Walking with the Unicorn

Social Organization and Material Culture in Ancient South Asia

Jonathan Mark Kenoyer
Felicitation Volume

Edited by

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Front cover: SEM microphotograph of Indus unicorn seal H95-2491 from Harappa (photograph by J. Mark Kenoyer © Harappa Archaeological Research Project).
Back cover, background: Pot from the Cemetery H Culture levels of Harappa with a hoard of beads and decorative objects (photograph by Toshihiko Kakima © Prof. Hideo Kondo and NHK promotions).
Back cover, box: Jonathan Mark Kenoyer excavating a unicorn seal found at Harappa (© Harappa Archaeological Research Project).

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Fish Symbolism and Fish Remains in Ancient South Asia

William R. Belcher

Food, like other aspects of 'material culture' contains embedded information in it related to cultural participants and their beliefs. Through the examination of the ethnographic and historic symbolism of specific foods, we can gain a greater understanding of the role of food in a larger cultural context, such as its relation to ritual, hierarchical structure as well as subsistence. Food and its preparation can contain symbolic information that reflects different aspects of a given society, including social and ethnic affiliations, religious beliefs, and social relationships between individuals and groups. Within a South Asian context, fish have been, and continue to be, an important symbol that permeates various aspects of a society. With some level of cultural continuity within the region, various contemporary attitudes and beliefs concerning fish are discussed as well as an examination of fish remains and symbolic representations of fish that are found within the Indus Valley Tradition of northwestern India and Pakistan, (*c*. 3000 to 1700 BC).

Keywords: Fish, Symbolism, Indus Valley Civilization, Technology, Subsistence.

While artifacts and architecture are often thought to contain aspects of societal ideology and symbolism (Clarke 2007; Kenoyer 1989, 1995b), food, quite apart from mere sustenance, can carry a large amount of embedded cultural information, including aspects of an individual's or a group's socio-economic status, ethnicity or group identity, and ideology (Betts, *et al.* 2015; O'Day, Van Neer and Ervynck 2004b; Ryan and Crabtree 1995). Additionally, food and its preparation can contain symbolic information that intertwines different aspects of society, such as social and ethnic affiliations, religious beliefs, and social relationships between individuals. In order to examine some of these ideas, this research will focus on a specific geographic area, northwestern South Asia, as well as a specific wild food source, fish, which is plentiful within modern and archaeological sites of the region. The ultimate goal is to understand aspects of symbolism contained in food as demonstrated in modern South Asian cultures as well as aspects of ancient South Asia as demonstrated with faunal and artifactual studies of materials from archaeological sites of the Indus Valley Tradition of northwestern India and Pakistan (Allchin and Allchin 1982; Kenoyer 1991a; Robinson 2015b; Shaffer 1992).

Fish remains from archaeological sites have the capacity to offer a tremendous amount of information on social issues in addition to the more traditional goals of subsistence studies related to procurement strategies and seasonality (Beech 2004; Belcher 1998; Brewer 1987; Wheeler 1989). In some regions of the world, fish have been and continue to be an important symbol that permeates many religious and cognitive traditions (Cope 2004; O'Day 2004a; Ryan and Crabtree 1995; Shepherd 1995; Van Neer 2004). The occurrence of fish as symbols has been particularly important in modern and historic South Asia. This research strategy can be thought of as a series of questions:

1. Are fish important symbols in modern South Asian societies?
2. Did the people of the 3rd millennium BC Indus Valley Tradition eat fish as an important component of their diet?
3. Is there evidence of fishing practices in the material culture of the Indus Valley Tradition?
4. What could constitute fish symbolism in the Indus Valley Tradition that may be interpreted through the pre-Vedic literature (*viz a viz* Parpola 2015).

These questions are related in terms of cascading from more mundane issues of subsistence in modern and ancient societies and going towards the more subjective aspects related to cognitive archaeology and the archaeology of religion (Insoll 2004; Wesler 2012). Concepts of cognitive archaeology that are of interest here relate to understanding symbolism of the past as well as ritual and religion (i.e., Hodder 1998, 2012).

More specifically for the Indus Valley Tradition, Parpola (2015) has recently examined the connection between non-Vedic traditions in Hinduism that may have been associated with Indus Valley traditions, symbolism, and possible rituals. Additionally, Kenoyer (1995b) has examined uses of various symbols and iconography related to the possible legitimation of social order, particularly in the realm of beads and seal iconography.

Fish symbolism in modern South Asia

In contemporary South Asia, fish are an important symbol in various forms of local village religious traditions throughout the Indian subcontinent. While the label 'Hinduism' is used within this text, it is recognized that this is a Western construct lumping together numerous regional religious traditions throughout the Subcontinent region. Hinduism is a

fusion of various traditions with many origins and has no single religious founder. The term 'Hindu' originates from the Arabic term *Al-Hind* which was used to describe a region centered around the Indus River (Wink 2004; Zimmer 1946). Parpola (2015: 3–5) presents an extremely succinct, yet detailed, summary of this history and should be consulted by the interested reader.

Within the Puranic tradition, Matsya is an important avatar of the god Vishnu and is often listed as one of the ten most important avatars. Additionally, Matsya gains importance by saving the first human, Manu, from a great flood. Matsya is often depicted as a gigantic fish or an anthropomorphic fish with the torso of a four-armed man and the tail of a fish (Parpola 1994a: 188). Fish are also considered one of the seven auspicious signs (*Ashtamangala*) common in many religions of South Asia, including Hinduism, Jainism, and Buddhism and can represent fertility and abundance (Parpola 1994a: 189).

Throughout the Subcontinent, cultural and natural environments are classified into a dichotomy of 'hot' and 'cold.' These divisions encompass a universal world view and classify materials such as animals, people, ethnic groups, and food (Belcher 2002; Zimmerman 1987). Fish are generally considered 'hot,' but inhabitants of the Pakistan Makrani coast further divide different fish species into finer gradations of hot as well as neutral categories. For example, predatory fish, like sharks, are considered the 'hottest'. To eat fish during the hot summer months is often said to cause illness, heat rash, and an imbalance in the body (Belcher 1998, 2002; Crooke 1926).

Today in South Asia, fish often are associated with curative powers for animals as well as humans. In the Punjab regions of Pakistan, water that has been used to cook or boil fish is used for the treatment of kidney ailments by homeopathic healers. Otoliths ('ear stones') of marine catfish (Ariidae) are ground into medicine and ingested for the same purpose along coastal areas outside of Karachi. For these coastal Western Baluch peoples, illnesses, such as fever or colds, are cured by consuming various fish, mollusks and crustaceans to help maintain a balance of 'temperatures' within the body (Belcher 1998, 2002).

Fish are seen in connection with fertility, based on its 'heat' as well as its phallic appearance. As heat is also a measure of virility and fertility, eating fish and fish broth is often considered an aphrodisiac and can aid in the treatment of infertility. In Sanskrit literature, both *rohita* (*Labeo rohita*) and the *sakala* (murrel or snakehead, *Ophicephalus* sp.) fish are compared to the labia of the female sexual organ and are associated with the Goddess Durga; these particular fish are often seen as aphrodisiacs (Parpola 1994a:1 94). Fish and certain reptiles, especially the carp *rohita* and the Indian gavial/gharial or crocodile (*Gavialis gangeticus*), are considered important sacrifices for Durga. These and other 'virile' animals represent the decapitated/castrated entity and later resurrected 'fertility demon,' the adversary as well as 'father-son-lover-husband' of the Goddess. Strong drinks (stimulants or hallucinogenic) and fish are important parts of sacrifices to various fertility spirits and serpent gods (Hora 1935, 1948a, 1948b). Parpola (1994b, 2015) summarizes much of the ancient and current ethnographic literature related to fish offerings as well as ancient South Asian texts.

According to later Sanskrit texts (*Jyotisaratnamālā* and *Sākalyasamhit*), the asterism (star sign) of *Rohin* is the red giant star Aldebaran. *Rohinī,* the consort of the moon god and is revered by women because she is always found near her husband, the moon, and is a symbol of faithfulness. The *sakala* fish is the symbol of *Rohinī*. In the Buddhist Jākata literature, *rohita* (*Labeo rohita*) is considered a royal fish that is prepared in order for the queen to conceive a son who will become the universal ruler (Hora 1952, 1955a, 1955b; Parpola 1994a, 1994c). In Tantric Buddhist texts, *sakala* and *rohu* (*Ophicephalus* sp. and *Labeo rohita*, respectively) are considered the two most auspicious fish that can be offered to the Goddess and comprise one of the five essential components of the circle of worship (Hora 1955a, 1955b).

Even today, fish are considered an important part of modern wedding ceremonies, as illustrated by Bengali ceremonies (Parpola 1994a: 191). In general, the red mark placed on the forehead of married Hindu women depicts the star *Rohin* and, like *Rohin,* the red mark represents marital fidelity and plays a central role in Indian marriage ceremonies, as indicated earlier. The large scales of the *rohita or rohu* fish often exhibit a reddish dot in the center and are used to mark the forehead during wedding ceremonies, while the cinnabar used to make the red marks is kept in fish-shaped containers (Parpola 1994a: 190).

Fish remains of the Indus Valley Tradition

Archaeologically, fish are an important component of faunal remains recovered from many South Asian and Arabian Sea sites (Beech 2004; Belcher 1998; Besenval and Desse 1995; Meunier 1994). However, it must be noted that there are many taphonomic issues involved in fish species and skeletal element representation in the archaeological record, their recovery and excavation, as well as identification (Belcher 1998; Butler 1990, 1994). These taphonomic issues include differential preservation based on bone density, screening and flotation protocols for archaeo-sediments, and the skill of the analyst in identifying a wide variety of skeletal elements and fish types.

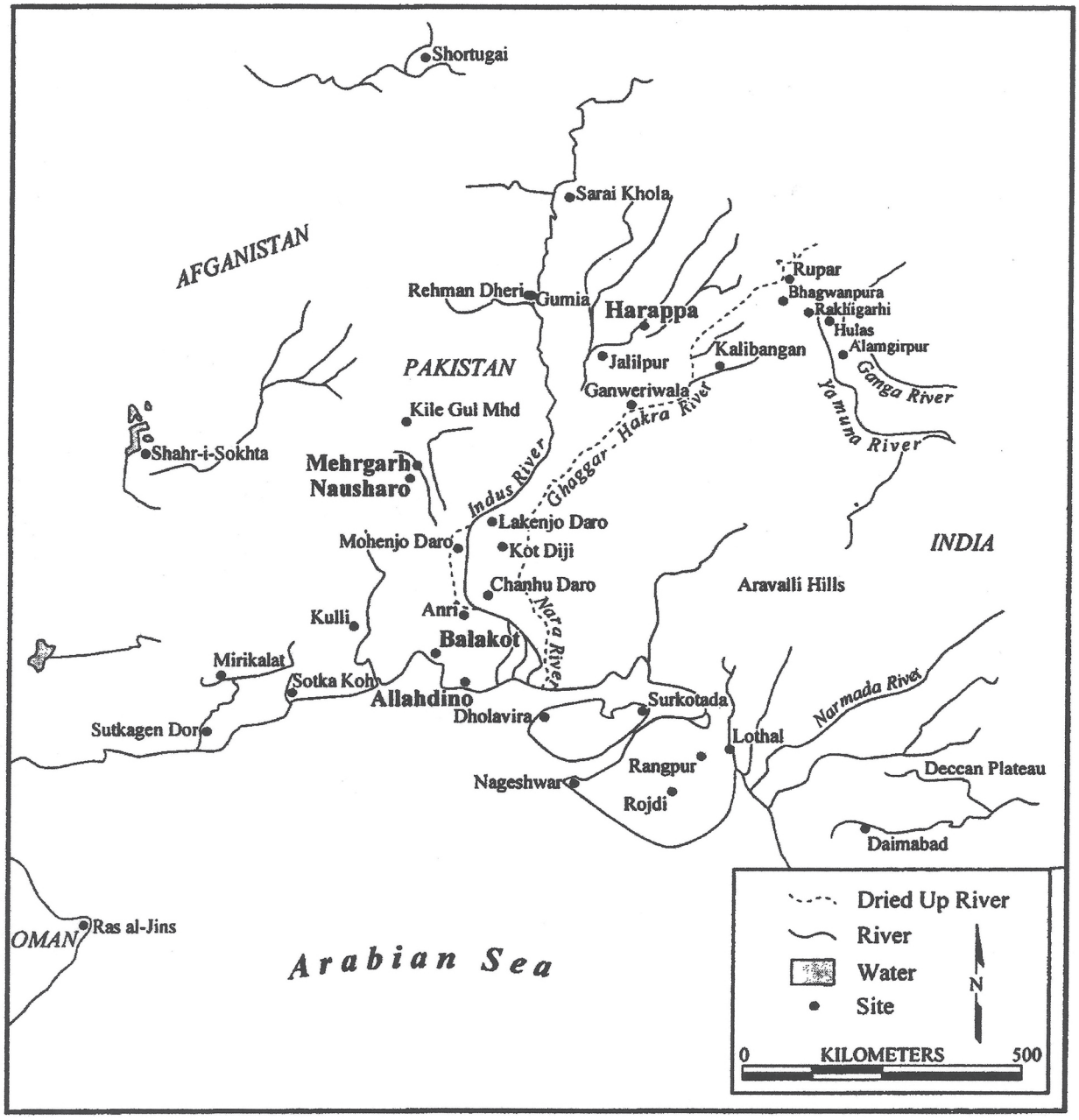

Figure 1. Location of Important Archaeological Sites of the Indus Valley Tradition.

The Indus Valley Tradition

The Indus Valley or Harappan Civilization has a long history of investigation (Kenoyer 1991a; Kenoyer and Meadow 2016; Possehl 1990; Shaffer 1992; Shinde 2016; Wright 2009) that began intensively during the early part of last century. It has been recognized as the earliest urban civilization of South Asia, contemporaneous with civilizations of Mesopotamia and Egypt; most researchers classify the Indus Valley civilization as a state-level society (Dales 1986; Jacobson 1986; Kenoyer 1991a, 1991b, 1995a). While chronological systems have been offered, they are obfuscated with a variety of terms describing similar spatio-temporal events, such as Early Harappan, Pre-Harappan, Mature Harappan, Urban phase of the Harappan Period, etc. (J.-F. Jarrige 1980; Mughal 1990). Shaffer (1992) provides a general, over-arching construct that organizes the temporal and artifactual materials of the Greater Indus Valley and areas to the west (Table 1 summarizes the chronology for the sites discussed below). Shaffer's chronology is based partially on concepts developed in North American archaeology by Willey and Phillips (1958) and integrates aspects of chronology, spatial

distribution, cultural interaction, and culture change in a comprehensive system.

Table 1. General Chronology of the Indus Valley Tradition (after Kenoyer 1991a; Shaffer 1992).

Era	Phases	General dates
Localization	Punjab Jhukar Rangpur	1900 to 1300 BC
Integration	Harappan	2600 to 1900 BC
Regionalization	Balakot Amri Hakra Kot Diji Ravi	c. 5000 to 2600 BC
Early Food Producing	Mehrgarh	c. 6500 to 5000 BC

Archaeological fish remains

The analysis of fish remains from five archaeological sites of the Indus Valley Tradition offer a unique opportunity to address issues of subsistence resources, such as procurement, provisioning and distribution patterns, particularly in reference to fisheries and fish butchery (Figure 1). Provisioning is primarily based on a series of social relationships between producers and consumers. These types of relationships, direct or indirect, were reflected in patterns visible in the archaeological record in terms of fish size, species diversity, element representation and butchery patterns. By reconstructing these relationships using the ethnographic and ethnoarchaeological models, it was possible to reconstruct various social relationships between rural villages and urban centers. Primarily, the archaeological samples span a time period from the Food Producing Era (*c.* 6500-5000 BC) through the end of the Integration Era (2600-1900 BC) of the Indus Valley Tradition. It was possible to examine changes and shifts in these rural and urban relationships as villages either became incorporated into larger economic systems or grew into urban centers themselves.

Mehrgarh and Nausharo

Mehrgarh is located in the Kachi Plains of Baluchistan at the base of the Bolan Pass, near the modern village of Dadhar in the Kachi District (Figure 1). The site itself spans an area of 250 ha, over which occupation shifted horizontally for almost 5000 years, between *c.* 7000 to 2500 years ago. Seven areas of occupation, designated MR.1 through MR.7, were investigated either through surface survey or excavations (J.-F. Jarrige 1974-1986, 1980, 1993). Nausharo consists of two major mounds: the northern mound rises 9.35 m above the modern plain and is circular, while the southern mound is ovoid with an east-west orientation and rises over 5m above the plain. Architecture includes well-preserved room blocks as well as kiln structures. The site provides a continuous cultural sequence that links the early deposits of Mehrgarh (Food Producing Era) with the Integration Era of the Indus Valley Tradition (C. Jarrige 1994; J.-F. Jarrige 1987, 1989, 1990).

The fish remains from both Mehrgarh and Nausharo represent a sub-assemblage of freshwater fishes, dominated by silurid catfish (*Wallago attu* and *Aorichthys* sp.) followed by bagrid catfishes (*Rita rita*), and various carp (cf. *Labeo* sp.) (Table 2). This is not unexpected due to the close proximity of the sites to the Bolan River, the probable exploitation area for the prehistoric occupants. Mehrgarh and Nausharo represent an exploitation pattern that initially shifted from a mixed domestic plant and wild fish and game economy to one that was dominated by domesticated plants and animals. Fish remains were found in stratigraphic deposits that spanned this period of increasing dependence on domesticated animals. Fishing continued as a specialized activity, while hunting of wild game diminished in overall importance. Additionally, Nausharo appears to represent a village that became incorporated into the larger economic and world system during the Integration Era of the Indus Valley Tradition (*c.* 2600-1900 BC).

Harappa

Harappa is located in the District Sahiwal, Punjab Province (Figure 1). It is a large urban center composed of at least five major mounds and lies near a dry channel of the Ravi River in the alluvial plain of the Greater Indus Valley along the Ravi River. Harappa represented a settlement that began as a small village during the Regionalization Era and expanded into a regional urban center during the Integration Era. The site encompasses approximately 150ha of surface area with some archaeological deposits extending up to 17m above the alluvial plain (Dales 1989, 1990, 1992; Kenoyer 1991b; Meadow 1994, 1997).

While this discussion does not present the entire fish remains sub-assemblage that has been analyzed to date, a total of 16,495 bone fragments was identified that comprised 7327 minimum skeletal elements (MNE) (see Table 2) from materials associated with the 1986 through 1990 excavations. Six freshwater fish families are represented in the sample, along with five marine or brackish water fish families. Dominant species include varieties of carp, including *Labeo* sp. and *Labeo rohita*, and three families of catfish, including silurid catfish (*Wallago attu* and *Aorichthys* sp.), bagrid catfish (*Rita rita*), and sisorid catfish (*Bagarius bagarius*). Other important fishes include spiny eels (Mastacembelidae),

Table 2. Fish remains representation (based on MNE) for the interior, riverine sites of Harappa, Mehrgarh, and Nausharo (Total Sample Analyzed; Belcher 1998).

	Harappa		Mehrgarh		Nausharo	
Fish Family	**MNE**	**% of Site Total**	**MNE**	**% of Site Total**	**MNE**	**% of Site Total**
Unidentifiable Unidentified	320	4.4	11	7.0	4	8.3
Cyprinidae						
Cyprinidae	435	5.9	1	0.6	2	4.2
Cirrhina sp.	40	0.6	12	7.7	0	0
Labeo sp.	493	6.7	31	20.1	11	22.9
Labeo rohita	1119	15.3	15	9.6	2	4.2
Puntius sp.	17	0.2	0	0	0	0
Catla catla	272	3.7	0	0	0	0
Barbus sp.	2	0.02	0	0	0	0
Siluridae						
Siluridae	219	3.0	5	3.2	0	0
Wallago attu	3116	42.5	41	26.5	14	29.2
Aorichthys sp.	7	0.09	1	0.6	4	8.3
Aorichthys aor	231	3.2	8	5.2	1	2.1
Aorichthys seenghala	3	0.04	2	1.3	0	0
Clupisoma sp.	1	0.01	0	0	0	0
Bagridae						
Rita rita	421	5.7	28	18.1	10	20.8
Serranidae						
Bagarius bagarius	67	0.9	0	0	0	0
Ophicephalidae						
Ophicephalus sp.	221	3.0	0	0	0	0
Mastacembalidae						
Mastacembelus	25	0.3	0	0	0	0
Notoperidae						
Notopterus sp.	304	4.2	0	0	0	0
Clupeidae						
Hilsa ilisha	1	0.01	0	0	0	0
Marine Fishes						
Pomadasys hasta	1	0.01	0	0	0	0
Ariidae	2	0.02	0	0	0	0
Carangidae	3	0.03	0	0	0	0
Epinephalus sp.	2	0.02	0	0	0	0
Scomberoides commersonianus	1	0.01	0	0	0	0
Total	**7327**	**99.59**	**155**	**99.9**	**48**	**99.8**

snakeheads (Ophicephalidae), Indian shad (Clupeidae), and knife fishes (Notopteridae). Most of these fish were available from the local, riverine environment.

However, bagrid and sisorid catfishes are present in the region only during the winter months, based on modern fishing lore of the local Punjabi fisher folk. As the water warms, these fish migrate to the more montane areas of the Punjab. All of these fish can grow in excess of one meter, with some of the silurid and sisorid catfish approaching three meters or longer and provide a significant source of animal protein.

Marine species include grunters (Haemulidae), tunas/mackerels (Scombridae), marine catfish (Ariidae), and jacks/trevallies (Carangidae). Although these remains do not constitute a large portion of the sub-assemblage (a total of 1.1% based on Number Of Identified Specimens, NISP), they are significant as they represent resources that are not locally available and may have arrived through some form of regional foodstuff trade within the Indus Valley Tradition's world system (Hall and Chase-Dunn 1993; Kardulias and Hall 2008; Kenoyer 2012). The coastline where these marine fish could have been procured is over 850km from Harappa; thus, it is thought these remains represent dried and/or salted fish trade.

Balakot

Balakot lies in the Las Bela District of Baluchistan, about 90km north-northwest of Karachi (Figure 1). This small site is approximately 180 x 150m in size and encompasses and area of 2.7 ha. The site has a lower area towards the east, referred to as the 'Low Mound' and a higher, steep-sided area to the east, referred to as the 'High Mound.' This higher area stands a maximum of 9.70m above the plain. The site is associated with the Balakot and Harappan phases of the Indus Valley Tradition (Dales 1974, 1979a, 1979b, 1981).

A total of 7278 skeletal elements (and a single dermal scale) currently have been identified at Balakot from a total of 10,211 bone fragments. One of the most abundant skeletal elements (n = 2070) is the neurocranium of the haemulid, *Pomadasys hasta (cf. argenteus*) or the silver grunter (see Table 3). The neurocrania of this haemulid exhibits severe hyperostosis, a swelling and fusion of neurocrania tissues (Meadow 1979; Meunier 1994; von den Driesch 1994). Beyond this specific fish, nineteen additional marine fish families are represented and include: grunters (Haemulidae, *Pomadasys hasta/argenteus*), marine catfish (Ariidae, *Arius thalassenis*, *A. maculatus*, *A. dussemieri*, and *A. sona*), jacks or trevallies (Carangidae), and large drums (Sciaenidae, primarily *Protonibea diachanthus*). Other fish that occur in lesser quantities include parrotfish (Scaridae), sea breams (Sparidae), snappers (Lutjanidae), groupers or sea bass (Serranidae), barracudas (Sphyraenidae), hair-tail eels (Trichuridae), sickle fish (Ephippidae), and large mackerels or tunas (Scombridae). Cartilaginous fishes include large and small requiem sharks (Carcharhinidae, represented by a small collection of teeth found together), and large eagle rays (Myliobatidae). Brackish or freshwater fish also are represented and include catfish (Siluridae), spiny eels (Mastacembelidae), and carp (Cyprinidae).

At Balakot, the faunal sub-assemblage spans the time period between the Regionalization and Integration Eras (*c.* 5000 to 2600 BC and *c.* 2600 to 1900 BC, respectively) of the Indus Valley Tradition. The earliest material from the Balakot Phase was limited, although it appears to represent fish remains that were obtained for local use. During the Harappan Phase (*c.* 2600 to 1900 BC), much of this sub-assemblage is represented by cranial elements of the silver grunter (*Pomadasys hasta* cf. *argenteus*). Furthermore, these remains are concentrated into two room complexes, suggesting fishing may have intensified as a commercial endeavor, possible geared towards the production of dried fish for inland trade; it appears that these remains were dumped into these contexts after the structures were abandoned. Based on the hiatus of approximately 200 years between the Balakot and Harappan Phase occupations, it is thought that this site was 'recolonized' during the Harappan Phase in order to procure, process, and produce dried fish for inland or perhaps extra-regional trade in the Arabian Gulf area (Belcher 1998).

Allahdino

Allahdino, also called Nel Bazaar, is located approximately 45km east of Karachi and about 16km west of the Indus River delta (Figure 1) (Fairservis 1982, 1973; Hoffman 1976; Shaffer 1974). Allahdino is a low mound, about 9.5ha in size, that rises about four meters above the surrounding fields. W. A. Fairservis, Jr. (1982) interpreted the small site size and large quantities of 'luxury' trade items to suggest that this site was a form of 'elite' estate.

The Allahdino sub-assemblage consists of 637 bone fragments that comprise 588 minimum number of elements (MNE) (Table 3). All of the excavated materials were associated with the Harappan Phase of the Indus Valley Tradition. Most of the fish remains originated from the 1973 field season, with a few skeletal elements from the subsequent 1974 field season.

Ten fish families were identified along with two major fish groups (see Table 3). Although a much smaller sample, the Allahdino sub-assemblage mimics Balakot's fish remains representation. The most dominant fish are grunters (Haemulidae, *Pomadasys hasta* cf. *argenteus*). Other major taxa include large drums

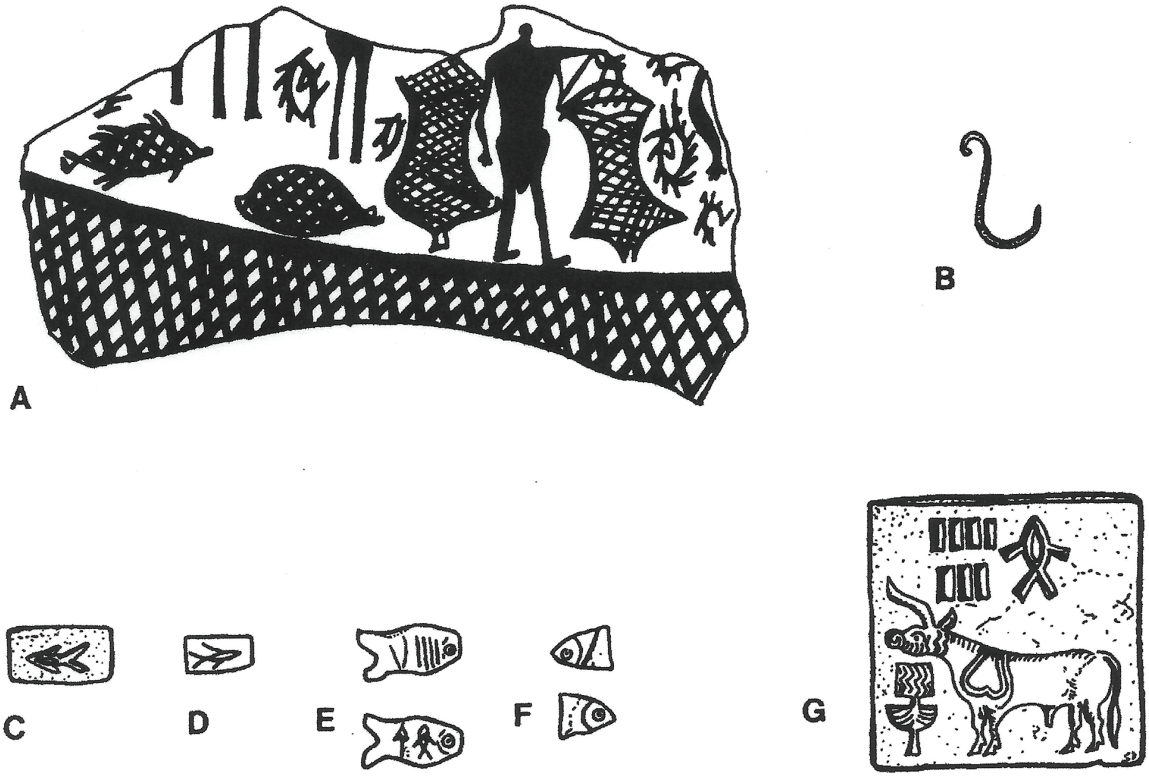

Figure 2. Sherd, Fishhook and tokens from Harappa: (A) sherd from Stratum VI, Mound AB (Vats 1940: pl. LXIX: 16); (B) copper/bronze fishhook from Mound F 'Great Granary area' Eastern Extension (Vats 1940: pl. CXXV: 8); (C) inscribed fish motif on one face of three-sided faience token from Mound F (Vats 1940: pl. XCV: 428); (D) inscribed. fish motif on one face of three-sided steatite token from Mound F (Vats 1940: pI. XCVIII, 590; length 5mm); (E) obverse and reverse of fish-shaped token in steatite from Mound F (Vats 1940: PI. XCV,428; length 15.2mm); (F) obverse and reverse of head of fish-shaped token in steatite from unknown provenience (Vats 1940: pl. XCVII: 560); (G) 'unicorn' seal of steatite with fish sign from Mound F (Vats 1940: pl. LXXXIV: a). All redrawn from Vats (1940) by J. M. Kenoyer (from Belcher 1991: 118).

(Sciaenidae, *Protonibea diachanthus*), and several species of large marine catfish (Ariidae, *Arius maculatus*, *A. thalassenis*, and *A. dussemieri*). Forty-six bone fragments from the family Carangidae were identified, including the large trevally, *Scombroides commersonianus*, a fast-moving predator. Vertebrae are present from Condrichthyes (cartilaginous fishes), such as skates and rays (batiformes, particularly Myliobatidae, the eagle ray) as well as vertebrae and teeth from requiem sharks (Carcharhinidae), particularly *Carcharhinus leucas*.

Summary

Fish were certainly an important part of the subsistence economy of the Indus Valley Tradition and may have been an integral part of the mercantile economy as well. There are seasonal components related to fish availability, closely tied with the monsoonal cycles, which ethnographically is expressed in different types of ecologically-focused fishing gear. Numerous artifacts and depictions allow us to reconstruct some of the fishing gear that may have been used to exploit these ancient environments.

Fishing artifacts and symbolism

Numerous and diverse depictions of fish as well as fishing gear can be found at sites of the Indus Valley Tradition. These items include artifactual remains of fishing gear as well as painted representations of fishing activities and fish on ceramics, faience fish tokens, and the fish symbol in the undeciphered writing system. These items, when combined with an understanding of modern South Asian culture, perhaps can be interpreted and provide more meaning into the symbolic nature of these animals to the occupants of these ancient villages and urban centers.

Artifactual representation of fish and fishing practices

Correlations between habitat and technology can be used to suggest probable fishing technologies used during the Indus Valley Tradition (Belcher 1994b). However, these inferences can be greatly strengthened by examining the archaeological record for specific artifacts associated with fishing. These artifacts include

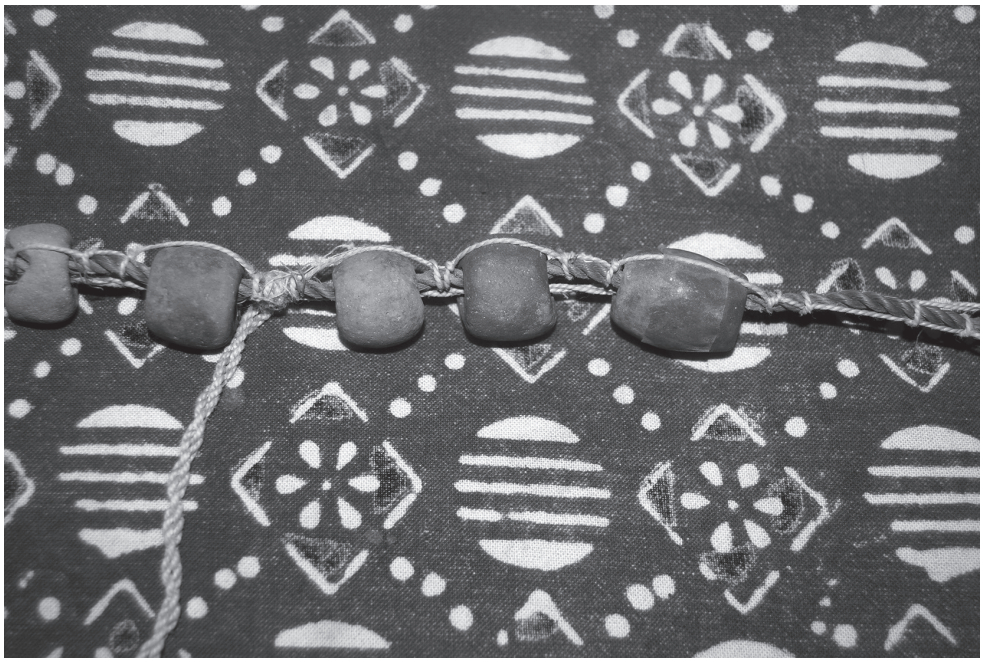

Figure 3. Modern clay net weights as seen on some of the older nets from the Punjab region, Pakistan (photograph by W. R. Belcher).

Table 3. Fish remains representation (based on MNE) for the coastal, marine sites of Balakot and Allahdino.

	Balakot High Mound (Period II only)		Allahdino	
Fish Family	**MNE**	**% of Site Total**	**MNE**	**% of Site Total**
Unidentified	468	7.6	7	1.2
Siluriformes	5	0.08	5	0.9
Ariidae	634	10.4	65	11.5
Carangidae	1010	16.5	46	8.1
Haemulidae	3698	60.4	240	42.4
Lutjanidae	2	0.03	0	0
Muglidae	1	0.02	0	0
Scaridae	1	0.02	0	0
Scianeidae	103	1.7	117	20.7
Scombridae	3	0.05	0	0
Serranidae	17	0.3	3	0.5
Sparidae	101	1.6	71	12.5
Sphyraenidae	7	0.1	0	0
Trichiuridae	7	0.1	0	0
Carcharhinidae	43	0.7	11	1.9
Myliobatidae	15	0.2	1	0.2
Cyprinidae	2	0.03	0	0
Mastacembalidae	1	0.02	0	0
Sepiidae	6	0.01	0	0
Total	**6123**	**99.95**	**566**	**99.9**

copper/bronze fish-hooks, possible terra-cotta net weights, and ceramic motifs depicting fish strategies (Wendrich 1994).

Copper/bronze hooks of varying sizes have been recovered from several Indus Valley Tradition sites: Harappa (Vats 1940), Chanhu-daro (Mackay 1943; Majumdar 1934), and Mohenjo-daro (Mackay 1938; Marshall 1931). These specimens are both barbed and non-barbed types (Figure 2). Many possess a straight shank while others are curved to form an eye for line attachment (Sarkar 1953). The variety of hook sizes suggests that a number of fish species were caught by angling and probably included both catfish and carps. Sarkar (1953) correlated various hook sizes and fish species with larger hooks primarily used for the larger catfish and medium-sized and smaller hooks used for carps. However, it is suggested here that based on the mouth shape of particular carps (i.e., Coutts 1975), only the smaller hooks were used for these fish. While hooks are an important procurement strategy, ethnographically nets are the primary means for procuring large amounts of fish in both riverine and marine settings.

The most definitive artifact reflecting net use (in lieu of finding a preserved net) would be net weights. Modern Punjabi fishermen use hundreds of terra-cotta net weights on large seine nets (Figure 3). These modern weights display a distinctive wear pattern that distinguishes them from terra-cotta 'beads' used for other purposes. This use-wear pattern occurs due

Figure 4. Modern stone net weights as seen on gill and bottom nets of the Buleji region, Pakistan. This specific net is a bottom net used to catch lobsters, primarily during the winter season (photograph by W. R. Belcher).

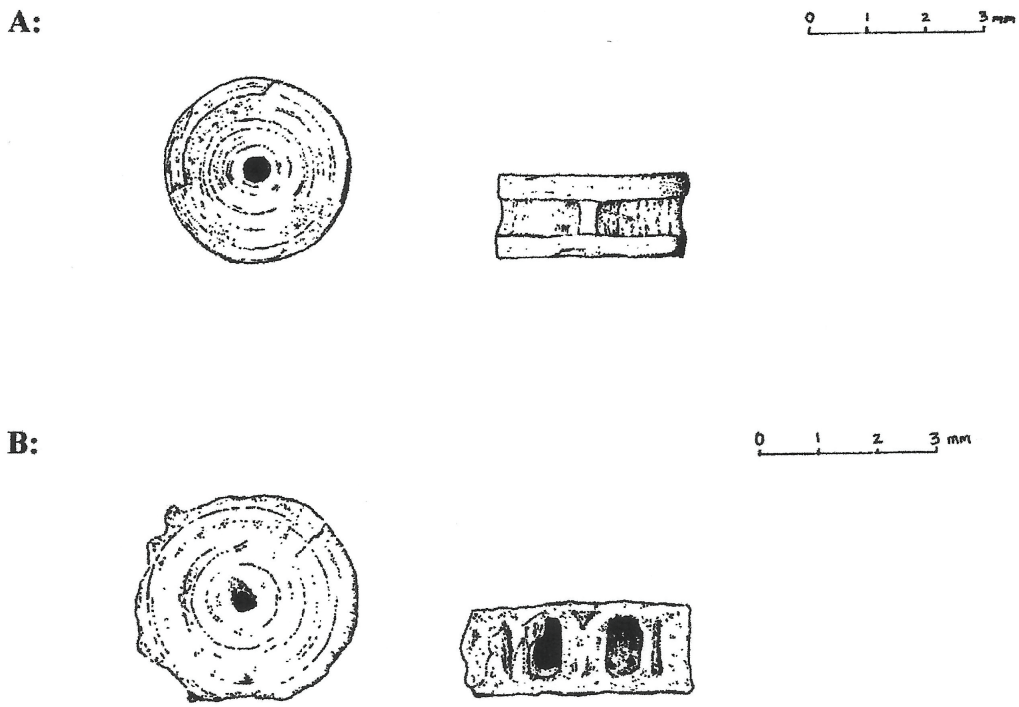

Figure 5. Balakot, Pakistan, c. 2500 BC. Beads manufactured from Chondrichthyes vertebrae (drawings by Michael Beck, from Belcher 1998).

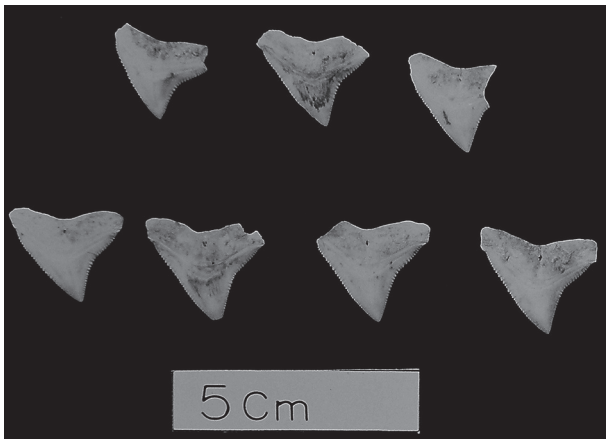

Figure 6. Balakot, Pakistan, c. 2300-2500 BC. Shark teeth (Carcharhinus leucas) (photograph by W. R. Belcher).

to the manner in which the weights are secured to the net. The weights are strung along a relatively thick cord and secured in place by tying two knots on either side of the bead with the string passing over the top of the bead (Belcher 1994a). Uniform wear from the cordage occurs along the bore of the bead, while the string that secures the bead in place, abrades the edge of the bore. In addition, the movement of the net weight across the river bottom eventually produces a battered surface along a limited portion of the bead's exterior. Based on these ethnographic observations, several hundred beads were examined in the storerooms of the Government of Pakistan, Harappa Museum. Many of these exhibited this type of wear and are thought to be indicative of Harappan Phase net fishing (Belcher 1994a).

Additionally, modern Baluch fisher folk use local stones for net weights. Relatively flat and ovoid to round stones are procured, eroding from the conglomerate embankments near the villages in the Buleji region as well as observed in Gaddani to the west. A small hammer is used to create two lateral notches, which is used to tie and secure the stone to the net. While none of these have been observed in the coastal archaeological record (research in relation to fishing has been sporadic along the Makran coast, see Besenval and Desse 1995; Dales 1982), it is an expedient and easy way to manufacture heavy net weights (Figure 3). Beech (2004: 60–64) has examined numerous net sinkers/weights from various prehistoric sites in Oman. These ranged from crudely chipped varieties (very similar to the modern specimens in Figure 4) to rounded and pecked specimens.

Other evidence of fishing strategies can occur as painted motifs on ceramics (Jett 1986). Nearly 50 representations of fish and fishing activities are present from Indus Valley Tradition sites, including Amri, Rehman Dheri, Harappa, Chanhu-daro, Mohenjo-daro, and Lothal. However, the most detailed representations originate from Harappa. One such motif (see Figure 2) depicts at least one individual holding a complex net trap or casting net, surrounded by fish, while another depicts a large net running across a body of water.

Fish remains as ornaments

Several vertebrae of both small and large requiem sharks and large eagle rays (Carcharhinidae and Myliobatidae, respectively) appear to have been drilled through the vertebral body (centrum) to form beads (Figure 5). The drill hole in most has been smoothed from wear, probably from cordage, although they appear to be uni-conical. Beads manufactured from large, particularly dangerous fishes are common in maritime societies throughout the world (e.g., Kirch 1977; Kirch and Dye 1979). Modern fisher folk in Baluchistan classify sharks, particularly requiem sharks as 'hot', a quality that expresses their strength and vigor. All fish are considered hot, with sharks considered by the Baluch as the hottest of all. A person wearing these beads may have done so to exhibit an achieved status representing personal power and vigor, often equated with sexuality as well as prowess in capturing these dangerous predators. Other items that could have been used as ornaments are shark's teeth. At Balakot, a cluster of seven lateral teeth of *Carcharhinus leucas* was recovered from a room complex along the western side of East Lane (Figure 6) and may represent some sort of ornamentation of power or status associated with these large, dangerous predators.

Tokens in the shape of fish, while uncommon, are present within the archaeological record (see Figure 2). These tokens were made from both steatite and faience. The shape of fish is present in terms of body shape, eye, and a line representing the opercular or gill cover. Additionally, many of these tokens have short Indus inscriptions, including the fish sign.

The Indus Script

Over the past 30 years, Asko Parpola has written extensively on the symbolism of fish and the interpretation of the various fish signs found in the Indus script (Parpola 1994a, 1994c). A recent overview (Robinson 2015a) of the decipherment of the script, still puts Parpola's ideas as the most plausible out of the multitude of interpretations that exist. Although the fish sign is recognizable as a fish, it is written far too frequently (on average, one in every ten signs is a fish sign) in the texts to mean fish in every case. Parpola (1994a, 1994c) suggests that the fish sign is the homophone for the Dravidian word for 'star' and is connected with an 'astral' presence, denoting divinity. This parallels many of the uses of fish and star throughout the ancient Near East and modern South

Asia. Parpola (1994a:195–197) interprets fish signs followed with number sequences to represent various constellations that have been important in ancient Indian mythology.

Possible fish offerings of the Indus Valley Tradition

In the early 'miniature tablets' from Harappa, plain fish pictograms (no ligatures or 'fins') are closely associated with the 'U' sign, thought to represent a sacrificial vessel. Parpola (1994a: 191) suggests that this association symbolizes the delivery of fish in some of the sacrificial pots. In modern South India, a common offering to the god Murukan is vessels filled with fish. Additionally, the fish sign is often associated with an image of the gavial/gharial (Indian crocodile). As fish are associated with virility, this conjunction of signs could represent fish being offered to a crocodile, which is the vehicle and symbol of the modern Varuna (the god of the waters) and Kama (the god of love and desire) (Parpola 1994a: 191, 2011).

Based on scenes from Harappan amulets and seals, the 'U' sign is often seen being offered to trees. From the earliest written records, trees are the abodes of fertility spirits. In ancient India as well as folk traditions of modern India, 'fish-water' (water with fish or fish parts) was poured at the base of cultivated trees in order to make them grow better and bear fruit. On the Harappan amulets, supplicants are offering these vessels to the so-called 'Proto-Siva' deity depiction (Parpola 1994a: 193–194).

Discussion and conclusions

Fish were an important part of the economic system of the Indus Valley Tradition. The earliest archaeological evidence for fishing occurs during the Neolithic occupation of Mehrgarh and continues through the end of the Integration Era of the Indus Valley Tradition. In fact, fish continue to be an important part of the subsistence regime of modern South Asia, comprising a major portion of the diet in some social and ethnic groups.

Fish may have been an important resource of intra-regional trade throughout the Harappan Interaction System as well as in extra-regional trade throughout the Arabian Gulf area (Belcher 1998; Kenoyer 2012). It was suggested above that Balakot may have been resettled or colonized in order to take advantage of local abundance of silver grunters. These fish were procured and processed in such abundance that they could not have been for local use. Instead, these fish were probably traded in dried/salted form throughout the interior of the region covered by the Indus Valley Tradition.

Two important fish for modern and historic sacrifices are the Ophicephalidae and rohu carp (*Labeo rohita*). Ophicephalidae are an unusual fish in that they have developed rudimentary features in their gills, similar to lung fishes. Ophicephalidae can survive out of water for up to 12 hours. Rohu scale markings may have been connected to the entire ideology surrounding the star Aldebaran. These are some of the most common fishes found in riverine and marine contexts at the sites discussed above. While no specific offering vessels have been found, fish are a relatively common component of the archaeological record and are found in debris associated with a variety of vessel shapes and sizes. Kenoyer (1998) and others (Allchin and Allchin 1982; Robinson 2015b; Wright 2009) have suggested that the lack of monumental religious architecture may be related to the possibility that religious rites and offerings may have taken place in open spaces or within domestic quarters. It may be that the religious offerings of fish may be difficult to discern from household domestic debris.

Use of certain predatory fish (i.e., sharks, etc.) for consumption and ornamentation may represent a transfer of the power and 'heat' of that fish to the wearer. This is a common belief throughout modern South and Southeast Asia related to the power, strength, and virility of fish in general, but certain predatory fish in particular.

As in many other areas of the world, food is not only a way to procure necessary energy for the maintenance of the human body it also has symbolic and cultural components. Procurement, distribution and preparation of food are actions that often define cultural entities and ethnic boundaries. Fish, particularly snakeheads (*Ophicephalus* sp.) and rohu (*Labeo rohita*), are important for their nutritional value as well as for their representation in local religious ideology. These fish may have been offered as sacrifices to various deities that Parpola (1994a) has identified as important for the Indus Valley Tradition. The very act of fishing for, preparing or eating these, and probably other, fish may have held more meaning other than for subsistence alone for the prehistoric peoples of the Baluchistan and Indus Valley Traditions.

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