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SCOMBRID FISHING AT SALANGO (MANABÍ, ECUADOR) DURING THE FIRST MILLENIUM BC

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Abstract: The Salango archaeological fish remains studied here (site 141B-T3) corresponds to Middle and Late Engoroy occupation (600-100 BC). The identification of 2 790 of the 17 260 fish bone fragments represents 65 species in 35 families. Our analysis indicate that the two periods are distinct, though the environmental pattern was similar and the same as today. Prevalence of scombrid remains and their increase with time suggest that *Euthynnus lineatus* (black skipjack) became the main and most valued catch for Engoroy people of Salango. Further analyses suggest that seining was the most likely fishing technique used by these people, operating cooperatively on a coastal migration site: Isla de Salango.

Key words: Engoroy, archaeoichthyology, Scombridae, prehispanic fishing, Salango, Ecuador.

The archaeological site (OMJPLP -141B) at the modern fishing village of Salango, situated at 1°35' S, is one of the most important of the central Ecuadorian coast. The coastline itself consists of alternating rocky cliffs and sandy bays, with several off shore islands such as Isla Salango and Isla de La Plata.

ECOLOGICAL CONTEXT

Biogeographically, the ocean waters of Salango form part of the Gulf of Guayaquil ecoregion, a zone transitional between the temperate Peru-Chilean province and the tropical Panamic province. Marine animal-life is rich and diverse, as it includes representatives of both provinces, but the zone also shelters several endemic species. The temperature of the littoral waters varies between 22 and 31°C at the surface, and between 14 and 26°C at a depth of 40 m. The relatively cool bottom temperatures are due to the influence of a northern branch of the cold Humboldt's current, and to upwellings.

Today, all kinds of fish are caught in the area, from large pelagic species such as the tunas or billfishes to small reef dwellers. It is to be noted, however, that until recently Salango was one the rare areas where scombrids came very close to the shore. Indeed, the people of Salango were formerly called «come negras», or black skipjack eaters.

ARCHAEOLOGICAL CONTEXT: THE ENGOROY PHASE

Pre-Colombian Salango (Norton, Lunniss, and Nayling, 1983; Lunniss, 2001) is a complex multi-component site with over 5 m depth of occupation levels

dating from at least 2700 BC to the arrival of the Spanish in AD 1531. At OMJPLP-141B, surface deposits of the Manteño period (AD 800-1531) and an intervening layer of culturally sterile alluvium overlay a sequence of 18 ceremonial structures that belong to Regional Debelopment (100 BC–AD 500) and Late Formative (600-100 BC) occupation. Underlying deposits relate to Middle Formative Machalilla (1500-900 BC) and Early Formative Valdivia (2700-1500 BC) village settlement.

The late Formative settlement at Salango lay towards the northern limit of the Engoroy culture zone (Bushnell, 1951; Simmons, 1970; Bischof, 1982; Beckwith, 1996; Lunniss, 2001), which extended up from the Santa Elena Peninsula along the coast into south Manabi province. The Engoroy culture is principally characterized by its fine ware ceramics, which were decorated with a distinctive iridescent paint and included elegant bowls, jars, and whistling bottles, the latter sometimes representing species of the local fauna. It also saw the beginnings of metal working and the development of shell trade.

The Engoroy structures at Salango (Lunniss, 2001) can be divided into a number of Building Phases. Building Phase I, Phase II, and Early Phase III (IIIE) all relate to a Middle stage (600-300 BC) of the Engoroy culture, while Late Phase III (IIIL) belongs to Late Engoroy (300-100 BC). Each structure was rectangular, with a maximum dimension of between 10 and 13 m. Building composition varied through time, but for the most part included either a central floor or low platform of yellow clay, with either a wooden superstructure or a perimeter fence of wooden posts, and a sunken clay wall that marked the edge of the central area. After Phase II, there was a clay floor around the outside. Trench 3 (T3) of OMJPLP-141B was an area of 88 m^2 whose excavation included the west corner of each of the structures and the exterior floors.

Associated with the structures of Phases I to IIIE were a number of ritual depositions of various artifacts and unworked materials, as well as human, bird, dog, and ocelot burials. In Phase IIIL, ritual deposition and human burial increase markedly, while funerary practice also included burning and the burial of feasting residues in specially dug fire and rubbish pits. Throughout, however, there was a separate and gradual process of horizontal rubbish discard around the exterior, interrupted by the laying of each clay floor, resulting in the formation of discrete midden layers.

ICHTHYOARCHAEOLOGICAL BACKGROUND

Engoroy subsistence patterns and strategies have received little attention. The first study of marine vertebrate remains related to the coastal site of La Libertad (OGSE-46D), on the Santa Elena Peninsula (Byrd, 1976). Scombrids were massively present (62% of NISP), the second taxa in abundance being the sea catfishes or ariids (28%). It is important here to note that scombrids are rare in Valdivia times (Byrd, 1976) and only appear first during the Machalilla period (Sánchez Mosquera, 1991), becoming more significant with the Engoroy culture.

More recently, Béarez (1996) made an extensive study of the Engoroy and Guangala fish remains of OMJPLP-141B-T3, and confirmed the importance of scombrids to the people of Salango. Béarez (1998) also hypothesized that the practice of fish capture by poisoning had appeared by that time. Results presented here are extracted from Béarez's unpublished thesis (Béarez, 1996), tho-

ugh the stratigraphy has been revised according to Lunniss (2001).

MATERIAL AND METHODS

The fish bones used in the present analysis all come from Trench 3 of the Salango site OMJPLP-141B. Only Engoroy material is considered, as the sample relating to the Early Regional Development period is too small for reliable comparative analysis. Hence the periods studied are Middle Engoroy (Building Phases I, II, and IIIE) and Late Engoroy (Building Phase IIIL).

Excavation methodology followed Harris (1989), and is described in detail by Lunniss (2001). All sediments were sieved on site, with a mesh of 1.5 mm for finer, sandy soils, and a 3 mm mesh for soils with more clay. A random stratified sampling system was used for the taking of soil samples for flotation, but judgement samples were also taken from contexts with high organic contents.

A global analysis was initially applied to material from all contexts of the two periods, Middle and Late Engoroy. For the more detailed phase by phase analysis, only those contexts were included that could be assigned securely to Building Phase. In each phase, the depositional origin of the fish remains has been taken into account. The attribution of the material to different types of context, defined by Lunniss (2001), permited distribution analysis of the fish remains. Three classes of features are here considered: «layers», «graves», and «other features». Among «other features» are lumped together several feature types, such as post-holes, rubbish pits, fire pits, etc., partly because their definition was not always certain, but also because there was no obvious difference among the fish remains contained by them.

The identifications were carried out by the first author using both his own and the Salango Research Center comparative skeletal collections (i. e. more or less 600 specimens of Ecuadorian marine fishes). Only the number of identified specimens (NISP) have been used.

RESULTS

A total of 17,260 fish remains were analyzed. All measured over 3 mm, the smaller fraction (< 3 mm) containing no identifiable bone. Of this total, 2,790 skeletal elements could be identified, a percentage of 16%. This relatively low figure is due to the rather bad state of bone preservation: in particular there was high fragmentation of non vertebral bones.

The faunal list obtained includes 65 species divided into 35 families, mostly Teleostei (31). The five more important families are Scombridae, Carangidae, Haemulidae, Tetraodontidae, and Serranidae. In all phases, scombrids are the most abundant and always represent more than 50% of the NISP (fig. 1).

Scombrids are also the dominant taxa in the different features of the four phases, so it was interesting to examine in more details their remains in each. First, it appears that one tribe, the Thunnini, forms 80 to 100 per cent of the scombrid remains. The common species of this tribe in the area are: bullet and frigate tunas (*Auxis rochei* and *A. thazard*), black skipjack (*Euthynnus lineatus*), skipjack tuna (*Katsuwonus pelamis*), and yellowfin tuna (*Thunnus albacares*).

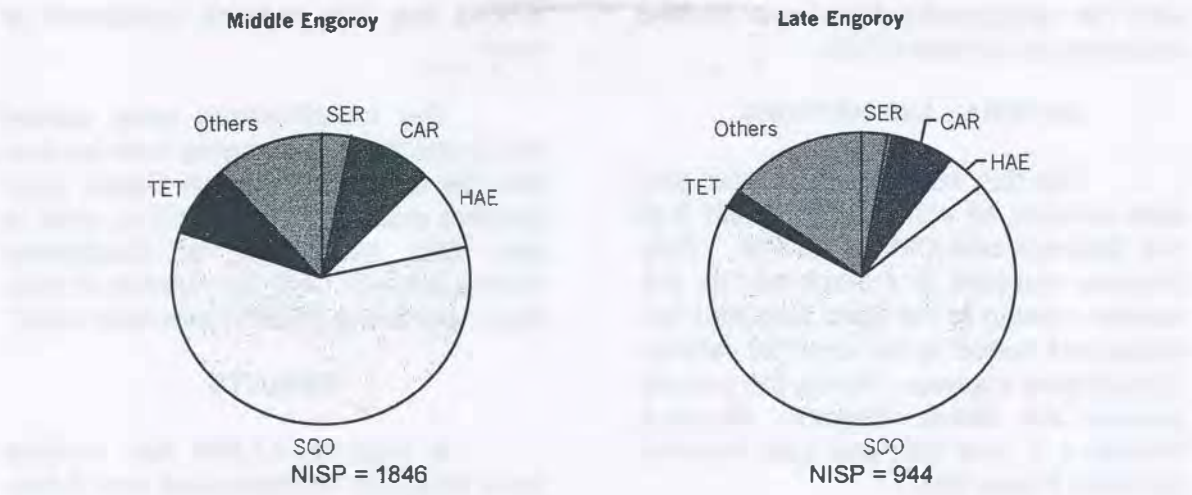

Figure 1. Distribution of NISP in the two Engoroy periods.

If we compare the distribution of scombrids during the two periods (fig. 2), we observe a very clear difference in relative abundances of each species.

The proportions of black skipjack and bullet or frigate tunas increase and those of skipjack and yellowfin tunas decrease. The immediate suggestion is of dramatic change in the exploitation or the availability of the ichthyological resources. In fact, however, if we observe the evolution of the distribution of scombrid remains through the different phases of the Middle Engoroy period (fig. 3), it appears that the changes occurred gradually through time.

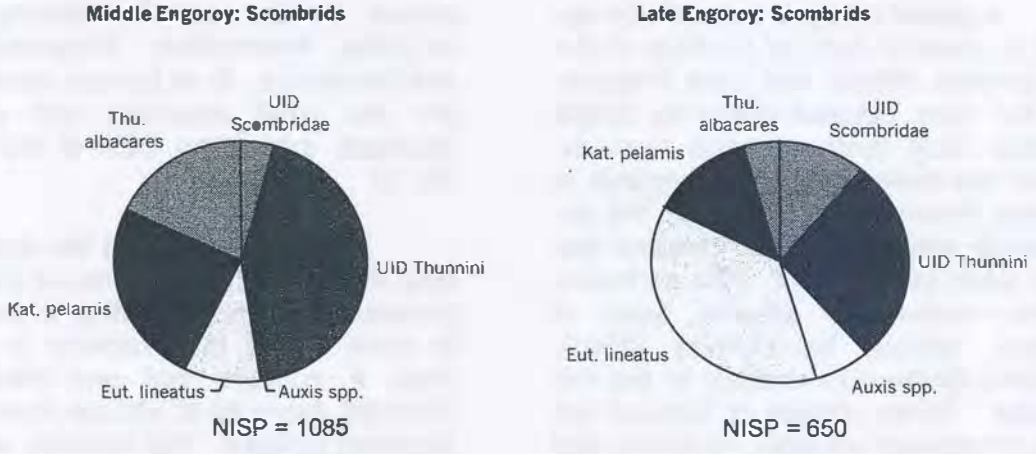

Figure 2. Scombrid remains in the two Engoroy periods.

DISCUSSION AND CONCLUSION

The two main fish families exploited, Scombridae and Carangidae, are deep ocean dwellers. They can be captured either by hook and line or by netting. While the black skipjack has a slightly greater affinity for tropical conditions than the skipjack, examination of the faunal spectra of the different phases indicates overall climatic stability: i.e. climate variation cannot be invoked to ex-

plain changes in scombrid fishing during Engoroy times. Secondly, while the use of hooks was already well established by the Engoroy period, no technological change in hook manufacture has been observed that could account for changes in fish recovery. Indeed, big yellowfin tunas, weighing up to 60 kg, are encountered among the remains, and it is unlikely they were caught with hook and line. Hence, we propose Engoroy fishermen mainly used nets for scombrid capture.

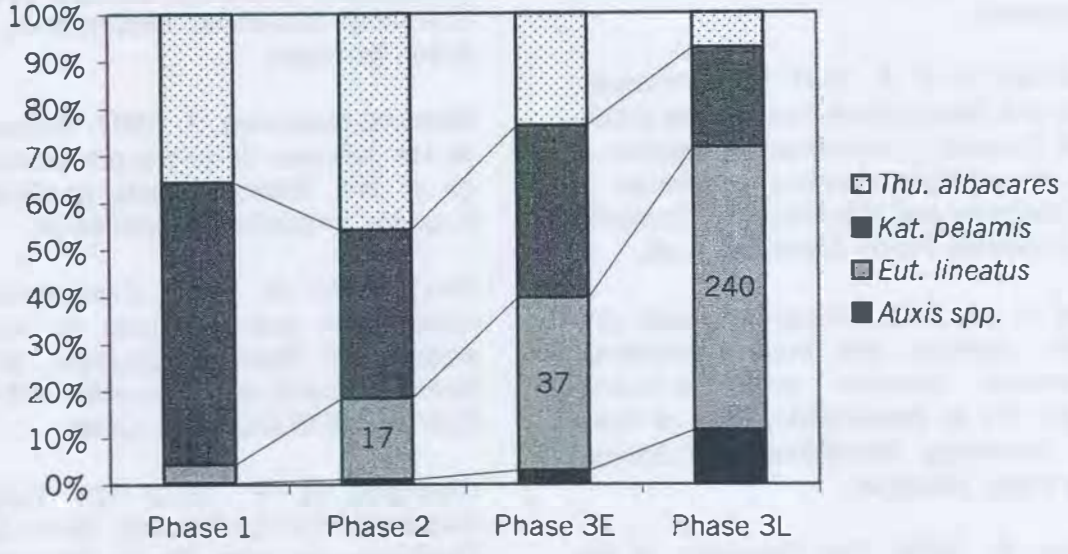

Figure 3. Evolution of Thunnini identified species through time.

Salango is notable for the presence of a rocky island about one kilometer off the sandy beach location of the archaeological site at the southernmost extremity of the bay. This geomorphological peculiarity is probably the principal factor behind an exceptional ichthyological phenomenon, the inshore crossing point, just off the island, of large schools of Thunnini. During the 20th c., Salango famously specialized in the fishing of «negras» (black skipjack), and its people was known as «come negras» (Southon, 1987). We suggest that this coastal migration site existed in the Ecuadorian Late Formative, and that it was first exploited by fishermen from Salango during the Middle Engoroy period, gaining importance through the following centuries. Seining is the most likely fishing technique to have been used.

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