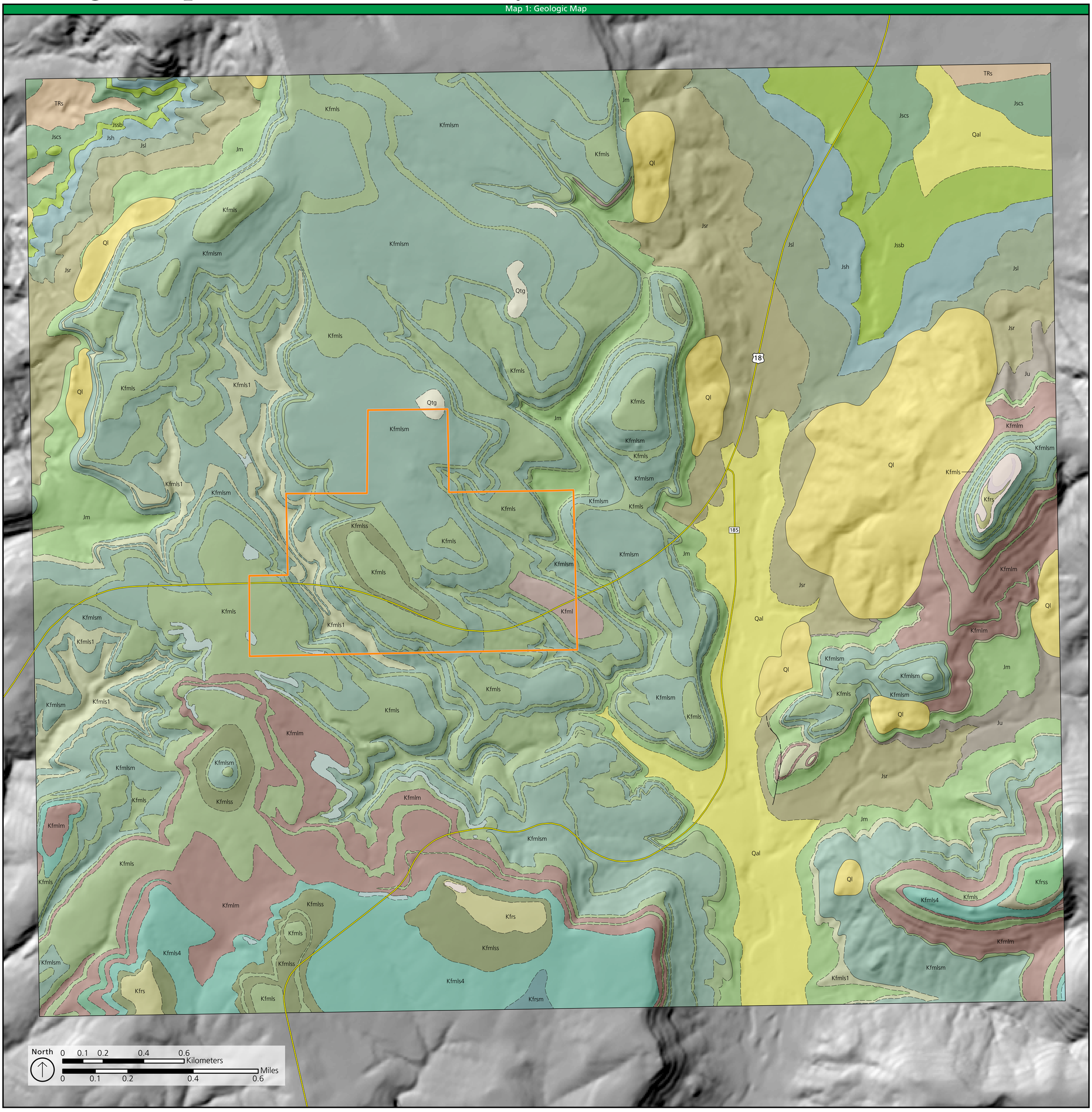
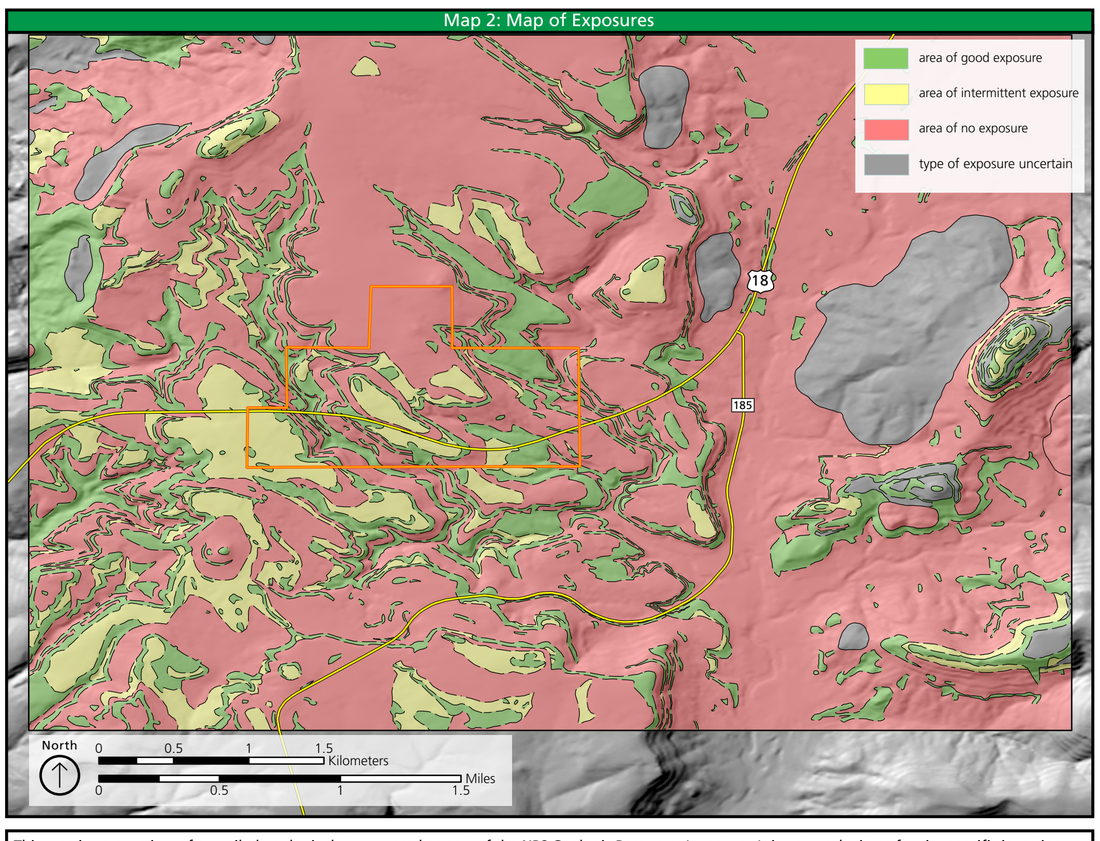
Geologic Map Overview for Fossil Cycad National Monument, South Dakota

Map 1: Geologic Map



Map 2: Map of Exposures



This map is an overview of compiled geologic data prepared as part of the NPS Geologic Resources Inventory. It is not a substitute for site-specific investigations.

The source map used in creation of the digital geologic data was:

Wilmarth, V.R. and Smith, R.D. 1957. Preliminary Geologic Map of the Southwestern part of the Minnekahta Quadrangle, Fall River County, South Dakota (1:7,200 scale). Mineral Investigations Field Studies Map MF 70. U.S. Geological Survey (prepared in cooperation with the U.S. Atomic Energy Commission).

As per source map scale and U.S. National Map Accuracy Standards, geologic features represented here are within 4 m (12 ft) (1:7,200 scale data) of their true location.

All digital geologic data and publications prepared as part of the Geologic Resources Inventory are available at the NPS Integrated Resource Management Applications Portal (IRMA): https://irma.nps.gov/App/Reference/Search. Enter “GRI” as the search text and select a park from the unit list. This map was created November of 2012.

NPS Boundary (1927-1952)

Infrastructure

Roads

Faults

unknown offset/displacement, solid where known, dashed where approximate, dotted where concealed

Geologic Contacts

solid where known, dashed where approximate, dotted where concealed

Geologic Units

Qal Alluvium (Quaternary)

Qtg Terrace gravel (Quaternary)

Ql Landslide (Quaternary)

Fall River Sandstone

Kfr undifferentiated (Lower Cretaceous)

Kfrs sandstone (Lower Cretaceous)

Kfrm mudstone (Lower Cretaceous)

Kfrss interbedded sandstone and siltstone (Lower Cretaceous)

Kfrs5 Unit No. 5 (S5) (Lower Cretaceous)

Kfrsm sandstone and mudstone (Lower Cretaceous)

Fuson Formation, Minnewaste Limestone and Lakota Sandstone

Kfml undifferentiated (Lower Cretaceous)

Kfmls sandstone (Lower Cretaceous)

Kfmlm mudstone (Lower Cretaceous)

Kfmlsm interbedded sandstone and mudstone (Lower Cretaceous)

Kfmlss interbedded sandstone and siltstone (Lower Cretaceous)

Kfmls4 Unit No. 4 (S4) (Lower Cretaceous)

Kfmls3 Unit No. 3 (S3) (Lower Cretaceous)

Kfmls1 Unit No. 1 (S1) (Lower Cretaceous)

Jm Morrison Formation (Upper Jurassic)

Ju Unkpapa Sandstone (Upper Jurassic)

Sundance Formation

Jsr Redwater Shale Member (Upper Jurassic)

Jsl Lak Member (Upper Jurassic)

Jsh Hulett Sandstone Member (Upper Jurassic)

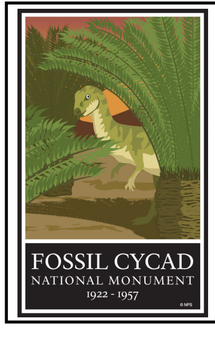
Jssb Stockade Beaver Shale Member (Upper Jurassic)

Jscs Canyon Springs Sandstone Member (Upper Jurassic)

TRs Spearfish Formation (Triassic)

silica-cemented sandstone

carbonate-cemented sandstone



In 1922, Fossil Cycad National Monument was established as the third NPS fossil park—Petrified Forest NP (1906) and Dinosaur NM (1915) were the first and second—but has the dubious distinction of being the only fossil park ever removed from the NPS. What happened?

Beginning in the 1890s, large tree trunk fossils from palm-like plants called "cycadeoids" were discovered in the southeastern Black Hills of South Dakota. Many were exposed at the surface and easy to see. The well-preserved, scientifically signifiant cycadeoids were found in rocks mapped as the Lakota Sandstone (Kfml units on this map). Yale paleontologist George R. Weiland championed the preservation of the site but also collected an extraordinary amount of specimens.

As a result of over collecting, coupled with lax managment and unclear direction by the National Park Service, no surface specimens were visible by the mid 1930s. The end of Fossil Cycad National Monument was directly related to the loss of its fossils, and the deaths of Wieland (1953) and South Dakota Senator Peter Norbeck (1936), its principal advocates. Congress de-authorized the park on September 1, 1957. Today the land is managed by the Bureau of Land Management. Cycadeoid fossils still exists on the site. Some were discovered during road construction in the 1980s.