is somewhat higher than portrayed on Gehrels map 1370 feet (418 meters) where we crossed. We crossed the ridge at 1640 feet (500 meters) and found most of the karst below 1200 feet (366 meters) in the upper end of the basin covered with shatter. The basin has many sinks and long linear (collapse?) features. The ridge to the north has great
potential. A number of short caves and pits were located on our retreat in pouring rain and fog. We did not follow the basin below 1250 feet (380 meters). There was no evidence of the stream shown on the Dixon Entrance D-4 Quad, just as there is no evidence of it near Beaver Having A Ball Cave (Report #195).

A number of caves were located along the northwest slopes of the 2100 foot mountain. So far, all have been below 500 feet (152 Meters) in elevation.

Our initial exploration showed highly developed karst throughout areas with carbonate rock. We have not determined a reason for the large amount of shattered dark gray limestone on the surface of much of the area. This is in stark contrast to the highly developed epikarst features found in the nearby Rose Karst. Was this the result of glaciation? Further work is required to determine this.

This entire arc of carbonate rock around the east and south of Waterfall Bay appears to be heavily karsted, with high potential for caves throughout. It is safe to assume that significant caverns and hydrolgic systems exist beneath all areas thus far investigated. Forested areas need to be thoroughly inventoried and the Krumholz and alpine areas deserve much more thorough exploration to determine the extent of karst and cave development. Further exploration and inventory of this area, the area encompassed in report #167, and areas between the two sites will be necessary to locate cave and karst features. However, at this point we are confident that all areas on carbonate substrate will fall into high or very high vulnerability classifications. Large amounts of blowdown, broken blocks under moss and surface detritus, and highly developed epikarst make travel and exploration difficult and potentially hazardous.

Those of us involved in the initial explorations feel that this and other karst areas on Dall Island are highly significant on a national and international scale since they contain pristine area of karst extending from alpine to sea level in a temperate rainforest. Such untouched areas will be very important in developing an understanding of karst systems in temperate rainforests worldwide, and for developing successful management techniques for other areas of karst in the Tongass National Forest.

In order to develop a comprehensive plan to keep this irreplaceable system intact, the next step is to contact private landowners in the area.

THINK BEFORE YOU RAPPEL THROUGH A TIGHT SPOT

Source. Ground Hog. SVG. April 1994

Recently our Shenandoah Valley folks found an exciting but tight little pit that became constricted about 7 feet down. They rigged so that the rope dropped through the widest point in the constriction. The caver put on a rack and carefully slid down. He was equipped according to standard practice, with a seat Jumar ready on a Jumar tail and a Texas Jumar packed at the top of his cave pack.

As his butt slid into the constriction, the caver encountered truth. "Whuff, ho-ah, wooo birdy," the caver thought. He locked off the rack. He was further chicken lest something slip and he hang himself to death on his helmet strap so he loosened his helmet. Now the caver was neither in any discomfort nor in any immediate danger, but he had a puzzle to solve. His seat Jumar might or might not be accessible. His other Jumar was in the pack which now rested against his ear, but there was no possibility that he get the Jumar sling onto either foot. He might put the seat Jumar on the rope and haul himself clear with his arms, but that would not have been easy.

Fortunately, the caver had the benefit of a back up ascending system. Another caver was standing above him. Frank grabbed the rope and hauled him out hand-over-hand. The caver then put away the rack, hooked up the Texas system, and gingerly downclimbed in three-inch increments, ensuring that he could reverse the process as he ooched through the constriction.

You can rappel into something that you can't climb out of. I speculate that, if you can downclimb through something with Jumars, then you have a reasonable hope of climbing out of it with the same system. I am marginally confident of this and would operate on this supposition if other circumstances were favorable. I am entire confidence of the converse: if you can't downclimb through a constriction with Jumars, then you can't climb out of it with Jumars. This is a no-go gauge that should certainly be exercised whenever there is doubt.

If you wonder whether you can climb up through a vertical constriction, then don't rappel into it! Put a suitable ascending system on the rope (no foot Gibbs, please!) and carefully downclimb, making sure that you can reverse the process at every juncture. In the absence of the second experienced caver, it would be prudent to have a hauling system pre-rigged on the rope with somebody at the standing end who knows how to operate the hauling system. If distance is involved, then establish clear signals for operating the hauling system (before you descend). You are in error when you feel that you are so experienced or so well-equipped as to be immune from error. If you proceed respectfully, than the cave will sometimes write you a warning ticket for one error.

Correct the error, be happy, and thank the cave for adding to your wisdom and your humility.
EL CAPITAN TRAIL #775

ACCESS: From the Maine Ferry Terminus at Hollis, take Highway 924 to Klawock (23 miles); At Klawock, turn right at the junction of Highway 929 and proceed to the Control Lake Junction, turn left onto FDR 20; in approximately 53 miles the FDR 20 intersects with FDR 15; turn left onto FDR 15, proceed west a few hundred yards to a parking area for the trailhead. The 1300-foot trail is a combination of gravel, boardwalk, stairs and natural tread. There are over 300 steps in the boardwalk stair portion of the trail. It takes approximately 15 - 20 minutes to hike up the trail.

Attractions: Entrance to the El Capitan Cave is the major attraction made more accessible by the development of the trail. Public safety and prevention of vandalism are the two main concerns with this tremendous resource. A gate has been installed in the "Hatfield" room, approximately 300 feet inside the cave, to eliminate the danger of flood entrapment. The cave has many hazards such as steep vertical pits and is prone to rapid flooding. The "El Cap Pit" is the deepest known natural pit in the United States with an initial drop of 598.3 feet. El Cap Cave is available for visitation under the following guideline.

Guided tours are offered 4 days a week, Thursday - Sunday. These tours allow visitation beyond the gate which is located within the cave. Tours beyond the gate last approximately two hours and are available as follows:

- 8:00 a.m. - 10:00 a.m.
- 10:00 a.m. - 12:00 noon
- Closed for lunch 12:00 p.m. - 1:00 p.m.
- 1:00 p.m. - 3:00 p.m.
- 3:00 p.m. - 5:00 p.m

1. Group sizes are limited to 6 not including the guide.
2. Small children are not recommended as there are many large boulders and pits throughout.
3. Bring your own flashlights and wear warm clothing.
4. Reservations may be called into the Thorne Bay Ranger District (907)828-3304, a radio call to El Cap will confirm availability.
5. Guided tours began May 25 and will end for the 1995 season on September 1. (Special arrangements may be made after September 1, 1995, to visit the cave provided there is 14 day advance notice.)
6. Anyone may visit the section to the gate at any time with no special arrangements.
7. A toilet, additional deck, and parking area were completed in 1994.

ADDITIONAL INFORMATION: Prince of Wales Island contains unique geologic structures and land forms known as karst topography which is characterized by caves, sinkholes, and underground streams. Karst topography is underlain by the soluble rocks of limestone and marble and was carved about 400 million years ago when the calcium carbonate shells and skeletons of marine creatures settled on the ocean floor in thick layers. Over time, material such as silt and clay buried the calcium carbonate deposits, exerted pressure and caused the hardening or lithification of these marine deposits. These deposits were carried to southeast Alaska on ocean plates. Subsequent folding and fracturing combined with uplift of retreating glaciers placed the limestone formations above sea level. In places, limestone outcrops are found at elevations above 3400 feet.

Length (one way): .................. 1300 feet
Elevation Gain: ..................... 300 feet
One Way Trip Time: .................. 30 minutes
Difficulty: .......................... More difficult

Recommended Season:

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USGS Maps: Petersburg A-4

(Copied from official USFS bulletin)
CAVES OF PRINCE OF WALES ISLAND  
Thorne Bay Ranger District, Ketchikan Area

Hundreds of caves underlie the forests of Southeast Alaska. Many of these are located on Prince of Wales Island where some are now open to the public.

Nearly all of southeast Alaska is in the Tongass National Forest which encompasses 17 million acres, and includes a large island group known as the Alexander Archipelago. Situated on the southern tip of the Archipelago is Prince of Wales Island where the National Forest lands are administered by the Ketchikan Area of the Tongass National Forest.

Caves are essentially nonrenewable resources. Caves can not be repaired, replaced or rejuvenated. Once destroyed, they are lost forever.

Prince of Wales Island contains a vast array of ecosystems including steep, forested mountains and deep U-shaped valleys, streams, lakes, saltwater straits, and bays that were carved out by glacial ice which once covered much of the island. It also has unique geologic structures and land forms known as karst topography, characterized by caves, sinkholes, and underground streams.

Currently, the Forest Service, in conjunction with the National Speleological Society, is conducting inventories to map the extent of karst topography found on Prince of Wales Island. Estimated to cover 700 square miles, the karst topography is underlain by the soluble rocks of limestone and marble and was carved about 400 million years ago when the calcium carbonate shells and skeletons of marine creatures settled on the ocean floor in thick layers. Over time, material such as silt and clay buried the calcium carbonate deposits, exerted pressure and caused the hardening or lithification of these marine deposits. The hardened deposits were carried to southeast Alaska on ocean plates. Subsequent folding and fracturing combined with uplift of retreating glaciers placed the limestone formations above sea level. In places, limestone outcrops are found at elevations above 3400 feet.

Weathering processes formed a variety of solution features in the limestone and marble such as sinkholes and caves.

Caving can be a dangerous sport for people who are not properly trained or equipped. Because of flooding, cool temperatures, wet conditions and vertical entrances, most of the caves on Prince of Wales Island are very hazardous. Normal above ground climbing techniques are not sufficient to insure safety in cave exploration.

Safety suggestions are listed below:
• Join an experienced group for training & safe caving.
• Never go caving alone: 3 or 4 are the safe minimum.
• Always carry three sources of light. The total absence of light is a constant source of danger.
• Don't attempt caves/cave passages beyond abilities.
• Use proper gear, including a good hard hat and suitable clothing.
• Leave word with family or friends about your location and expected time of return.
• Always choose the safer alternative when you have an option.

Don't be a victim! The number of qualified cave search and rescue teams is extremely limited in southeast Alaska. There are few, if any, people on Prince of Wales Island who have both caving skills and medical expertise to deal with cave search and rescue. The Alaska State Troopers are responsible for public search and rescue operations, and in the State of Alaska victims can be charged for a portion or all of the rescue expenses. For more information contact: Alaska State Troopers, 5150 N. Tongass Highway, Box 8700, Ketchikan AK 99901 (907)225-5118

Public Caves:
- **Cavern Lake Cave**: Located at the outlet of Cavern Lake - Highway 924 Hollis to Klawock (23 miles), Highway 929 Klawock to Control Lake Junction (18 miles), Left on Road 20 to intersection with Road 27 (~40 miles), (right) 3 to 4 miles. A large gravel pit on the left is the parking area for the trail to Cavern Lake Cave. A 300-foot gravel trail leads to the cave with a viewing deck at an intermediate location. It is recommended that visitors view the cave from the observation deck or at the entrance. This cave has been formed by the underground flow of Cavern Lake through a low wall of Heceta limestone. Due to the possibility of hypothermia and drowning, swimming through the cave should not be attempted.

- **El Capitan Cave**: Location detailed on page 16. The 1,300-foot trail is moderately difficult with a combination of gravel, boardwalk, stairs and natural tread. The cave has many hazards such as steep vertical pits and is prone to rapid flooding. A gate was installed to eliminate the danger of flood entrapment. Amenities at the site include a toilet, parking area, interpretive signs and viewing decks.

**Other Cave Developments**: No other caves are currently being developed for public use. Cave development takes a minimum of two years for planning and implementation. Additional information about caves on Prince of Wales Island is available from the Glacier Grotto, Alaska Chapter of the National Speleological Society, PO Box 376, Haines AK 99827.

Vol 15 No 2 April 1995
MISCELLANEOUS

NORTHWEST CAVING ASSOCIATION
The NCA will meet at 9 a.m. May 28 in the Peterson Prairie Camp Ground. Each member organization is requested to have a representative present.
The Joint Regional NCA and Western Region is scheduled for Oct. 7, 8 and 9, 1995 at the Lava Beds national Monument, CA. Willamette Valley Grotto is sponsoring the project and will provide additional information.
Persons interested in serving as an officer of the NCA should indicate their willingness to run for election to David Klinger. (509)548-5480
Annual I/O reports should have been delivered to Evelyn Bradshaw by this time.

TEXAS CAVE
Construction crews recently discovered a spectacular cave in Bexar County, Texas.
"This one is prettier than any of the others I've seen. It's definitely the most decorated," said Kurt Menking, a member and former president of the Bexar Grotto. Other quotes from the article in the Dallas Morning News of Feb. 8, 1995, identify a variety of cave formations such as soda straws, cave coral, cave bacon, and massive columns.
The opening was bull-dozed shut to protect the cave from curiosity-seekers and as a safety precaution. In addition to rock loosened by blasting, some caves in the area contain "bad air" which causes shortness of breath, headaches and fainting.

FAMILY CAVING PLANNED
If the summer schedule does not include Family Caving, now is the time for a little originality.
Several Glacier Grotto members have scheduled outings that combine children, caves and camping. Even though plans include taking the little ones to various "easy" caves, camping promises primitive conditions - no television. Food may consist of pasta, fish, berries and wild mushrooms liberally sprinkled with the ashes and tree needles.
A few recommendations for the uninitiated. Take......
1. Toys. A 500 piece Lego set is OK.
2. Tweezers. They remove Devil's Club.
3. Cold water detergent to keep clothes clean
4. Bear repellent
5. Ear plugs for the adults. Noise levels exceed limits, at times.
6. Your own on-island transportation
Serious family caving has merits and is being encouraged this summer by GG members. For details contact Pete Smith at PO Box WWP, Ketchikan AK 99950 or Kevin Allred Box 376, Haines AK 99827.

CAVES of SOUTHEAST ALASKA
A 14-minute video on the caves at Prince of Wales Island is available from
Marcel LaPerriere
PO Box 9062
Ketchikan, AK 99901

Send $15 plus $2 for shipping to the Glacier Grotto in care of Marcel.

The Alaskan Caver
1921 Congress Circle, Apt. B
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