ABSTRACT

A fossil collection from a site near Garita Creek, New Mexico is rich in macro- and micro-vertebrates, including bones, teeth, and coprolites. Sediment and small bags of picked fossils from the site were provided by Larry Martin and the Lauer Foundation for Paleontology, Science, and Education respectively. The sediment consisted of ~20 kg of picked screenwash material, referred to as "concentrate" hereafter. We used sieves to sort the concentrate into five sizes: ≥4, 2-4, 1-2, 0.5-1, and <0.5 mm. We then picked and identified fossils as bone fragments, tooth fragments, and coprolites. The data presented here are for 24 mm and 2-4 mm fossils only.

In our sample of concentrate there are 7,112 fossils, of which 25.8% are bone fragments, 13.9% are tooth fragments, and 60.3% are coprolites. In a small sample of the fossil bags, there are 1,442 fossils, of which 59.2% are bone fragments, 35.2% are tooth fragments, and 5.6% are coprolites. The concentrate was originally sorted by Larry and Betty Martin, whose picking methods may have been biased as the concentrate is dominated by coprolites, whereas the bags of fossils contain mostly bone and teeth. The Martins likely prioritized more diagnostic fossils for the bags. Since the combined collections contain 51.1% coprolites, 31.4% bone, and 17.5% teeth, we hypothesize that new collections from the site would have proportionately fewer coprolites than in the concentrate, and proportionately fewer bones and teeth than the fossil bags.

METHODS

Two modes of collection:  
1. The Martins' ~20 kg screenwash material – "concentrate"  
2. The Lauer Foundation's bags of "picked fossils"

We used sieves to sort the concentrate into five sizes: ≥4 mm, 2-4 mm, 1-2 mm, 0.5-1 mm, and <0.5 mm. We sorted the fossils from the picked bags into three sizes: ≥4 mm, 2-4 mm, and ≤2 mm.

RESULTS

We have sorted a total of 7,246 fossils from the concentrate, out of which 1,863 (25.71%) are bones, bone fragments, including osteoderms; 1,080 (14.90%) are teeth and tooth fragments; and 4,303 (59.38%) are coprolites. From a small sample of the picked bags, we have counted and sorted a total of 1,991 fossils, of which 1,012 (50.83%) are bones, bone fragments, and osteoderms; 892 (44.80%) are teeth and tooth fragments; 87 (4.37%) are coprolites.

There is a grand total of 9,237 fossils from both the concentrate and the picked bags, out of which a total of 2,873 (31.12%) are bones, bone fragments, and osteoderms; 1,972 (21.35%) are teeth and tooth fragments; 4,390 (47.53%) are coprolites.

A significant portion (47.53%) of the fossils are surprisingly coprolites.

FOSSIL "FITS"

We have found many fits in the "picked fossils," suggesting that each bag of fossils represents a discrete batch of sediment, and that careful collection could result in many more complete elements.

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