

# Quantitative Evaluation of Screen Size Choice on Artifact Assemblages in a South Florida Midden

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## Introduction

- The materials collected in an archeological site provide insight in palaeoecological patterns as well as in human trends (Gordon, 1993).
- Researchers have pointed out that different sampling methods in the field can lead to biased results (Shaffer, 1992; Gordon, 1993).
- Faunal representation and environmental reconstruction can be negatively impacted (Shaffer & Sanchez, 1994; Stewart & Wigen, 2003).
- To understand this effect, artifacts were collected in South Florida using 1/8" screen sizes, passed through 1/4" screen, and assemblages were compared and analyzed.
- It was hypothesized that artifact retrieval in the field using 1/8" mesh size (would yield to better archeofaunal representation than when using the 1/4" screen size).

## Materials

- Samples were retrieved from South Inlet Park, Boca Raton, FL using a 1/8" screen and later passed through a 1/4" screen.
- Artifacts collected were sorted, counted, and weighed by unit and depth.
- Assemblages were compared using Bray-Curtis dissimilarity, two diversity indexes (Simpson and Shannon), richness, evenness, and t-test.

## References

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- Shaffer, B., & Sanchez, J. (1994). Comparison of 1/8"- and 1/4"-Mesh Recovery of Controlled Samples of Small-to-Medium-Sized Mammals. *American Antiquity*, 59(3), 525-530. doi: 10.2307/282464
- Stewart, K.M. and Wigen, R.J.(2003). Screen size and the need for reinterpretation: a case study from the northwest coast. *Bulletin of the Florida Museum of Natural History* 44:27-34

## Results

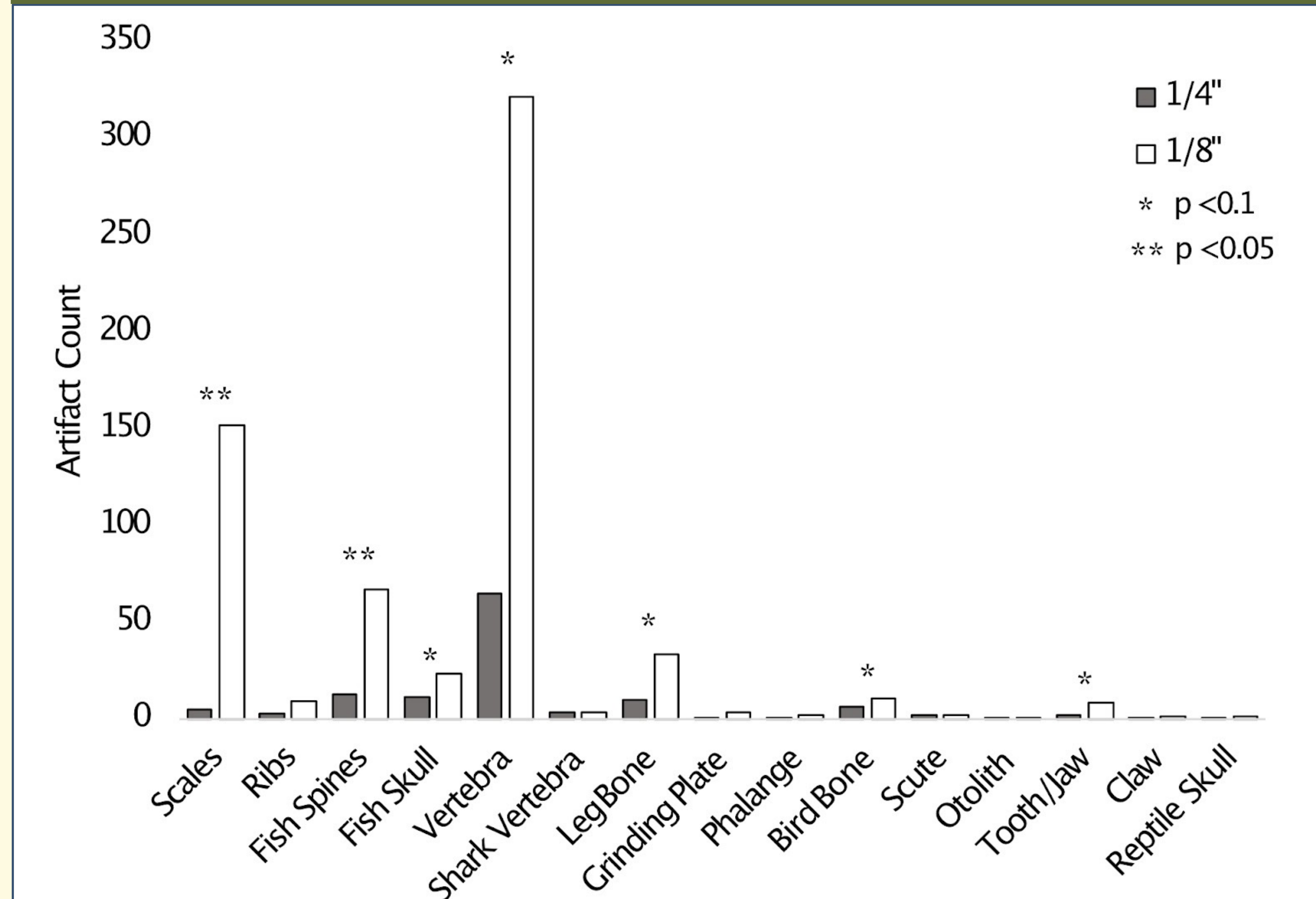


Fig 1. Counts of bone types retained within the 1/4" and 1/8" screens. Counts are the total for the whole excavation, not by level. An asterisk represents a significant difference between the counts of the 1/4" and 1/8" screens and represents bone types that are at risk for under sampling with the 1/4" screen.

Table 1: Artifact richness, diversity (Shannon Index & Simpson Index), and evenness for each level within the test unit.

Depth	Richness		Shannon Diversity		Simpson Diversity		Evenness	
	1/4"	1/8"	1/4"	1/8"	1/4"	1/8"	1/4"	1/8"
40-50 cm	3	5	0.85	1.25	1.98	2.37	0.77	0.70
50-60 cm*	10	10	1.84	1.43	4.39	3.10	0.77	0.60
60-70 cm *	14	15	1.59	1.41	2.68	2.42	0.60	0.52
70-80 cm*	8	12	1.28	1.54	2.56	3.52	0.62	0.62
80-90 cm	7	9	1.53	1.32	3.48	2.96	0.79	0.60
90-100 cm	3	7	1.08	1.46	2.88	3.37	0.98	0.75

Table 1. Percent dissimilarity between bone artifacts collected in the 1/4" and 1/8" screens as calculated via Bray-Curtis dissimilarity, which accounts for number of artifact types and abundances of those artifacts.

Depth	Percent Dissimilarity
40-50 cm	28.0
50-60 cm*	66.1
60-70 cm*	62.0
70-80 cm*	71.4
80-90 cm	81.6
90-100 cm	87.8

## Conclusion

- Dissimilarity between the artifact assemblages of each screen size ranged between 28.0% and 87.8%, within the feature dissimilarity was between 62.0% and 71.4%
- Significantly more scales, fish spines, fish skull pieces, vertebra, leg bones, bird bones, and tooth/jaw in the 1/8" screen assemblages.
- Diversity among different levels and screen sizes likely varied due to presence of scales and vertebra, which impacted artifact evenness overall.

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