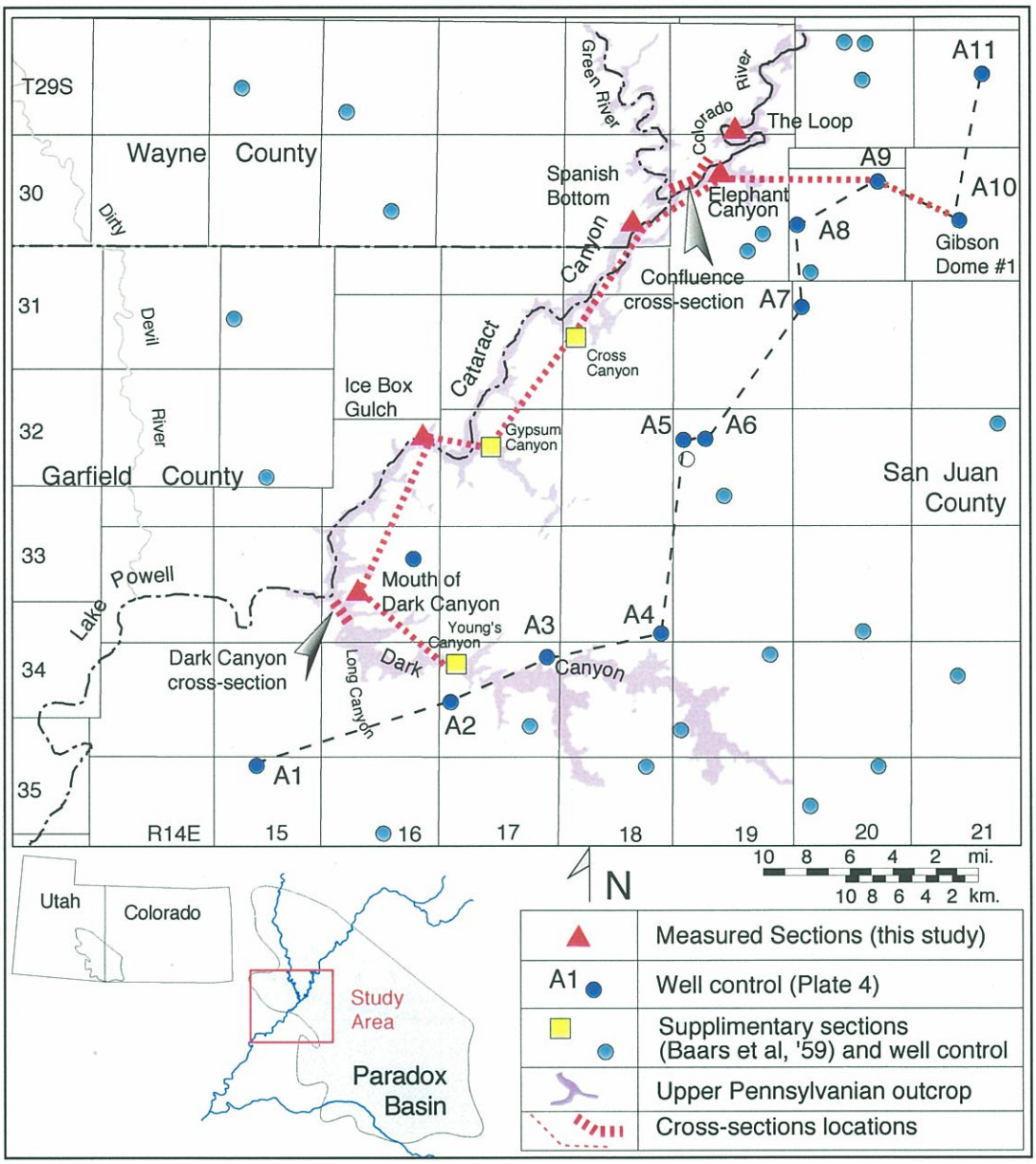


Figure 1
Base map of study area in the Paradox basin of southeastern Utah showing the location of measured sections and open-hole well-logs used in this study. Shaded area shows upper Pennsylvanian outcrop along canyon walls of the Colorado River drainage system. Photo-mosaic and cross-section locations for Plates 1,4 and 5 are also shown.

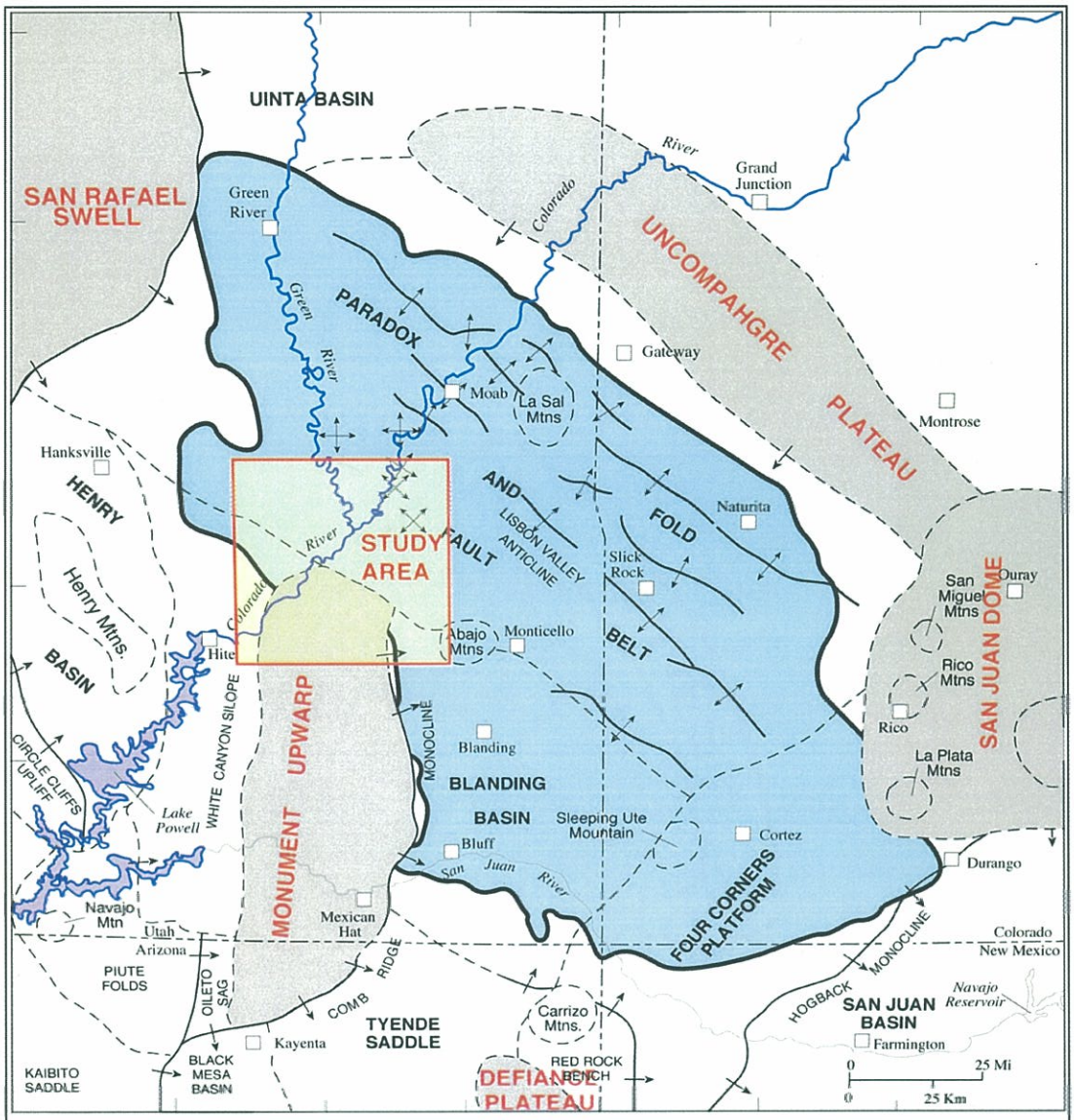


Figure 2
Tectonic features of the central Colorado Plateau region showing position of study area along the western margin of the Paradox Basin. Modified after Kelly, 1958 and Nuccio and Condon, 2000.

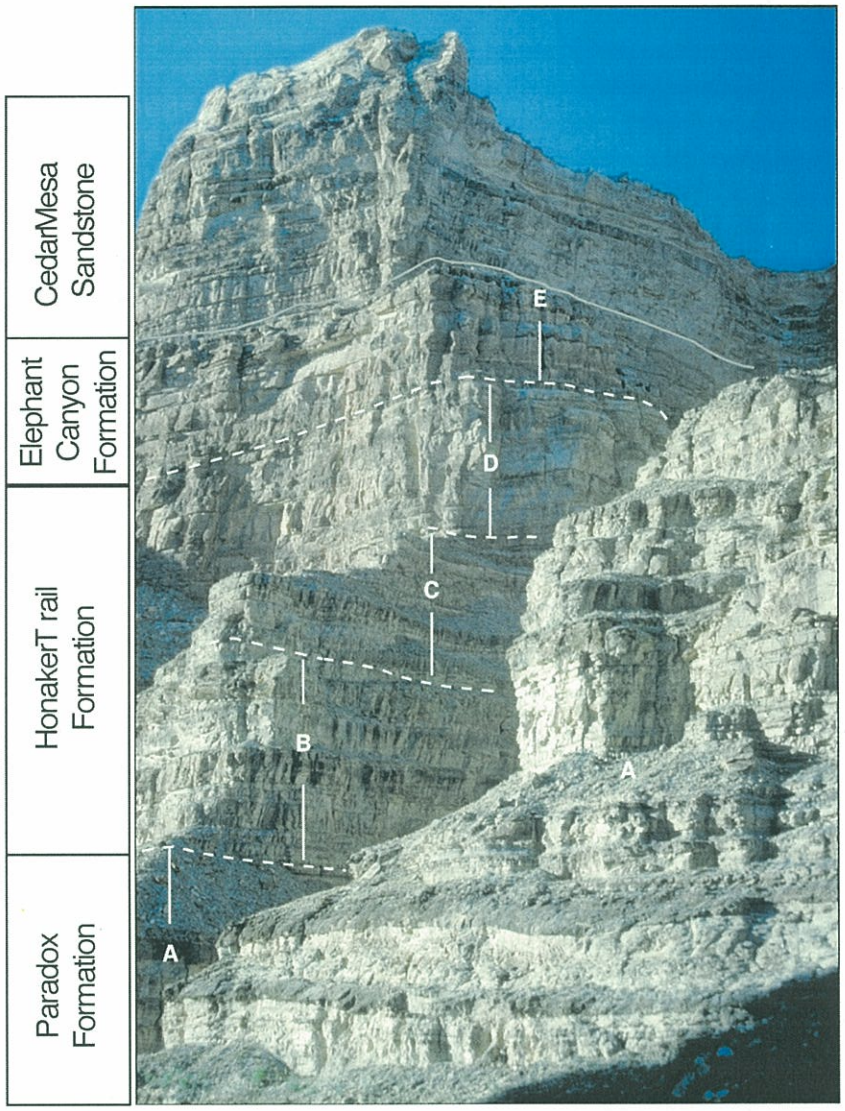


Figure 3
View looking west at Ice Box Gulch. White dased lines illustrate cycle-set boundaries defined in this study. Limestone beds of the Ismay member of the Paradox Formation comprise the A cycle-set. Lighter colored sandstone and limestone beds of the Honaker Trail Formation comprise the B, C, and D cycle-sets. Red sandstones and shales (recessive slope hidden above gray, solid line) compose the Elephant Canyon Formation. Lighter colored beds composing the uppermost cliff wall are the Cedar Mesa Sandstone.

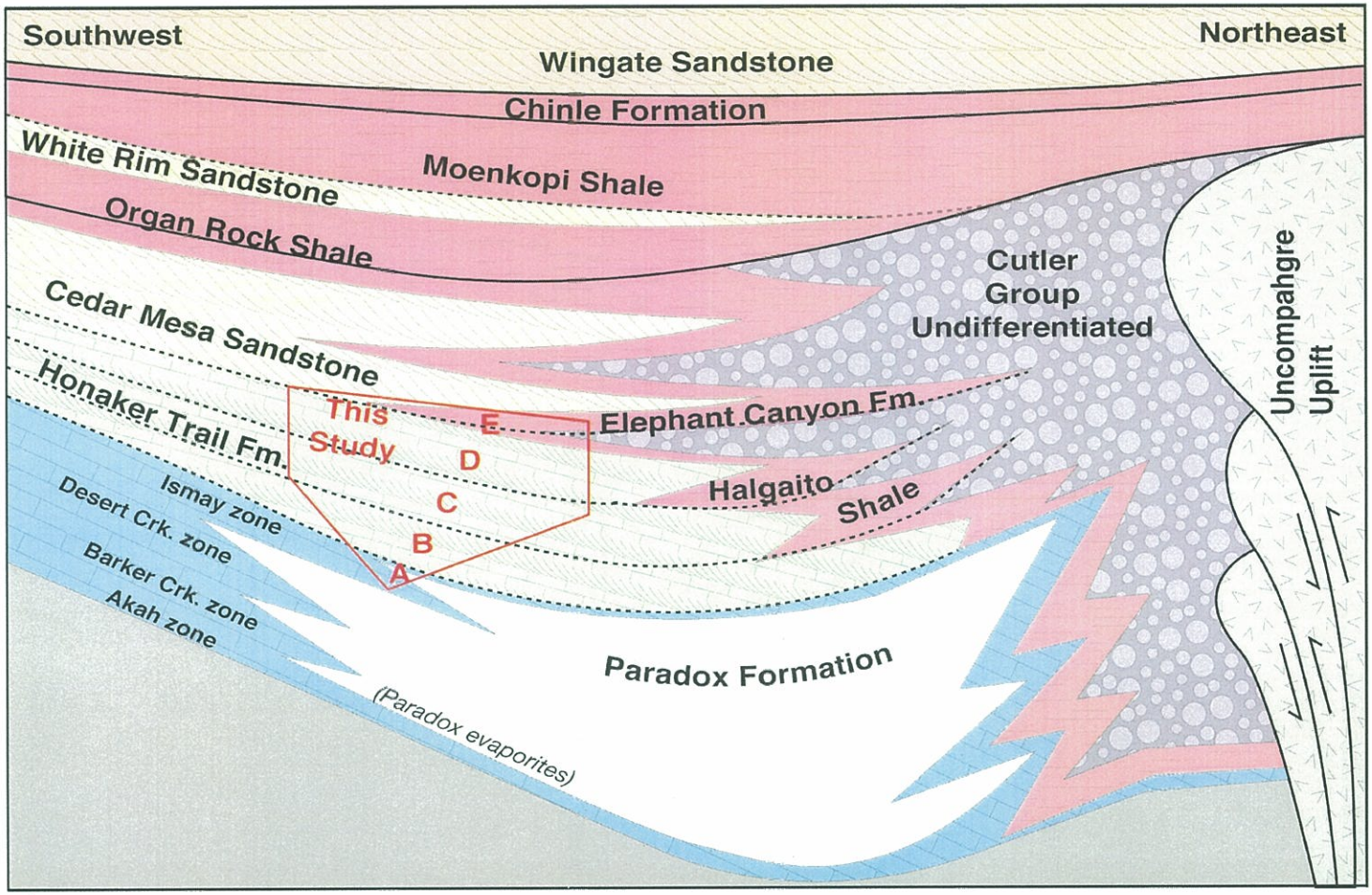


Figure 4
Generalized stratigraphic relationships of the northern Paradox Basin showing the position of cycle-groups A through E described in this study. Adapted from Wengerd and Matheny (1958), Baars and Stevenson (1981), and Hite and Buckner (1981).

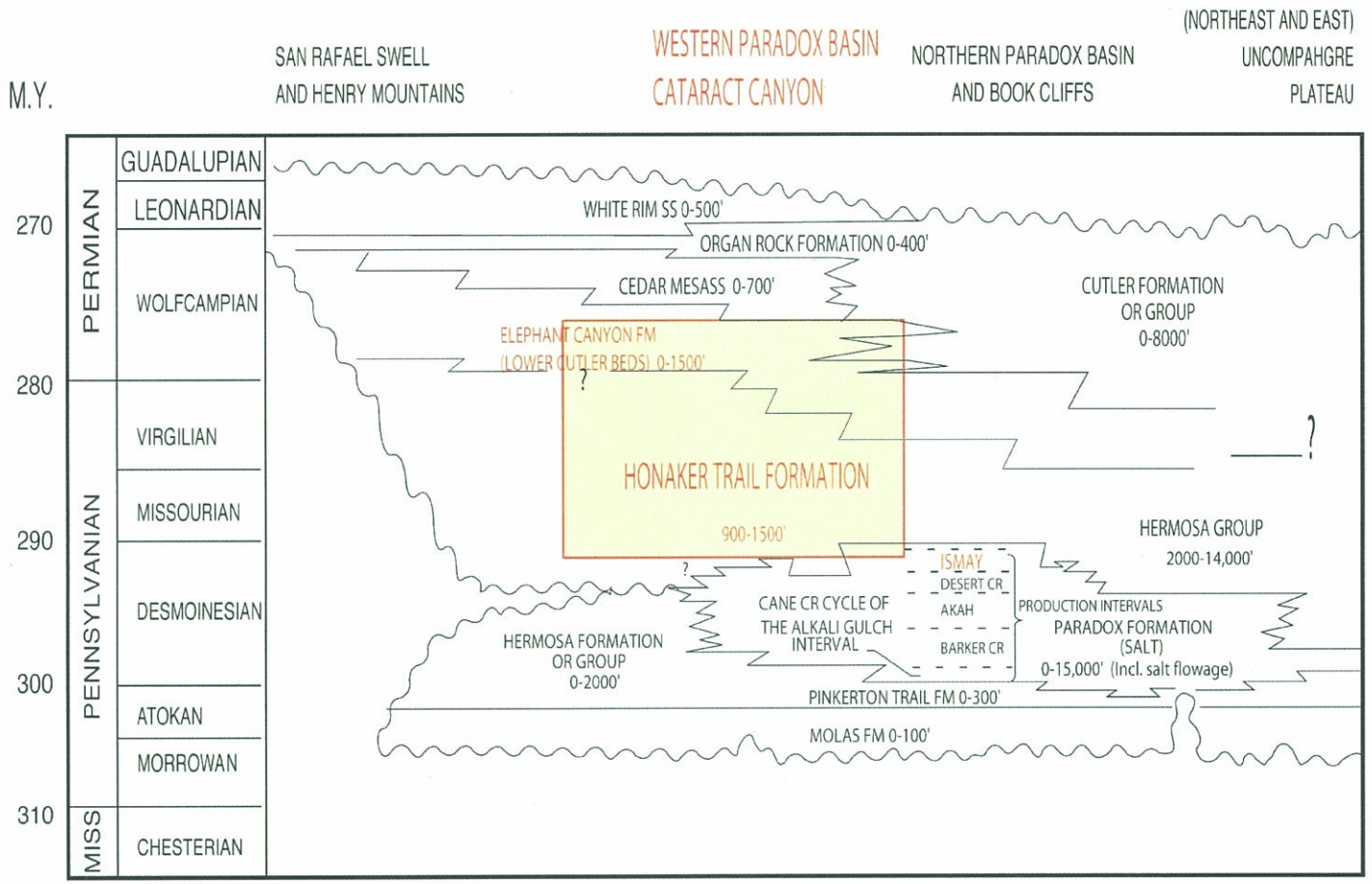
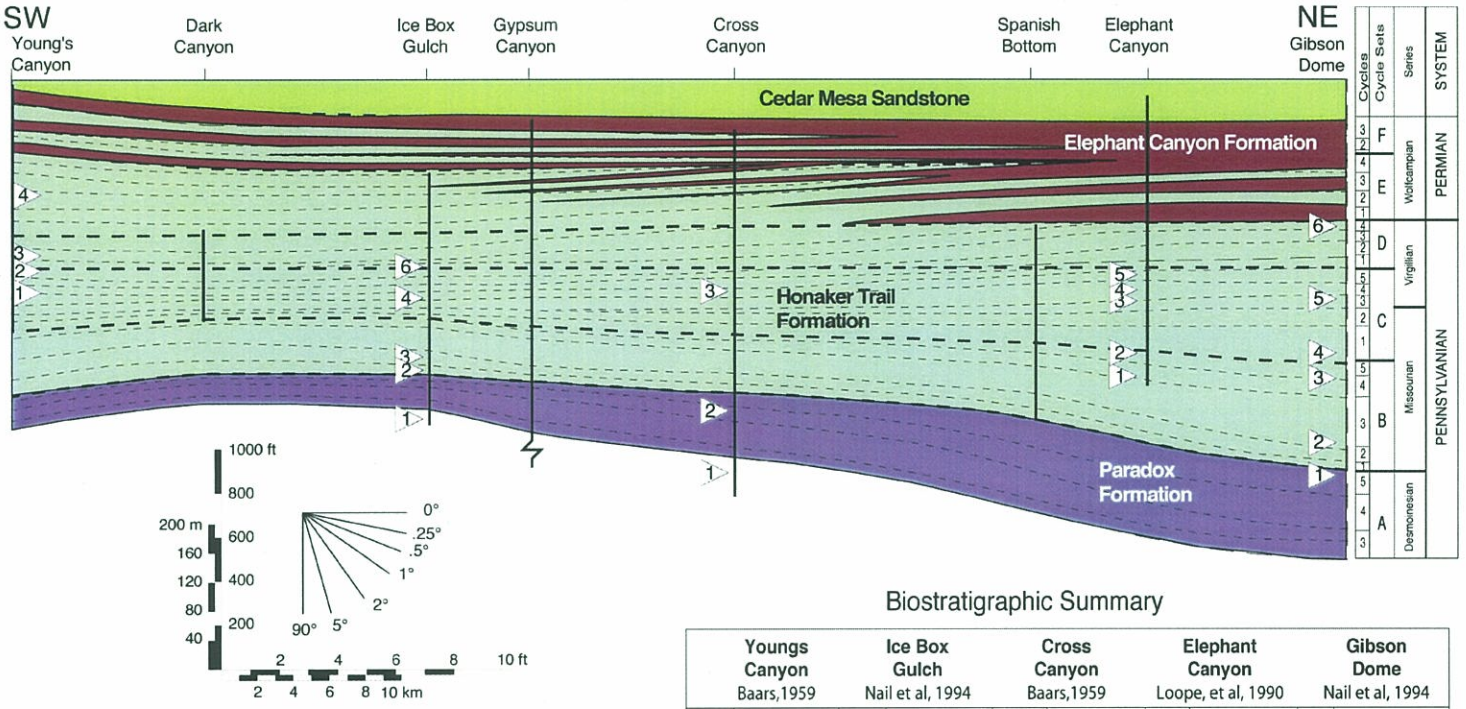


Figure 2
Regional correlation chart through the Paradox basin. Modified after Nuccio and Condon, 2000 and Molenar, 1987. Time scale after Kluth, 1986.



Biostratigraphic Summary

Youngs Canyon Baars,1959		Ice Box Gulch Nail et al, 1994		Cross Canyon Baars,1959		Elephant Canyon Loope, et al, 1990		Gibson Dome Nail et al, 1994	
								6	Conodont Unknown (Permian ?)
4	Fusulinid Triticites cf. T. Pygmaceous	5	Fusul. & conod. latan (U.Mis or L.Virg.)			5	Fusulinid T. Subventricosis (Virgilian)	5	Conodont Oread (Hebner) (L. Virgil)
		4	Conodont Quivara (M. Missouri)			4	Fusulinid T. Jacksboroensis (Late Penn.)	4	Conodont Stanton (Eudora) (U. Missouri)
3	Fusulinid Triticites	3	Conodont Mound City (L. Missouri)	3	Fusulinid Oketaella (Missouri)	3	Fusulinid Oketaella sp. (age ?)	3	Conodont Iola (Muncie Ck.) (M. Missouri)
2	Fusulinid Oketaella (Missouri)	2	Fusul. & conod. Lost Branch (U. Desmoines)	2	Fusulinid Fusilina (Desmoines)	2	Fusulinid Staffelids (?) (age ?)	2	Conodont Dennis (Stark) (L. Missouri)
1	Fusulinid Triticites (Missouri)	1	Fusulinid U. Cherokee (L. Desmoines)	1	Fusulinid Fusilina (Desmoines)	1	Fusulinid T. Irregularis (Missouri)	1	Conodont Lost Branch (U. Desmoines)

Figure 6
Cross-section through Cataract Canyon showing location of measured sections and comparison of stratigraphic hierarchy defined in this study to lithostratigraphic units. Age relationships shown are based on available biostratigraphic data.

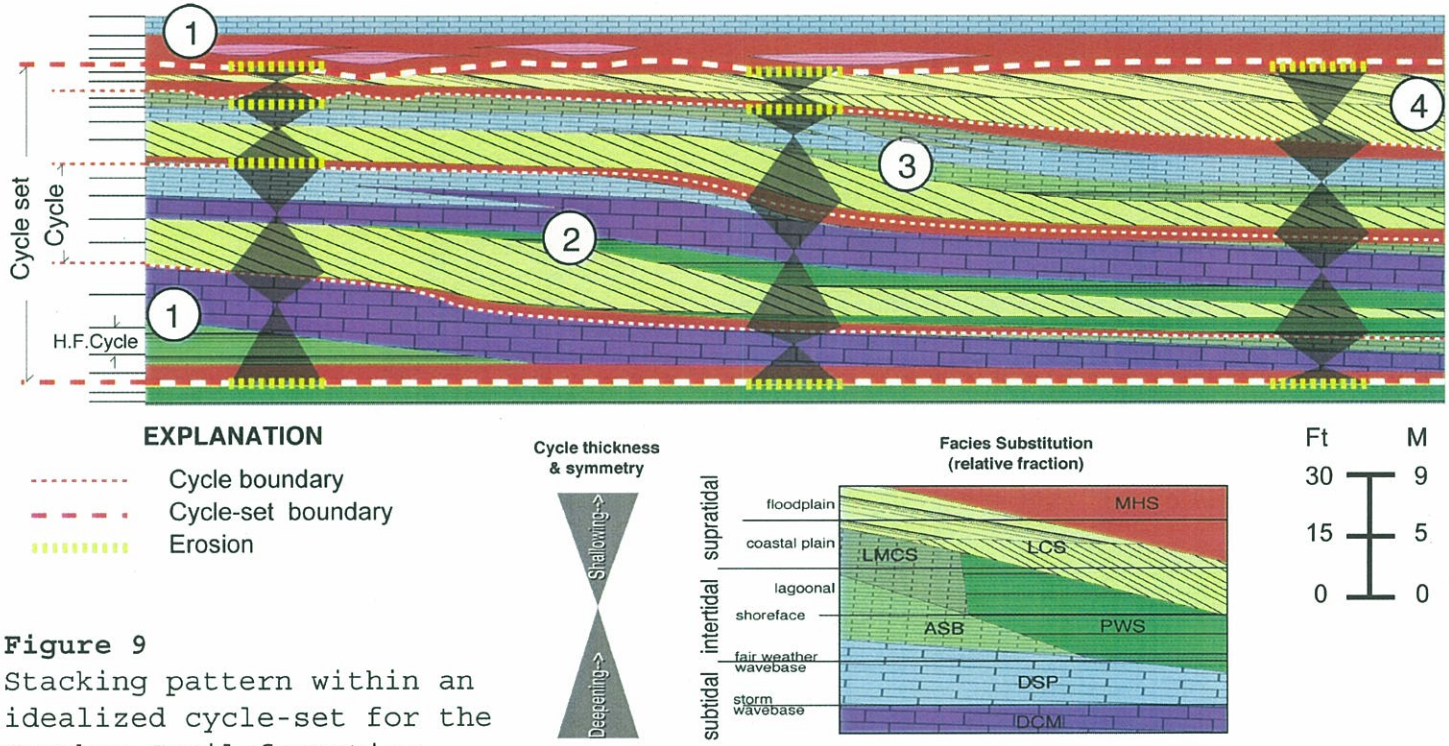


Figure 9
Stacking pattern within an idealized cycle-set for the Honaker Trail formation. Cycle and cycle-set boundaries are marked by short and long dashed lines, respectively. Thick dashed lines indicate erosion. Numbered circles mark the center of mass (geometric center) of 4 cycles. Relative offset between these cycles shows a seaward stepping stacking pattern. A landward shift in the position of maximum preserved sediment volume define cycle group boundaries. Cycle-sets typically consists of 3 to 6 cycles which have a seaward-stepping stacking pattern. Cycle-set boundaries record a landward shift in facies tracts.

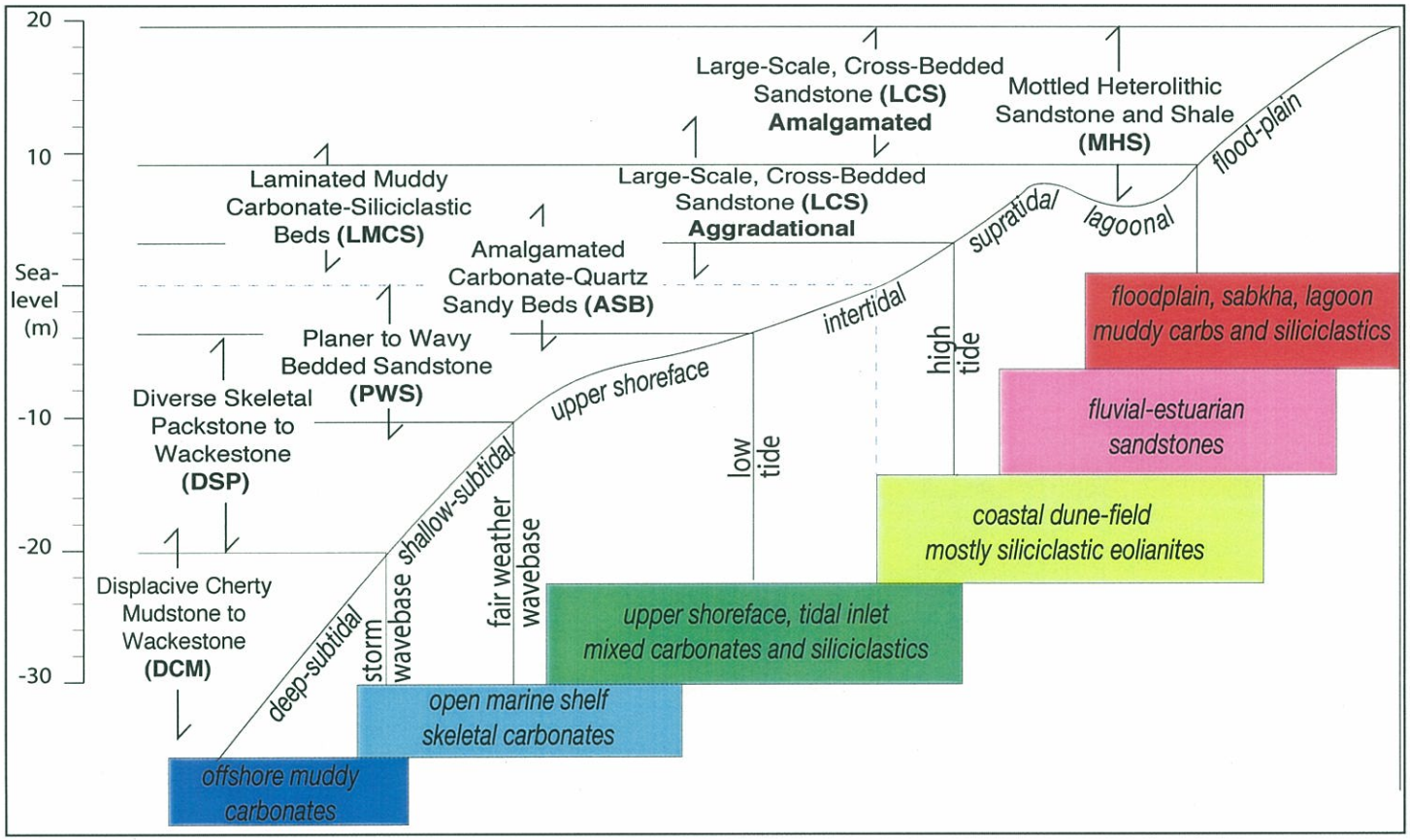


Figure 10
Facies associations described in this study with their interpreted depositional position relative to the paleostrandline. Color block plots show facies tracts and common litholgies.

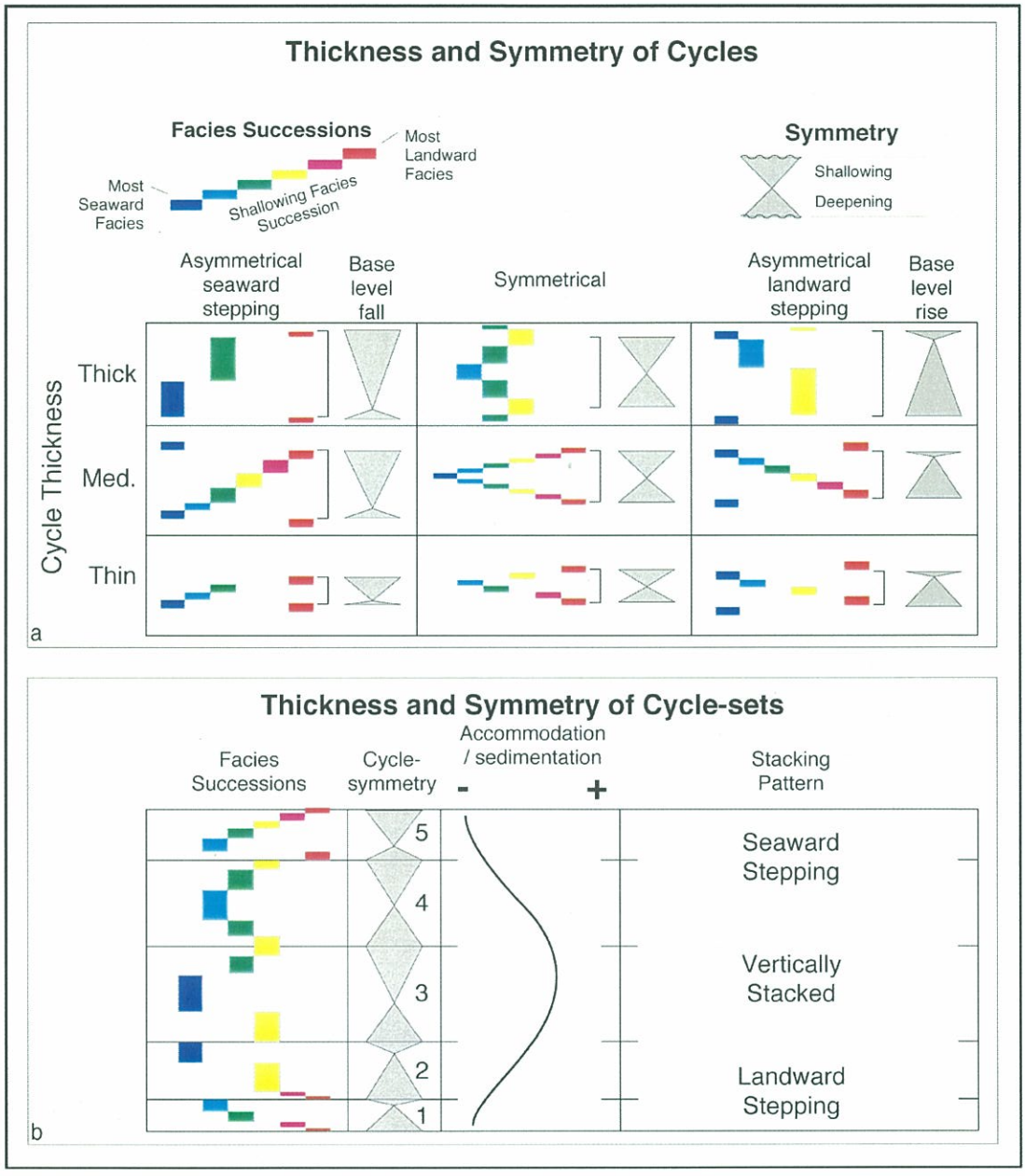


Figure 11
a) Stacking diagrams from vertical profiles use facies successions to graphically illustrate base level conditions during deposition. These plots also illustrate facies diversity, cycle thickness and cycle symmetry.

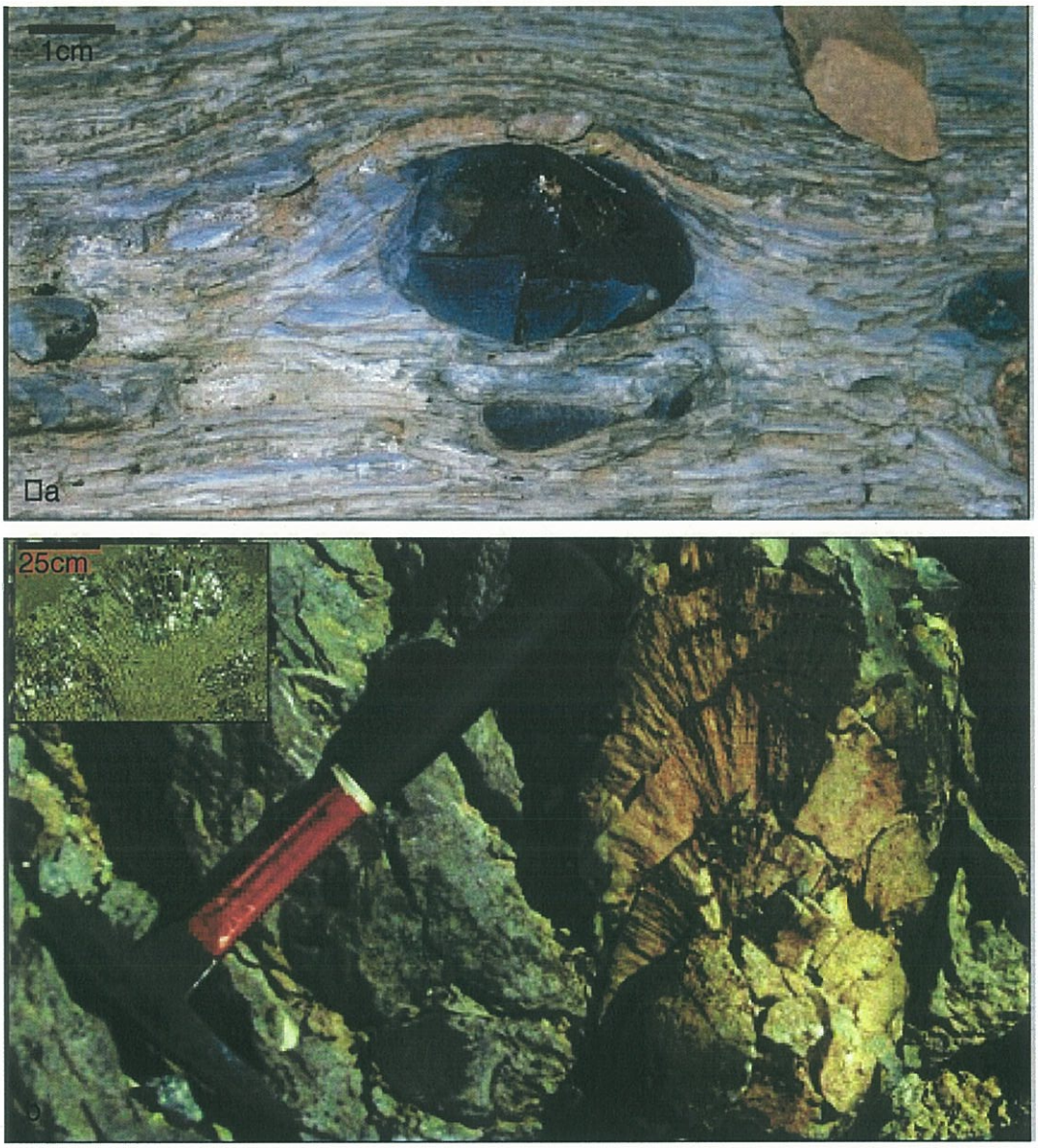


Figure 12
a) Chert nodule in displacive, cherty mudstone facies (DCM). Chert is common in this facies and is preferentially concentrated along silty and spiculitic horizons. Adjacent laminae are deformed around nodules such as shown here suggesting that the silica in the nodules precipitated early, prior to most compaction. b) Chaetetes head with distinctive fan shape and boxwork texture (inset) in DCM bed within the Ismay Member of the Paradox Formation at Ice Box Gulch.

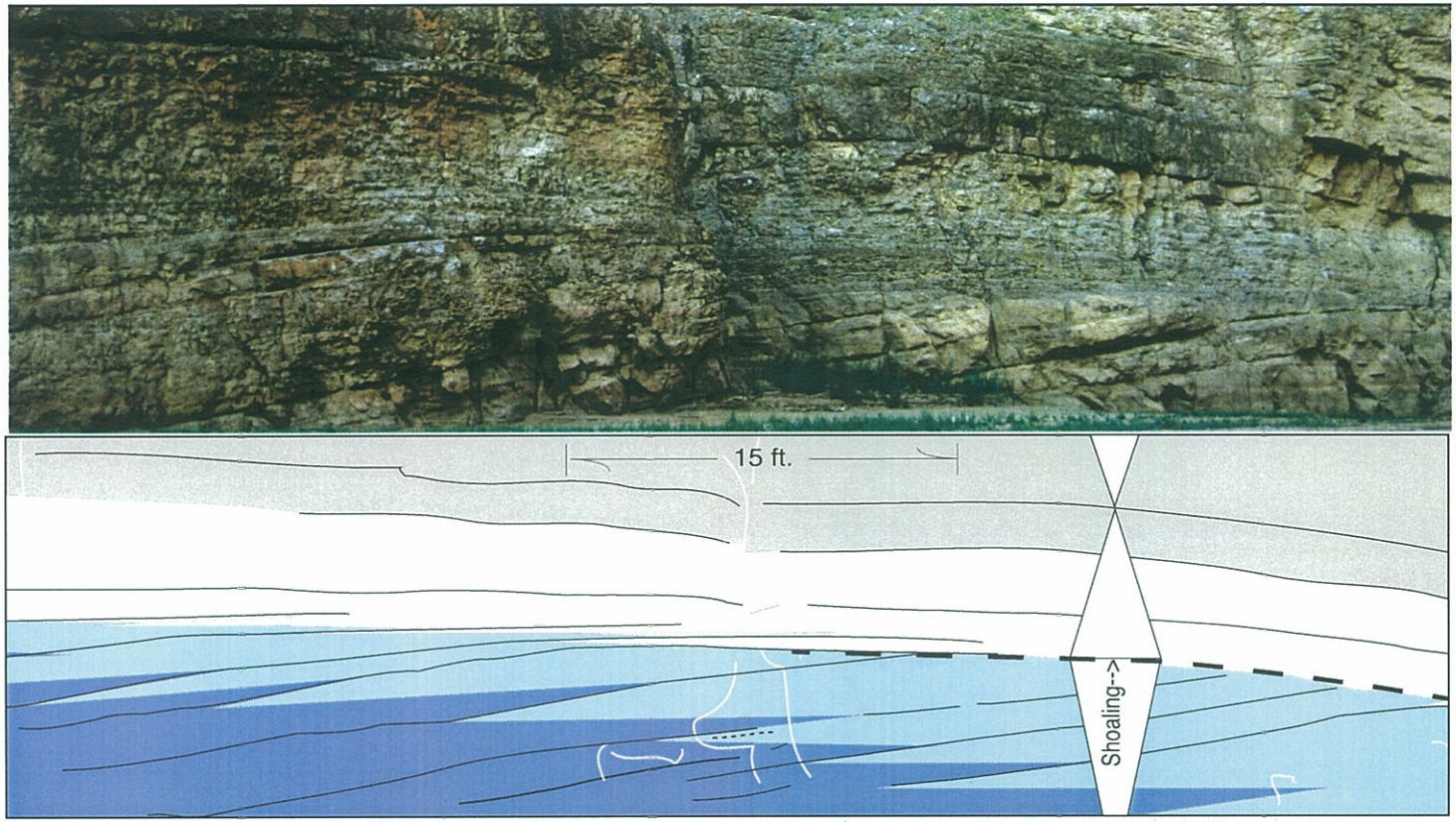
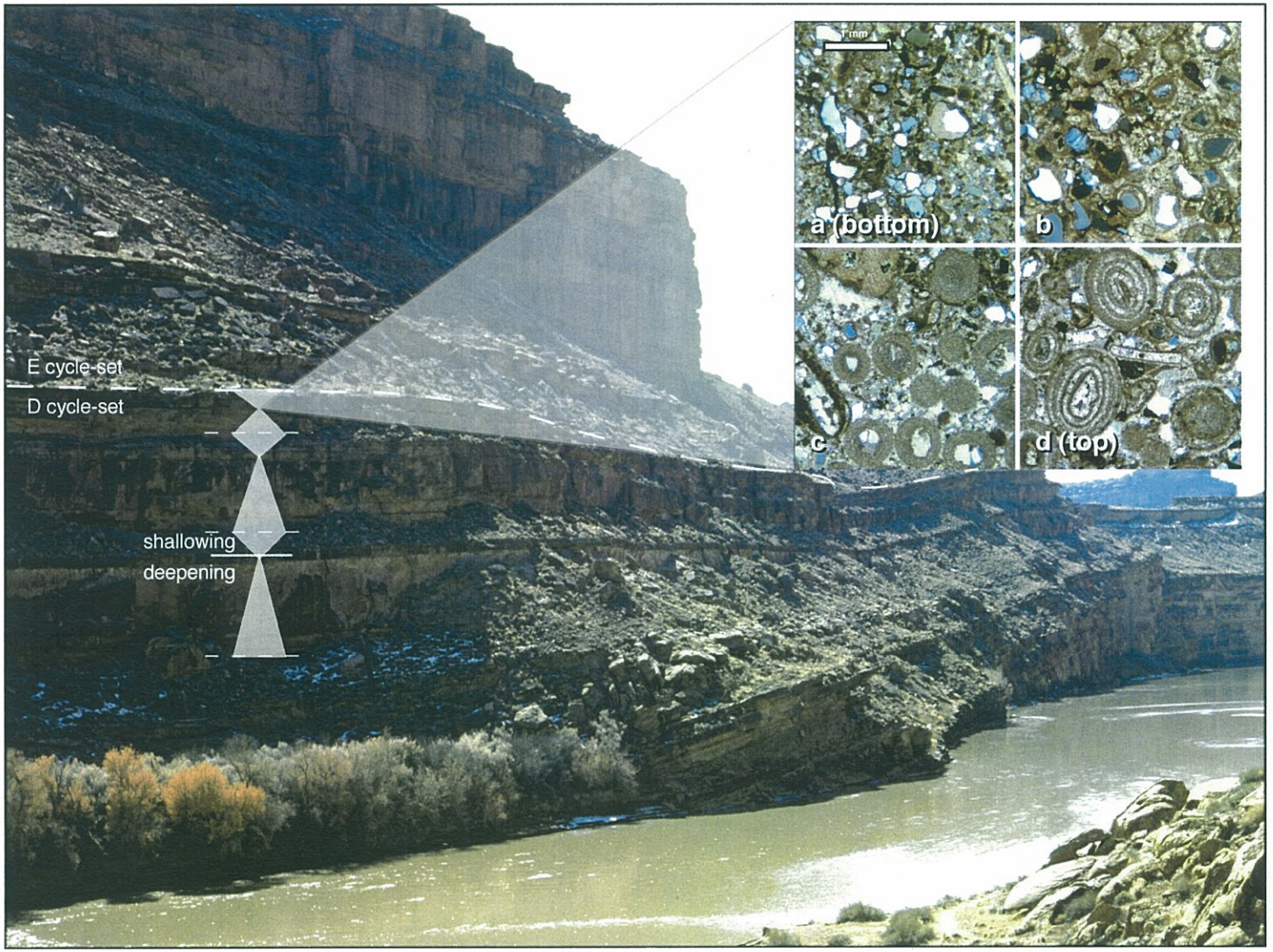
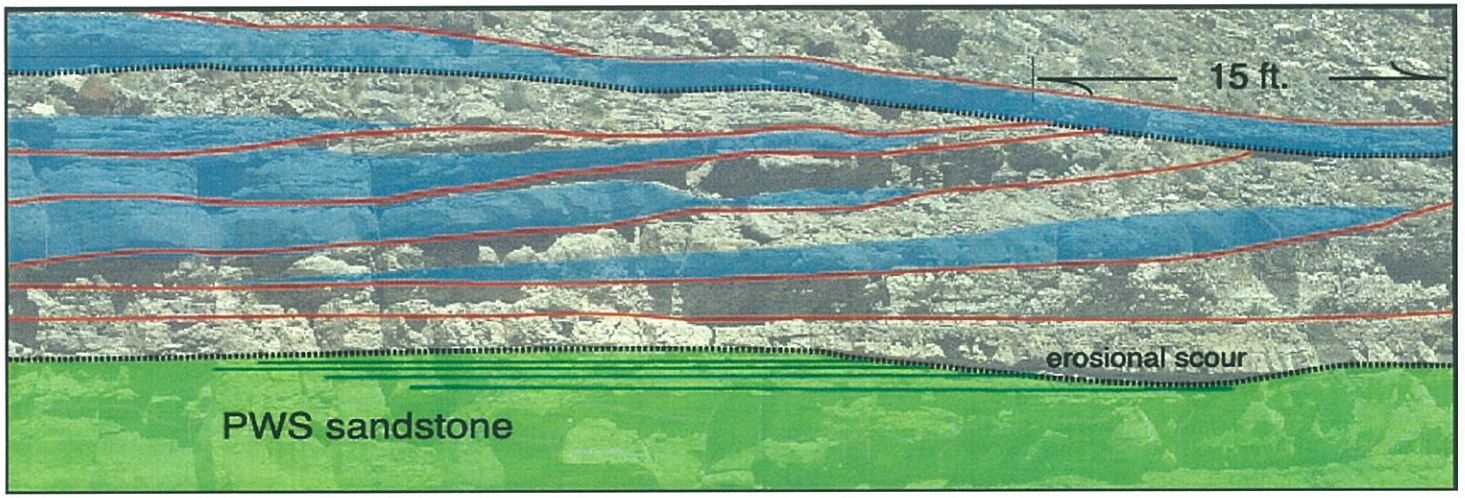


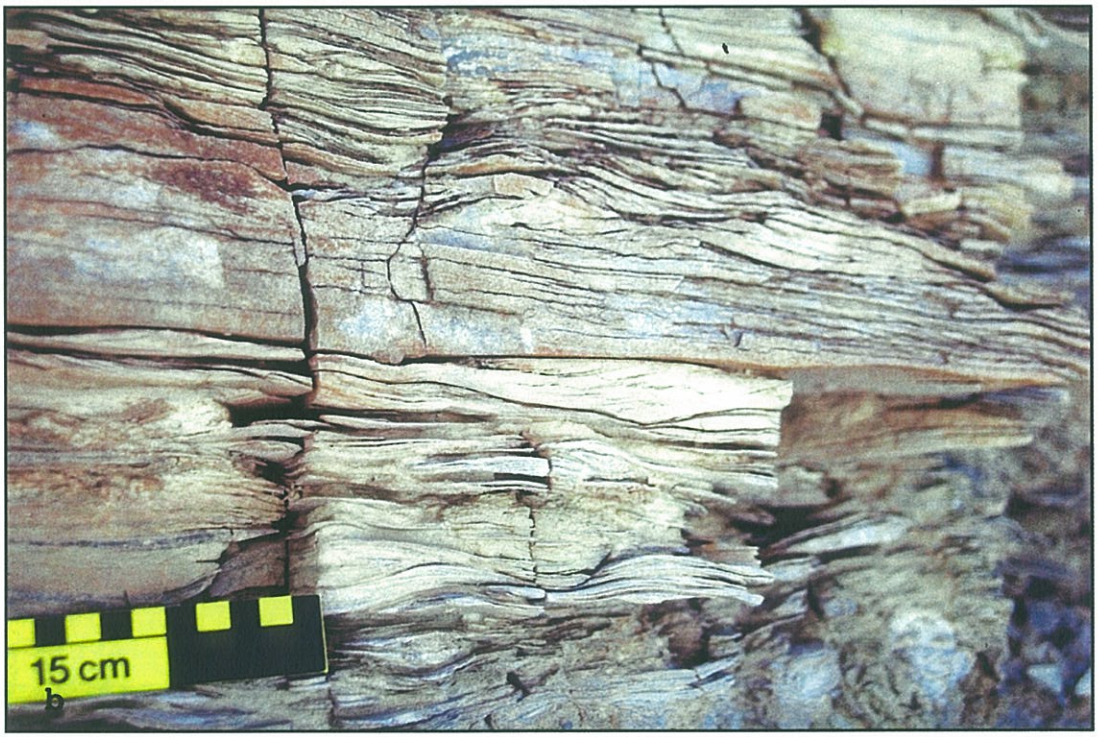
Figure 13--Seaward migrating bar composed of diverse skeletal packstone to wackestone facies (DSP) within the Ismay Member of the Paradox Formation. Location is immediately across the river from Ice Box Gulch. Inclined, lower foreset beds (medium blue in sketch) consist of crinoid, brachiopod wackestone which grade upward to articulated crinoid packstone (light blue). Topset beds (white)contain bioclastic skeletal debris and are continuous with foreset beds along left side of photo but are truncated along right side of photo suggesting shallow, high energy, locally erosional conditions. The section is capped by the displacive cherty mudstone facies (gray) indicating deepening conditions.


E cycle-set
D cycle-set
shallowing
deepening
a (bottom)
b
c
d (top)


15 ft.
erosional scour
PWS sandstone


Ostracod lags
.5 m
a
b
1 cm
c


a
1 ft


15 cm
b