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*DINOSAURS TO DINOFLAGELLATES*

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**PROGRAMME AND ABSTRACTS**



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REVISED CHRONOSTRATIGRAPHIC  
FRAMEWORK FOR THE UPPERMOST  
CRETACEOUS AND LOWER PALEOGENE  
STRATA OF NORTH DAKOTA

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A number of iterations of a chronostratigraphic correlation diagram of the uppermost Cretaceous and lower Paleogene strata of North Dakota have attempted to show the current state of knowledge of ongoing studies on mammalian biochronology, nonmarine and marine invertebrate paleontology, paleomagnetic investigations, and lithostratigraphic field work. The present study makes use of 1) new mammalian fossil discoveries; 2) reinterpretation of mammalian local fauna age assignments; 3) a new radiometric date; 4) revised calibration of

the North American Land Mammal images (NALMAs) for the middle and upper Paleocene of the Bighorn Basin, Wyoming (Secord, et al., in prep.); 5) revised interpretation of the paleomagnetic record in the Little Missouri and Missouri River valleys (see Hartman et al., 2002); and 6) the recalibrated geomagnetic polarity record based on orbital forcing, and other paleomagnetic (e.g., Crazy Mountains Basin and subsurface data to provide a more accurate depiction of the temporal relationships of Williston Basin strata. One goal has always been to more clearly show the intercalation of the marine and marginal marine Cannonball Member of the Fort Union Formation with the predominantly nonmarine Ludlow and Tongue River Members. The North Dakota record of these units and subjacent Cretaceous/Paleogene (K/T) boundary is the best study area to document certain fundamental questions on extinction and biotic recovery associated with marine transgression just prior to the K/T impact event. Changing Cannonball sea levels for the first 5 Ma years of the Paleocene was most likely a major contributing factor to the slow rate of increase in freshwater molluscan diversity following their near demise near the K/T boundary.