Plant-eating dinosaurs replaced teeth often, carried spares

July 17 2013

Some of the largest herbivorous dinosaurs replaced their teeth at a rate of approximately one tooth every 1-2 months to compensate for tooth wear from crunching up plants, according to research published July 17 in the open access journal *PLOS ONE* by Michael D'Emic from Stony Brook University and colleagues from other institutions.

A little like counting tree rings, researchers can estimate rates of tooth formation and replacement in extinct animals by counting lines of deposition of tooth dentin, a layer below enamel that grows throughout an animal's life. In this study, authors estimated tooth replacement rates in *Diplodocus* and *Camarasaurus*, two distantly related, different-looking sauropod dinosaurs of similar giant size. *Camarasaurus* had up to three "baby teeth" lined up in each tooth socket, and replaced about one tooth every 62 days. Each *Diplodocus* tooth socket held up to five replacement teeth and one functional tooth, and each tooth was replaced once in 35 days.

As D'Emic explains, "A nearly 100-foot-long sauropod would have had a fresh tooth in each position about every one to two months, sometimes less. Effectively, sauropods took a 'quantity over quality' approach to making teeth, opposite the approach taken by large animals —mammals—today."

These sauropod dinosaurs were the largest terrestrial herbivores known, and would have required huge food supplies. Eating large amounts of plant foods likely caused extensive tooth wear, requiring this constant

growth and replacement. Differences in the rates at which these species replaced their teeth could reflect differences in their feeding strategies or food choices.

More information: *PLoS ONE* 8(7):e69235. doi:10.1371/journal.pone.0069235