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Contemporary Observations on the Procurement, Processing, and Consumption of Shellfish and Seaweeds in Huanchaco, North Coast of Peru: Notes for Interpreting Archaeological Assemblages

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CONTEMPORARY OBSERVATIONS ON THE PROCUREMENT, PROCESSING, AND CONSUMPTION OF SHELLFISH AND SEAWEED IN HUANCHACO, NORTH COAST OF PERU: NOTES FOR INTERPRETING ARCHAEOLOGICAL ASSEMBLAGES

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INTRODUCTION

In addition to fish, seabirds, and marine mammals, shellfish[1] and seaweed have been consumed by ancient and present-day fishing communities along the Andean coast.[2] The importance of marine resources resides not only in their intrinsic subsistence value, but as products that fostered domestic-level exchanges that were part of a vibrant economy in pre-Hispanic times (Beresford-Jones *et al.* 2018; Mader *et al.* 2023; Marcus 2016; Moseley 1975; Prieto 2018a:547–549, 2021; Sandweiss 2009).

Shellfish have also played an ideological role in ancient Andean societies from their very early stages. There are representations of marine crabs in Late Preceramic textiles and in mud brick columns. Later, three dimensional representations of shellfish and gastropods in ceramic bottles and in the carved Tello Obelisk at Chavín de Huantar attest to the symbolic importance of these resources in Andean cosmology (Bird *et al.* 1985:169, 173; Burger 1992:151, figure 141). Daniel H. Sandweiss has argued that the large mussel (*Choromytilus chorus*) had a symbolic role in earlier periods of Andean prehistory, similar to the one later performed by spondylus shells (Sandweiss and Rodríguez 1991). The symbolic importance of large mussels is materialized in the archaeological record as they were carefully placed in Middle and Late Preceramic burials (Quilter 1989:29, 119, 131, 135, 146).

In Initial Period residential sites, like Gramalote in the Moche Valley, North Coast of Peru, the valves of *C. chorus* were used in votive offerings made as part of domestic rituals (Prieto 2018b:210). At the same site, sea urchins were placed under the heads of adults at the time of burial (Prieto 2015:326, 850). During the late Early Horizon (400–200 cal. B.C.), limpets were placed in the hands of the dead buried in Huanchaco. Caches of gastropods are common in domestic units of the Early Intermediate Period at Pampa la Cruz, another archaeological site on the coast of the Moche Valley. For later periods, shellfish and marine algae can be seen more prominently in pre-Hispanic Andean art (Buse 1973:725–738; Campana 2006:135; Donnan and McClelland 1999:66, figure 3.44c, 105, 138, 190, 198, 208; Villalobos *et al.* 1978).

The abundant evidence of shellfish and algae representations in pre-Hispanic art con-

[1] In this article, shellfish refers to bivalves, gastropods, crustaceans, and echinoderms.

[2] Beresford-Jones *et al.* 2021; Burger 1985; Chicoine and Rojas 2013; DeFrance *et al.* 2001; Helmer 2014:14; Masuda 1986; Moseley 1975; Pozorski 1976; Pozorski and Pozorski 1979; Prieto 2021; Sandweiss and Rodríguez 1991; Vásquez *et al.* 2017.

trasts with the limited information describing shellfish gathering activities or the role played by shellfish in the ideological realm of modern maritime communities of the Peruvian coast. Therefore, our capacity to interpret the economic role and symbolism of shellfish in pre-Hispanic art lacks a local perspective. The possibilities for inferring economic models related to the exploitation, processing, and consumption of shellfish are very limited. The available coastal ethnographies emphasize marine productivity (Coker 1910, 2008; Fiedler 1943; Hudson 2011, 2019), fishing technology, community identity, territoriality (Gillin 1947), navigation and watercraft technology (Edwards 1965), fisheries organization and social dynamics (Sabella 1974), shellfish and the economy (Sandweiss 2024 [1979]), coastal cosmologies (Leon-Barandiaran 1938; Valladares Huamanchumo 2021), with general aspects like social organization, fishing strategies, and fishing technology treated briefly by some authors (Anhuamán 2008; Hammel and Haase 1962; Prieto 2013; Sabogal 1974).

In contrast, there is an abundant literature of ethnographic studies conducted in the highlands and Amazonian regions.[3] This overwhelming interest in highland and Amazonian ethnographies has contributed invaluable data to understanding these traditional communities' social dynamics, cosmology, and economic interactions. The lack of published ethnographic studies of communities located along the Andean coast is preventing archaeologists from counting on empirical evidence to build up emic models that could help to reconstruct the social, economic, and political organization of pre-Hispanic societies.

Consequently, those aspects of pre-Hispanic coastal societies have been reconstructed by means of ethnohistorical information, which has proven to be valuable, but not enough in itself due to typical biases of sixteenth to eighteenth century writers (Marcus 1987, 2016; Netherly 1984; Ramírez 1995; Rostworowski 2004; Sandweiss 1992; VanValkenburgh 2021). More specific to the subject of this paper, despite a few well-documented cases (see below), systematic research has yet to be conducted regarding shellfish gathering practices along the coast of Peru (Chicoine and Rojas 2013; Helmer 2014; Pozorski 1976; Sandweiss and Rodríguez 1991).

In terms of ethnographic information related to maritime communities, there is scattered evidence from various sources, compiled here for the first time. To enrich these data, I provide first-hand information from my observations made between 2001 and 2019, mainly in the modern maritime community of Huanchaco, Moche Valley, North Coast of Peru (Prieto 2009, 2011; Prieto and Rodrich 2015). Observations carried out by the author of this paper in 2009 in many maritime communities from Puerto Huacho in the Department of Lima to Caleta San José in the Lambayeque Region, provide additional information which is briefly mentioned in this paper (for more information see also Prieto, 2013) (Figure 1).

Ethnography can be problematic in the interpretation of archaeological data and vice versa, especially in creating middle-range theories that archaeologists use for interpreting the past or by creating direct analogies (Kuznar 1995). More importantly, archaeology has traditionally used or "transferred" ethnographic cases to mirror the present into the past, providing a distorted view of the past by employing simplistic analogies (Allison 1999; Blanton 1994; Hirth 1993; Kuznar 1995; Tringham 1994). The essence of applying ethnographic cases to archaeology (ethnoarchaeology) is to

[3] *E.g.*, Bolin 1998; Chernela 1993; Flores Ochoa 1985; Gelles 2000; Guss 1990; Harner 1972; Isbell 1978; Kensinger 1995; Marzal 1988; Mayer 2002; Meyerson 1990; Salomon 2018.

study the behavioral context of artifact use, disposal, and site formation, rather than stereotyping certain behaviors or artifacts as indicative of a way of life (Kuznar 1995:4). I agree with Louis Binford, who suggested that fitting archaeological remains into contemporary patterns adds nothing to our knowledge of the past (Binford 1972). However, such patterns can suggest models that can be tested archaeologically while suggesting interpretations of archaeological remains.

The problem for the North Coast of Peru is that although there is a risk of transporting the present to the past, we have not even tried to test or compare both assemblages (ethnographic data and archaeological contexts) with a few exemptions (see below). When ethnographic studies are well discussed and analyzed, they help in the search for systematic relationships between behavioral adaptations of people to their environment and its effects on specific aspects of the archaeological record (see for example Marcus 2016). They are also valuable sources for testing competing hypotheses used to interpret an archaeological context until a better explanation is developed (Gould 1980).

Thus, the use of ethnographic data from present-day maritime communities along the central Andean coast could be a valuable tool for archaeologists. Researchers could gain access to comparative data to test possible scenarios and broad themes such as social organization, exploitation of natural resources, and ideological conceptions of the landscape and seascape. The latter is something that has dominated the studies on maritime anthropology for many years, but is poorly developed for the Andean pre-Hispanic coast (Acheson 1981; Prieto 2016a; Prieto and Sandweiss 2020; Sandweiss 2024 [1979]). It has been suggested that "isolated" Andean communities in the upper highlands that grow tubers and herd camelids are "less affected" than their coastal and highland counterparts (Bolin 1998:1–12; Browman *et al.* 1984; Nielsen 2016: 231–232). In contrast, communities engaged almost exclusively in agricultural activities are more "affected" by non-Andean traditions since they were effectively inserted into the global economy during Colonial times and, more recently, by the sociopolitical and economic needs of the globalized world (Mayer 2002).

An ethnoarchaeological perspective can be relevant, even though Andean coastal societies have been "acculturated" for several centuries (Foster 1985; Rostworowski 1981). In the Andean region, most of the so-called "traditional" societies have been influenced by almost five hundred years of European, African, and Asian traditions (Degregori 2000; Mitlewski 1985; Sabella 1974). For example, wooden boats imitating Iberian and Italian technology are overwhelmingly used by coastal communities along the Peruvian coast (Edwards 1965; Sabella 1974) (Figure 2). Some fishing technology assumed to be of pre-Hispanic origin and in current use by fishermen in Huanchaco, like certain types of nets, have, in fact, a Mediterranean background (Prieto 2015:532–533). Despite the impact of external cultural backgrounds on the Andean coast over centuries, it is possible to observe some indigenous continuities or, at least, similar cultural/economic responses for an effective exploitation of marine resources. A few examples are the reed boats and the small balsa rafts still in use for fishing activities by local fishermen (Prieto 2016b).

After the conquest of the Inca empire, very little was written on shellfisheries. Spanish chroniclers were more interested in describing (although briefly) the trade and mythology of the *mullu* or thorny oyster (*Spondylus* sp.) due to its importance in Andean cosmology and economy (Blower 2000; Cobo 1891 [1653]:131–138; Paulsen 1974; Pillsbury 1996:318–319; Rostworowski 2004:221). The sixteenth to

eighteenth century chroniclers were not interested in recording shellfish gathering techniques, labor organization, territoriality, or the devices used in the shellfish gathering process. Furthermore, there was no interest in learning how shellfish and seaweed were processed for consumption or other purposes.

During the Colonial Period (A.D. 1532–1821), fish was vital for feeding the increasing populations of the emergent coastal cities like Lima, Trujillo, Zaña, and Lambayeque. Fish was critical in the local diet because, according to Christian traditions, it was preferably eaten by faithful believers not only during Lent, but every Thursday and Friday of the year, to remember the passion and suffering of Christ (Foster 1985:306). Every week, the need for fresh/salted fish in big Colonial cities must have created a demand for great quantities of this product (Castañeda 2004:129; Marcus 2016:342). The high demand for fish, and possibly other marine resources, makes us question the assertion that, in Colonial times, maritime communities on the Central Coast of Peru were "isolated" from big cities and therefore preserved their local traditions and indigenous ways of life more than was done in the large cities (Flores Galindo 1981).

Available information suggests that post-Conquest societies relied principally on fish, but did not heavily exploit shellfish and seaweed to supply food stocks in big Colonial cities. In any case, archival data on this matter are limited (Rostworowski 1981). Shellfish and seaweed consumption seems to have stayed local within maritime communities, and these foodstuffs were not in high demand in big Colonial cities and towns. In the future, specific research projects should explore the role of shellfish and seaweed in the Colonial Andes, combining archaeological and archival evidence. Therefore, ethnographies on the procurement, processing, and consumption of shellfish and seaweed could still reveal some essence of ancient cultural practices that might be relevant for archaeological studies, while taking into account obvious historical and environmental changes.

This paper is written with the intention of sharing, with a broad audience, my observations and experiences as a member of the Huanchaco community on the North Coast of Peru, in terms of shellfish and seaweed procurement and consumption. The information provided here is neither the result of a systematic study, nor the outcome of a structured research project. Instead, it is part of my life experience, anecdotes heard, observations, and long conversations with friends and family members in Huanchaco and other fishing settlements along the North Coast of Peru.

This paper aims to provide models and patterns for exploiting, processing, and consuming shellfish and seaweed. The ultimate goal is to call attention to the importance of these poorly studied marine resources, which today play an essential role in the diet of coastal populations and which could have been critical in the past.

Previous Ethnographic Accounts of Shellfish and Seaweed Gathering on the North Coast of Peru

The earliest available records of shellfish gathering activities in Peru are brief accounts made by the Spanish chroniclers who described the fisheries along the coast of Peru, which provided seafood for the emergent villages and cities that were relocated and founded during the Colonial Period (Garcilaso 1976 [1609]; Lizarraga 1946 [*c.* 1595–1609]; VanValkenburgh 2021). The first descriptions of shellfish gathering and the uses of shellfish in post-Colonial times are in brief mentions published by nineteenth century travelers. For example, in 1835, W.S.W. Ruschenberger, an official of the U.S. Navy, reported that in Pacasmayo, on the

coast of the Jequetepeque Valley, at that time a small fishing village, people used to eat starfish that were roasted on coals and flavored with hot peppers kept in small gourds (Ruschenberger 1835:330). In 1887, Heinrich Brüning took several photos of young women gathering mollusks and seaweed along the rocky shore of the fishing village of Santa Rosa, on the coast of the Lambayeque Valley. These women used gourd containers to store their shellfish (Schaedel 1989:115). Another photograph taken between 1906 and 1907 shows six men, one woman, and two children gathering shellfish along the shore of Puerto Eten (on the Lambayeque coast). In this photo, it is interesting that the men use baskets, little net bags, and even hats to collect the species available between the boulders (*ibid.*:114). Unfortunately, the details and observations made by Brüning about these marine activities have never been published and are still stored in the Ethnographic Museum of Hamburg.

Robert Coker mentioned that in 1910, limpets and chitons were sold dried in strings of two dozen. Before these species were dried, the limpet and chiton meat was stripped from the shells and then boiled (Coker 1910:350). During the early 1940s, Reginald Fiedler stated that the shellfisheries in Peru were important, located mostly near Pisco and Pucusana (South and Central Coast) and in Tumbes (North Coast) (Fiedler 1944:105). Fiedler noted that along the Central and Southern Coasts of Peru, the scallop and mussel fisheries were maintained by men, because they required diving offshore (Fiedler 1943:296–297). Once the meat of the scallop was removed, the shell was ground and sold in the marketplace to feed chickens (*ibid.*:109). Fiedler also observed that octopi were hunted using long hooks (*ibid.*:299).

Between 1943 and 1944, John Gillin, an American ethnographer, devoted twenty-two months to studying the communities of the Moche Valley near the city of Trujillo. As part of his studies, he collected data from two fishing communities: Las Delicias and Huanchaco. In both places, he recorded the use of different kinds of shellfish traps. For example, at Las Delicias, the most common trap was the *cahuan*, a dip net for catching crustaceans and small fish. The net is a purse-shaped affair made of cotton thread and supported on two sticks held in the hands. Along the front edge runs a thin rope attached to several small lead weights, which keep this edge deep in the water when fishing for crustaceans and small fish (Gillin 1947:28; Plate 8). Gillin observed that women and children collected shellfish and seaweed by hand from the beach boulders during low tide. In the 1940s, crabs and seaweed were taken in considerable quantities to the Trujillo market for sale (*ibid.*:36). Around the same time, Junius Bird camped for several months with his family next to the site of Huaca Prieta in the Chicama Valley. Besides his archaeological excavations and surveys, he spent some time photographing the nearby town of Magdalena de Cao and its residents' farming and fishing practices. The photographs show members of the nearby community mainly gathering crabs and sea cucumbers, locally known as *ancocos* (*Patallus mollis*) (Figure 3).

In 1962, Eugene Hammel and Ynez Haase pointed out that in the fishing community of Laguna Grande, on the coast of the Ica Valley (South Coast of Peru), the favorite tools for scraping hulls and collecting certain shellfish were the spade and the rake (Hammel and Haase 1962:213). They also observed that in the North Coast town of Puerto Morín (Virú Valley; also spelled Puerto Moorín), women exclusively took part in gathering shellfish and seaweed from the rocks "bare handed" or without tools (*ibid.*:222). In 1964, Leo Levy, at the time a graduate student at Cornell University, went to Huanchaco to study this maritime community. He never finished graduate school

but took many field notes and an invaluable collection of photographs. He donated his archive (photos and field notes) to the author of this paper. When using this information, I will refer to it as the "Leo Levy Archive, 1964." His field notes emphasize the offshore fisheries' organization using motorboats and Huanchaco's social aspects at that time. He also reported that local men fishing with hook and line used *capusa* (*Emerita analoga*) for bait. *Capusa* is the name of the mole crab at the stage of shedding its exoskeleton. Levy also reported on the construction of *sacas*, a crab trap that has been widely used along the North Coast of Peru since Pre-Hispanic times (Figure 4).

Mercedes Cardenas reported the discovery of a complete crab trap at the Late Preceramic-Initial Period site of Paraiso 1 de Playa Chica on the Huaura Valley coast (Cardenas 2004:60–61). Around the same time, José Sabogal reported that the villagers of the farming town of Santiago de Cao in the Chicama Valley considered shellfish to be delicacies. Farmers annually visited the nearby beach to gather shellfish, especially crabs and mole crabs that are captured along the shoreline with bare hands (Sabogal 1974:147). Similar cases have been reported in the Ica River estuary, on the Central Coast of Peru, and even by farmer-potters from Morrope, who used to visit coastal settlements in the Lambayeque Region to exploit marine resources (Beresford-Jones *et al.* 2018:413; Quilter 1992:122; Shimada 1994:300).

During the late 1970s, Shelia Pozorski documented similar practices in shellfish gathering in maritime communities of the Virú, Moche, Chicama, and Jequetepeque Valleys. She described how women from the fishing villages of Puerto Morín (Virú Valley), Huanchaco (Moche Valley), and the beach of Huaca Prieta (Chicama Valley) ventured among the rocks at low tide mainly to collect seaweed, but also to gather any mollusks encountered (Pozorski 1976:213–214). She observed that small clams (*Donax* sp.) were salted, which kept them usable for about a week after collection (*ibid.*:216). An interesting observation was made by Pozorski at the Puémape beach, in the southern part of the Jequetepeque Valley. There she observed that at low tide, when the bay is nearly dry, the locals identified the presence of large clams by their waterspouts and holes. Once detected, the clams are dug from the gravel and sand substrate, requiring fast work with a shovel (*ibid.*:215). Unfortunately, Pozorski did not explain whether the people in charge of digging out the large clams were men or women. Both sexes could have performed this activity.

Also during the late 1970s, Daniel H. Sandweiss conducted an ethnographic survey along the coast of Peru to record knowledge of shellfish exploitation, preparation, and consumption. This important research was summarized in his senior research project entitled "Mollusc and Man in Prehistoric Peru: Preliminary Studies" (Sandweiss 2024 [1979]). One of Sandweiss's informants in Huanchaco was Percy Valladares Huamanchumo, who, years later, published a book *Historias del abuelo*, a compilation of oral narratives from Huanchaco, which was sponsored by the Institute of Andean Research (*ibid.*:23; Valladares Huamanchumo 2021).

Perhaps one of the most important contributions of Sandweiss is the information on the surf clams (*Donax* sp.). He recorded that *Donax* was commonly known by North Coast fishermen as *marucha* and also as *choro blanco*, and that it was usually consumed fresh, but also dried and salted. In the 1970s, as it is today, it was the most important commercial marine shellfish species after crabs. A local fisherman in Huanchaco told Sandweiss that *Donax* is subject to seasons of abundance and scarcity. The latter occurs when the sand banks retreat so far from the shoreline that it is impossible to collect them. However, it eventually returns in great

abundance (Sandweiss 2024 [1979]). *Donax* is usually collected in calm waters, which are more frequent during the summer season. Men usually collect it in Huanchaco, with the aid of a device known as *cabáan* (also known as *cafan* along the coast of the Lambayeque valleys). In contrast, seaweed is collected mainly by the women of the Huanchaco community (*ibid.*). Sandweiss reported that collecting *Donax* took from two to three hours for an average yield of twenty to thirty kilograms, adding that two to three kilograms of these shellfish suffice for a family of ten people (*ibid.*). The surplus used to be commercialized by the Huanchaco woman traders in the city of Trujillo. This shellfish can remain edible for two days (*ibid.*), although Sandweiss reported that in the marketplaces of Chiclayo and Ferreñafe, some *maruchas* are kept in salt, and last for five days or even a full week (*ibid.*).

Donax is eaten in soups, stews, *picantes*, and ceviche, seasoned with hot peppers, along with potatoes and other mollusks such as mussels, purple crabs, and the mole crab (*Emerita analoga*) or *muy-muy*; the latter usually is collected along with *maruchas* (*ibid.*). According to Sandweiss, *maruchas* were also important for producing lime for chewing coca leaves, since the lime releases the alkaloids in the coca, producing the desired effects (*ibid.*). Today, finding information describing how the shells of *maruchas* were transformed into lime is difficult, but Sandweiss obtained first-hand information on this matter. He reported that people from the highlands mainly did it. However, *marucha* shells were not the only ones used in lime production: at Cerro Negro de Guañape (Virú Valley), he was told that it is also possible to obtain lime from other shellfish species like limpets, chitons, and gastropods. To obtain the lime, a circle of *carca* (manure) must be formed, the shells must be put in the middle, and then the manure is burned. When the shells turn brown, they must be removed from the circle and placed into large metal cans, adding a little water. After heating the can for some time, the heat turns the shells into the desired lime powder (*ibid.*). Sandweiss also reported on other shellfish species collected on rocky beaches, especially the ones located along the coast of the Virú Valley. He noted that there limpets and chitons were the most preferred species, adding that according to local informants, these species move to a secure place when the waves crash forcefully and when these species see the shellfish gatherers coming (*ibid.*).

At the fishing settlement of Puerto Morín, the *mariscadores* or shellfish gatherers used to go to a spot known as Cerro Negro de Guañape. Shellfish gathering on the rocks was done only by men, using a tool locally known as *mariscador* (a metal rod 40–50 centimeters long) to pry the limpets and chitons off the rocks. Sandweiss reported male *mariscadores* usually do one expedition per day, two to three times a week, taking three quarters of an hour to get to the shellfishing spot, while the actual collection only takes from a half hour to several hours (*ibid.*). Sandweiss also reported that the women of Puerto Morín boil the mollusks whole, and then use a knife to cut off the part that protrudes below the edge of the shell, which is then consumed in *picantes* or ceviches; only limpets are used in soups (*ibid.*).

Sandweiss reported that in the northern fishing village of Puerto Eten, local shellfish gatherers use the *rasqueta*, which is like the *mariscador* tool from Puerto Morín, to scrape off rows of mussels from the rocks or the pier, taking approximately half an hour for half a sack, for home use. After washing, they put them in boiling water to open them; meat can be used in any dish: soup, *picante*, or ceviche. Six to seven people can eat 4–5 kg of *choritos* (little mussels) in a meal (*ibid.*:25).

During the 1980s, a group of students from the National University of Trujillo documented that in Huanchaco it was principally women,

but also children and (sometimes) men who gathered mollusks (Cueto *et al.* 1982). They observed that while women and children used baskets to collect shellfish and seaweed, men used a net bag locally known as *cal-cal* (*ibid.*:34). The stature of the gatherers conditioned how far they could walk into the sea during a low tide. They could only venture to where the water reached their arms because they crouched to gather the marine products (*ibid.*; see also Sandweiss 2024 [1979]). Regarding this issue, there is a local legend in Huanchaco about a "cheating stone" (*piedra engañadora*) that is said to be located on the northern end of the Huanchaco beach and that only appears during low tides. During this event, which lasts for just one hour, one can see that the "cheating stone" is surrounded by an additional stone on either side, simulating the peaks of three little mountains. The stone in the center holds starfish (locally known as *cachos*) and abundant purple crabs. The other stones have octopi and mussels. The legend says that the stones are enchanted, and when the shellfish gatherers approach them, they slowly move back into the ocean, followed by the careless gatherers to a sector where big waves break. By the time the gatherers react, they are already caught by the big waves and drown. This sector of the ocean is known in Huanchaco as *Yauwan*. According to this tradition, many people have died pursuing these stones and their magic abundance (Díaz 1995: 175).

Antonio Rodríguez Suy Suy mentions that for shellfish gatherers, certain varieties like gastropods, clams, sea cucumbers, lobsters, and others are more abundant during the summer season along the North Coast of Peru. However, biological reports on the marine resources along the La Libertad Region indicate that octopi, crabs, lobsters, and seaweed are available year-round (De Lucio *et al.* 2013). As was observed by Sandweiss (2024 [1979]) and Cueto and colleagues (1982), low tides or calm waters are more frequent during the summer season, making it easier for *mariscadores* to approach shellfishing grounds (Rodríguez Suy Suy 1997:67). Higher seawater temperatures during the austral summer could have also favored a greater density of shellfish along the shore, fostering intense marine resource gathering on the North Coast of Peru during this season.

Rodríguez Suy Suy has provided a helpful chart indicating the presence, absence, or abundance of specific mollusks and crustaceans (*ibid.*). This chart was created using the indigenous knowledge acquired from the Virú, Moche, and Chicama Valleys' fishing communities. According to these data, clams are only available during the summer season. Crabs (principally *Platyxanthus orbignyi*) and seaweed (*Chondracanthus chamissoi*) are available year-round, but are especially abundant during the winter. The black snail (*Tegula atra*) is available all year, as are the white snails (*Stramonita haemastoma, Stramonita chocolata*), but they are abundant during the summer season. Finally, octopi are a year-round resource, but they, too, are more available during the summer. It is unsurprising that when this information is compared with biological observations, the findings are almost identical in these two sources (Álamo and Valdivieso 1997; Sánchez Romero 1972). Rodríguez Suy Suy indicates that the fishermen from Puerto Morín (Virú Valley) used to worship a stone known as *mama susha*, who was said to be a mythical woman providing good luck and abundant marine resources to fishermen and shellfish gatherers (Rodríguez Suy Suy 1997:79). The information provided by Rodríguez Suy Suy is essential, since it demonstrates the ecological knowledge acquired by indigenous shellfish gatherers in this region, allowing them to maintain a sustainable exploitation of these species.

In his book about the traditions and myths of Huanchaco, Percy Valladares Huamanchumo

offers practical methods that old fishermen used to carry out daily, as well as a mythological perspective on various marine creatures that are common in the daily life of the Huanchaco community. This knowledge was conveyed to him, and the legends were told to him by his grandfather, a wise man who was a leader in Huanchaco in his day, and who had the surname of the lineage associated with the last kings of the kingdom of Chimor or the Chimú empire (Valladares Huamanchumo 2013, 2021). One of the stories refers to the origins of the *carretero* or ghost crab (*Ocypode gaudichaudii*). According to Valladares Huamanchumo, the ghost crab was once upon a time a shellfish fisherman who bragged about defeating the Mother Sea all the time. Mother Sea became so furious that, after a second chance to regret his bad behavior, she transformed him into a creature that would be afraid of humans and the sea and live in darkness, feeding on rotten stranded animals along the beach. This story was a fable warning fishermen not to defeat and underestimate the power of the sea. The author also mentioned that, in the past, healers would eat the ghost crab to "enter" the underworld. Another story describes how starfish appeared in Huanchaco, as the result of an enchanted princess who was in love with a star from the sky (*ibid.*: 75, 145).

This author also reported on the mole crab (*Emerita analoga*), which was particularly common on a beach north of Huanchaco known as *Suchiñam* (today known as *Suchiman*). The mole crab was eaten in ceviche, as *torreja* (a kind of omelet), but it was also dried and ground to be stored and used as flour. The author also mentioned that mole crab was particularly abundant from March to May (*ibid.*: 148). The references to seaweed are also abundant, particularly to *Chondracanthus chamissoi* or *mococho*. According to Valladares Huamanchumo, *mococho* was used as food and to heal diseases and muscular/bone pain. It was also used to fertilize agricultural fields, while abundant *mococho* on the beach stones may predict a rainy year (*ibid.*:199–200).

Valladares Huamanchumo also described how *huanchaqueros* used to build artificial embankments to grow surf clams and mole crabs. The ultimate goal was to attract fish to the shoreline. He also mentions that *huanchaqueros* used to build small rock shelters to attract octopi and placed rotten fish within the stones in the shoreline to attract purple crabs (*ibid*:219–228).

This summary of scattered ethnographic research about shellfish and seaweed exploitation on the North Coast of Peru needs to be completed. More publications, theses, unpublished research, and other documents need to be compiled. However, the data presented here offer a current synthesis of the information accumulated over roughly a hundred years on this matter. In the following pages, I will focus on some social aspects (gender, organization of labor) and possibly two patterns of shellfish exploitation along the North Coast of Peru.

Gender Roles in the Procurement of Shellfish and Marine Algae along the North Coast of Peru

Today, shellfish and seaweed gathering are considered complementary activities in the economic systems of contemporary maritime communities on the North Coast of Peru. When there is an abundance of fish or another marine resource near the shore, regardless of the hour, the entire community will gather it full-time, because it is an essential source of food and trade (Figure 5). However, there seem to be differences along the North Coast related to gender, type of marine species gathered, and the topography of the littoral. For example, seaweed gathering is done exclusively by women in places like Huanchaco, while gathering limpets

and chitons on rocky cliffs is done exclusively by men in the littoral of the Huarmey, Casma, Nepeña, Santa, and Virú Valleys as well as further south (Bonavia 1982; Flannery and Marcus 2016; Sandweiss 2024 [1979]).

In fishing settlements, there is a typical division of labor in which men usually take care of the risky fishing activities offshore (Acheson 1981). In contrast, women, children, and elders of the community are engaged in less risky, shoreline activities such as shellfish and seaweed gathering[4]. At Samanco, a maritime community in the Nepeña Valley, men are the ones using boats for offshore fisheries (an activity that could take from a few hours to several days), while women are in charge of the commercialization of the marine products obtained by the fishermen of the households. Elsewhere, I argued that both shellfish and seaweed gathering and then marketing these marine products (including fish) could have been mainly done by women in pre-Hispanic societies in the littoral of the Moche Valley (Hudson 2011; Pozorski 1976; Prieto 2009:283, 2015:841, 2018a:545).

In parallel, children and older members of the community support the family economy with other essential activities for their subsistence, such as preparing bait for fishing expeditions (Figure 6). This is also observed among the Malay fishing villages where the adult males oversee fishing and rice cultivation. At the same time, adult women are the managers of the household economy and they are also in charge of the distribution and marketing of fish (Fraser 1966). In Peruvian North Coast communities like Huanchaco, boys and girls learn their future duties as active members of their community when they are between eight and ten years old. Commonly on the Peruvian coast, at that age boys start getting trained in how to use reed boats by surfing waves using small versions of the original-sized boats, while girls learn how to gather shellfish and seaweed. Boys are expected to become active fishermen, ideally using reed boats or fishing with seine nets from the shore. They are not expected to become full-time shellfish gatherers, but it is not unusual to see boys and men helping in shellfish gathering activities.

By contrast, there seems to be a high expectation that all women from Huanchaco should be shellfish and seaweed gatherers, and pride is taken in this[5]. An essential lesson for a girl is how to predict tides and she learns about winds and other natural signs. Tides are significant for shellfish gatherers; from childhood, they learn tidal secrets and moon cycles. In addition, at least one local tale talks about the dangers of going too far into the ocean during gathering activities (see the "cheating stone" tale related above). Although sea tides change frequently, there is a consensus that the best low tides occur during the austral summer, when the gatherers can reach grounds with abundant resources located far from the shore. Girls are specially trained to collect seaweed and shellfish using their hands.

Young girls learn short songs that tell them how the moon's phases relate to the tides (Prieto 2009:287). One of these rhymes has survived into the present, and it was told to me

[4] As always, there are exceptions. In Huanchaquito, south of Huanchaco (Moche Valley littoral), an old woman said that since she never had brothers, she helped her father in fishing tasks. She said she never used a reed boat, but took care of seine nets from the shore and dove deep in the sea to hunt octopi and rocky fish. This information is relevant because Ian Tattersall reported a few cases of exostoses of the external auditory canal in adult females of the Late Preceramic and Initial Period occupations buried at Huaca Prieta (Chicama Valley) (Tattersall 1985:60–61, Table 3).

[5] Today, this ideal has changed. All children in Huanchaco are encouraged to attend school and, if possible, university.

by the late Doña Clotilde Diaz, a former shellfish gatherer and the last totora reed mat weaver in Huanchaco:

> Cuando la luna venía saltando, va secando el agua; cuando la luna estaba en medio, estaba en toda la seca; cuando la luna volteaba, ya iba llenando.[6]

The rhyme was intoned by the shellfish gatherer while looking at the sky and in a flat voice, as if she were following a drumbeat.

Girls learn through observation and by asking questions of experienced shellfish gatherers. A good shellfish gatherer must be "very curious" (constantly observing and posing questions to an older person). They also learn other types of signs. For example, when there are many seabirds (especially seagulls) along the shoreline, that signifies abundant mole crabs. Another sign is when many tails of fish come out of the water close to the shoreline; that means that there are extensive beds of surf clams, and fish (usually drums, *i.e*. Fam. *Sciaenidae*, *e.g*., corvina, *Cilus gilberti*) are feeding on those shellfish. Usually, the next day the gatherers will go to that spot and gather clams and other bivalves. There are also celestial signs. A shellfish gatherer from Puerto Eten in the Lambayeque littoral told me that when there is a blue ring around the moon, there will be abundant shellfish and fish, but when the moon is very clear (full moon), or the winds blow very strongly, there are no fish and shellfish available. Regardless of the personal gender choices by members of Peruvian maritime communities, these economic activities (fishing, paddling reed boats, using nets, gathering shellfish and seaweed with bare hands) must be learned at an early age. This knowledge guarantees the subsistence economy of the maritime community and individuals' social roles in adulthood.

Two Patterns for Exploitation of Shellfisheries on the North Coast of Peru

During my conversations and observations in several fishing settlements along the North Coast of Peru, I identified two patterns for shellfish and algae extraction. These two patterns of exploitation seem to be determined by the topography of the littoral where the extraction of marine resources occurs. The first pattern occurs on open sandy beaches in coves or bays, suitable for short-distance walking expeditions. The second pattern is observed in cliffs next to the sea (close or far from the fishing settlement) (Figure 7).

In the first pattern, which occurs on open sandy beaches, shellfish is preferentially exploited by women and, to a lesser degree, by men and children of the community, regardless of age. In these places, there seems to be a preference for women to exploit algae and shellfish resources barehanded, principally using baskets or gourd containers to store the catch of the day (Figure 8). The community's adults are usually accompanied by their children and occasionally by elders (Figure 9). While on the beach, men are more focused on obtaining bait for their fishing expeditions with the aid of devices such as the *cabán* (a scoop which is a digging device). The main goal of adult men is to catch enough mole crabs or *muy-muy* (*Emerita analoga*) and surf clams (*Donax* sp.), which are preferred for hook and line fishing (Figures 10 and 11).

Fishermen use crab traps known as *sacas*, filled with bait, and transported by the aid of reed boats, to the deep sea bottoms where large

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[6] When the moon was coming up, the tide was going out; when the moon was at its zenith, the tide was at its lowest; when the moon turned around, the tide began to come in.

David Beresford-Jones helped improve the translation from Spanish into English of this song.

colonies of purple crabs (*Platyxanthus orbingy*) dwell (see below). Women in Huanchaco capture the same crabs in more moderate numbers by using their bare hands while walking on rocky-bottom beaches during low tides, pulling the crabs from gaps formed between stones, or by catching crabs very superficially buried in sand beds near the shore.

The second pattern of shellfish exploitation occurs when fishing communities are surrounded by cliffs on the shore, with strong waves breaking on the rocks (Figure 7, right). The cliffs are sometimes far from the villages, but are rich in shellfish, making them desirable for exploitation. When this is the case, shellfish gathering is almost exclusively performed by the men of the community, who consider it a risky activity that can only be performed by them or by boys accompanied by an adult, and almost never by the women (Figure 12). This pattern is more common (but not exclusively so) along the coast of the Supe, Pativilca, Huaura, Huarmey, Casma, Nepeña and Virú Valleys.

During my observations, I was particularly interested in exploring gender bias towards women and their capabilities of doing the shellfish gathering on the cliffs. Nothing prevented women from going there, but they were mainly not interested in such a risky activity. Therefore, there seems to be a cultural consensus in these communities to send the men to do the job.

During the archaeological excavations at the site of Los Gavilanes on the Huarmey coast, Duccio Bonavia (1982) provided the only available ethnographic description for this region along the rocky coasts of this valley. He recorded that adult men were the only ones conducting shellfish gathering activities on the cliffs where the surf breaks constantly. Usually, they go to these activities naked and with a sharp tool known as *mariscador* which helps them to pry the species off the rocks. The shellfish gatherers are interested in chitons and, to a lesser degree, false abalones (*Concholepas concholepas*) and limpets, which adhere strongly to the rocks (*ibid*.: 73, 248). A similar pattern was also reported by Sandweiss at Cerro Negro de Guañape in the Virú Valley (Sandweiss 2024 [1979]).

I collected additional information during my short visits along the Huarmey, Casma, Nepeña, and Santa coasts. Indeed, men perform almost ninety percent of the shellfish gathering in this region. The risk of doing this consists of the danger of working in a difficult topography with the sea constantly beating against it. The shellfish gathering grounds are far from the communities and sometimes can only be reached by boat or by walking expeditions that take more than two days. The late Peruvian journalist and photographer Luis Miranda, was able to document *mariscadores* from Huarmey collecting marine products naked, just wearing hats and their *chinguillos* or net bags used to store the desired mollusks (Figure 13).

Los Mariscaderos:

Shellfishing grounds (*mariscaderos*) are recognized as subsistence food exploitation zones, usually located within walking distance along the littoral of a maritime community. These areas are regularly exploited and are critical for the local subsistence and economic dynamics of a nearby population. They are usually within meters from the town to up to two to ten kilometers along the littoral. *Mariscaderos* not only play a role in the subsistence strategies of these communities, but also serve as places to foster social interaction and materialize the physical boundaries of maritime communities (Valladares Huamanchumo 2021:189–191).

Isolated and distant shellfishing grounds are usually exploited in organized expeditions, with the intention of fostering social alliances and

economic deals among close and distant relatives of the extended household system in Huanchaco. Members of maritime communities feel proud of having the most prosperous and abundant shellfishing grounds, which are defended from "intruders". The latter suggests that these spots along the coastline are also used as pragmatic markers of communal territories, providing communities' rights to exploit these areas. In Huanchaco, a shellfishing ground known as El Palo Marino marks the southern end of the Huanchaco territory (around ten kilometers south of the town), while another shellfishing spot known as Tres Palos (thirteen kilometers north of the town) marks the northern end of the community. These distant shellfishing grounds are often visited by young couples.

Along the coastline of Huanchaco, several locations have large concentrations of pebbles, cobbles, and boulders that serve as shelters and homes for quantities of shellfish and seaweed (Figure 14). These species are concentrated there due to the protection given by the stones, locally known as *arrecifes* or *bajos* (when offshore). At least in Huanchaco, it seems that these stone concentrations could have resulted from multiple river discharges in the area, specifically after mega-ENSO events. Quebrada de Río Seco is a usually dry riverbed 450 meters south of Huanchaco town but it is always very active during ENSO events. The abundance of stones has facilitated the proliferation of marine biodiversity in Huanchaco, which was effectively used by local people for marine farming activities.

Percy Valladares Huamanchumo described how the Huanchaco community used to build semicircular stone alignments with the outer curve always toward the south, in order to contain the flow of the Humboldt Current, generating a natural sandblasting in the interior of the stone alignment where the surf clams (*Donax* sp.) and the mole crab (*Emerita analoga*) were artificially raised (Valladares Huamanchumo 2021:219). This information suggests that marine farming was practiced by the people of Huanchaco in recent times and perhaps in the pre-Hispanic era.

A parallel and more ambitious enterprise seems to have been a large dock made of thousands of stones and earth contained by wooden posts, possibly built during the Late Intermediate Period to serve as a pier for landing balsa rafts (Figure 14). This feature, still visible today, is located immediately south of the Huanchaco Pier in a zone known as Huankarute. The only known illustration of this large structure was published in the *Atlas* of Mariano Paz Soldan (1862: Plate XIV). Today, it is only observable during low tides, and the pattern of its original shape is still present (Figure 14A). Local people in Huanchaco refer to this beach area as the *enseco* (the dried area) or the *empedrado* (the paved zone). This sector of the beach is where the pre-Hispanic harbor was located and its use was continued into Colonial times, thereby suggesting that the structure could be pre-Columbian. More studies are needed in this fascinating sector of the Huanchaco coast, which should include identifying the wooden posts described in the nineteenth century and sampling them to obtain AMS dates.

In Huanchaco, the shellfishing grounds are highly esteemed among local people. They are identified by natural features (usually geographic signs) or by placing posts, whale bones, and rails for resting reed boats on the beach. These drying area are known as *calas*, thatched areas that serve as territorial markers for their users, but not of the shoreline, but of the offshore waters in front of it, which are usually exploited utilizing reed boats or by hauling seine nets from the shore (Figure 15). The shellfishing grounds are also suitable for launching and landing reed boats. Although all the shellfishing grounds are

open to any community member, some families prefer to gather shellfish and seaweed in specific spots. Some of these spots are known to have the best crabs, octopi, or gastropods on the beach. However, all of these spots have the same fauna. The most typical fishing spots in Huanchaco are, starting from the south, El Hueso, El Mogote, La Punta del Barranco, El Enseco or El Empedrado, La Tusca, and Suchiñam (Figure 16).

VAMOS A MARISQUEAR! THE STRATEGIES AND MEANS OF SHELLFISH AND SEAWEED GATHERING IN MARITIME COMMUNITIES OF THE NORTH COAST OF PERU

In addition to the territorial and gender-oriented patterns for the exploitation of shellfish and seaweed resources described in the previous section, there are also two different ways in which maritime communities are organized to procure those resources. The first one is based on an individual mode. This model is common on beaches with cliffs. The second one is a community-based or group-based mode. The latter is common on open beaches. A combination of both modes of exploitation could happen if the littoral presents both topographic conditions (cliffs and open beaches).

The individual mode of gathering is exclusively performed by male specialists who do not perform other maritime activities (Figure 13). They are armed with two net bags (*kaitos* and *chinguillos*) and usually work independently. Indeed, there is a contest between them regarding who gets more shellfish or who finds the largest specimens during the gathering. The preferred species collected are *chanques* (*Concholepa concholepas*), *pausa*, a type of gastropod (not identified), limpets (*Fissurella* sp.), and various genera of chitons, sometimes known as *barquillo*, *barbudo*, or *arracacha*. The two latter species are pried using an implement known as a *clavo* or *mariscador*, an L-shaped iron rod about 40 centimeters long (Prieto 2013:157).

Other mollusks that I was not able to identify, but which were constantly mentioned by shellfish gatherers in the Huarmey and Casma littorals were the *ciño* and *rascahuacha*. The *chanque* is especially abundant during the austral winter. I noticed that the meat is extracted on the beach, leaving the shells on the shore since they represent an unnecessary weight to bring back home (Figure 17). In Puerto Casma, locals use the purple ink of the *chanque* to heal skin spots, especially those on the face. Shellfish gatherers in Playa Tuquillo, Huarmey Valley, indicated that gathering naked brings good luck, but also helps to avoid dangerous mermaids. Also avoiding wet clothes prevents getting sick (*ibid.*:161; Luis Miranda, personal communication, 8 February 2023).

The other mode for gathering shellfish is collective. This mode is common in maritime communities adjacent to coves and bays. The dynamics of shellfish and seaweed gathering are complex, because they imply the collaboration of many household members. During a regular shellfish or seaweed collecting expedition, women are organized in groups of two to four, being in most cases close relatives (mothers, sisters, grandmothers, aunts, and the like) or ritual relatives (in-laws, godmothers, etc.) (Figure 18).

When a clam or scallop bed is discovered, the whole community goes there to take advantage of this abundance if the location is close enough to the shoreline and in a safe place. The same is said when seaweed is abundant. In Samanco, a fishing community in the Nepeña Valley, an old fisherman told me they used to dig the clams with rakes. Quiroz and Barriga (1997:16) indicate that, on the Moquegua coast, shellfish gatherers collect clams with their feet and bare hands, using net (*paño*) bags to

store the shellfish while working on the beach. This ethnographic information shows that the pattern observed in the Huarmey-Casma-Nepeña-Santa region extends further south, and it is not restricted to this area of the North-central coast of Peru.

The weather and the season of the year seem to foster collective shellfish gathering activities. They occur mostly during low tide events, which are more frequent during the daytime in the austral summer. Furthermore, there is an abundance of shellfish, seaweed, and fish during the summer season on the shoreline, yielding a more profitable harvest. The summer season is known among fishermen on the Andean coast as *tiempo de abundancia*, *bonanza*, "the big fishing", "the season" or "the new water" (Beresford-Jones *et al*. 2018:404; Gillin 1947:34; Hammel and Haase 1962; Prieto 2013:180; Rodríguez Suy Suy 1997:65). In consequence, there is general agreement that the best shellfish and seaweed gathering occurs during the austral summer season.

Conversely, during the winter season, there are very few low tides in the mornings. According to the local shellfish gatherers, the best low tides occur during the night, forcing them to enter the sea in complete darkness to collect the desired species. When I asked how they find shellfish at night, the shellfish gatherers responded, "by testing and feeling with their hands and especially with their feet". In other words, no torches or lights are used in these events because "the light may warn the shellfish, and they could run away from us." It seems that shellfish gatherers learn to perceive some species' textures, odors, and luminosities at night. I was told that even if the low tides occur at three A.M., the shellfish gatherers will wake up and go in groups to collect whatever is available on the beach.

In Huanchaco, most of the shellfishing grounds are south of the town. Local women organize themselves in collective gathering parties to exploit shellfish and seaweed more effectively. The group walks to the most remote shellfishing ground, usually two kilometers south of Huanchaco town, leaving, on their way, large baskets in front of each spot that will be visited later. Each spot is an average of 500 meters from the other. Once they reach the furthest spot, they start collecting from there, walking north toward the town. The large baskets left behind on the beach serve to empty the smaller ones they carry into the sea as they gather different products. Although the motivation to go shellfish gathering is because the season is approaching for a given product, or because someone has noticed the abundance of a particular species, the gatherers will collect everything they consider edible. However, they will generally focus on one of four resources: seaweed, purple crabs, surf clams, or gastropods. If an octopus is found on the way, it will be caught, and the same is true for small but tasty fish like *tramboyos* (*Labrisomus philippii*) and *borrachos* or *chalacos* (*Scartichthys gigas*). Later these products are sorted into the ones that will remain to feed the family and those that will be bartered or sold in the marketplace.

Once the large basket is full, it is time to move on to the next shellfishing ground. Later, the women's sons or other relatives (including their husbands) will come down to help them bring the large baskets back to their homes. It is interesting that during the gathering process, the shellfish harvesters do not root out the seaweed; instead, their hands work as scissors cutting the seaweed about two-finger widths from the holdfast attached to the boulder, so it will grow again (Figure 19). The women of Huanchaco refer to the algae's holdfast as "mothers" because new algae will grow from them.

Shellfish gatherers cover the tops of their baskets with wet sand and seaweed because both serve as excellent protection, helping to keep the shellfish cool during the intense summer mornings. When seaweed is abundant, it is dried and then carefully stored in sacks for times of scarcity, for special occasions, or for trade with highlanders, who used to visit Huanchaco during the winter. I have witnessed women from Huanchaco bartering seaweed for fruits or tubers during religious festivities in other towns of the valley like the festivities in the middle valley town of Simbal in the Moche Valley (Prieto 2018a:547).

VAMOS A PARTIR! TIME TO SELECT, PROCESS, AND CONSUME THE SHELLFISH AND THE SEAWEED

I have observed that when shellfish are abundant, each family will collect from two to three large baskets of these products. These baskets are manufactured by inland valley communities and are obtained by bartering in the Trujillo marketplace. The baskets are of different dimensions; the largest is about forty centimeters in diameter and has a twenty to thirty kilogram capacity (Figure 9). For example, three baskets full of *Stramonita haemastoma* or *Stramonita chocolata* (two species of snails) can yield around ninety kilograms of this product, including their shells. The amount of edible meat is usually twenty percent of the total weight. Therefore, about six kilograms of edible food per basket will be available for the household. No minimum size is required when gathering gastropods, but shellfish gatherers always left behind the *crías,* which is how they refer to the smallest ones. The size has to be large enough to be worth collecting from the beach, leaving the *crías* or the small ones in the sea.

Once at home, the simplest way of cooking the gastropods is by boiling them in large containers. Boiling is followed by the tedious task of removing the flesh using a pointed instrument made of bone or wood. Sometimes a large spine of a Peruvian grunt (*Anisotremus scapularis*) (locally known as *chita*) is used to extract the gastropod flesh.

In present-day Andean maritime communities, fish and shellfish are mainly eaten in four ways which are more complex than simple boiling.

1) As ceviche, preparations of raw marine products, including fish and shellfish that are "cooked" with key lime (*lima*) juice, and commonly (among North Coast maritime communities) seasoned with local hot peppers and served with several starchy vegetables, usually manioc (yuca), sweet potatoes, and corn.

2) As *picante,* usually described as a stew made primarily with fish, but including other ingredients. Shellfish and even seabirds are served as stews or *picantes* in communities like Huanchaco.

3) As *chilcanos* and *chupes* (soups). The former is a broth made exclusively of fish heads, while *chupe* is cooked with milk, fish meat, and abundant shellfish and seaweed.

4) As *Causa*, a dish made from dried/salted fish, seasoned with hot peppers and sometimes key lime juice, and accompanied by manioc and sweet potatoes.

It should be mentioned that three of these categories include post-Conquest introduced products from other continents like *lima* (*Citrus aurantifolia*) for ceviche, cow's (*Bos taurus*) milk for *chupe*, and onions (*Allium cepa*) for most of the *picantes*. Therefore, the influence of almost five hundred years of intercontinental cultural encounters should be acknowledged. But, apart from these popular ways of preparing seafood, certain shellfish and seaweed species appear in

Huanchaco in dishes, which do not include introduced products or ingredients, suggesting that they may represent a pre-Hispanic cuisine.

Gastropods are a common component of daily food and are used when available (Figure 20). Regularly they are boiled with potatoes and seaweed and seasoned with local hot peppers. The gastropods that are not eaten at home are sold fresh, boiled, or salted. Inland communities of the nearby valley highly appreciate gastropod flesh.

The large clams (*Semele* spp*; Protothaca thaca, Euromalea rufa, Tellina* spp.) are not present today in Huanchaco. I was told that they are occasionally seen in the Guañape Bay (Virú Valley) or at Pacasmayo (Jequetepeque Valley) (Figure 21). I have only seen one small live specimen of *Semele* sp. in Huanchaco, in February, 2016, a year before the ENSO event of 2017. It is possible that these species, like many others, have disappeared due to anthropogenic and natural causes occuring over centuries, as has been recorded in other sectors of the Peruvian littoral (Beresford-Jones *et al.* 2022; Diaz and Orlieb 1992; Sandweiss and Rodríguez 1991; Sandweiss *et al*. 2001). The shellfish gatherers said that they had never seen these large clams in the Huanchaco area, and did not remember their grandmothers talking about these species. Moreover, they argued that Huanchaco's open beach is unsuitable for these species because the sea current is too strong. In addition, they mentioned that the Huanchaco seabed does not have the type of sea bottom needed by these clams. The shellfish gatherers also said that the well-protected bays of Salaverry and Guañape, south of Huanchaco, are suitable for clam beds. Shellfish gatherers in Huanchaco also mentioned that at least once in their lives, they had visited these spots to gather clams. Reports from IMARPE support this ethnographic information. In 2014, a survey of densities of invertebrates along the coast of the La Libertad Region indicates that beds of large clams are concentrated near the offshore Chao and Macabi Islands and are absent along the Huanchaco shoreline (Álfaro *et al*. 2014:145).

This information is relevant for the analysis and interpretation of the remains of large clams in archaeological deposits because their presence in offshore locations (around the islands) may imply long distant trips undertaken to obtain them. Nevertheless, this interpretation should be viewed with caution, because Junius Bird documented a few *Semele* sp. clams collected, in the 1940s, on the beach in front of the Huaca Prieta site, in the Chicama Valley (Figure 3). Based strictly on archaeological data, in Huanchaco, large clams disappeared from this area by the end of the Initial Period or the beginning of the Early Horizon, around 1100–800/800–500/400 cal. BC, which correlates well with the disappearance of other shellfish species on the Pacific Coast due to the impact of ENSO events (Prieto 2021:38). More than twenty years ago, Jeffrey Quilter pointed out that this factor should be considered when evaluating the presence or absence of certain products (Quilter 1992:116; see also Prieto *et al.* 2022:32; Sandweiss *et al*. 2001). Scallops (*Argopecten* spp.) are extremely rare in Huanchaco and Samanco middens, and are only present as prestige foods or in caches or in offerings made to the dead (Helmer 2014:118; Prieto 2018b:213, figure 19, 2021a:34, Table 2.4). The scarcity of scallops in pre-Hispanic Huanchaco contrasts with the abundance of these species in pre-Hispanic deposits on the South Coast of Peru and in the Casma-Nepeña-Santa littorals at present (Beresford-Jones *et al*. 2018; Berru *et al*. 2007; Craig and Psuty 1971; García *et al*. 2013).

Large clams are opened using a modern knife when they are to be eaten raw. When boiled or roasted on a grill (which usually takes a few minutes), the clam shells open naturally,

enabling the roasted or grilled flesh to be eaten. In contrast, the small clams (*Donax* sp.) are present in Huanchaco, and seem to have been prominent in the local diet since the late Early Horizon (500/400–200 cal. BC) and remain so today (Figure 22). This pattern of species availability confirms previous observations of Daniel H. Sandweiss, who indicated that *Donax* sp. became prominent in the diet of the North Coast of Peru by 1100 cal. BC, as ENSO events became more frequent in the region (Pozorski 1976:119; Sandweiss *et al*. 2001).

Donax sp. is very common in Huanchaco in the south sector known as Huanchaquito and at the beach known as Suchiñam on the north side of the town. These clam-beds are more commonly present during the austral summer due to the sand that appears during this season along the coast of Huanchaco and Huanchaquito (see also Sandweiss 2024 [1979]).

Between January and February, members of the Huanchaco community walk to these spots to collect these highly appreciated clams that are harvested with bare hands, or with the aid of *cabanes*. The small clams are boiled and then prepared in a stew with seaweed, potatoes, eggs, and other shellfish. Today, chicken (*Gallus gallus*) eggs are used, but I was told that, in the past, the eggs of seabirds were commonly used as a component of surf clam and even purple crab stews. During cooking, the small clams open up naturally. After the flesh of this species is eaten, the tiny shells are usually discarded. Sometimes, they are carefully collected and are later burnt and then crushed to make shell lime, which is highly appreciated among highlanders for its use in chewing coca leaves. However, this practice is not common in Huanchaco anymore. Today, it is preferred to collect shells and sell them as raw materials for those interested in processing shell lime. I have observed that apart from the tiny surf clam shells, other shells are used for producing lime, such as those of gastropods (*Concholepa concholepas*) and large clams (*Semele* spp.), which are bartered by members of coastal communities for other highland products in religious festivities hosted in the mid-upper coastal valleys.

Snails are also gathered, with the *caracol cachaco*, called this because of its green color, like that of military uniforms, being the most desired in Huanchaco today (Tresierra *et al*. 2009:23). This name refers to two different species: *Stramonita haemastoma* and *Stramonita chocolata*. The former is more abundant than the latter in Huanchaco today. I have noted that when shellfish gatherers collect them, they do not take care to separate the two species. It is not easy to know if this was the situation in the past. However, it is clear that one species, *Stramonita haemastoma,* is more common in the archaeological deposits in Huanchaco's sites than the tastier *Stramonita chocolata*. Perhaps the biotope played an essential role in the abundance of these two species. Although both snails are found together in the infralittoral of Huanchaco, the *Stramonita chocolata* is more common in the sublittoral, which is more challenging for the gatherers to reach. Shellfish gatherers argued that these snails have cycles of about seven years and appear with that frequency in great abundance on the rocky beaches of Huanchaco. Apparently, this cycle is not related to ENSO events, although a more thoughtful examination should be made in the future. When this occurs, these snails are readily available in local restaurants as *ceviche* or *picante* served with seaweed and potatoes.

In Puerto Eten, on the Lambayeque coast, snails are wrapped in seaweed to preserve them for extended periods. Today, the *caracol negro* or *caracol sombrero* (*Tegula atra*) is occasionally consumed, but is more frequently used as bait (*ibid*.:875). In contrast, in the archaeological record, *Tegula* is always the most abundant species (Figure 23). At Gramalote, more than

fifty-thousand specimens have been recovered (Prieto 2021:35, Table 2.4). Many of the shell specimens of this species are found complete in the archaeological sites of Huanchaco, suggesting that they were boiled, and then consumed using a pointed tool of some sort to extract the meat.

When the gastropods are destined to be bartered or sold in the marketplaces, their shells are broken with a stone to accelerate the process of shellfish meat extraction. Also, when modern fishermen use the *caracol negro* as bait, they break the apex of the shell with a cobble. Another gastropod that is abundant in the archaeological deposits in Huanchaco is the turban snail (*Prisogaster niger*). Today, this gastropod is neither used as food, nor as bait by the local fishermen (see below). For many years it has been assumed that its presence in the archaeological deposits may have been the result of accidental gathering). At Gramalote alone, thirty thousand specimens have been found in archaeological contexts (*ibid.*:35, Table 2.4). This enormous number of shells could not result from an "accidental gathering".

People from Huanchaco have indicated that this species was used as a condiment; it was boiled with other shellfish to flavor stews, soups, or *picantes*, but it was not itself eaten. *Prisogaster niger* is boiled with the operculum in place. Since almost all the shells of this species in the archaeological record still have their opercula in place, the meat was never removed from the shell, and thereby could have been boiled to flavor food, as is done today.

Various species of limpets are present today on the Huanchaco coast, mainly concentrated around the pier, where they are attached to the metal poles (Tresierra *et al.* 2009:1). It will be necessary in the future to undertake a detailed study of limpets and their contribution to the local diet, since their meat is usually double the volume of their shells. Even today, they are considered to be a delicacy among the Huanchaco fishermen (Figure 24). Finally, sea urchins are abundant today on the Huanchaco coast and are mainly used as bait for rocky fish species and for the crab traps used with the reed boats. However, there are reports that this species is eaten as ceviche in the Central Coast of Peru (Daniel H. Sandweiss, personal communication, November 2023). Sea urchin remains (mainly spines) are found in great quantities in the archeological sites in Huanchaco. It has been suggested that this species was exploited mainly for bait, but it could have been consumed raw, or in stews, in pre-Hispanic times.

El Cangrejo Nos Matiene en Invierno: Crab Fisheries in Huanchaco and Their Importance for Local Subsistence and Economy During the Winter

The purple crab (*Platyxanthus orbignyi*) is abundant along the Huanchaco coastline today and is captured by the male members of the Huanchaco community, mainly using crab traps, and is also gathered by hand during low tides by local women (Hudson 2011, 2019). *P. orbignyi* is a marine crustacean that dwells year-round in the rocky and sandy bottoms of the sea (Anticona 2016; Carbajal and Santamaría 2018; Álamo Vásquez and Valdivieso 1997; Tresierra *et al.* 2009b:35). There is consensus that during the austral winter season (April through October/November), fish are less abundant in Huanchaco. At the same time, the rough currents prevent fishermen from using their fragile reed boats daily. But more critically, the rough currents constantly detach their fish nets from their anchors, and they get lost, or more commonly, they become entangled and useless. Therefore, the Huanchaco community has organized itself around the crab fisheries during the austral winter season, which implies not using fishing nets and exploiting the more profitable purple crab.

A reed boat can yield 100 kilograms of purple crabs per journey (Figure 25). Although crabs are elusive in the archaeological record worldwide, current efforts are emphasizing their role in ancient maritime communities and subsistence strategies in the past (Bender 2019; Rick *et al.* 2015; Specht 1985). When appropriate excavation techniques are applied, and the soil allows good preservation, crustaceans can be excavated and analyzed. Crustaceans such as the purple crab or the mole crab were important in the diets of people living on the Andean coast since the Middle Preceramic Period, as evidenced at sites like La Yerba III, until the Late Intermediate Period as seen at sites like Cerro Azul (Beresford-Jones *et al.* 2021:745; Flannery and Sommer 2016).

In Huanchaco, special efforts have been made to document crab remains. However, we are still far from having a well-suited methodology for collecting archaeological crustaceans in the field and for subsequent analysis. For example, at Gramalote, the most popular species recovered was the purple crab, which represents 6 percent by NISP of the total sample (n=13,868), followed by other species such as *Emerita analoga*, *Romaleon setosum*, and *Callicnetes* sp. (Prieto 2015:877). At the archaeological site of José Olaya-Iglesia Colonial, purple crab is also abundant (Prieto *et al.* 2022, Tables 4–6). At Huanchaco sites, the pincers are the most frequently represented and most diagnostic indicator of crabs, followed by carapaces (mainly from *Platyxanthus orbignyi*), including some desiccated remains of the mole crab (*Emerita analoga*). A more nuanced project focusing on recovering carapace fragments could yield hundreds, if not thousands, of crabs. The data obtained in many archaeological sites like La Yerba III, Cerro Azul, Samanco, and the Huanchaco sites confirm the importance purple crabs must have had as an essential source of food and marine protein in pre-Hispanic times.

The crab trap, or *saca*, is still used in Huanchaco and other fishing communities including Puerto Eten and Santa Rosa in the Lambayeque Region. Today it consists of an iron circle attached to a synthetic net, with a plastic bottle used as a buoy (Figure 26). Until the 1990s, it consisted of a square frame of four pieces of bamboo canes lashed together at the corners. At each of the four corners, there was a stone weight. Over the frame stretched a net that hung below the level of the frame to a depth of 15 to 20 centimeters to which the bait was tied. At the corners were attached four suspension cords, that are, in turn, connected to a line around 7.5 meters long. Near the upper end of the line, there is a gourd float or *chuno* (Gillin 1947:35–36) (Figure 4). The gourd was replaced around the 1950s by a cork (Figure 4). This device is exclusively used by fishermen in reed boats, who regularly carry them out to their respective fishing grounds. On each trip using a reed boat, a Huanchaco fisherman carries from three to five *sacas* filled with bait, usually the meat of machete fish (*Ethmidium maculatum*), a very oily and smelly flesh preferred by the purple crab. Other good bait is *lisa* (*Mugil cephalus*) and sea urchins (*Tetrapygus niger*) (Figure 27).

The preferred spot to capture crabs is the zone known as *La Punta del Barranco*, which is on the south side of Huanchaco, precisely in front of the Pampa La Cruz archaeological site. Fishermen place their reed boats with the bow to the south and get ready to catch the crabs. Fishermen in Huanchaco said they sink the *saca* or crab trap to the bottom of the sea and wait a few minutes while praying (usually Catholic prayers). Others mention that they wait for five minutes or *al tanteo*, which means to pull the rope attached to the trap gently, and if it feels heavy, it is ready to bring it back to the surface. The crabs are selected by size, and the gravid females with exposed eggs will usually be returned to the sea to guarantee the sustainability of the resource. The crabs are stored

inside a net bag known as *cal-cal* and placed on the back of the reed boat.

Once back at the beach, some of the crabs are distributed among the community, and the rest are taken back for family consumption and for later trading in the marketplace (Figure 28). The purple crabs need to be washed prior to cooking. Sometimes they are smashed with stones, and then boiled in a stew with seaweed, eggs, and onions. This way of preparing the crabs is locally known as *cangrejo reventado*. The most desired part is the pincers, but the carapaces' interior is also eaten. Today, *cangrejo reventado* is a delicacy and a popular dish in Huanchaco (Figure 29). Despite pollution and degradation of the Huanchaco coast, local fishermen are still among the best providers of crabs in the region (De Lucio *et al.* 2013). As I have mentioned above, despite a limited methodology for recovering crab remains at the archaeological sites in Huanchaco, the abundance of purple crabs suggests that, in the past, just as today, they were a significant food source. Their role in subsistence patterns should be considered more seriously, as well as their consumption on a regional scale.

The Importance of Algae in the Subsistence Patterns of North Coast Fishing Settlements

The most frequently consumed marine algae on the North Coast of Peru is *mococho* (*Chondracanthus chamisoii*) (Campos *et al.* 2009). On the southern coast of Peru, other algae species are exploited (Masuda 1981, 1986). Algae plays a vital role in the ecosystem. Marine algae mostly consist of blades (plant bodies) without leaves, stems, and roots. These algae are benthic and autotrophic and can be placed in three classes: green (Chlorophyta), brown (Phaeophyta), and red (Rhodophyta). Along the coastline of the Huanchaco area, 27 algae have been identified. *Chondracanthus chamisoii* or *mococho*'s most important use is human consumption (Campos *et al.* 2009:45) (Figure 19). *Mococho* is a polymorphic alga with membranous blades from 6 to 45 centimeters with a green to violet color. Its natural habitat is rocky beaches of the intertidal and subtidal zones. *Mococho* is a very nutritious food. It is also present on the coastline of the Moche and nearby valleys at beaches including La Ramada, Uripe, Playa El Brujo, Malabrigo, Puémape, Pacasmayo, and Chérrepe (*ibid.*).

The South American coast is rich in many species of algae, and they seem to have been exploited in this region since at least 14,600 BP, as shown at the site of Monte Verde in southern Chile (Dillehay *et al.* 2008). In pre-Hispanic times, marine algae were possibly used as a source of iodine among the highland population (Burger 1985:276; Masuda 1986), but they are poorly represented in the archaeological record. In Huanchaco, excavations at different sites have yielded various algae blades, which vary from site to site, depending on the conservation of organic materials. For example, at Gramalote, a total of 332 body plant remains (blades) were collected, mostly from domestic contexts in the residential sector of the site (Prieto 2015, see tables 10.35 and 10.36; Prieto 2021:42, Table 2.6). At Pampa la Cruz, a residential and ceremonial site that was occupied uninterruptedly from 400 cal. B.C. to A.D. 850, *mococho* blades have also been found not only in the refuse of domestic structures but associated with votive offerings in the context of human sacrifice events (Fernández *et al.* 2022).

Today, *mococho* is almost exclusively gathered by women and children in Huanchaco, and local families consider harvesting it to be a gendered activity. It is used in many local dishes, including one that is cooked using hot peppers (*aji*) and potatoes. It is a stew served before the main dish, known as *picante de mococho* and it is served as an accompaniment to

ceviche or any fish stew. It can be also used as a condiment in different dishes (Anhuamán 2008:119).

In 1985, Richard Burger pointed out the importance of seaweed, based on ethnographic data recorded for the Peruvian South Coast. He noted that it is challenging to identify this resource due to preservation issues, and that the algae were mostly eaten or consumed, with no remains left in archaeological contexts that could demonstrate its use. More importantly, Burger indicated that seaweed may have been a significant source of iodine, a scarce nutrient among highlanders (Burger 1985:276). Thus, one of the products that could have been of particular interest for highlanders during the pre-Hispanic period was algae. In this context, it is possible that the inhabitants of coastal communities gathered *mococho* for local consumption and exchange with highland communities.

In some regions of the Peruvian coastline, shellfish and seaweed gatherers do not belong to coastal maritime communities. They are from high-altitude regions, and come down to the coast seasonally. This situation has been extensively recorded for the South Coast of Peru, specifically along the coastlines of Arequipa, Moquegua, and Tacna (Masuda 1981, 1986). These are groups of camelid herders and potato growers who come down to the shoreline between August and December (*ibid*.:242, 244). During these months, they exploit seaweed and shellfish such as the extensive beds of local clams known as *macha* (*Mesodesma* sp.). Both seaweed and clams are immediately processed, dried, and then stored in waterproof facilities. Later, these products are used as exchange goods to obtain other products back home and for consumption (Masuda 1981:190–192). Although this pattern now seems to be restricted to the southern region of Peru, a similar situation may have occurred on the North Coast as well.

During my conversations in Huanchaco, old villagers said that until the 1950s, during the winter months (July–November), a few highlanders came down to the Huanchaco coast, bringing utilitarian ceramic vessels, tubers, and dried potatoes. They stayed in Huanchaco with local families. In other cases, they rented or borrowed unoccupied houses. During their stay, they collected seaweed and, in lesser quantities, shellfish. In 2007, I observed a woman from the highlands systematically collecting seaweed on the shoreline in Huanchaco (Figure 30). This information is essential, since Shozo Masuda has argued that in the central and northern regions of Peru, seaweed is produced and commercialized by the coastal people (Masuda 1986:237).

The information I have given here (recorded in 2007) tells us that the pattern might have been less rigid, and that, perhap,s in the past, the fishing communities of the North Coast were in closer contact with highlanders (as the southern region still is). Flores Ochoa reported in 1985 that marine products were available in the marketplaces and streets of Quillabamba and Andahuaylas in the southern highlands of Peru. There, traders or *comerciantes* from Huamanga provided a high-quality *qochayuyo* (a Quechua word that refers to algae) which was claimed to come from Chiclayo (Lambayeque Region, North Coast of Peru) and which was considered to be of higher quality than the one brought by *recolectores* working along the South Coast of Peru (Flores Ochoa 1985:259). *Qochayuyo* is highly valued in the Andean highlands and is used for fancy dishes or special day celebrations like marriages, first hair cutting, and collective agricultural work. It is also consumed in a particular dish prepared exclusively during the Corpus Christi celebration in Cusco (*ibid*.: 267).

One pound of *qochayuyo* was bartered for one pound of coca, while two "cakes" (about the size of a brick) of *qochayuyo* were bartered for a pound of peanuts or hot peppers (Prieto 2018b:213, figure 19). This suggests that an exploitation pattern and then bartering (perhaps as part of a down-the-line system) must have been in place to move seaweed from the North Coast of Peru down to the southern highland marketplaces during the 1980s. More interesting is that present-day highlanders consider the seaweed from the north (which is actually a different species from the seaweed from the South Coast) to be of better quality than the local *qochayuyo* (*ibid*.:259). The consumption of *qochayuyo* could have been different in the past, since at the Middle Preceramic sites of La Yerba II and III on the South Coast of Peru, the preferred algae are edible kelps (*Macrocystis* spp.) (Beresford-Jones *et al*. 2021; Beresford-Jones *et al*. 2022). If coastal-highland interactions occurred during this early period, as it has been suggested, then preferences in seaweed consumption were clearly different in the past.

Other Shellfish Gathered and Consumed by Modern Maritime Communities on the North Coast of Peru

Other species of shellfish were exploited, then processed and consumed, by maritime communities of the North Coast of Peru. Many of these marine species do not leave evidence of consumption in the archaeological deposits, or are too fragile to be preserved. Some of them, such as the octopus (*Octopus mimus*) and mole crab (*Emerita analoga*) are heavily exploited and consumed on the North Coast of Peru today, particularly in Huanchaco.

Other shellfish are less well known, but are occasionally consumed or used as bait for fishing. For example, the *sacho* or *marucha* (*Callianassa garthi*) is a sand shrimp that is heavily exploited to serve as bait for various fish species, particularly for *chita* (*Anisotremus scapularis*). In Puerto Malabrigo in the littoral of the Chicama Valley, an old fisherman said that the *quirripe*, a type of sea cucumber that is frequently located on rocks, can be eaten as ceviche after it is cooked, or used raw for bait. At Puémape in the Jequetepeque Valley littoral, I was told that a black worm (sometimes yellow) dwelling in the stones and locally known as *miñoca* or *meñoca*- served exclusively as bait for targeting rocky bottom fish.

Starfish (*Stichaster striatus*) live on rocky beaches and used to be abundant in Huanchaco, but today they seem to appear intermittently on the shoreline (Morales 2011; Uribe *et al*. 2013). The last time I saw them in abundance was in 2007. They are locally known as *cachos* and are eaten in ceviche and soups (Figure 31). At the beginning of this paper, I mentioned that around 1835, a U.S. traveler saw people in Pacasmayo eating grilled starfish with hot peppers. Today, they are eaten boiled, or used as condiment to enrich *chilcano* type soups (broth made of fish heads). In Huanchaco, starfish are particularly well represented during the late Early Horizon (400–200 cal. BC), decorating large ceramic vessels found at the Pampa la Cruz and José Olaya–Iglesia Colonial sites. Their symbolic importance seems to have persisted in the local oral tradition. Chonyicni was a princess who fell in love with a celestial star, and to stay forever with her lover, she became a starfish (Valladeres Huamanchumo 2021:75).

Mole crabs (*Emerita analoga*), locally known as *muy-muy* and *capusa* (when they are shedding the exoskeleton), are collected by hand and are highly appreciated, because they are not only a valued food for humans, but are good bait for fish and seabirds. They dwell along the shore and the intertidal zone of sandy beaches and are mainly collected by men who use a particular device locally known as *cabán*, which helps to

gather hundreds in minutes when they are abundant at the shoreline (Álfaro *et al.* 2014; Sánchez and Álamo 1974) (Figure 10). The *cabán* is used to scoop a quantity of sand and rinse it out in the surf, leaving in the net the mole crabs and small clams (Pozorski 1976:214–215). *Muy-muy* are also collected using bare hands, but this is a more tedious enterprise.

Capusa are collected for bait, and are considered the best for fishing for grunts, drums, and even small sharks such as *tollos* (*Mustelus* sp.) (Figure 32). *Muy-muy* have been found at the sites of La Yerba II and III on the South Coast of Peru and in lesser quantities during excavations in Huanchaco (Beresford-Jones *et al.* 2022; Prieto 2015). It is most likely that this species represented a major food resource for Pre-Hispanic maritime communities, as it is today. *Muy-muy* is eaten raw, as ceviche, as *chilcano*, and in *torreja*, defined on the North Coast as an omelet. The broth of *muy-muy* is highly esteemed in Huanchaco, and it is used to flavor fish stews and sometimes even in ceviche. When the mole crab is eaten, there are no leftovers, although sometimes the chewed carapace is thrown away, but it is too fragile to survive in archaeological contexts. The best examples of well-preserved mole crabs come from the Middle Preceramic shell midden of La Yerba II, where masticated carapaces almost dominate certain archaeological contexts (Beresford-Jones *et al.* 2022, Table 1). In some cases, I recovered complete individuals from the archaeological deposits at Gramalote, indicating its importance to the local diet and economy (Figure 33).

Octopus (*Octopus mimus*) dwells in rocky beaches and it can be found from the shoreline to the end of the continental shelf (De Lucio *et al.* 2013:49; Tresierra *et al.* 2009:43; Ylquimiche 2014). This member of the octopodidae family is another vital source of food, and is regularly exploited on the North Coast of Peru. Women use bare hands, while the men capture them with an extended hook locally known as *gancho* or *arpón*. This is a long metal artifact with either a pointed end or a hook on one end, while the opposite end will have a loop with a long rope attached to a float (Figure 34). The ones with a hook are expected south of the Jequetepeque Valley, while I have only seen the ones with a pointed end in the Lambayeque Region, as at Puerto Eten. If gatherers are seeking octopi, the best way to determine if there is one is to look for big stones with a little white foam around them. This sign is a good indication of a potential octopus beneath the rock.

The second step is to put the hand into a small cavity along one of the sides of the stone. If the hand feels something slimy, and also if the hand comes out with black ink, that is an unmistakable sign that there is an octopus. The next step is to insert an arm to let the octopus adhere to it and then pull it out of the rock. Octopus is eaten raw as ceviche, grilled, or as a side dish accompanying fish stews. Depending on its size, one octopus can feed a family of about five individuals, so its importance should be considered. Unfortunately, I have not found any evidence of octopus remains in Huanchaco, because they are soft-bodied mollusks. There are only a few representations of octopi in Early Intermediate Period Moche art, but they are featured more prominently in Lima culture mural and ceramic art produced around the same time (Donnan and McClelland 1999:37, figure 2.25c; 87, figures 4.43 and 4.44; Goldhausen 2001:244–256).

Sea cucumbers were very popular in the past, but today they are almost gone from the shorelines of the North Coast of Peru due to changes in the seabeds, although they are still common in the Central and South Coasts (Ramírez *et al.* 2022; Uribe *et al.* 2013:137). As

previously indicated in the first part of this paper, they used to be very common in the Chicama littoral, as Junius Bird documented in his photographs (Figure 3). The most popular sea cucumber exploited by the modern fishermen of Huanchaco is the *ancoco* (*Patallus mollis*) which dwells in sandy and rocky bottoms along the shoreline and the intertidal zone of the littoral (De Lucio *et al.* 2013:65; Tresierra *et al.* 2009b:50). *Ancoco* used to be eaten raw or in stews. North of Huanchaco, and specifically along the coast of the Lambayeque Region, it is known as *ancoque*.

According to Huanchaco local people, *ancoco* used to be abundant during summer. Today, it is occasionally seen, and the fishermen attribute its scarcity to the ENSO event of 1997–1998 and the high pollution of the beach. People from Huanchaco described large beds of *ancocos* as beautiful, colorful "flowers" on the sandbanks of the beach. Since then, they have not been seen in Huanchaco. There are photographs, from the mid-1940s, of people gathering *ancocos* on the beach near the archaeological site of Huaca Prieta, in the Chicama Valley (Figure 3). Many shellfish gatherers said that *ancocos* disappeared from the coast of Moche and Chicama after ENSO events, not because of the high-water temperatures, but because of the sediments discharged on the seabed, which eventually backfilled or destroyed the sandy/muddy bottom where *ancocos* like to dwell. There are no archaeological records of *ancocos* in Huanchaco. However, given its importance in the recent past, it is assumed that it was an essential food source in pre-Hispanic times. Its soft composition and consumption do not leave any remains that can be tracked archaeologically.

Finally, lobsters (*Panulirus gracilis*) are present on the North Coast of Peru in the intertidal zone and usually frequent the littoral when the waters warm up during the summer season, or, occasionally, before or during ENSO phenomena (De Lucio *et al.* 2013:65; Tresierra *et al.* 2009: 50). In Huanchaco, lobsters seem to be seasonal resources that tend to be abundant prior to ENSO events. They were common in December 1997 before the floods and rains of that ENSO. They were also widely consumed during the summer of 2016, and then during the months of October– December of the same year, a few months prior to the events of the 2017 ENSO phenomenon (Figure 35). Sandweiss and others have argued that there was a strong El Niño elsewhere during 2015–2016, but the effects were not as strong on the coast of Peru (Sandweiss *et al.* 2020). Therefore, the presence of the lobsters along the coast of Huanchaco could have been the result of a mild El Niño along the coast of Peru prior to the strong 2017 event.

When present, they are eaten boiled or in ceviche. A few people said that when abundant, they used to be roasted on stone grills and seasoned with hot peppers. Lobsters are prominently depicted in pr-Hispanic art of the North Coast, but are scarce, if not absent, in archaeological middens.

Discussion

The main goal of this paper is to emphasize the economic, social, and ideological importance of shellfish and seaweed gathering in modern maritime communities along the North Coast of Peru, particularly in Huanchaco, in the Moche Valley. This goal is not unusual, since shellfish are considered to have been a major subsistence resource among ancient societies and during later times (Waselkov 1987). Based on the available data (although it is not systematic), I suggest two patterns related to the exploitation of these resources centered on geographic and gender factors.

Although there is no doubt that the fisher families of these maritime communities rely primarily on fish as their main source of protein, shellfish and seaweed also play a critical role in their subsistence. Since most of the shellfish and seaweed can be gathered in considerable quantities with much less risk, skill, or expenditure of energy than is involved in obtaining fish, all members of the society (women, children, and elders, see Figures 5, 6, 8, 18, and 31) can contribute significantly to subsistence and protein requirements. Therefore, the exploitation of shellfish and seaweed is an economic activity that unites all members of a coastal community, bonding together family members and extended family groups.

Reports written in the first half of the twentieth century emphasize that among the populations of the Peruvian coast, fish was the main source of protein, while poultry and meat were not even ten percent of local consumption (Fiedler 1943). Today the picture is inverted, and fish are less frequently eaten than chicken and meat. Perhaps this is the result of the depletion of the fish stock due to industrial overfishing in the last sixty years, the pollution caused by the spread of big cities over the once rich Andean coast, and the current globalized market emphasizing the consumption of cheaper chicken and more expensive fish in the daily diet (Wintersteen 2021:121).

Future projects in maritime communities along the Andean coast should keep in mind these factors and the rapid changes these communities have been experiencing over the last thirty years. Also, it is important to distinguish between seafood served in restaurants in coastal communities and what is eaten in the intimate family settings of those living in these towns. I have not explored this aspect in this paper, so specific sociocultural studies are needed to distinguish between commercial consumption and daily consumption at the household level.

This is important because Peruvian cuisine, especially seafood, is in vogue, with an emphasis placed on fancy dishes based on shellfish and seaweed (Acurio 2015). A few examples are *ceviche de mariscos*, *arroz con mariscos* (a dryer version of Spanish paella), *pulpo a la oliva* (octopus with olive sauce), or *langostinos a la piedra* (shrimps grilled on hot stones). Although most of these dishes could have had a preHispanic origin, they are the result of a culinary fusion that materialized part of the intricate history of cultural encounters in South America over the past five hundred years (*ibid.*).

In addition, foodways in pre-Hispanic times were not static; they changed over centuries, and they certainly differed by region or even within valleys. Indeed, with the aid of new analytical techniques and faunal/botanical studies, we are just learning about how diverse and complex foodways were prior to the Spanish conquest (Alfonso Durruty and Blom 2023; Staller 2021; Turner and Klaus 2020).

Coastal communities offer seafood dishes to local and foreign tourists as genuine expressions of their millennial and "traditional" cuisine. In contrast, most of these families will have a very different diet in their day-to-day experience in their homes. When it comes to shellfish and seaweed, at least what I have observed and experienced in Huanchaco, is that those marine products will be eaten in a very simple way: raw or boiled and seasoned with ají (a variety of hot pepper) or in stews or as ceviche. The second most preferred way is in the form of *caldos* or broths. Evidently, these current culinary preferences could have their own sociocultural background, and may represent a fusion of traditions over several centuries, or just a few decades. In any case, eating shellfish and seaweed raw, or simply boiled and seasoned with local *aji*, seems reasonable and feasible for pre-Hispanic times.

Today, in communities like Huanchaco, purple crabs and seaweed are the most commonly consumed shellfish and algae, but we should question whether modern consumption is a continuation of pre-Hispanic practices or not. One example for the Huanchaco area is the turban snail (*Tegula atra*). This gastropod was heavily consumed throughout the pre-Hispanic sequence at all sites in Huanchaco, yielding the largest quantities by NISP in all sites excavated. In contrast, today it is rarely consumed, and is preferred as bait for fishing. Would changes in availability, tastes, customs, or religious restrictions be factors that impacted the consumption of certain shellfish over time? On top of this problem, we should consider differences in taphonomy or methodological approaches in judging relative abundance in the archaeological records. Even within Huanchaco, local people seem to remember that octopi and sea cucumbers (*ancocos*) were common in their daily diet fifty years ago. They blame ENSO events for wiping out shellfish and causing these species to disappear from the local environments. Several studies have confirmed that ENSO could severely affect local stocks temporarily or permanently, so this claim is not implausible (Correa *et al*. 2022; Kluger *et al*. 2018; Valqui *et al*. 2021). Therefore, current trends in coastal diets should be viewed with caution, and future studies must consider that the availability, exploitation, and consumption of marine resources was not static and that it varied over time.

The other importance of shellfish and seaweed in coastal communities is the role they play in local legends and as symbols of power, or simply as icons of cultural expression. A few examples were mentioned above (the cheating stone, the princess who turned into a starfish, the defiant fisherman who turned into a ghost crab). Readers are encouraged to review the primary sources for these stories, since doing so will also foster a more diverse inclusion of local authors from the North Coast of Peru in the academic bibliography of Andean archaeology (for example Anhuamán 2008; Fernández Díaz 2021; Huamanchumo 2022; Rodríguez Suy Suy 1997; Valladares Huamanchumo 2021). Based on a quick look at pre-Hispanic art, both architecture and portable objects, there is no doubt that shellfish and seaweed were important, and, therefore, they must have been critical for coastal and perhaps inland communities. Apart from the importance of *mullu* (*Spondylus* shells) and conch shells (*Strombus* spp.), other marine species must have had local, regional, and interregional importance at different time periods.

Unfortunately, very little has been done by ethnographers and cultural anthropologists in recovering oral tradition along the Andean coast in order to preserve this knowledge. Why is this knowledge important? It is important because such traditions may include key aspects of pre-Hispanic, Colonial, and post-Colonial religion and belief systems that are part of the local cultural heritage of maritime communities along the Andean coast. For example, based on the song about the moon cycle and its relationship to the tides and their implications for shellfish gathering, it could be a clue to infer the roles of the so-called moon goddess, the sea, and gender in coastal societies (Mackey 2002). Oral traditions are also important because they can help social scientists to elaborate local models to interpret archaeological contexts. Fortunately, in Huanchaco, this information is partially available, and amazingly enough, the publication by Valladares Huamanchumo (2021) has fostered other members of the local community to publish and share part of their rich oral tradition and knowledge (Fernández Díaz 2021; Huamanchumo 2022).

The scarce ethnographic data on shellfish and seaweed exploitation and consumption are solid evidence of the importance of these re-

sources for coastal communities. This is materialized in the social investment done to train young members of the community to learn the secrets of effectively exploiting shellfish and seaweed. It is also evident in the existence of extractive tools exclusively designed and used to yield better returns while gathering shellfish: *cabán* (to maximize the procurement of small clams and mole crabs), the *saca* (to accelerate the gathering of purple crabs), the *arpón* (to facilitate the capture of octopi), and the *mariscador* or *clavo* (to effectively pry abalones, chitons, and limpets from rocks). As previously noted, some of these shellfishing devices have pre-Hispanic antecedents, indicating that similar forms of shellfish exploitation could have occurred in the past. The existence of these tools opens the possibility of exploring the intensification or reduction of shellfish and seaweed exploitation and consumption in pre-Hispanic times, and the ways in which maritime communities could have organized themselves to effectively exploit these resources.

Apart from the specialized devices for shellfish gathering, the intentional modification of the shoreline using stones to create artificial embankments for seafood farming should be highlighted. The evidence recovered in Huanchaco indicates that maritime communities on the North Coast of Peru could have been engaged in more systematic ways of procuring specific shellfish species, such as mole crabs, surf clams, purple crabs, and octopi (Valladares Huamanchumo 2021:219–230). Seafood farming has been reported archaeologically in other sections of the Pacific coast in South America, so it seems to be an extended practice (Martin and Mendizábal 2021).

Is it be possible that the critical shift in marine food proportions during the pre-Hispanic sequence or even the intensification of harvesting certain shellfish species over time could have been the result of seafood farming? One potential candidate that comes straight to my mind is the surf clam (*Donax* spp.), which is described by Valladares Huamanchumo as one of the marine species "farmed" by the people of Huanchaco. Are we encountering the leftovers of a pre-Hispanic marine revolution in food production that started with the gathering of large clams and mussels, and then shifted to a systematic and controlled growing of smaller species such as surf clams and small mussels in sea farms? More information is certainly needed here, and future studies should try to identify markers of shellfish farming versus shellfish gathering. Farming could have served to mitigate the deleterious effects of past climate changes (see, for instance, Sandweiss *et al.* 2001) and its effects on the appearance or disappearance of shellfish species in the archaeological record.

There is a third dimension in which shellfish and seaweed play a critical role. Today, gathering (and to a lesser degree shellfish farming) these marine resources yield large amounts of surplus. Although it has been noted that shellfish gatherers will harvest what is needed for family consumption, they usually produce an intentional or unintentional surplus that is commercialized by their family members on the beach or at nearby local marketplaces. This surplus becomes a sort of commodity for the family economy. The shellfish or seaweed is sold fresh or salted/dried, then stored and used for later bartering. The latter is done in the context of modern Catholic religious festivals hosted by mid-upper valley towns. Both transactions, sales and bartering, provide extra cash and other products needed for daily activities. Therefore, I would like to suggest that shellfish could have been an important product to dynamize local and regional economies.

At the residential sectors of Chavín de Huántar, Richard Burger has documented an increasing presence of marine resources over

time (possibly dried fish and up to fourteen species of shellfish), which were more common in sector D and were associated with the Janabarriu occupation. Similarly, Matthew Sayre has reported thirteen shellfish species for the La Banda sector at Chavín (Burger 1984:255–258; Miller and Burger 1995:436; Sayre 2010:156, Table 8.1). Recent studies of economic directness applied to the case of the Paracas society in the Palpa-Nasca region state that people there had access to a diverse range of commodities from various ecological levels: direct and down-the-line exchanges, and other modes of meeting supply and demand with significant consumption on the coast (Mader *et al*. 2023:386–387). The large quantities and variety of marine and terrestrial shellfish remains found at coastal Paracas sites testify to their significant economic value across the whole coastal region in this part of the Andes (*ibid*.:393). Similarly, the exploitation of shellfish and seaweed on the South Coast of Peru by modern highlanders who later use these marine products as commodities to exchange for other subsistence goods on the way back home, indicates the importance given to these resources at the economic level (Masuda 1981). These data suggest that shellfish became important in the highland diet over time, but was only occasionally consumed, as the ethnographic information from present-day highland communities indicates (Flores Ochoa 1985:267). Fish, shellfish, and seaweed were preserved during pre-Hispanic times using the drying/salting technique, which can prolong the edibility of these marine products. Consequently, shellfish and seaweed can be transported long distances to be exchanged, as has been described earlier in this paper. Therefore, it is possible to consider shellfish and seaweed as commodities that fostered socioeconomic interactions between the coast and the highlands (Masuda 1981; Miller and Burger 1985; Rostworowski 1981).

A problematic factor here is the "absence of evidence" which means that several shellfish and seaweed species do not leave evidence of consumption, due to preservation issues or consumption patterns. This is especially true at inland sites, far from the coast. Seaweeds do not preserve well in the highland sediments at archaeological sites, and they were so valuable that perhaps they were entirely consumed, not leaving traces or leftovers in the archaeological record. The occasional consumption of seaweed would not leave relevant traces at the isotopic level, either, although this is a technical aspect that needs to be explored further in the near future. More than thirty years ago, Jeffrey Quilter recommended that this factor be considered when evaluating the presence and absence of certain products (Quilter 1992:116). One case to consider is the importance of abalones (*Concholepas concholepas*) in the diet along the Huarmey-Santa littoral. Modern shellfish gatherers in this area leave the shell at the beach, taking only the flesh back home (Figure 17). Looking at the importance of abalones in the archaeological record of sites in the same region, they are underrepresented. They constitute around 0.06 percent (n=6) of 103,473 shellfish remains found at Caylán and around 0.02 percent (n=15) at Samanco, both sites occupied roughly during the Early Horizon (Chicoine and Rojas 2013:346, Table 1; Helmer 2014:422, Table 5.8). If the modern pattern of discarding abalone shells on the beach happened in the past, then we should be cautious in assessing the importance of abalone in preHispanic times.

Finally, the division of labor and how the community is organized are essential because they help us to understand the mechanisms by which the members of maritime communities maximize the procurement of supplementary resources for their daily diet and local economy. There seems to be two patterns in the social organization for food procurement based on the geographic conditions of the littoral along the

North Coast of Peru. In addition, these patterns seem to emphasize the role played by women, children, and elders, in a sustainable economy that underpins daily subsistence and fosters economic interaction at a local and regional level.

In conclusion, shellfish and seaweed exploitation seems to have been a systematic, but sustainable, practice along the Peruvian North Coast. Sustainability is maintained by the careful treatment of these resources and demonstrated by the fact that most of them have survived until the present.

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My interest in learning more about Huanchaco and similar settlements goes beyond the duration of the project exemption I obtained from IRB. However, most of the critical information here presented was the result of the questionnaires I administered to members of my community in 2010 as part of the project exemption submitted and approved by the IRB. I also feel gratitude towards my family, especially towards my grandmother and mother, to my friends, and to community members in Huanchaco who always treat me in a friendly way "as the *weird guy* in town who decided to study the bones and *huacos*" (ceramic vessels) scattered on the surface of the dozens of archaeological sites here."

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Figure 1. Map of the North Coast of Peru indicating the location of modern maritime communities studied by the author that are mentioned in this paper.

Figure 2. European-style boats in Tortugas, littoral of the Casma Valley, a traditional maritime community on the coast of Peru. Photograph by Gabriel Prieto, June 2009.

*Figure 3. (A) View of the beach in front of the Huaca Prieta site, Chicama Valley at low tide. (B) Young local woman collecting sea cucumbers from the Huaca Prieta beach. (C) Sea cucumbers or ancocos gathered during the morning on the Huaca Prieta beach by local people. (D) Seaweed and shellfish collected on the Huaca Prieta beach: white clams (*Semele *sp.), purple crab (*Platyxanthus orbygnyi*), octopus (*Octopus mimus*), and ancocos (*Patallus mollis*). Photograph courtesy of the American Museum of Natural History, Division of Anthropology, Junius Bird Collection and Archive (catalog numbers: V3p18_001; V3p18_002, V3p18_011 and V3p18_012).*

Figure 4. Construction process of a traditional saca*, a crab trap that was used in Huanchaco until the 1990s, when it was replaced by circular ones made of iron rings. Photograph by Leo Levy, July 1964.*

Figure 5. Women and children clearing a net of silversides (Odontesthes regia*) or* pejerrey *which were abundant for a few days along the shoreline of Huanchaco. Photograph by Gabriel Prieto taken at 2:20* A.M. *on July 2012.*

Figure 6. Children who were helping their fathers by tightening bait in crab traps or sacas. *The black and white photograph is by Leo Levy, and was taken in August 1964. The color photo by Gabriel Prieto was taken in August 2006 in the same place, the Huanchaco beach, Moche Valley by Gabriel Prieto.*

Figure 7. Left: El Remanso Beach, in the littoral of the Huarmey Valley. These rocky cliffs are exploited exclusively by the men of the community. Right: the open beach at Huanchaco, Moche Valley, an area systematically exploited for shellfish and seaweed by women. Photographs by Gabriel Prieto.

Figure 8. Women in Huanchaco gathering seaweed, locally known as mococho. *Photographs by Gabriel Prieto.*

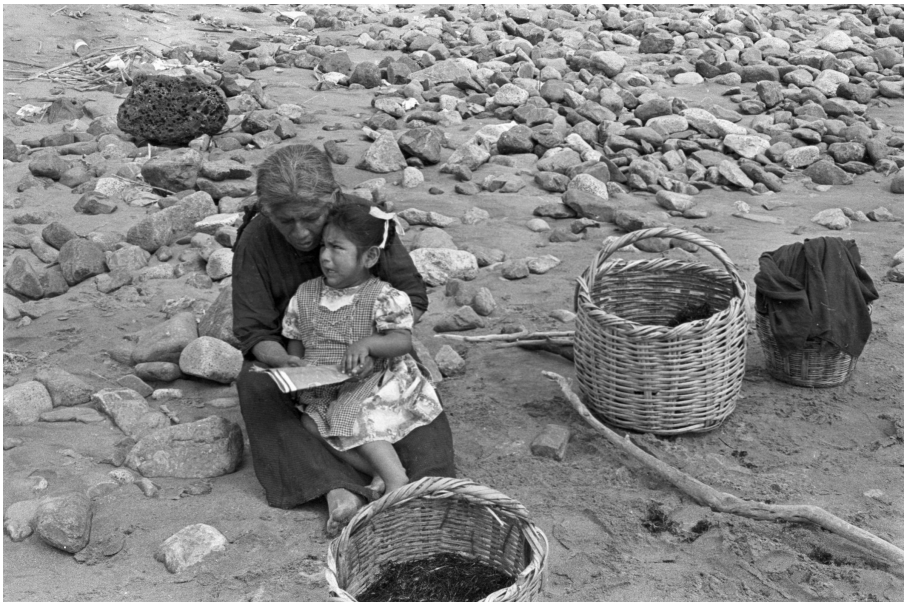

Figure 9. An elderly woman from Huanchaco is babysitting her granddaughter while the child's mother is possibly gathering seaweed in a nearby location Photograph by Leo Levy, August 1964.

Figure 10. A fisherman using his cabán *to catch mole crab to be used later as bait. Huanchaco beach. Photograph by Gabriel Prieto, January 2016.*

Figure 11. A fisherman from Santa Rosa beach, Lambayeque Region, holding a cafan*, a northern version of the Huanchaco* caban*. Photograph by Gabriel Prieto, August 2009.*

Figure 12. A man and a boy exploring the reef cliffs south of Puerto Eten, Lambayeque Region. Photograph by Gabriel Prieto, August 2009.

Figure 13. Two mariscadores *from the Huarmey littoral collecting mollusks* a la antigua*: nude except for a hat and a small net bag, locally known as a* kaito*.*
Photo courtesy of the late Luis Miranda@luismirandafotografia.

Figure 14. (A) Drone view of the Enseco" or Empedrado *shellfishing ground near Huanchaco. It is possible that this unusual concentration of stones is an artificial structure built in prehispanic times. Photograph by Gabriel Prieto, February 2023. (B) Illustration of Huanchaco harbor made by a French artist in 1789 and reproduced by Mariano Paz Soldan in his famous* Atlas del Perú. *Note the location of an earthen structure with wooden poles, possibly a dock entering into the sea. Is it possible that the high concentration of stones and its distributional pattern in photo 14-A is the remains of this construction?*

Figure 15. Calas, *or thatched areas, that serve to dry reed boats, store crab traps, fish nets, and the surplus of the day for later trading in the marketplace.*
Black and white photograph by Leo Levy, July 1964.
Color photograph by Gabriel Prieto, January 2016.

Figure 16. Location of the principal shellfishing spots along the coast of Huanchaco.

Figure 17. Shells of chanque (Concholepas concholepas) *abandoned by shell gatherers on the littoral of the Huarmey Valley after removing the meat.*
Note the purple ink produced by the mollusk. Photograph by Gabriel Prieto, July 2009.

Figure 18. Above: two gatherers returning from collecting seaweed in Huanchaco. Photograph by Leo Levy, June 1964.
Below: modern shellfish gatherers from Huanchaco in the process of collecting seaweed. Photograph by Gabriel Prieto, April 2006.

Figure 19. A basket full of mococho*, gathered in Huanchaco by local women, Huanchaco beach. Photograph by Gabriel Prieto, April 2006.*

Figure 20. Gastropods gathered in Huanchaco (Stramonita chocolata). *Photograph by Gabriel Prieto, June 2008.*

*Figure 21. Clams (*Semele *sp.) sold in the Trujillo* Mayorista *(wholesale) marketplace and said to have been collected in Pacasmayo, Jequetepeque Valley.*
Photograph by Gabriel Prieto, January 2009.

Figure 22. Concentration of surf clams or marucha *(*Donax *sp.), gathered at the Huanchaco beach.*
Photograph by Gabriel Prieto, summer 2008.

Figure 23. Specimens of Tegula atra *found at Gramalote. This is a gastropod that was frequently consumed by prehispanic Huanchaco populations, but it is not as popular today. Photograph by Gabriel Prieto.*

Figure 24. Limpets (Fissurella *sp.) collected from the Huanchaco pier. These specimens were gathered by the author of this article in January 2012.*

Figure 25. A reed boat landing at the beach. Two boys help by pulling the boat out of the water. Note the sacas *(crab traps) and the* cal-cal *(net bag) full of crabs at the back of the boat. Photograph by Leo Levy, Huanchaco, June 1964.*

Figure 26. Two modern crab traps ready to catch crabs offshore, Huanchaco beach. Photograph by Gabriel Prieto,September 2005.

Figure 27. Fisherman at Huanchaco tightening his crab traps for a fishing expedition. Photograph by Leo Levy, June 1964.

Figure 28. Fishermen at Huanchaco beach selecting purple crabs after landing the catch of the day, September 2006. Photograph by Gabriel Prieto, September 2006.

Figure 29. Cangrejo reventado, a traditional stew prepared in Huanchaco based on purple crab. Photograph by Gabriel Prieto, June, 2014.

Figure 30. Woman dressed in the typical clothing and hat of the highlands of La Libertad gathering seaweed or mococho *on the Huanchaco beach. Photograph by Gabriel Prieto, December 2007.*

Figure 31. Top: children selling starfish collected in Huanchaco. Photograph by Gabriel Prieto, October 2007. Bottom: Starfish in its natural habitat, Tuquillo beach, Huarmey littoral. Photograph by Gabriel Prieto, July 2009.

Figure 32. Mole crab locally known as muy-muy *and* capusa*, collected by a fisherman in Huanchaco to be used as bait to catch fish. Photograph by Gabriel Prieto, May 2008.*

Figure 33. A complete mole crab recovered at Gramalote, Huanchaco. This specimen was found in an archaeological occupation dating to 2400 cal. B.P. Photograph by Gabriel Prieto.

Figure 34. A fisherman at the fishing town of Puémape holding a gancho *(hook) or* arpon *(harpoon) with a recently captured octopus. Photograph by Gabriel Prieto, August 2008.*

Figure 35. Lobsters captured in Huanchaco. Photograph by Gabriel Prieto, austral summer, 2016.