

Tail Anatomy of the Protocetid Archaeocete *Maiacetus inuus* (Mammalia, Cetacea): Insights into the Evolution of Aquatic Locomotion in Early Whales. Melissa A. Braun and Ryan M. Bebej, Calvin College

One of the keys to understanding the evolution of cetaceans (whales, dolphins, and porpoises) from terrestrial mammals involves reconstructing the evolution of aquatic locomotion early in this land-to-sea transition. Terrestrial mammals swim using four limbs, while cetaceans use a highly modified tail with a horizontally flattened tail fluke to generate propulsion. Terminal caudal vertebrae rarely preserve in fossil cetaceans, but the complete tail known for the protocetid archaeocete *Maiacetus inuus* provides insights in how the tail was used by this four-legged, semiaquatic cetacean. The caudal region of *Maiacetus* was compared with the tails of over 70 specimens of modern mammals, including representatives with terrestrial, semiaquatic, and aquatic lifestyles. The large number of chevrons in *Maiacetus* is a characteristic shared by mammals that have extensive tail control, including dolphins, porpoises, and some terrestrial mammals with prehensile tails. However, the presence of a well-defined fluke is difficult to discern given that the terminal caudal vertebrae are proportioned differently than those of modern cetaceans. Thus, the tail of *Maiacetus* is intermediate in form and function between terrestrial and aquatic mammals, and it is likely that *Maiacetus* used its tail to supplement paddling of the hind limbs for generating propulsion during swimming.

Egg Cannibalism in Marine Gulls Increases with Sea Surface Temperature. James L. Hayward, Shandelle M. Henson, and Gordon Atkins, Andrews University

Climate change brings with it a variety of unexpected consequences. El Niño-Southern Oscillation episodes mimic conditions of a warming climate except on a shorter timescale. We found that marine gulls nesting in the Pacific Northwest cannibalize significantly more of their neighbors' eggs during El Niño events than during other times. El Niño events are associated with higher sea surface temperatures which, in turn, depress marine food webs and reduce the amount of food available to gulls and other marine birds and mammals. Despite the risk of attack from parent birds, an egg cannibal can obtain half its daily energy requirement simply by stealing and eating one of its neighbor's eggs. Consequently, cannibalism is more common when sea surface temperatures rise. But female gulls may have developed a surprising adaptation to reduce the chance that one of their eggs will be cannibalized: every-other-day ovulation synchrony.

Movement patterns of Blanding's Turtle (*Emys blandingii*) in two habitat types in central Michigan. Olivia Horton and John Rowe, Alma College

Movement patterns of organisms can have consequences for energy uptake and fitness as well as reveal intersexual differences in reproductive strategies. We used