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Fish consumption at the ancient market of Monterrey (18th-19th centuries), México, based on archaeological remains

ANA FABIOLA GUZMÁN[1,2], MIRIAM ESPINO[1] Y ARACELI RIVERA ESTRADA[3]

[1]Subdirección de Laboratorios y Apoyo Académico, Instituto Nacional de Antropología e Historia. Moneda 16, col. Centro, México 06060, D. F., México.

[2]Departamento de Zoología, Escuela Nacional de Ciencias Biológicas, Instituto Politécnico Nacional. Prolongación de Carpio y Plan de Ayala, México 11340, D. F., México.

[3]Centro INAH Nuevo León. Rafael J. Verger s/n, Col. Obispado, Monterrey 64010, Nuevo León, México.

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RESUMEN: Durante los trabajos de remozamiento del actual Museo Metropolitano de Monterrey, se rescataron diversos restos de fauna del antiguo mercado de la ciudad de Monterrey, entre ellos material de peces. Poco se sabe del antiguo consumo de peces en el noreste de México y estos materiales brindan la oportunidad de explorar ese aspecto. Se analizó un total de 1204 restos de peces, de los cuales el 27% fue identificado y representa a 8 taxa de peces dulceacuícolas (bagres y mojarras) y marinos/estuarinos (robalos, jureles, pargos y corvinas). Predominan los materiales de origen marino, particularmente de las corvinas (*Sciaenops ocellata:* 65 % de los restos identificados y el 35 % de los individuos). La tercera parte de las especies y de los individuos son bagres dulceacuícolas. Monterrey está ubicado en la cuenca del Río Bravo, a 300 km de distancia del Golfo de México, por lo que la presencia de ambos componentes pesqueros indica la existencia tanto de un comercio semilocal (ríos) como de uno a distancia (costera). La representatividad de las regiones corporales sugiere que los peces dulceacuícolas se transportaban completos, y posiblemente sea el mismo caso en los peces marinos.

PALABRAS CLAVE: MONTERREY, MÉXICO, PECES DULCEACUÍCOLAS, PECES MARINOS, HUESO, COMERCIO

ABSTRACT: During renovation works in 2008 at the Metropolitan Museum of Monterrey, faunal remains from the ancient market of Monterrey city, including fish, were collected. Little is known on the consumption of fishes in northeastern México during former times thus this material offered an opportunity to explore the issue. A total of 1,204 fish remains were studied, of which 27% were identifiable. These represent eight taxa of freshwater (i.e. catfishes and mojarras) and marine/estuarine fishes including the snook, crevalle jack, snapper, and red drum. Marine taxa, in particular red drum (*Sciaenops ocellata:* 65% of the identifiable remains and 35 % of the individuals) dominated the sample and fully one third of the specimens and taxa were freshwater catfishes. Monterrey City is located in the Rio Grande basin and lies 300 km away from the Gulf of Mexico. For such reason, the presence of these two fish groups revealed the coexistence of semi-local (fluvial) and long-distance (coastal) trade. The representation of body-fish parts suggests that freshwater fishes were transported whole and it is possible that the same applied in the case of those of marine origin.

KEYWORDS: MONTERREY, MÉXICO, FRESHWATER FISH, MARINE FISH, BONE, COMMERCE

INTRODUCTION

Lately, particular attention has been paid in México to interventions that will affect historic sites, due to the opportunity to recover valuable archaeological materials. One of these occasions were the renovation works carried out in 2008 in the current Metropolitan Museum of Monterrey, and led to the discovery of architectural elements of the ancient market and City Hall, as well as faunal remains and other types of cultural material.

Monterrey (27.67° N, 100.31° W) is the capital of Nuevo León State, and is the third city in importance in México after México City and Guadalajara. Monterrey is located approximately 150 km south of the Rio Bravo o Río Grande, the U. S. natural border, and is separated from the coast for nearly 300 km of plain (Figure 1); it is in a semi-arid area nourished by several springs, crossed by the seasonal Santa Catarina River and 30 km away from the Pesquería River, both tributaries to the Rio Bravo; it is also surrounded by mountains, which allow access to various forestry resources.

History of the government house and adjoining stores

Monterrey was finally founded in AD 1596 by 12 Spanish families. It was planned as the capital of the New Kingdom of León, and required a place to set the royal house of government, jail included, building known in Spanish as "Casas Reales", locating it by AD 1626 in the land now occupied by the Metropolitan Museum of Monterrey (Mota y Escobar, 1940; Cavazos Garza, 1980).

The government building had different destruction and rebuilding periods, driven by flood events that seasonally hit the region. The final construction began in AD 1831 and had several extensions completed all in AD 1887. After the independence of Mexico from Spain, the building housed government offices, tribunals, and more recently, museums (Tovar Esquivel & Santa Cruz Vargas, 2009).

Prior to AD 1655, several independent rooms adjoining the north wall of Casas Reales functioned as stores, and whose rent paid religious services. These rooms were purchased in AD 1824 by the council to expand the government house, by then known as Town Hall and later as City Hall. At about AD 1826, at least one of the ground-floor rooms was used as a kitchen or fonda, and in the next western block, there was a square where edible products such as meat were sold and the whole area was rather unhealthy. The rooms survived until AD 1851, when they were added to the City Hall structure, but the new areas kept their function as fondas and groceries until AD 1936, when the market was taken out of this building (Tovar Esquivel & Santa Cruz Vargas, 2009).

Recent archaeological findings

The 2008 excavations were carried out on the patio and corridors of the ground floor, using a 2x2 m-grid and following stratigraphic levels (Rivera Estrada, 2009). The excavation in the northern side also allowed access to the area of the former food stores.

Explored contexts included hearths, walls, and a block of stone grooved suggesting it was used to slaughter and bleed out animals. Among the recovered materials were lithic artifacts, tiles, mosaics, led plates, metal ornaments, fragments of pottery, glass beads, wood, charcoal and bone artifacts.

Faunal remains belong mostly to European domestic species (such as goat, sheep, cow and chicken): some had cut marks (Cruz, 2008), while others were found inside pots and likely were used for broth (Rivera Estrada, 2009). Elements belonging to rodents and other micromammals were found, and also and unexpectedly, fish remains.

The set of materials was consistent with other findings from dumps of the Colonial period, located in old houses and convents from the sixteenth to the eighteenth centuries in the City of Mexico (*e.g.* Guzmán & Polaco, 2003; Jiménez Badillo, 2003; Valentín Maldonado, 2003). At first glance, it was thought that those materials were from Colonial times (Rivera Estrada, 2009), maybe from the eighteenth century, but the radiocarbon dates reveal that part of the deposit could be even more modern, from the nineteenth to the twentieth centuries (AD 1800-1950).

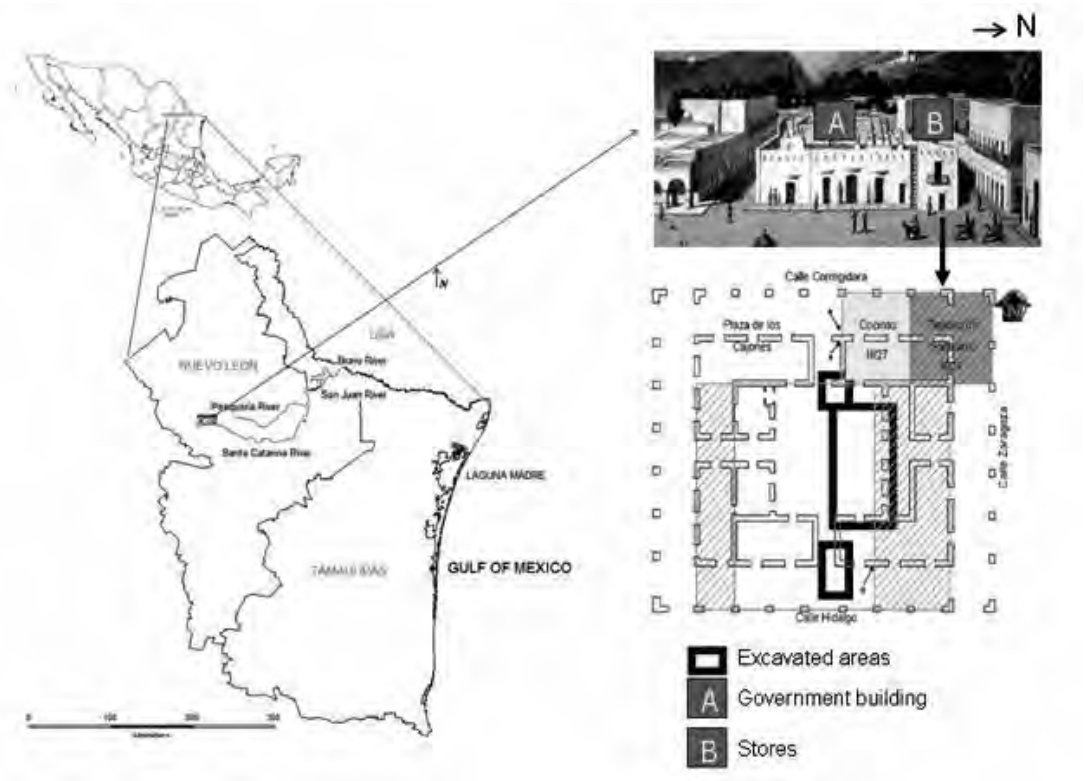

FIGURE 1

Location of the city of Monterrey, Nuevo León, in northern México. Painting taken from Tovar Esquivel & Santa Cruz Vargas (2009). Building plan modified from Tovar Esquivel & Santa Cruz Vargas (2009).

MATERIALS AND METHODS

The study of more than one thousand fish remains, separated from the other faunal elements, followed up the conventional rules relevant to these materials (e.g. Liseau von Lettow-Vorbeck, 1998; Guzmán & Polaco, 2000 and references included there; Reitz & Wing, 2000): (1) cleaning, consolidation and, when necessary, restoration; (2) taxonomic and anatomic classification based on visual examination and verification of preliminary and trouble identifications using specialized literature and the osteological collection of Laboratorio de Arqueozoología "M. en C. Ticul Álvarez Solórzano"; (3) quantification of remains (NISP) and individuals (MNI), this last calculated in two ways: MNI_1, based only on anatomical and size criteria, and MNI_2, adding the stratigraphic information; (4) microscopical inspection to analyze and classify taphonomic marks and, (5) analysis of the spatial and vertical distribution of the remains within the site.

RESULTS

Fish resources and their relative importance

One-third of the remains (27.4%) could be taxonomically identifiable, the other part includes elements anatomically identified (but not taxonomically: 44.0%) and non-identifiable in either way (28.6%).

There were eight taxa of bony fish, although only three of them could be identified to species level and happened to be the first evidence of its consumption in the past (Table 1: *Pylodictis olivaris, Sciaenops ocellata,* and "*Cichlasoma*" cf. "*C.*" *cyanoguttatum*); the assemblage comprise two ecological types: marine and freshwater fishes.

Freshwater forms are represented by two types of catfish and one mojarra, with 15 individuals (or 29 when separated by unit and level of excavation), being catfishes more numerous than mojar-

ras (Table 1: 6% remains and 30-31% individuals vs. 0.2% remains and 2-3% individuals). One type of catfish corresponds to genus *Ictalurus*, of which three species are naturally distributed in Nuevo León (Contreras-Balderas *et al*., 1995): *I. furcatus*, *I. lupus* and *I. punctatus*. The other catfish is named piltonte or piltontle (*Pylodictis olivaris*). These species of catfish are distributed in north-northeast of Mexico and are associated to the rivers that drain into the northern Gulf of Mexico, and except for *Ictalurus lupus*, which is a small size catfish (Page & Burr, 1991: 48 cm total length (TL)), adults of the other three species reach over one meter in length and even get a little larger than 1.5 m TL (Page & Burr, 1991; Miller *et al*., 2005).

As for the mojarra, the species *"Cichlasoma" cyanoguttatum* is widely distributed in the rivers of Nuevo León (Contreras-Balderas *et al*., 1995), making quite possible that the remains correspond to this form. Other species of cichlids are distributed in nearby basins, especially in the coastal slope of neighboring basins with sea outlets (Miller *et al*., 2005).

In general, identified marine fishes have a wide tolerance to changes in salinity (euryhaline), especially in juvenile and pre-adult stages. To this group belong snooks (*Centropomus* sp.), crevalle jacks (*Caranx hippos*), red drums (*Sciaenops ocellata*), and snappers (*Lutjanus* sp.), and recorded 30 individuals (up to 58), being red drums the most represented one (Table 1: 18% remains and 36-49% individuals vs. 3% remains and 24-31% individuals).

There are six species of snooks recorded on the Mexican Atlantic coast, but only the common snook (*Centropomus undecimalis*) and the chucumite or fat snook (*C. parallelus*) reach northeastern Mexico (Rivas, 1986; Robins & Ray, 1986; Castro-Aguirre *et al*., 1999); the first species reaches 1.4 m TL and its wide tolerance to low salinity levels allows it to travel rivers over long distances from the coast; the chucumites are smaller, just over 60 cm TL and are recorded mainly in coastal areas and lagoons (Chavez, 1963; Rivas, 1986; Robins & Ray, 1986; Hoese & Moore, 1998; Castro-Aguirre *et al*., 1999). The crevalle jack grows up to 1 m TL and is distributed throughout the Gulf of Mexico (Castro-Aguirre *et al*., 1999; Secretaría de Pesca, 1989). The red drum, which reaches up to 1.5 m TL, is probably the sciaenid with the greatest tolerance to extreme salinity levels and which has been found in fluvial environments away from the coast (Castro-Aguirre, Espinosa Pérez, and Schmitter-Soto 1999); fisheries on red drum are more common in the northeastern coast of Mexico, since this species is rather unusually south of Lake Tamiahua (21.63° N, 99.55° W) in northern Veracruz (Hildebrand 1958, pers. obs.). The snappers recorded in northeastern Mexico are *L. campechanus* (which normally does not penetrate estuarine areas), *L. cyanopterus*, *L. synagris* and *L. griseus* (Allen, 1985; Castro-Aguirre *et al*., 1999).

Finally, there were one unidentified catfish remain that could belong to a freshwater species (family Ictaluridae) or a marine one (family Ariidae); both kinds of catfishes are known in this area of México (e. g. Miller *et al*., 2005).

The ecological characteristics and geographic distribution of marine fishes, especially the red drum, suggest that fishing was carried out on the northwestern coast of the Gulf of Mexico, most likely in the extensive hypersaline Laguna Madre, in its associated coastal bar, as well as in the mouth of the Río Bravo (Figure 1). The freshwater taxa indicate also the existence of a semi-local fishery, probably from the already mentioned Pesquería River, or from the San Juan River, 45 km southeast of Monterrey (Figure 1).

These conclusions, based on biological information, are reinforced by the quantity of remains and individuals recorded by environment and species (Figure 2). The most consumed fishes were red drums and catfish. This would mean that freshwater fishing, which was a bit less diverse, had a minor role, but not less important, than coastal fishing.

Handling of the fish resource

The skeletal representativeness shows little quantity of cephalic elements, but not its total absence; trunk, fin and skin remains prevail (Table 1). Cephalic elements are more numerous for catfishes, perhaps because the hardness of their cranial bones allows a better preservation, but could also indicate a major closeness from the fishing area to the place of consumption, situation that would make unnecessary to undergo a process of evisceration, cut up and preservation.

For saltwater fish, evidence of transportation of relatively entire specimens is less, due to the limited number of species identified cranial remains, although among the unidentified remains are many

Identification	NISP	NMI_1	NMI_2	body region																	Total
				Head					Trunk					Fins					Skin		
				Neurocranium	Jaws and suspensorium	Hyoid arch	Branchial skeleton	Opercular series	Ribs	Precaudal vertebrae	Caudal vertebrae	Non classified vertebrae	Pectoral girdle and fin	Pelvic girdle and fin	Dorsal and anal fins	Caudal fins	Rays and spines	Not identified remains	Scales	
Ictalurus sp. (freshwater catfish)[1]	60	12	25		1				4	1	2				1						9
* *Pylodictus olivaris* (freshwater catfish)[1]	9	2	2	4	7	8			5	4	1	2	11		1		17				60
Unidentified Siluriformes (catfish)	1												1								1
Centropomus sp. (snook)[3]	6	4	4							2	2		1				1				6
Caranx hippos (crevalle jack)[3]	3	2	3						1		2										3
Lutjanus sp. (snapper)[4]	32	8	14						12				2	2	13	1	2				32
* *Sciaenops ocellata* (red drum)[3]	216	16	37	1					21	36	33	1	21		32	6	62		3		216
** *Cichlasoma*" cf. "C". cyanoguttatum (mojarra)[2]	3	1	3		1			2													3
Unidentified fish remains	530			34	4	9		9	82	6	10	8	21	7	39	10	166	47	78		530
Unidentifable fish remains	344			33				1	15		1	2	3		10	2	81	14	182		344
TOTAL	1204	45	88	72	13	17	0	12	140	49	51	13	60	9	96	19	329	61	263		1204

* = new records for Mexican archaeological contexts. Ecological classification taken from Castro-Aguirre et al. (1999): 1 = primary freshwater fish, 2 = secondary freshwater fish, 3 = estenohaline marine fish, 4 = estenohaline/eurihaline marine fish

TABLE 1

Taxa list, NISP, MNI, ecological classification, and discarded body parts of fishes from the ancient market Monterrey, Nuevo León, México..

cephalic elements (Table 1). So, it is assumed that, just as it happened in other Pre-hispanic, Colonial and Modern inland archaeological sites of México, marine fish were marketed, as a general rule, without removing their head (e.g. Guzmán, 2002, 2005; Guzmán & Polaco, 2003, 2008; Guzmán *et al*., 2008; Guzmán & Hernández Luna, 2011), a situation which did not restrain the fact that they could had been somehow preserved before its trade (either smoked, salted, dried, etc.).

The presence of burned remains as well as cutmarks (Figure 3), involving different bones of several identified and unidentified taxa, is a further evidence of handling the fishes, that could have been made either by the preservation method or during the cooking phase. Environmental and biological marks were more numerous, though, suggesting remains were, at some point, in a superficial deposit.

Distribution of the remains within the site

Fish remains come from trenches L to P (Figures 1 and 4), which are associated to the courtyard and the northern corridor of the current building. Most remains were concentrated towards the northern half of the patio, particularly in three excavated units (L16, M12 and M15). In accordance with the reconstruction of the limits of the Casas Reales and the stores (Tovar Estrada & Santa Cruz Vargas, 2009), the area of waste would be outside but contiguous to the kitchens, and probably become dispersed into the courtyard of Casas Reales by a process of filling and leveling of the floors (Figure 4).

The stratigraphic distribution of the fish remains within two of the excavation units above mentioned (Figure 5) shows a higher concentration of bones and species from layers III to V. These layers are located at about half a meter deep, suggesting that those are the levels of the original dump.

DISCUSSION AND FINAL COMMENTS

According to the database on archaeoichthyology in Mexico (Polaco & Guzmán, 1997; Guzmán & Polaco, 2005; Guzmán, 2007), this finding is the first record of ancient fish consumption in northern

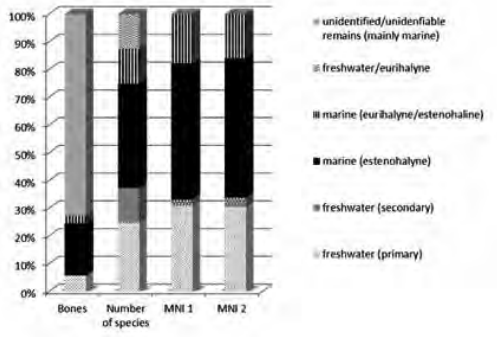

FIGURE 2

Proportion of species, bones and individuals per ecological category of fish.

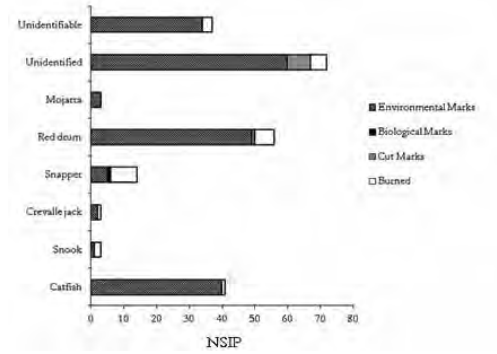

FIGURE 3

Observed taphonomic marks in the fish remains.

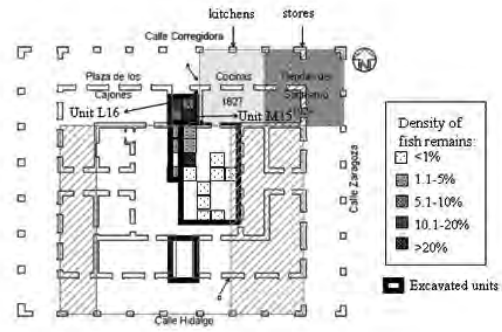

FIGURE 4

Horizontal distribution of fish remains within the ancient kitchen installations (modified from Tovar Esquivel & Santa Cruz Vargas, 2009). Location of units L16 and M15 is marked.

Nuevo León, with three species also first recorded for the country; thus, the continued study of more remains and sites keeps broading the range of species consumed in the past and changing the vision of economic dynamics of ancient Mexican societies. The only other known state record is based in a cleithrum of *Ictalurus*, which was recovered in a native settlement in southern Nuevo León (Álvarez Solórzano & Ocaña Marín, 2000).

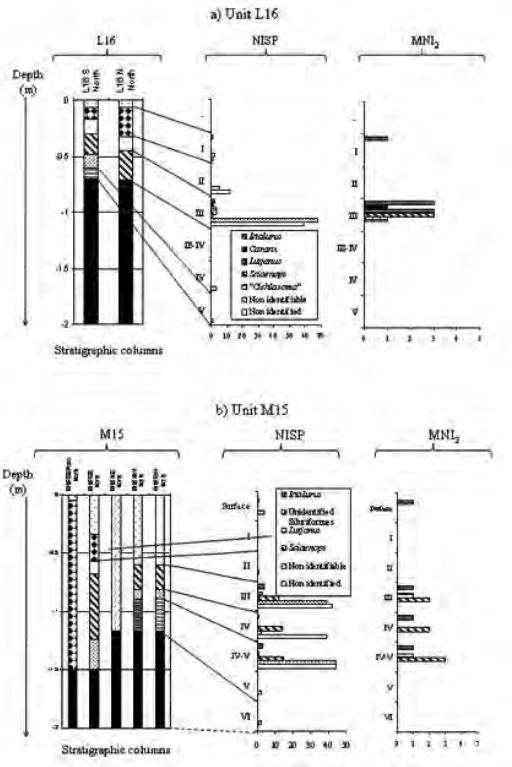

FIGURE 5

Vertical distribution of fish remains in the units with higher concentrations of these bones.

Finding fish remains in Monterrey is somewhat unusual, as economy of northern Mexico, since colonial times to present day, has relied on livestock in such a way that, for example, regional cuisine in Nuevo Leon is based on goat (*Capra aegagrus hircus*).

Unfortunately, the few historical documents for the area do not mention fish consumption among the city dwellers, only referring that it was done by indigenous peoples, many of whom, such as the "Comepescado" or "Fish-eater" people of southern Nuevo León, disappeared or were absorbed almost immediately after the arrival of Spaniards (Orozco y Berra, 1864; Mota y Escobar, 1940). Snook, catfish, mojarra, trout and bream were

among the freshwater fishes known at the beginning of the twentieth century (León & Sánchez de Zamora, 1909), corresponding, respectively, to *Micropterus salmoides* (commonly known in México as lobina), ictalurids, cichlids, *Agonostomus monticula* (also known as tepemichin) and *Aplodinotus grunniens*.

Carrying sea fish to Monterrey should not pose major difficulties, as the 300 km in distance to the coast is made of flat land. Written sources from the eighteenth century failed to mention Monterrey as a trade destination city for the products from traditional fishing grounds (*e.g.* Ximénez, 1967). No fish was mentioned by early twentieth century chroniclers of Monterrey, who instead described live chickens and goats in the marketplace waiting to be slaughtered (Saldaña, 1943, in Tovar Esquivel & Santa Cruz Vargas, 2009). It is during the mid-twentieth century when it is known that part of the fish catches of the Laguna Madre was sent to Monterrey, specifically crevalle jacks, exporting red drum catches to the Texas market (Hildebrand, 1958).

Although the exact reason for the fish consumption at the Market remains unsolved (regular or sporadic consumption? Holy Week rite?), the archaeological record is once more an essential tool to provide information which would be impossible to ascertain by other means, broading the range of species consumed in the past and changing the vision of economy dynamics of societies.

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