

Research under contract N00014-70-A-0219-0001 (subcontract ONR-392).

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A Skeleton in Triassic Rocks in the Brooks Range Foothills

Fragments of vertebrate fossils are found in beds of the Shublik Formation, which blanketed most of northern Alaska during Triassic time. Although articulated remains are uncommon, one partial skeleton was discovered in 1950 during exploration of Naval Petroleum Reserve No. 4¹. Tourtelot and Tailleux revisited the site in 1968 during study of oil shales in northern Alaska (supported by the U.S. Navy Office of Petroleum and Oil Shale Reserves and by the Naval Arctic Research Laboratory) and found the skeleton still well enough preserved to merit expert examination. In 1970, Mull placed a sign, prepared by W. C. Black of the U.S. Geological Survey, requesting preservation of the skeleton for future collection, now feasible because of easier access to the area. This note calls attention to the existence of the skeleton and reports on what has been observed of the vertebrate remains.

Figs. 1 and 2 locate the site (68°37'15" N., 157°35'W.) on Cutaway Creek (Howard Pass 1:250,000-scale quadrangle) in the geologically disturbed zone of the Brooks Range foothills. It is about 200 miles south of Point Barrow and 35 miles northwest of Howard Pass.

Fig. 3 is a photograph of the actual bedding-plane exposure. Most of one side of the rib case is exposed, and some limb structures seem preserved. The exposed parts indicate a skeleton more than 5 feet long. Bone fragments are common in the fine talus weathering off the outcrop. Although no invertebrate fossils were seen on the surfaces of beds containing the skeleton, they are abundant in correlative beds; detailed examination of this or nearby exposures should yield pelecypods that will fix the biostratigraphic level of the vertebrate remains.

Some features of the Late Triassic environment can be assessed. A sea of remarkably persistent character extended beyond the length of the present Brooks Range and

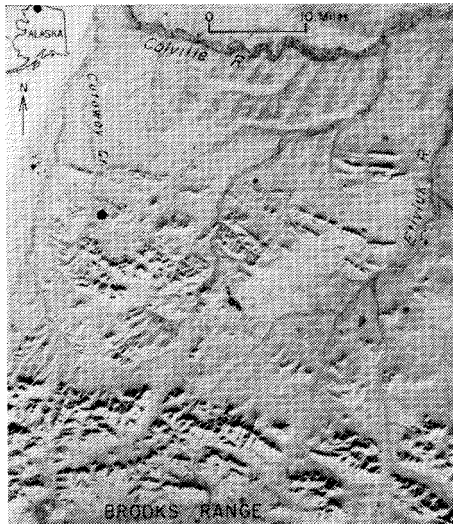


FIG. 1. Skeleton locality (dot on upper Cutaway Creek) plotted on part of ERTS-1 near-infrared image 1058-21403-7, 19 September 1972 (snow-covered).



FIG. 2. View northwest across Cutaway Creek to skeleton exposure (arrow).

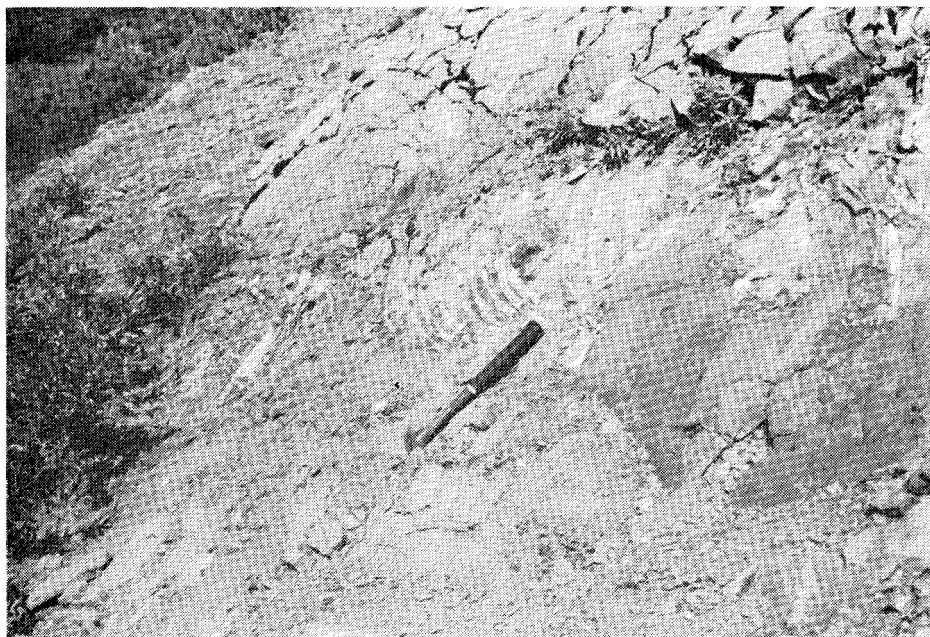


FIG. 3. Detail of skeleton.

probably more than twice the width of the present Arctic Slope. A shoreline existed near the present northeast coast of Alaska, but coarse detritus was not carried far southward. The bottom elsewhere was below wave base, and the sediment that settled onto it formed thin deposits, first of anaerobic chert, shale and limestone, then aerobic lithographic limestone. Pectens that also thrived elsewhere—Siberia, Arctic Canada, Nevada, and parts of Europe for example—are abundant, and many of the dark limestone and limy shale beds are made up of compressed shells of *Halobia* sp.; the younger limestone beds are frequently composed of shells of *Monotis* sp. The thin chert beds surrounding the skeleton are correlative with beds elsewhere that contain *Halobia* of Karnian or early Norian age² (N. J. Silberling, written communication 1968). The skeleton is older than 200 million years as shown by K/Ar age determinations on minerals in diabase sills that intrude the Shublik Formation about 20 miles to the east (unpublished data).

Vertebrate fragments previously collected from the Shublik have been identified as follows: from this locality and from limestone near Hardway Creek (68°38'5"N., 156°51'W.) about 20 miles to the east—vertebra of a possible ichthyosaur and teeth of a probable *Mixosaurus* (Jean Hough, written com-

munication 1951); in limestone, chert, and shale on Kiligwa River (68°43'45"N., 158°26'W.) about 25 miles to the northwest—probable caudal vertebra of an ichthyosaur (D. H. Dunkle, written communication 1952); and in limestone at the west end of the Sadlerochit Mountains (69°35'15"N., 145°55'5"W.), northeastern Brooks Range³—vertebral, costal, and jaw fragments of either the Shastasauridae or Ichthyosauridae ichthyosaur family (C. A. Repenning, written communication 1972).

Helicopters offer the only practical access to the site, for the nearest lake on which a float plane can land is more than 10 miles away. Transportation for preliminary inspection could probably be arranged with any geologic field party working within a hundred miles of the locality. Collection of the skeleton would require that an outfit be landed near the outcrop by ski plane in the spring and retrieved during the fall or winter.

We cannot judge the quality or significance of the skeleton but feel that it should be examined by a vertebrate paleontologist as it could yield valuable information on life in the seas during Triassic time at a present arctic latitude.

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Devon Island Programs 1972-1973

From April 1972 through the 1973 field season, the Arctic Institute's research base on the northeast coast of Devon Island (75°40'N., 84°40'W.) will be the seat of operations for scores of investigators and their field assistants. The major research program continues to be a large integrated tundra ecosystem study sponsored by the Canadian International Biological Program (IBP). The Base Camp is also being used by groups of researchers from the Canadian Wildlife Survey, and from the Polar Continental Shelf Project. The two AINA-sponsored projects are summarized below.

The status and condition of the Base Camp and the logistics services, remain essentially as reported in the 1971 field summary (*Arctic*, Volume 25, Number 2, page 156).

During the summer of 1972, and the winter of 1972-73, the camp was used as a communications centre, and for providing other assistance to research stations established on Coburg Island and on the Carey Islands (Greenland) which are part of the Institute's North Water Project.

During the 1972 summer the camp staff were host to a number of distinguished visitors, including Dr. and Mrs. F. Armstrong of the Institute's Board of Governors, Mr. T.

Harwood, Chairman of AINA's Devon Island Advisory Committee, and Mr. G. J. Thompson, AINA's Finance Officer.

ECOLOGICAL STUDIES OF SEDGE-DOMINATED MEADOW TUNDRA

During the 1972 field season studies were continued on the ecology of sedge-dominated meadows. Populations mapped during 1971 were relocated and mapped and new map plots established at other locations in the lowland. Studies of rhizome behaviour were continued. Complete systems were excavated and collected at five locations. Rhizome growth was monitored on selected individual plants. These plants were marked and re-buried and will be followed continuously. Population characteristics of sedges invading small ponds and drained lake systems were further investigated.

Three-and-a-half weeks were spent at the National Museum of Natural History camp on Bathurst Island. During this period six sedge meadows were selected and analysed for comparison with the Devon Island meadows. Five permanent plots were also established and mapped and populations of *Carex stans* collected for both seed and morphological measurements.

A project to investigate the revegetation of vehicle-disturbed sedge meadows with native *Carex* species was also initiated. Six sites of heavy disturbance were located on the ground. These areas were then subdivided into various treatment blocks. Analysis of plantings of *Carex stans* as well as natural revegetation in some blocks will be monitored in following seasons. A detailed report of the last-mentioned project is at present being prepared for the Arctic Institute of North America and the Canadian Wildlife Service which supported the study.

VEGETATION STUDIES ON THE INTERIOR PLATEAU

Vegetation studies were initiated on the Plateau to the east of Base Camp during the 1972 season. The Plateau is spatially isolated from the lowlands by a vertical escarpment approximately 300 m. in height. Though the two areas are contiguous, the influence of controlling environmental conditions appears very different. These differences are reflected in the dichotomy of floristic composition and vegetation cover of the Plateau and Lowland. On 27 July, the Plateau became snow-free. A 2.4 km. transect was placed east from the Plateau margin to the interior. The transect crossed a number of habitats, including solifluction terraces, stripes and sorted nets. Four maximum-minimum thermometer enclosures