

Outcrops of the Fox Hills Formation of western South Dakota

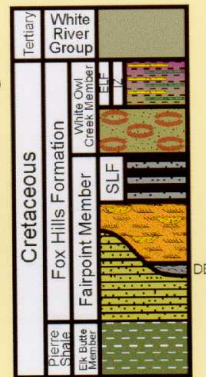
Lithologic descriptions of the Enning and Corson County sections are from Pettyjohn (1967) and Waage (1968), respectively. The age of individual stratigraphic units in the Creighton and Badlands sections is based on our proposed age for the disrupted zone. Note the overlap of the Interior Zone of weathering across different stratigraphic units. The position of the disrupted zone at Enning is unknown, but if preserved, should be higher in the section based on the time-transgressive nature of deltaic sedimentation and a lateral shift into increasingly more terrestrial environments. Zones of disrupted sediments have been noted in the banded Bullhead lithofacies of the Corson County sections, but these are localized zones of very limited lateral extent, possibly due to sediment loading, and are below the dinosaur-bearing beds of the Hell Creek Formation (Waage, 1968). If the disrupted zone is present in the Corson County area, it should be above the highest occurrence of articulated dinosaur fossils and be associated with typical impact signatures (shocked quartz, spherules, meteoritic geochemistry), although the degree of liquefaction should decrease toward more proximal positions.

Corson County type area (1)



- lignite, brownish to purple shale, and fine-grained light gray sandstone
- tabular and trough cross-bedded very fine to medium-grained white to grayish-white sand
- banded shale, silt, and sand
- fine-grained greenish-gray dirty sand (weathers yellowish orange)
- gray clayey silt with limestone concretions

Enning (2)



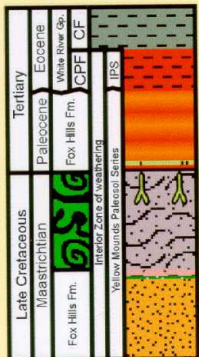
- mudstone
 - purple clay-shale with green silt and white-yellow sand
 - massive and cross-bedded sands with large iron-stained concretions
 - coal, lignite, and dirty sand
 - highly channelized and cross-bedded silt and fine-medium dirty sand
 - coquina lag with (reworked?) dinosaur (DB) and turtle bones
 - coarsely banded shale, silt and sand
 - gray-olive shale
- ELF = Enning lithofacies
SLF = Stoneville lithofacies
SLF = Interior Zone of weathering

Creighton (3)



- purple clay-shale with green silt and white-yellow sand
- disrupted zone
- banded shale, silt, and sand with thin, resistant fine sandstone beds
- transitional Pierre Shale-Fox Hills Formation contact
- gray-olive shale

Badlands (4)



- mudstone
 - claystone
 - disrupted zone
 - undulatory sandstone
 - nuculid clam zone
 - glauconitic sandstone
 - massive siltstone/sandstone
 - root trace
- CF = Chadron Formation
CPF = Chamberlain Pass Formation
IPS = Interior Paleosol Series

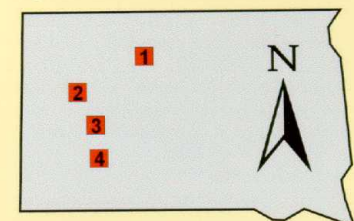
(not to scale)

position on delta

distal

proximal

South Dakota



4 outcrop locations