

National Fossil Day Lecture



Dead Shells Do Tell Tales: Evaluating Human Impacts Using the Youngest Fossil Record

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Biologists and the public increasingly appreciate the many ways that humans interact with natural systems, mostly to the detriment of wild species and various 'ecosystem services'. However, data are difficult to acquire for more than a few select species and for the past few decades, centuries, and millennia that are actually needed to recognize change, discriminate between natural and human drivers, and establish natural baseline conditions, all critical to ecological assessment and restoration. Death assemblages — the actively accumulating organic remains encountered in present-day seafloors and landscapes, as distinct from permanently buried fossil assemblages — are an under-exploited source of ecological historical information at precisely these scales. Field work, experiments, and statistical exploration of 'live-dead agreement' in modern environments, originally motivated to better understand the formation of ancient fossil assemblages, reveal that dead shell and bone assemblages in fully natural settings differ very little from the local living community. The small differences that exist arise from the natural time-averaging of many generations of shells or bones into a single, still-unburied assemblage — skeletal remains are faithful recorders. In modern-day study areas where living and dead *are* discordant, human modification of the living community is the cause: the composition of the living community has been shifted from its natural baseline, which the death assemblage remembers. Paleontologists are now testing this approach in a large range of settings to develop it as a new, standard method in the toolkit of conservation biologists and environmental managers.

When: 7:00pm, Wednesday October 14th

Where: Reakirt Theater, Cincinnati Museum Center

