

New report chronicles the history of the Kenai Peninsula landscape for the last 20,000 years

by Ed Berg



This granite boulder, called a glacial erratic, was dropped just west of Robinson Loop Road between Soldotna and Sterling. It was probably carried about 100 miles south from the Talkeetna Mountains by ice of the Moosehorn glacial advance 20-21,000 years ago. The boulder measures 50 feet high by 100 feet long. It is one of a series of granitic monoliths that form a north-trending train across the northwestern Kenai lowland. Credit: Dick Rege

In my 30-some years of traveling around the Kenai Peninsula, I have often puzzled about the origin of various features on the landscape. For example, why do you go up a big step as you drive east out of Sterling? What formed all the flat-bottomed muskegs that run south from Sterling to Kasilof and Ninilchik, down to Anchor Point? What formed the Homer spit? What are the two distinct layers visible in the Kenai River bluff west of the Warren Ames bridge?

We now have good answers to many of these questions, based largely on the long career of geologist Dick Rege, now retired from the Alaska Division of Geological & Geophysical Surveys (DGGS). Dick and his two brothers and sister grew up in Soldotna, where their father Harry operated Rege's Garage for many years. After finishing his PhD in geology at Arizona State University, Dick returned to Alaska and worked in the Interior and on the Kenai. One of his big projects was mapping the surface geology of the Trans-Alaska

oil pipeline corridor, and DGGS has now contracted him to map the corridor of the proposed natural gas pipeline from Delta Junction to the Canadian border.

Dick, now settled once again in Soldotna, has spent almost 30 years studying the glacial and post-glacial history of the Kenai and much of this work is summarized in a new DGGS publication, *A Guide to the Late Quaternary History of Northern and Western Kenai Peninsula, Alaska*. Co-authors are Alfred Sturmman, myself, and Patty Burns. Dick wrote most of the text on landscape history, Al Sturmman prepared six beautiful large folding color maps showing the glacial landforms, I wrote the sections on vegetation and climate history and spruce bark beetle outbreaks, and Patty Burns coordinated the whole project.

We wrote this guide for a three day "Friends of the Pleistocene" fieldtrip last Labor Day weekend. The book has 13 roadstops along the Sterling Highway from Turnagain Pass to Homer, and a 14th stop at Grewingk Glacier, across Kachemak Bay. A side trip takes the Spur Road to Captain Cook State Recreation Area north of Nikiski. The 112-page book is formatted like *An Alaska Milepost*, where features are described by milepost markers driving south from Turnagain Pass. You can get out of the car at each stop, read the book, look at the maps, photos and diagrams, and find out how features such as moraines, glacial lakebeds, and eroding bluffs were formed.

This is not the kind of book that you read from cover to cover in one sitting. Rather, it should be nibbled at and pondered, as Professor David Wartinbee from the Kenai Peninsula College expressed it. Look up one of your favorite areas and read the surrounding paragraphs, and see how this area came to be. How has the climate changed at this site since the ice pulled out thousands of years ago? What vegetation has grown here since that time? How many times in the last several centuries have spruce bark beetles thinned this forest?

In the book we tried to summarize recent research on the Kenai landscape, much of it done under sponsorship of the Kenai National Wildlife Refuge. Re-

searchers from as far as Northern Arizona University, Alaska Pacific University, University of Alaska Fairbanks and Anchorage, Columbia University, Lehigh University, University of Illinois, Duke University and others, as well as from the U.S. Geological Survey and the Alaska Volcano Observatory have carried out a wide variety of studies on and around the Kenai Refuge over the last dozen years. The general theme has been “paleoecology,” looking at climate, fire, bark beetles and vegetation history of the landscape on timescales ranging from decades to millennia. Many of these studies have not yet been published, so the reader gets a sense that this is very much “a work in progress.” We did however include an extensive bibliography of earlier work.

Recent interest in climate change has motivated many of these studies, and the Kenai Refuge has provided a 2-million acre laboratory where these studies could be carried out under relatively pristine natural conditions. Graduate student Kacy McDonnell from Alaska Pacific University for example just finished her masters thesis showing that peatlands on the Refuge are drying out and experiencing an invasion of shrubs and black spruce, for the first time since the end of the last major glacial period 18,000 years ago. This drying out process started 150 years ago at the end of the Little Ice Age, but it has greatly accelerated since the late 1960s. This research and much more is summarized in the book.

To fully appreciate this book I recommend that readers early on acquaint themselves with our timetable of glacial advances. The last major glacial period is called the Wisconsin glaciation nationwide, but is locally known as the Naptowne glaciation after the original name for Sterling, where some of the moraines are particularly well displayed. The Naptowne glaciation had four glacial advances: the Moosehorn (oldest), Killey, Skilak, and Elmendorf (youngest). During Moosehorn time (32,000 to 18,500

years ago) glaciers came from the west across Cook Inlet from the Alaska Range, stopping just west of Sterling; the Swanson River Road follows these westside Moosehorn moraines. Moosehorn ice also came out of the Kenai Mountains to the east, and in some places (e.g., Kasilof) this ice butted up against the westside ice. In other places narrow glacial lakes separated the two lobes; the old lakebeds now form the flat-bottomed muskegs beloved by snow machiners that the run from Sterling to Anchor Point.

The Moosehorn advance was the biggest advance, and each successive new advance (Killey, Skilak, and Elmendorf) was shorter than its predecessor. The Moosehorn advance ran out of Kachemak Bay as far as Anchor Point, whereas the Killey advance went only to the Baycrest overlook, and the Skilak advance formed a terminal moraine which is now the Homer spit. With the Elmendorf advance the Kachemak Bay glaciers only came down to the shore and didn't fill up the Bay as did the earlier advances.

The six large-format color maps accompanying the Guide show the fronts of the each glacial advance, and help to visually simplify the sometimes quite complex pattern of overlapping glacial advances.

The Guide and maps can be downloaded free from the DGGs website at <http://www.dggs.dnr.state.ak.us/pubs/pubs?reqtype=citation&ID=15941>, although the type on the maps is too small to read if the maps are printed on standard 8 ½ x 11 inch paper. For \$25 you can order a nice spiral-bound edition from DGGs, along with the six full-sized maps on permanent quality paper on a 1-inch-to-the-mile (1:63,360) scale.

Ed Berg has been the ecologist at the Kenai National Wildlife Refuge since 1993. He teaches several courses at the Kenai Peninsula College on themes of this Guide, the next course being “Cycles of Nature” in September. Previous Refuge Previous Refuge Notebook columns can be viewed on the Web at <http://www.fws.gov/refuge/kenai/>.