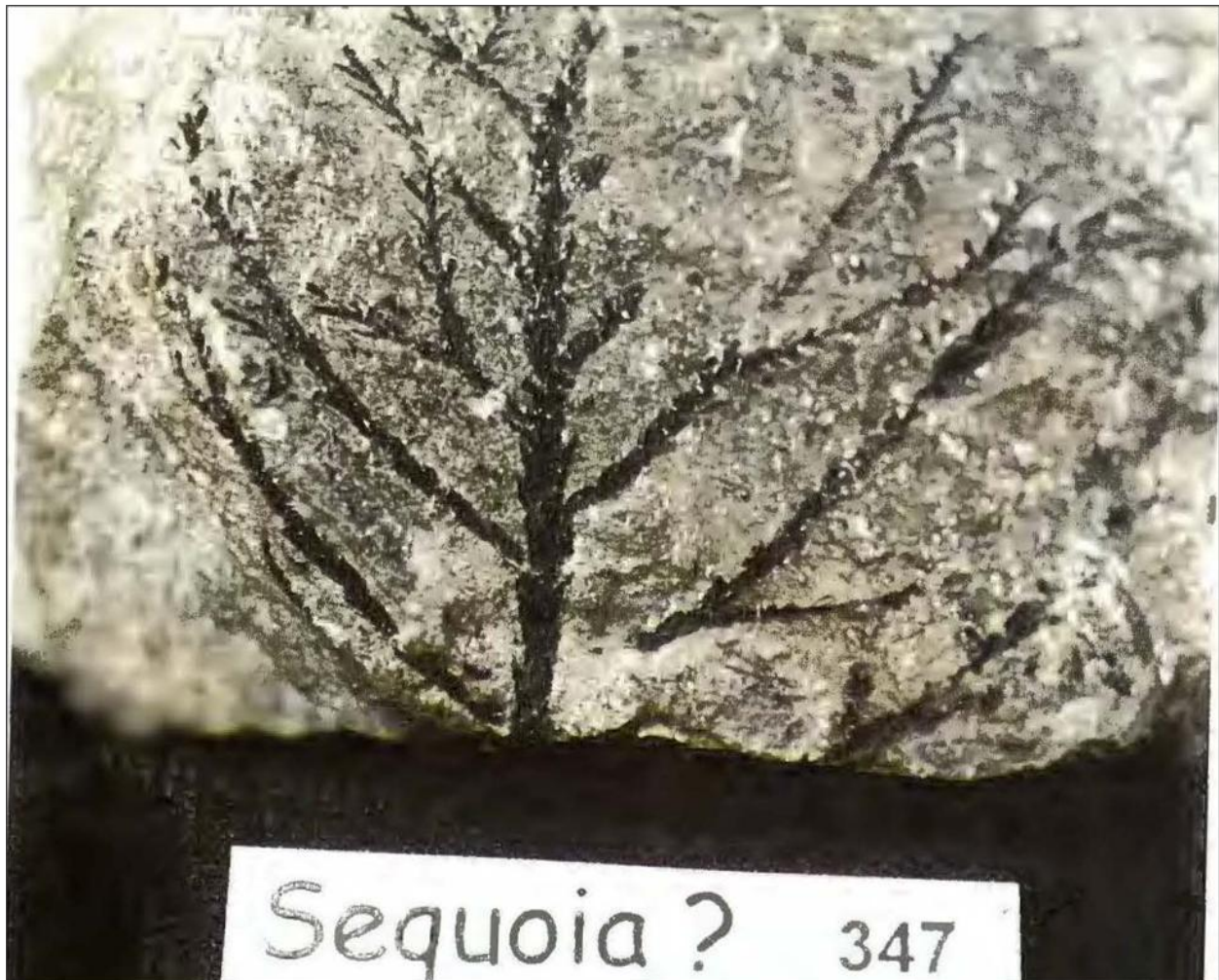


Compilation of Chickaloon Formation paleontological studies from the Wishbone Hill fossil recovery project in Southcentral Alaska

Compiled by Anne D. Pasch, Simone Montayne, and Aleria H. Knudson

MP 179



Carbonized impression from the Premier coal group of the Chickaloon Formation showing linear Sequoia(?)

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Compilation of Chickaloon Formation paleontological studies from the Wishbone Hill fossil recovery project in Southcentral Alaska

Compiled by Anne D. Pasch¹, Simone Montayne², and Aleria H. Knudson³

INTRODUCTION

This report compilation presents five reports documenting the Wishbone Hill fossil recovery project, conducted from May 1, 1997, to December 31, 1998, with an additional field visit in 2001. The project's fieldwork included measurement of a composite geologic section, collection of amber and plant fossils, mapping of in-situ petrified trees, documentation of fossil wood float, and evaluation of fossilized vertebrate tracks.

The Wishbone Hill site was situated in the west end of the Matanuska Valley, approximately 59 miles northeast of Anchorage and ten miles north of Sutton on the Glenn Highway. The site contains exposures of the Paleocene–early Eocene Chickaloon Formation, a unit noted for diverse fossil assemblages and value to paleoclimate and sedimentologic studies (Barnes and Payne, 1956; Flores and Stricker, 1993). These exposures have supported stratigraphic, structural, paleomagnetic, and paleontological research, including studies of fossil plants, fossil wood, amber-preserved insects, and leaf herbivory. The reports compiled here document investigations conducted at one of Alaska's most significant paleontological localities and preserve observations from fossil-bearing exposures, some of which are no longer accessible.

Much of the associated field documentation and supporting observations exist only in personal files and aging hard-copy materials, placing valuable legacy data at risk of loss. These records are especially important because the Wishbone Hill area has undergone multiple phases of mine development, abandonment, and reclamation that have altered or obscured surface exposures and fossil resources. Although portions of this work have been cited in later studies, the original reports were never published and remained difficult to obtain. In collaboration with the Alaska Division of Mining and Water Management (DMLW), Alaska Division of Geological & Geophysical Surveys (DGGS) is releasing this compilation to provide permanent public access to these historically significant materials. The reports are reproduced as originally prepared; interpretations, nomenclature, and references reflect the state of knowledge at the time of writing. This collection is presented as a DGGS Miscellaneous Publication, and all components are available at <https://doi.org/10.14509/32125>.

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INCLUDED REPORTS

Chapter A: *Wishbone Hill fossil recovery project* — Anne Pasch, compiled 1998

Chapter B: *Chickaloon Formation flora obtained during the reclamation of the Wishbone Hill coal mine, Wishbone Hill fossil recovery project* — Anne Pasch, compiled 1998

Chapter C: *Plant flora (genera) in the Premier coal group of the Chickaloon Formation, Southcentral Alaska* — Anne Pasch and Marilyn Barker, compiled 1998

Chapter D: *Mapping an early Eocene fossil forest of the Chickaloon Formation in Southcentral Alaska* — Heather S. Collins, formerly published as Heather S. Pierce, compiled 1998

Chapter E: *Assessment of fossil vertebrate tracks and associated plant remains on Wishbone Hill* — Anne D. Pasch and Kevin C. May, compiled 2001

Although all five reports arose from the Wishbone Hill Fossil Recovery Project, they were prepared for different purposes. Chapters A, B, and E were submitted to DMLW. Chapters C and D are companion works that document taxonomic and fossil-forest investigations undertaken in support of the same research effort. Together they provide a comprehensive record of the project's scientific findings. The reports were primarily prepared by Anne Pasch, Professor Emeritus in the Department of Geology at the University of Alaska Anchorage (UAA), with contributions from students and collaborators.

RESEARCH OUTCOMES

The Wishbone Hill fossil recovery project produced several significant scientific and curatorial outcomes that substantially advanced understanding of the Chickaloon Formation and its fossil resources. The project preserved a key Paleogene plant fossil assemblage from Alaska's most important coal field and established that Wishbone Hill contains one of the world's rare fossil forests. It completed the first systematic collection of the Chickaloon paleoflora in 35 years and documented a rich Paleocene to early Eocene riparian ecosystem that thrived in a subtropical-temperate climate. The work also provided material for comparison with modern plant communities and climate, created the only reference collection of this fossil assemblage in Alaska, produced the first documented evidence of Cenozoic amber in the state, and recovered previously undescribed reproductive structures representing ancestors of modern woody angiosperms.

ACKNOWLEDGMENTS

This project would not have been possible without the many hours of field assistance by University of Alaska students and staff. All work was done by volunteers under the supervision of Anne Pasch. A 1997 Field Archaeology Permit (97-05) was obtained from the State Archaeologist as required by the Alaska Historic Preservation Act, Sec. 41.35.080. It was renewed for the 1998 season. DMLW staff, Aleria Knudson and others, recognized the value of the research and solicited DGGs's assistance in establishing a permanent public archive for the reports. This data preservation collaboration was funded by the State of Alaska general fund. We thank Marwan

Wartes for his advocacy in publishing the reports through DGGS and for his thoughtful review of the compilation summary.

REFERENCES

- Barnes, F.F., and Payne, T.G., 1956, The Wishbone Hill district, Matanuska coal field, Alaska: U.S. Geological Survey Bulletin 1016, 88 p., 14 sheets.
- Flores, R.M., and Stricker, G.D., 1993, Early Cenozoic depositional systems, Wishbone Hill District, Matanuska coal field, Alaska, in Dusel-Bacon, Cynthia, and Till, A.B., eds., *Geologic studies in Alaska by the U.S. Geological Survey, 1992*: U.S. Geological Survey Bulletin 2068, p. 101-117.

AUTHOR BIOGRAPHY

Anne Pasch is a pioneering Alaska geologist whose career has significantly advanced the understanding of Southcentral Alaska's paleontology and surficial geology. After completing graduate studies in geology and earning a Master of Arts in Teaching with a geology concentration, she joined Anchorage Community College in 1974, later becoming a professor and chair of the Department of Geology at the University of Alaska Anchorage. Over her career, she developed numerous geology courses, taught her signature paleontology classes, and worked seasonally with the U.S. Geological Survey on surficial deposits in Southcentral Alaska.

Pasch's field research led to several landmark discoveries, including the first Mesozoic dinosaur fossil found in Southcentral Alaska and the first documented dinosaur trackways on the North Slope. She also described the exceptional fossil forest associated with the Tertiary coal deposits at Wishbone Hill. In conjunction with the Wishbone Hill fossil recovery project, she oversaw the recovery of large petrified tree specimens now displayed in the UAA Rock Garden. Her work further documented ancient invertebrates on the Bering Glacier forelands and contributed extensively to Alaska's fossil record.

Beyond her research, Pasch co-founded the Alaska Museum of Science and Nature and served in leadership roles across scientific, educational, and community organizations. She retired from UAA in 1997 as professor emeritus but continues to teach and share her expertise widely.