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The Alaskan Caver

VOLUME 9 NUMBER 1 FEBRUARY 1989



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Membership is open to all interested in Alaskan cave discovery, exploration, description, survey, mapping, photography, hydrology, morphology, biology, geology, history, speleogenesis and other spelaeon processes, conservation, management, adventures, and the fellowship of Alaskan cavers. Dues are \$5.00 per year for the first member of a mailing address and \$1.00 for others at that address. Those living overseas must pay \$2.00 per year more if they wish to receive The Alaskan Caver via air mail.

Dues are due January 1 and are sent to Sam Dunaway, Treas., 7301 Chad St. Anchorage, AK 99518. Those paying for the first time between October 1 and December 31 will be considered paid up for the following year. The year through which you are paid is indicated on your mailing label. Meetings are called to plan and report on trips, and other special events; anyone wanting to have a meeting should notify the President.

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Cover Page Drawing

"Alaska Underground" by Carlene Allred

ANNUAL REPORT TO MEMBERS
Presidents Corner

This report is in three parts: Major Accomplishments, List of Members, and Financial Status. We lost our Secretary-Newsletter Editor, Mike Mauser to the attractions of the Washington D.C. area. Mike brought The Alaskan Caver out of its doldrums and finished off Volume 8. All of us appreciate his effort, and during this time he documented the significance of the newly found karst in Southeast Alaska. We are very grateful for a fine job well done, Mike, and hope that you can get back for a trip with us in August. Harvey Bowers is commencing with this issue. All material should go to him. He said he could handle it, if he could get some help. He will be calling on some of you.

Our major accomplishment was the Grotto's Prince of Wales Island Expedition II (PWIE II). The field portion (August 8-26, 1988) comprised nine Grotto members from five western states, including Alaska. A small portion of the recently recognized significant, extensive, and well-developed rain forest karst was examined. Five caves were discovered, surveyed, mapped, and described. Survey of largest cave stopped at 5560 feet for want of time.

Exploration of the deepest entered pit stopped at -340 feet for want of more rope. Thus, for the second year running, the record length and depth of Alaska's longest and deepest caves have more than doubled. Salmon, signs of bats, and other forms of life have been found in caves; no new species have been verified, but range extensions are expected. The Expedition was conducted in close cooperation with the Tongass National Forest. The Grotto provided expertise in cave exploration, surveying, conservation, protection, and management and the Forest Service assisted with informal logistic support. Sadly, some vandalism, in the form of graffiti, trash, and rock hounding had taken place, even in this remote area. The Leader of PWIE II and the upcoming PWIE III is Kevin Allred (16730RE); he is assisted by Carlene Allred (16389FE). Thanks are due to Forest Service personnel for their help and encouragement, and to the NSS Research Advisory Committee, for a grant which helped defray some initial research expenses, including purchase of aerial photos and stereo equipment. Detailed cave descriptions and field trip reports will appear in The Alaskan Caver.

KETCHIKAN MAN DROWNS IN CREEK
The Associated Press

KETCHIKAN - A 22-year-old ketchikan man drowned after being swept into a creek while trying to explore a cave, the Alaska State Troopers said.

Michael J. Williams and a companion were trying to get into a cave above the Ketchikan Lake area Tuesday afternoon, the troopers said. The cave is

accessible only by going in the water, and when Williams entered the creek, the swift current knocked him off balance and carried him downstream, the troopers said.

He was swept about 100 yards downstream, where he lodged under a bridge, the troopers said.

REPORT ON RESULTS OF THE 1988
GLACIER GROTTO EXPEDITION TO
PRINCE OF WALES ISLAND, ALASKA
by Kevin Allred #16730

I would first like to thank the NSS on behalf of the expedition for the \$250.00 research grant.

Alaska presents special challenges to cave discovery and exploration, the foremost being limited access. This new caving area has been, in the last 10 to 15 years, made very accessible by the logging activity.

PREPARATIONS FOR THE EXPEDITION

Preparations were begun last year when Carlene Allred and I began collecting information available on the cave potential of Prince of Wales Island. with our reconnaissance trip in August, 1987 of Northern Prince of Wales Island (third largest Island of the U.S.) came the discovery and surveying of Alaska's longest (2189 ft.) and deepest (-201 feet.) cave and discovery of tremendous cave potential. We later traveled twice to Juneau by ferry for several days each time and studied Dept. of Agriculture aerial photographs, locating hundreds of major karst features. Sporadic contacts were maintained with other Glacier Grotto and NSS members to help with the 1988 expedition. Also efforts by us and Grotto president, Jay Rockwell, resulted in support from the Forest Service. Final preparations were in August, 1988 with 9 grotto members committed to join.

The expedition from Hollis, on Prince of Wales, lasted 3 weeks from August 8 through August 28. There were 9 adult members, Jay Rockwell (AK), Harvey Bowers (AK), David Klinger (WA), Denise Ward (UT), Mark Evans (AZ), Bob Bastasz

(CA), Kathy Tonnessen (CA), Kevin Allred (AK), and Carlene Allred (AK). The 4 children along were Bryce Ward, Ella Allred, Soren Allred and Flint Allred.

The cost of the transportation was high consisting of ferry or jet travel to Ketchikan, ferry travel to Hollis, then vehicles (3) over mostly dirt roads, 100 miles to the camp at the base of El Capitan Peak. From there members struck out on foot or in vehicles looking for and surveying caves.

DISCOVERIES

Below are the caves found and surveyed during the three week period.

Salmon Fry Cave: 162.1 feet (complete). Carcass Cave: 568.5 (complete). Kid Cave: 153.7 feet (complete). El Capitan Cave: 5563 feet (not complete).

Of special interest is the amazing potential of big cave systems in the region. El Capitan Cave seems to be going very strong in several directions and other caves will certainly be found in the future under the several hundred square miles of karst on Prince of Wales and the smaller islands to the West.

Some Black Fly larvae were found from Salmon Fry Cave and later identified by Rod Crawford at the University of Washington. Also some Specimens of Fungus Gnat larvae (genus *Speolepta* and of undetermined species) were collected from El Capitan Cave and also identified by Rod Crawford, who stated that these are the first recorded from Alaska.

OUTSIDE SUPPORT

Although the Research Grant was modest, the Forest Service could see that we were part of a supporting organization and helped us greatly by providing showers, laundry facilities, and use of a drafting table, all at a Forest Service Work Camp located one half mile from us. They also provided some nice maps, a barrel for a latrine, and much useful information. One of the most helpful things they did for us was providing helicopter support when they flew rope and gear to a nearby alpine karst area on El Capitan Peak and then picked it up after we had used it to descend 340 feet into newly discovered El Capitan Pit which continues down. There is hope for their assistance to some degree next year as well.

USE OF THE RESEARCH GRANT FUNDS

\$169.00 was used in preparatory research expenses such as transportation to and from Juneau, xeroxes, and purchase of aerial photographs used before and during the expedition. The additional \$81.00 was divided among the expedition members to help defray their expenses.

CONCLUSIONS

I believe the NSS will find the grant was well invested as this new caving region is further explored and studied.

RESERVE YOUR PLACE IN PWIEX III NOW.

PWIEX III will run from 25 July to 25 August, 1989. 10 working cavers are needed for the entire time to provide ten man months for the survey, i.e., 10 people there for one month, or 40 people there for one week each. Kevin Allred is coordinating; get in touch with him if you are interested. "Alaskan Cavers" (those with Alaskan caving experience and those living in Alaska) will be given first preference, but, if necessary, others will be invited to fill quota.

A volunteer agreement between the Grotto and the U.S. Forest Service (USFS) and possibly others is being developed to assist USFS in inventory, survey, description, protections and management of cave resources. USFS hopes to be able to provide even more assistance than they did in 1988.

Contact Kevin Allred (See inside of front cover for address and telephone message contact; if you need to talk with him, leave a number where he can call you collect). Bob Bastasz is equipment coordinator.

If you need more information try to come to the March meeting, and read the reports as they are published.

CAVE PROTECTION LAW SIGNED BY PRESIDENT REAGAN

PL 100-691, The Federal Cave Resources Protection Act of 1988, the result of years of exhausting work on the part of the NSS Conservation Committee and many others was finally signed into law in the waning days of the last Administration and Congress. All members are urged to request a copy from their Senator or Congressman. Senator Ted Stevens sent me mine. His address is "Committee on Appropriations, Washington, DC 20510-6025". It does no harm to show interest in such legislation.

CAVING THROUGH A STEREOSCOPE

by Carlene Allred

Alaska is the perfect state for armchair caving for the simple reason that real caving is too expensive. For only \$14 someone living in Haines can hop on the ferry and travel to Juneau, where the U.S. Forest Service (USFS) aerial stereo photos are kept in the federal building. My husband Kevin and I have each made such a trip this summer in preparation for the Glacier Grotto Expedition in August.

We have examined (through stereoscope approximately 106 square miles of land located on the northern end of Prince of Wales (P.O.W.) Island. That is about one third of the terrain yet to be viewed. We concentrated on parts of what we believe is the "cream", which is the massive Silurian (Heceta) limestone (see reference number 1). This limestone varies in thickness, but in one place has been noted to be 10,000 feet thick. Quick peeks at some non-Heceta areas also revealed karst. Limestone beds and lenses exist in other formations that surround the Heceta, and also our preliminary geologic map (1) may be in error. Only major features such as poljes and very large sunken areas were discernible in the areas where the heavy forest canopy covered the ground. Most karst features we noted were seen in clear cuts. The following is a tally of the number of features that we interpreted (terms are discussed in the text):

1. Sinkholes (holes or pits) 159
2. Sinks, solution dolines 24
3. Uvalvas (contains multiple sinks and pits, not included in 1 above) 69
4. Poljes 3

5. Cockpit areas 8
6. Pinnacle karst areas (contain innumerable pits) 2
7. Karst "trenches" 2
8. Possible major steepheads 3

Our caving neighbor, Mike Van Note, who has worked on P.O.W. Island, had previously told us not to be surprised if we find tropical style karst because the Island is a rain forest.

While looking through the stereoscope, the topography appears much exaggerated. I asked the cartographers working near me to tell me how much this exaggeration is. Several of them spent half a day arguing and calculating this for me. I was then able to determine just how much I needed to "squash" the hills down in my perception. Here is the formula they used:

$$\begin{aligned} V &= 5 \cdot (B/H) \\ H &= F \cdot S \\ V &= \text{Vertical exaggeration} \\ B &= \text{Base distances between photo centers on same photo} \\ H &= \text{Flying height} \\ F &= \text{Focal length (8.25 inches)} \\ S &= \text{Scale (12,000 or 1 inch = 1,000 feet in this case)} \\ \text{Solving for flying height, H:} \\ H &= 8.25 \text{ inches} \cdot 12,000 \cdot 1 \text{ foot/12 inches} \\ &= 8,250 \text{ feet} \\ \text{Solving for vertical exaggeration, V:} \\ V &= 5 \cdot (B/H) \\ &= 5 \cdot (3050 \text{ feet}/8250 \text{ feet}) \\ &= 5 \cdot 0.37 \\ &= 1.85 \end{aligned}$$

SAND CRAWL

END ROOM

HATFIELD'S PIT

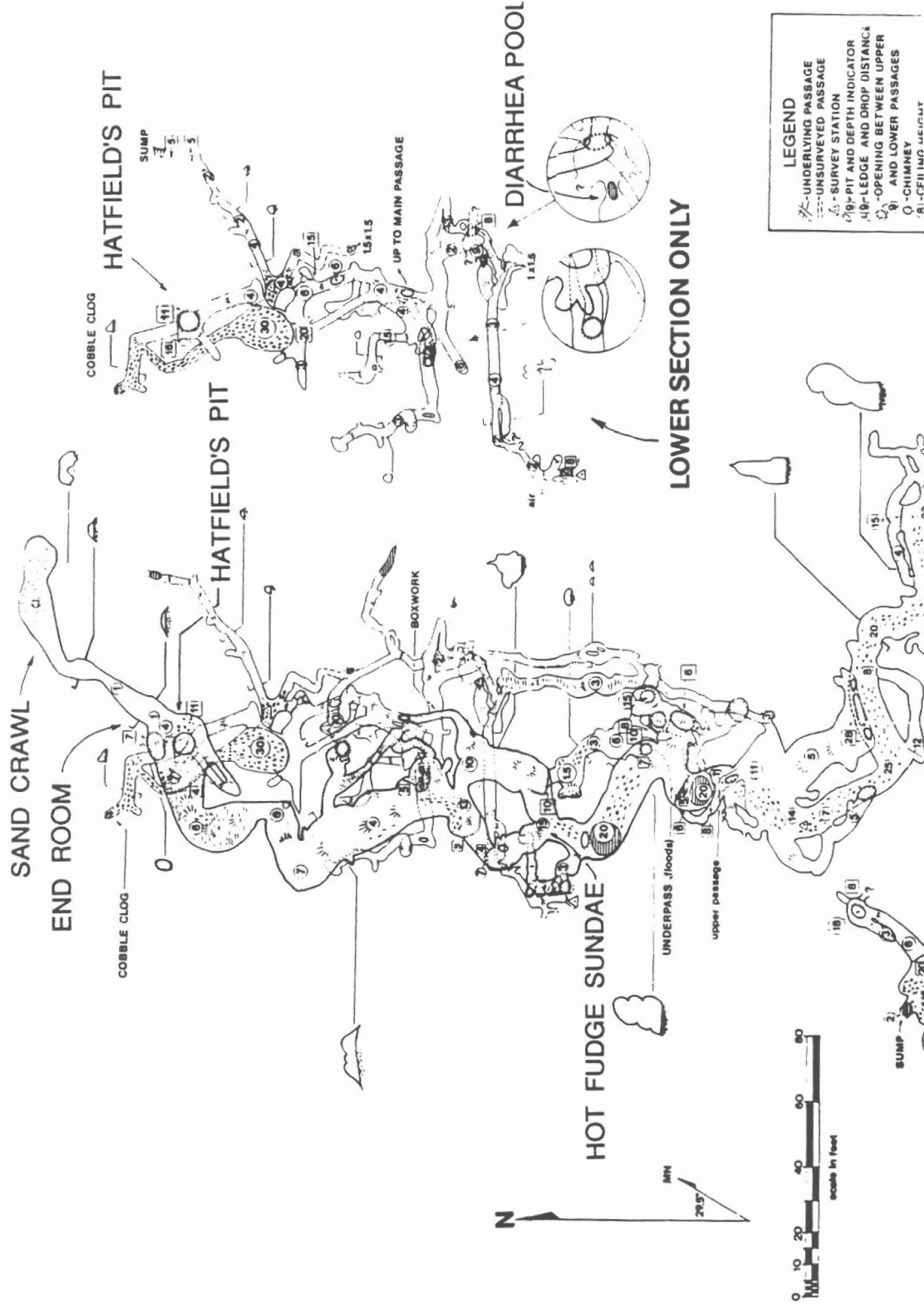
HATFIELD'S PIT

HOT FUDGE SUNDAE

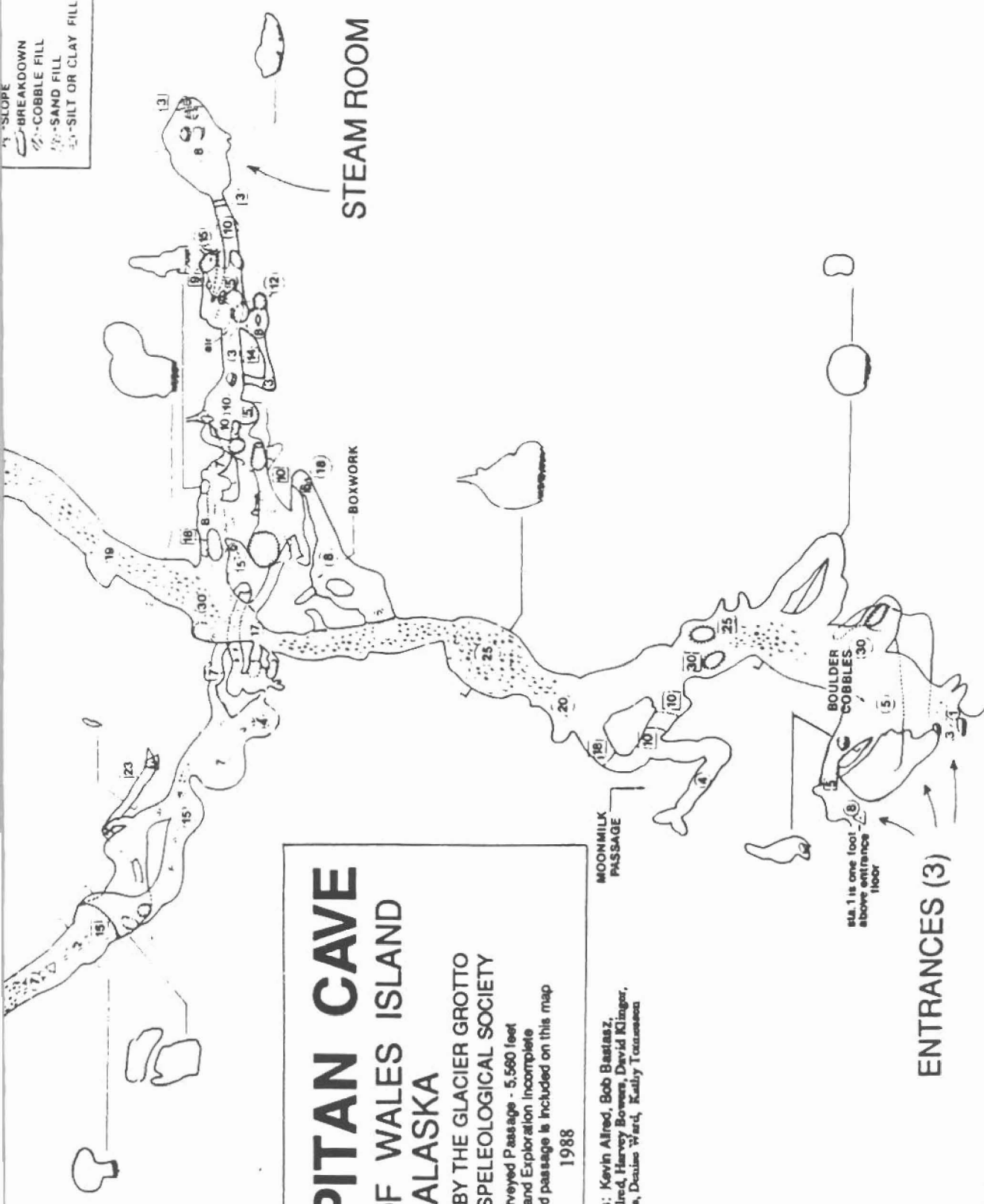
DIARRHEA POOL

LOWER SECTION ONLY

- LEGEND
- UNDERLYING PASSAGE
 - UNSURVEYED PASSAGE
 - SURVEY STATION
 - PIT AND DEPTH INDICATOR
 - LEDGE AND DROP DISTANCE
 - OPENING BETWEEN UPPER AND LOWER PASSAGES
 - CHIMNEY
 - CHIMNEY HEIGHT



-SLOPE
 -BREAKDOWN
 -COBBLE FILL
 -SAND FILL
 -SILT OR CLAY FILL



EL CAPITAN CAVE

PRINCE OF WALES ISLAND ALASKA

SURVEYED BY THE GLACIER GROTTTO
 NATIONAL SPELEOLOGICAL SOCIETY

Total Surveyed Passage - 5,560 feet
 Survey and Exploration incomplete
 not all surveyed passage is included on this map
 1988

Surveyors: Kevin Allred, Bob Bastasz,
 Carlene Allred, Harvey Bowers, David Klingler,
 Mike & Bruce, Denise Ward, Kathy Toussaint

The following illustrations are cross sections of the different types of karst terrain that we interpreted.

Actual fieldwork is now needed for verification and further study.



Pinnacle Karst



Cockpit Karst



Uvala Karst



Sink or Doline



Sinkhole or Pit



Steephead



Polje

Terminology We Use

Different areas seem to take on different types of karst topography. In some localities there was little or no karst noted, such as the areas east of Red Bay. Elsewhere, as in the Northwestern districts near Port Protection, the land appears to be covered with what we call "cockpits". These are round shaped hills averaging perhaps 400 feet across, and jammed together, forming pointed depressions between them. This terrain could be clearly seen only where the forest canopy had been removed by clear-cutting, but I believe that all the limestone areas in this vicinity are probably pitted in this manner.

Southwards, in the vicinity of Neck Lake and northward, the terrain takes on a different character. This we call "Uvala Karst". The topography in this area is dominated by irregularly shaped sunken areas that apparently appear to be made up of merging solution (?) dolines. The largest uvala that we noted was about 1/3 mile across. Many holes and pits were noted within these uvalas. Last summer's fieldwork has shown us that pits less than 6 feet in diameter don't show up on the

aerial photos. This "uvala" type karst grades into "cockpit karst".

The three small poljes we noted (up to 2,000 feet diameter) can best be described as wide, flat bottomed, closed depressions with streams or stream channels seen on the flats in their bottoms. Two of these contain secondary dolines or possibly pits. These features don't contain forest in their bottoms and this may indicate seasonal flooding. (The photos we looked at were taken in August.) The poljes are subalpine.

In the area west of Red Bay the terrain (as viewed in clear-cuts) appeared normal except for occasional solution (?) dolines and pits.

Some alpine areas contain "pinnacle karst". Between the pinnacles are unaccountably numerous pits. Because of absence of soil in alpine areas every detail of topography can be discerned through the stereoscope.

I also took a quick look at a series of aerial photos of Coronation Island. It was karsted also in the same uvala-cockpit manner. We noted everything that we saw on up-to-date blue-printed road-topo

maps that we obtained from the cartography department. The next page of this issue is a karst map that we have compiled of the areas described in this article. There is much more limestone further south that we have not examined, as well as some portions on this map. The islands west of P.O.W. Island also contain lots of limestone.

We have ordered for ourselves some sets of aerial photos for further study at home. For ordering information write to:

U.S. Department of Agriculture
and SCS
Aerial Photography Field Office
Customer Service
2222 West 2300 South
PO Box 30010
Salt Lake City, UT 84130-0010

An inexpensive stereoscope can be ordered for less than \$5 from:

Forestry Suppliers, Inc.
205 West Rankin Street
PO Box 8397
Jackson, Mississippi 39204

According to the NSS Caving Information Series Paper No. 28, page 4, there are two types of aerial photos. U.S. Geological Survey takes its pictures when deciduous trees

have no leaves so that ground features can be distinguished. The Dept. of Agriculture Soil Conservation and Stabilization Service takes its photos when trees and bushes are in leaf.

Studying aerial photos can be a great time saver in cave hunting. This is how we located the entrance to Starlight Cave last summer. I would recommend these methods for other parts of Alaska as well.

References:

1. U.S. Geological Survey Preliminary Geologic Map of Southeast Alaska, 1984
2. USGS Bulletin No. 682, Marble Resources of Southeastern Alaska, 1920, page 18.

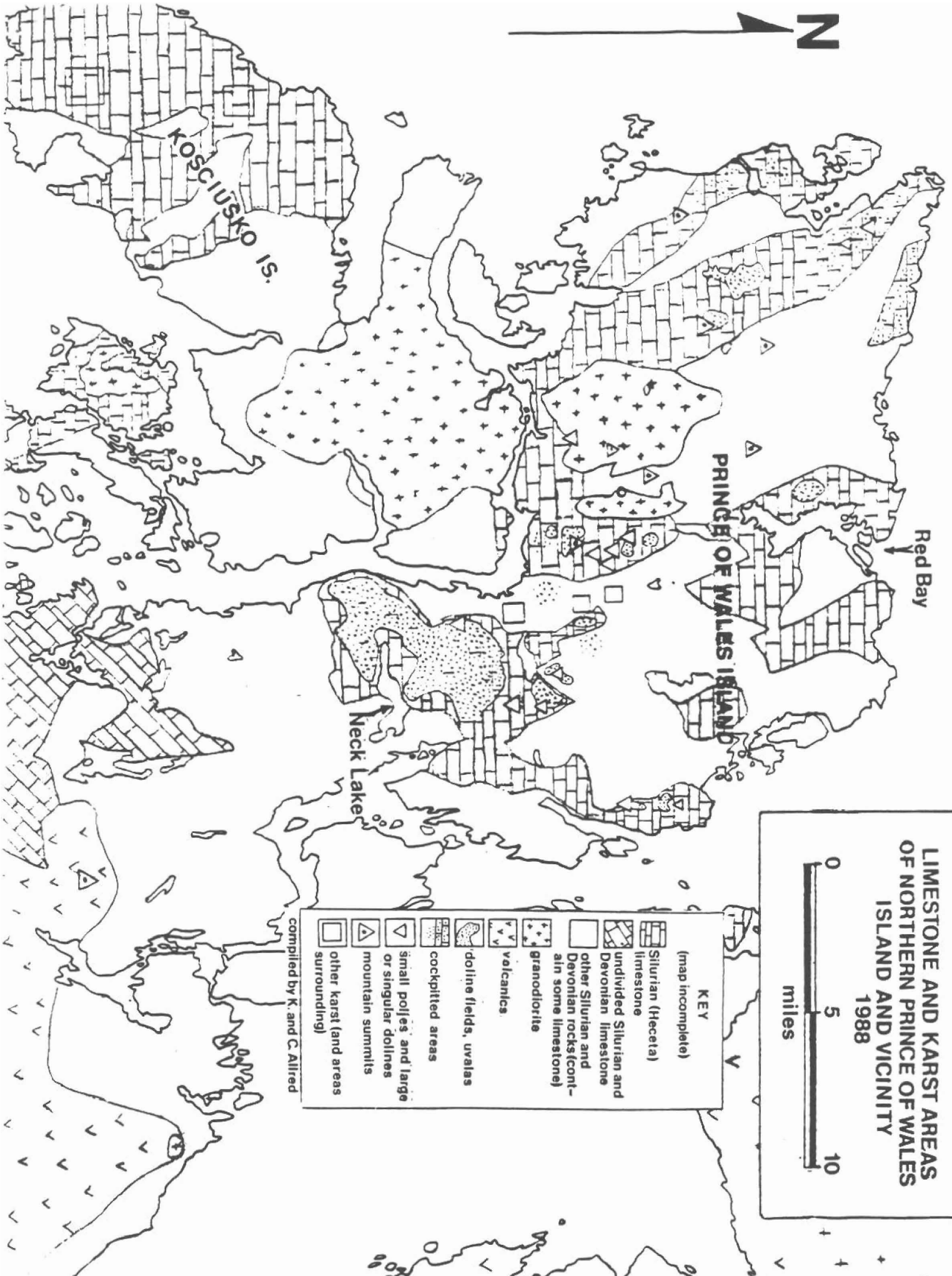
Map references:

1. See number 1 above
2. USGS topo maps, 15 minute series.
3. Prince of Wales Island Road Guide (U.S. Forest Service)
4. Personal interpretation of Dept. of Agriculture stereo photographs

GROTTO MARCH MEETING ANNOUNCEMENT:

There will be a meeting at 1:00 P.M. on March 4, 1989, at 2944 Emory Street, Anchorage, AK (near the corner of Lake Otis and Northern Lights). The purpose of the meeting is to brief those present on some findings of PWIEX II, to decide on letterhead and patch logos, and any other new business. Please bring slides, cave maps, videos, etc.; yes, even songs, and musical instruments. (If any questions call, Jay Rockwell, (907) 277-7150.)





LIMESTONE AND KARST AREAS
OF NORTHERN PRINCE OF WALES
ISLAND AND VICINITY
1988



	Silurian (Heceta) limestone
	undivided Silurian and Devonian limestone
	other Silurian and Devonian rocks (contain some limestone)
	granodiorite
	volcanics
	doline fields, uvalas
	cockpit areas
	small potholes and large or singular dolines
	mountain summits
	other karst (land areas surrounding)

compiled by K. and C. Alfred

PRINCE OF WALES ISLAND CAVING EXPEDITION III

Dates: July 25 to August 25, 1989

Leaders: Kevin and Carlene Allred

1. Each participant must be self sufficient: will need own tent with extra tarp, food, stove, camping gear, caving gear, vertical gear, and a complete set of raingear. A poncho will not do. P.O.W. Island is a rainforest. Kelly Hanson, top, pants, hat/hood work best. Also, you will need more than one set of coveralls.
2. Cave temperatures are 40 degrees or colder. Bring warm clothing for under your coveralls. If you have a wetsuit, bring it. It may be cold outside too. Bring survey gear if you have any.
3. Make arrangements as soon as possible. Flight or ferry reservations may be needed well in advance. Let us know as soon as possible if you plan to come.
4. Basic foods and gas are available on P.O.W. Island in the Craig-Klawock area during the day. Gas and a very limited amount of food are available in Whale Pass. Nothing is available in Hollis.
5. Transportation: fly or take ferry to Ketchikan. From Ketchikan take ferry to Hollis. Need your own vehicle or make arrangements with expedition leader. Hollis is 100 miles from El Capitan USFS work camp on north end of island where caving area is located. Make arrangements early. Vehicles can be rented in Ketchikan or possibly Klawock. Contact Jay Rockwell.
6. This project has received support from the NSS and Forest Service. Participants should be NSS and Glacier Grotto members. Contact Jay Rockwell.

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