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On Fish in Manasollasa (c. 1131 AD)

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Abstract

We came across a very interesting description of fishing for royal recreation in the 12th century compendium in Sanskrit titled Abhilashitarthachintamani or Manasollasa and authored by the Western Chalukya King Someshvardeva (1126–1138 AD). The text includes description of 35 kinds of marine and fresh water fishes, each with a distinct name, the feeds provided to few fishes, and the art of angling. The text also includes a brief description of cooking fish. We have made an attempt to identify Latin names of the fishes from the names given by Someshvardeva. Fishes described in the text include sharks, a sawfish, a triggerfish, garfishes, carps, croakers, a spiny eel, catfishes, barbels, murrels, a ray fish, gobies, and snakeheads. Only half a dozen of these were nurtured for the royal game of angling. It is evident that considerable knowledge of fishes was gathered almost 900 years ago, but was ignored in subsequent centuries.

We had earlier published a series of three articles containing the English translation of Sanskrit verses on elephants as described by the Western Chalukya King Someshvardeva (Sadhale and Nene, 2004a; 2004b; 2004c). Someshvardeva or Someshvara III, who ruled from Kalyani (near Bidar in northern Karnataka) between 1126 and 1138 AD, composed Manasollasa or Abhilashitarthachintamani (Shamasastry, 1926) around 1131 AD. The authors had given earlier some details about this compilation (Sadhale and Nene, 2004a; 2004b; 2004c). The Western Chalukya Empire included substantial portions of Andhra Pradesh, Karnataka, and Maharashtra by the time of the rule of Someshvardeva. It would be safe to assume that the languages spoken in his reign must have been Kannada, Marathi, and Telugu. Also knowledge of fishes from the Andhra coast on the east to the Maharashtra and Karnataka coasts on the west must have been available to Someshvardeva. In Manasollasa, Chapter 14 of Section IV deals with royal recreation through fishing and has 52 verses (verses 1381–1432). In addition, there are 13 verses (verses 1524–1536) in Section III, Chapter 13 describing preparations of fish as food.

By the time we had more or less completed the work of identifying Latin names of the fishes that had been given names in Sanskrit in Manasollasa, we came across an excellent paper by Hora (1951), which gives details about Manasollasa, the Sanskrit text related to fish, its translation in English, and also the identification of fishes as well as the art of angling. Hora's paper provided us with an opportunity to confirm his work or express disagreements, especially in the identification of fish species.

Translation of verses 1381–1432
(Manasollasa: Section IV, Chapter 14)
Royal recreation: fishing

Types of fish

1381. And now I describe below the game of fishing which is so dear to the kings. There are several species of fish and it is not possible to count them all.

1382. Still I shall describe those that are relevant to this sport. There are two main categories of fish according as they are born with plain skin or with scales.

1383. Each is further divided into two groups (depending on the size), viz., big and small. *Charmaja* (scaleless) are those that are born with plain skin resembling a tree bark and not having scales.

1384. *Shalkaja* (scaly) is stated to be those that are born with scales or shells as the outer part of their body. Again some are born in sea while others in rivers.

1385, 1386a. Here are some of the names to be remembered; *sora, shringasora, chanvilocha, bala, kantakara,* and *sankuchaka* are scaleless varieties born in sea.

1386b, 1387a. *Kovasaka, khirida, pathina,* and *simhatundaka* are fishes of huge size and are born in rivers.

1387b, 1388a. One is called *patala-picchaka* and has a crest of red color. Yet another is called *dantapatala*. Both are of medium size, born in rivers and belong to the scaleless kinds.

1388b, 1389. *Gagdhara, gojjala, vidruva*, and a fish called *kantharaya* are of a small size born in the rivers. *Pandimana* is a large fish belonging to the scaly kind.

1390, 1391a. *Pallaka* and *tomara* are medium-sized sea fish. *Mahashila*, *kahlava*, *nadaka, vadisha,* and *vatagi* are large river fishes of the scaly type.

1391b, 1392a. *Rohita*, *swarnamina*, and *khandalipa* are powerful, though medium-sized river fishes belonging to the scaly type.

1392b, 1393a. *Marila*, *tumbaya*, and *vanchi* are medium-sized fishes of the scaly type. These three do not eat flour-balls and are meat-eaters.

1393b, 1394. *Kaurattha* swims six to seven *yojanas* (according to one calculation, *yojana* = 4 miles; *krosha* = 9 miles) from a big river adjacent to a mountain or from a sea into a small river, and lives in deep and large lakes.

1395a. This is the place from where they can be caught and not the sea.

1395b, 1396. Large *kovakiya* fish of the scaly type lives in a river in a place full of rocks and devoid of mire. The medium-sized *koraka* and others live deep inside a river at a place full of rocks.

1397, 1398a. *Rohita* and such other fishes live in a sandy place deep inside the river while *pathina* and others along with turtles live in very large lakes, undisturbed by running water and full of mud.

1398b, 1399. *Thogyara*, *tumbaya*, and *vami* live in water reaching up to naval, in the crevices of rocks either at the forepart or rear of the lakes or even in the perilous middle, bends, or islands as they please.

The food

1400. Fishes should be fed ground sesame, lumps of flour, or flour of parched grains, morning and evening.

1401–1402. *Kahlava*, etc. should be fed on balls of the size of *bilva* fruit (Bengal quince; *Aegle marmelos*) made from the roasted flour of chickpea mixed with cooked rice. The flour along with beeswax should be mixed well in water along with ground sesame seeds mixed with cooked rice.

1403. *Rohita* and such other fishes should be fed on roasted flour of *kusumbha* (safflower) mixed with cooked rice and grit of barley meal, shaped into balls of the size of *badari* (*Ziziphus mauritiana*).

1404. *Vadisha* fish should be fed on crushed leaves of *bilva* (Bengal quince) mixed with barley meal, made into balls of the size of mango fruit.

1405. The wise should feed *kovakiyas* by scattering before them balls of the size of *dhatri* (emblic myrobalan; *Emblica officinalis*) fruit made out of the same mixture and on sesame and pieces of raven.

1406. Foul-smelling meat pieces should be given to *pathinas* and it is wise to feed the fish called *simhatundaka* on *dhichakas* (?).

1407. *Marila* should be given crab flesh with effort. The wise should feed turtles or roasted flesh of rats.

1408a. Small fishes should be provided with earthworms or with flesh.

1408b–1410a. At the places from where water is fetched and at the banks of ponds, arrangements should be made (by the king) to nourish fishes carefully in this manner and being informed by attendants, the king should gather together ropes and sticks to catch them.

The fishing rope

1410b–1412a. The king should order good strings to be made with the sturdy strands of *murva* (*Sanseviera roxburghiana*), *kanduka* (betelnut tree; *Areca catechu*), or *arka* (*Calotropis gigantea*), or with thin lotus fibers. Among these, strings made with *murva* are the best. Those made with *kanduka* or *arka* are of medium quality and those made with cotton fibers are of an inferior quality. The gradation in quality is due to difference in strength.

1412b, 1413a. An expert should make good strings uniformly lengthened out like the lamp-wicks, with three strands, whether thick, medium, or thin.

1413b, 1415a. The maximum length according to the experts should be a thousand cubits (literally, two hundred measures of two extended arms). Never should a string be made less than ten cubits (literally, two measures of two extended arms) in length. Horse's hair is the lower limit for thinness. The rope must not be thinner than the stalk between the mango fruit and the twig to which it is attached.

The rod

1415b–1417a. A cane (or bamboo) or a thorn-shaped branch coming up from the ground or a branch of coconut (*Cocos nucifera*) is recommended for making the rod. It should gradually taper resembling the tail of a chameleon. It should be made from a bamboo-half, having closely positioned knots and no holes.

1417b–1419a. The circumference at the bottom of a big rod should not exceed the measure of six *angulas* (where an *angula* is a measure of a finger's breadth equivalent to eight barley corns) while that of the small should not exceed half of that measure. Experts have recommended angling rod made from cane that is neither too long nor too short, neither too flaccid nor too rigid.

1419b, 1420a. The one made from a branch of a coconut tree should have a (circumference ?) size of ten *angulas* and should have gradually tapering shape, too. It should not have too compactly positioned knots.

1420b–1422a. The angle should be curved like a hook or like a horse's hoof or like a *makanda* (mango) fruit or resembling a crab or of the shape of a monkey. It should be sharp and strong made with iron, broad at bottom but narrow (pointed) at the tip.

1422b, 1423. The spot on the fishhook for tying the rope should be round or like a plank, and that depresses at the center. A thick rope should not be tied on to a thick rod, or a thin string on a thin rod.

1424. The thickness or the length should be determined by (the quantity of) water and (strength and size of the) fish. The hook proportionate to the rope should be tied to the end of the rope.

1425. A peacock feather should be fixed in the middle of the rope and at the bottom of the rod, another long rope, like a tail, should be fixed.

The fishing

1426, 1427. For the purpose of attracting the fish, the king should arrange to get fixed to the tip of the hook, flour-item or flesh as per the liking of the particular fish, placing the same under water, at the fishing spot. He, then, should watch the feather with a concentrated mind.

1428, 1429. When a fish touches the hook to eat the food-item fixed to it, shaking it (the feather) in the process, he should notice the change instantly and cause the strike. The fishes eating either flesh or other food-item move forward. When the fish gets strung on to the hook it struggles with full force.

1430. The fisher should, therefore, draw it out while it is weak. In the event of its gaining strength, he should let go the rod and should gradually pull the fish out taking care to see that the rope does not give way.

1431a. When the rod is released, he should otherwise drag out the fish by pulling the tail-rope.

Ending

1431b, 1432. Thus, King Soma, the Lord of the Earth, the most powerful among the mortal kings, has described this sport of fishing, a sport related to fishes, for the purpose of recreation.

Translation of verses 1524–1536
(Manasollasa: Section III, Chapter 13)
The royal food: fish preparations

1524. In the preparation of scaled fishes, the scales must be first removed with effort. Then if the fish are big they should be cut into pieces. If small, they can be used in the same (natural) form.

1525. Heads of fishes must be cut away (like the tail-part of birds). Intestines should be removed after cutting open the belly.

1526. [The text does not make sense, particularly the first line that is printed with a question mark. The verse appears to refer to certain names of the fish-species. It reads something like this: *Kahnaka*, *roshta* (perhaps it could be misprint for *proshthi*), and *vadisha* should be burned with *khavala*, *chachuka*, and *pathina* after cutting off their heads.]

1527–1529. Rub oil and salt on fish so that they become slimy and the odor fades away. Afterwards wash them with water mixed with turmeric paste. Tie them in a piece of cloth and press to squeeze out

all the water inside. Then mix them with the *anakas* (?) previously cooked thoroughly and kept ready for the purpose. After some time the cook should put down (from fire) the (earthen) dish and add seasoning.

1530, 1531. Cut fishes into pieces and wash them well. Cook along with tamarind juice. Sprinkle well with wheat flour. Fry in heated oil till brown. Add rock salt. Sprinkle powdered cardamom and pepper.

1532. Cook fishes as per test, in *anaka*, oil, or smokeless fire as per the method described earlier.

1533, 1534. Cut fish into pieces, measuring four *angulas* (breadth of four *angulas*) each. Mix salt and store in earthen jars. These are called *kharakhandas* (salted pieces) that can be preserved for a long time. The cook should roast them in fire at the time of meals.

1535, 1536. Take out the scrotums of a fish and roast them in fire. When hard, cut into pieces and fry in heated oil. Add powdered cardamom, pepper, and rock salt and season with asafetida.

Discussion

Types of fish

In all 35 names have been given by Someshvardeva with minimal information on their habitat (marine or fresh water), presence or absence of scales (*charmaja* – scaleless; *shalkaja* – scaly), and size (large, medium, small). Even this information is not given for each fish. As pointed out before the Western Chalukya empire included people who spoke Kannada, Marathi, and Telugu. Names of fishes in these languages, in addition to Sanskrit, were studied by us to understand the meaning of the fish names given by Someshvardeva. We have used CSIR (1962), Watt (1890), and Buchanan (1807) for identification of fishes.

Bala. This is a marine, scaleless, and possibly a large fish. *Bala* in Sanskrit connotes "powerful" or "to injure". Hora (1951) has wrongly read *bala* as *baala* meaning "ignorant person who does not know, usually translated as fool". A particular shark, *Carcharhinus macloti* Day, is called *pala sorah,* which is a relatively small shark. We, therefore, suggest that *bala* stands for *C. macloti.*

Chanvilocha. It is described also as a marine and scaleless fish, and large size is implied. *Chan* in Sanskrit could indicate "to injure or kill", whereas *lunch* means "to tear" or "to pluck". Hora (1951) traced the name to the word *vilochana* in Sanskrit, meaning an eye, and suggested that this could be a fish with "shining eyes". Hora further suggested that this could be a species of sawfishes, *Pristis* sp. We believe *chanvilocha* is *Pristis microdon* Latham, the small-toothed sawfish, found frequently in Indian seas including the Mumbai area. Fishermen are scared of this fish as it can inflict serious injuries when caught.

Dantapatala. In Sanskrit, *danta* means teeth and *patala* means red. Thus it should be a fish with red teeth. Someshvardeva describes this fish as an inland, scaleless, medium-sized one. Hora (1951) has identified this fish to be *Eutropiichthys vacha* Ham. We find it difficult to accept Hora's identification because *E. vacha* is found mostly in northern India and does not have red teeth. We suggest that *dantapatala* is the trigger fish (Balistidae) *Odonus niger* Ruppel, which has red teeth and is scaleless and medium-sized. It is a marine fish, but often found in inshore waters. It is present in Indo-Pacific region (Wheeler, 1985). Though Indian workers have not described this fish, we would like to think that this fish could have been present in northern Arabian Sea through to the Red Sea during the times of Someshvardeva.

Gagdhara. *Dhara* in Sanskrit means possessing or holding. *Gag* does not have any specific meaning. Hora (1951) has assumed that *gag* could be a phonetic variant of *kag*, which means a crow. Hora suggested that this could be a fish having a crow-like beak, which made *Xenedoton cancila* Ham. a good candidate. *Xenedoton cancila* is a garfish and has a long well toothed jaw. It is an inland,

scaly, and small fish. This fish is called *kaduru* in Telugu, which is phonetically close to the word *gagdhara*. We agree with Hora's identification.

Gojjala. This is an inland, scaly, and small fish. In Sanskrit *gochara* means within the range, such as hearing or visible. The word *gochi* means a plant with sharp leaves. Hora (1951) suggested a different interpretation; *jala* means water and *goj* means shallow. On this basis, Hora identified the fish as *Ophiocephalus punctatus* Bl. We find that another fish, which fits in with the features mentioned above and which is an excellent food, is *Ompok bimaculatus* Bl. It is a catfish. In Kannada, it is known as *godla*, which is phonetically close to *gojjala*.

Kahlava. This has been mentioned as an inland, scaly, and large fish. If we try to trace the origin of *kahlava* in Sanskrit, *ka* can mean water, *lhaad* means to be happy. *Kahlava* could thus mean something from water that brings happiness. Also we believe the word *catla* has no origin in Latin and probably the Sanskrit name *kahlava* was used for renaming the fish as *Catla catla* Ham., which is a popular carp. Hora (1951) identified the fish as *Barbus* (*Puntius*) *carnaticus* (Jerdon), with which we do not agree.

Kantakara. It has been described as a marine fish with no scales, but nothing has been mentioned about the size. However, because *kantakara* has been grouped with sharks such as *sora* and *shringasora*, we have assumed this one to be a large fish. The word *kantakara* in Sanskrit means one that pricks with thorns. Hora (1951) suggested that the fish could belong to a species of a genus of catfish eels, *Plotosus*. Species of *Plotosus* have spiny fins. We believe *kantakara* is the name of *Plotosus canius* Ham., which is a common coastal and estuarine fish.

Kantharaya. This one has been described to be a small, inland, and scaly fish. *Kantha* in Sanskrit means throat or voice and *raya* may mean *raja* (king) or speed. The whole word *kantharaya* could mean a royal (impressive) neck. Hora (1951) identified *kantharaya* as *Barilius bendelisis* Ham., because the latter has a dark shoulder process, which could be likened to neck. It is a "trout" common in the Western Ghats (Buchanan, 1807). We agree with Hora's identification.

Kaurattha. The description given by Someshvardeva is minimal. He mentioned that *kaurattha* is a marine fish that migrates through rivers to large lakes where it can be caught. There is no mention about presence or absence of scales and its size. In Sanskrit, *rathir* means speedy, *kur* refers to sound, and *kaula* connotes living in a family. Hora (1951) suggested that *kaurattha* could be *Hilsa ilisha* Ham., but was not certain. Taking into account the meanings in Sanskrit, we suggest that *kaurattha* could be *Pseudosciaena diacanthus* Lac. as this fish migrates to shallow areas of rivers, is a croaker (*ghol* in Marathi), and lives in schools.

Khandalipa. This is an inland, scaly, and medium-sized fish. The root of the word *khandalipa* can be traced in Sanskrit; *khanda* means broken and *lipa* means to cover or overspread. Hora (1951) suggested the name *Mastacembelus armatus* Lacel. with which we agree. It is a spiny eel.

Khirida. This fish is riverine, large, and possibly scaleless. The name could not be traced to Sanskrit. Hora (1951) tentatively identified it as *Pangasius pangasius* Ham., a catfish. Taking a clue from a Marathi name, *khirurh*, we suggest *khirida* to be *Rita gogra* Sykes or *Rita pavimentata* Valenciannes, which is common in the rivers of the Deccan and is also a catfish.

Koraka. This is an inland, medium-sized fish. No mention was made about scales. The word *koraka* in Sanskrit would indicate a bud. *Kur*, as pointed out earlier, suggests making sound. In Indian languages, there is a name *karoua* or *korake* for *Pomadasys hasta* Bl. (Watt, 1890), which is considered a marine fish. However, it is known to enter estuaries and is found in almost fresh water (Wheeler, 1985). We, therefore, suggest that *koraka* is *P. hasta,* which is a grunter. Hora (1951) admitted his inability to identify the fish.

Kovakiya. This is an inland, scaly, and large fish. In Sanskrit *kuvaak* means a bad utterance, which would indicate a fish belonging to croakers, etc. Hora (1951) tentatively suggested that *kovakiya* could be *Polynemous tetradactyles* Shaw. We believe *kovakiya* fits in better with the fish known to be common in Mumbai area, *Pseudosciaena sina* C., which is a croaker.

Kovasaka. This is a large fish found inland. Someshvardeva does not mention whether it is scaly or scaleless, but the name appears in the text along with sharks. The word *kovasaka* in Sanskrit would mean someone who inhabits filthy or stinking place. Hora (1951) suggested *Mystus aor* Ham. or *M. seenghala* Sykes. We believe *kovasaka* could be *M. seenghala*, a catfish.

Mahashila. Someshvardeva mentions this to be a riverine, scaly, large fish. *Mahashila* in Sanskrit could mean a large stone-like (powerful) fish. This name is very similar to the famous *mahaseer* fish (*Tor tor* Ham.) of India. Hora (1951) suggested that *mahashila* could be South Indian *Barbus (Tor) mussulah* Sykes or *B. (Tor) khudree* Sykes. *Barbus khudree* is not a large fish. Hora (1951) did not consider *Tor tor* because it is present in northern India. We find that Day (Watt, 1890) mentions the presence of *T. tor* all over India. We, therefore, suggest that *mahashila* is *T. tor,* a barb.

Marila. The nearest word in Sanskrit is *maraal* which means soft, tender, or yellowish red. It has been described as a scaly, medium-sized fish. Its name appears with riverine fishes and also Someshvardeva mentions that crabs have to be fed to this fish, obviously in a pond. Hora (1951) identified it to be *Ophicephalus striatus* Bloch. Because a very similar fish is called *maral* in Marathi, we suggest *marila* to be *Channa* (*Ophicephalus*) *marulius* Ham., which is a murrel. This fish makes excellent food.

Nadaka. The word *nadaka* (or *nalaka*) in Sanskrit suggested a tubular shape or a reed-like appearance. It is an inland, scaly, and large fish. Hora (1951) has identified this fish as *Barbus curmuca* Ham., a barb, which is common in waters of Western Ghats. We agree with Hora's identification.

Pallaka. The word *pala* or *palali* in Sanskrit means heap of flesh. It has been described as a marine fish of medium size. Presence or absence of scales has not been specifically mentioned. However, *pallaka* probably is a scaly fish since it is grouped with scaly fishes, such as *rohita*, etc. Apte (1965) mentions *pallavaka* as a kind of fish. Hora (1951) considered *pallaka* to be *Luteanus roseus* Day. We disagree with Hora's identifiction and suggest that *pallaka* is *Hilsa ilisha* Ham., which is known as *pala* in Marathi and *paliya* in Kannada. Hilsa's popularity as a table fish, in spite of numerous tiny bones, is probably due to the high fat content. Hilsa belongs to the group commonly called ladyfishes.

Pandimana. This fish has been described as large and scaly, and possibly found in inland waters. *Pandu* or *panduriman* in Sanskrit means pale or white and *pandaa* as "learned". The word *pandimana* in Sanskrit could mean, "liked by Brahmins". Hora (1951) identified *pandimana* as *Lates calcarifer* Bl. We believe *pandimana* to be the milkfish *Chanos chanos* Forsk. that is purely vegetarian in its food habit, which relates to "learned" persons in the ancient Indian context. This fish is called *pumin* in the Tulu language of Karnataka.

Patalapicchaka. This is a medium-sized, scaleless fish with a red crest and is found in rivers. *Picchaka* in Sanskrit means tail. Hora (1951) identified it to be *Clupisoma garua* Ham. We do not agree with Hora because *C. garua* is common only in northern India. We suggest that *patalapicchaka* to be *Mystus aor* Ham., which has a dark caudal fin, and is a catfish.

Pathina. This has been described as a scaleless, large fish found in rivers. *Paathi* in Sanskrit means someone who recites with the back moving back and forth in a sitting position. Amarkosha (Jha, 1999) mentions that *pathina* has one thousand molars. It is a fish that has been mentioned commonly in the ancient literature of India, and was used in certain rituals. Hora (1951) identified it to be *Wallago attu* Schn. and we agree with Hora's identification. *Pathina* is a catfish.

Rohita. This has been described as scaly, medium-sized fish that inhabits rivers. Sanskrit literature frequently mentions this name. Bhavaprakasha (Chunekar and Pandey, 1986) describes *rohita* as a red fish that is best for human consumption. *Rohita* (or *lohita*) means red. Hora (1951) suggests *rohita* as *Labeo fimbriatus* Bl. instead of *L. rohita* Ham. or popularly called *rohu,* because the latter is of a rather large size, and not of medium size as described by Someshvardeva. However, we do not consider Hora's reason sufficiently strong. Many other authorities have consistently maintained that

rohita is *L. rohita. Rohita* also has a name (*tambada masa* = red fish) in Marathi. We, therefore, maintain that *rohita* should be identified as *L. rohita,* which is a very commonly found carp.

Sankuchaka. In Sanskrit, *sankuchaka* means one that contracts itself. Someshvardeva described this fish as a marine and scaleless fish; size was not mentioned but because it is grouped with sharks, we assume it to be large. Apte's Sanskrit-English dictionary (Apte, 1965) mentions *sankocha* as a skate-fish. Hora (1951) did not try to identify the species. Since skates and rays are considered interchangeable groups, we tried to widen our range for identification. We find the name *sankusha* used in India for *Dasyati*s (*Pastinachus*) *sephen* Forsk. and also this fish is found commonly on the west coast of India. We suggest *D. sephen* is *sankuchaka*.

Shringasora. This has been described as a marine and scaleless fish, which by implication is large in size. *Sora* means shark and *shringa* means horns. Probably because of a printing error, we find the table in Hora (1951) shows it to be a sawfish. *Shringasora* clearly fits in with a hammer-headed shark, *Sphyrna blochii* C., which is found off the west coast of India.

Simhatundaka. This one has been described as a large and riverine fish, presumably scaleless. *Simhatundaka* in Sanskrit would indicate lion-faced. A catfish with a ferocious appearance and behavior would be the obvious candidate. Hora (1951) suggested *Bagarius bagarius* Ham., which is ferocious and has under-hung mouth. It is called *baghar* (tiger-like) in some Indian languages. We agree with Hora's identification.

Sora. Someshvardeva described this one as a marine, scaleless, and obviously a large fish. No meaning can be traced in Sanskrit. In Telugu, *sora* is used for any shark. *Sora* is the first name listed by Someshvardeva and was clubbed with other sharks. It must be an impressively large fish commonly seen in Indian seas. Hora (1951) believed that the name *sora* was used in plural sense for several sharks. We suggest that the name *sora* could have been used for the largest shark, *Galeocerdo tigrinus* N.H., found in both west and east coast waters.

Swarnamina. This has been described as an inland, scaly, medium-sized fish, which in Sanskrit would mean a golden fish. Names such as *sarana* (similar to *swarna*, gold) in Bengal and Orissa and *kannuka* (*kanakam* in Sanskrit also means gold) in Andhra help us to identify this barb fish as *Barbus sarana* Ham. Hora (1951) too has identified this fish as *B. sarana.*

Thogyara. This has been described as an inland fish. Other details are missing. It has not been possible to trace *thogyara's* origin in Sanskrit. Hora (1951) failed to identify this fish. Taking a clue from two local names, *yerrathok-mosu* in Telugu, and *tharimeenu* in Kannada, we tentatively suggest that this fish is *Cirrhinus reba* Ham., a carp found in fresh waters all over India.

Tomara. This one has been described as a medium-sized marine fish and most likely, scaly. The word *tomara* in Sanskrit means a spear-like weapon or a forceful stroke. Hora (1951) suggested that *tomara* could be the garfish (needle fish) *Belone annulata* Day. We agree with Hora's identification.

Tumbaya. This one is a scaly, medium-sized fish most likely inhabiting inland waters. *Tumbaya* means similar to a long gourd. According to Hora (1951), *tumbuki* in Telugu means puffed cheeks. Using the latter meaning Hora suggested the name *Glossogobius giuris* Ham., and we agree. This species belongs to the group called gobies.

Vadisha. This has been described as a riverine, scaly, large fish. It was fed leaves and barley, suggesting a "vegetarian" diet. Hora (1951) tentatively identified *vadisha* as *Notopterus chitala* Ham., which is carnivorous. The word *vadisha* can be a phonetic variant of *badisha* or *balisha*. Taking a clue from the word *balisha*, which indicates strong or powerful. We suggest *vadisha* to be *Acrossocheilus hexagonolepsis* McClell., which is a barb.

Vami. This is a fish that is most likely an inland fish. Someshvardeva made no mention about its size or scales. *Vamah* in Sanskrit means a snake, *vam* means vomit, and *vaama* means crooked. Hora (1951) was not able to identify the fish. Taking a clue from the Sanskrit meaning of *vamah* as snake,

we suggest that *vami* should be the snakehead, C*hanna gachua* Ham., which is found in fresh waters, has scales, and is a small fish.

Vanchi. This has been described as a scaly, medium-sized fish, which probably inhabits rivers. In Sanskrit, *vaanchhi* means desired, *vacha* is a fish name, and *vanch* means to deceive. For some reason Hora (1951) suggested that *vanchi* could be *Silonopangasius taakri* Sykes, which is a medium-sized fish but is without scales. He ruled out *Silonia silondia* Sykes as *vanchi*, even though its name in Telugu is *wanjou*, because it is large and usually found in northern India. Another species, however, *Silonia childreni* Sykes is found in Godavari and Krishna rivers and is also called *wanjou* in Telugu. We believe *vanchi* should be *S. childreni*. This species belongs to family Schilbeidae.

Vatagi. This one is an inland, scaly, and large fish. In Sanskrit *vat* indicates a string. Hora (1951) did not identify this fish. We believe it should be *Channa leucopunctatus* Sykes. Though *C. leucopunctatus* is a marine fish, it is known to be present inland in the Deccan and the length can be 92 cm. It is also a snakehead and has an elongated body that could be considered string-like.

Vidruva. This is a riverine, scaly, and small fish. In Sanskrit *vidruva* may indicate something moving fast or frightened. Hora (1951) stated that this fish could belong to genera such as *Chela, Rasbora, Danio*, etc. We believe *vidruva* should be *Oxygaster clupeoides* Bl., a carp that is found all over India and is a fast-moving fish.

A complete list of all the above fishes with their Sanskrit and Latin names has been given in Table 1.

The fish food

Someshvardeva mentioned only a few fishes that must have been popular for angling. These fishes were *kahlava* (*Catla catla*), *rohita* (*Labeo rohita*), *vadisha* (*Acrossocheilus hexagonolepsis*), *kovakiya* (*Pseudosciaena sina*), *pathina* (*Wallago attu*), *simhatundaka* (*Bagarius bagarius*), and *marila* (*Channa marulius*). Of these *kahlava, rohita,* and *vadisha* were fed with vegetarian items, *kovakiya* with vegetarian and meat items, and *pathina, simhatundaka,* and *marila* were fed with flesh. Thus the choice of food items is in line with our knowledge today.

Food items mentioned were: ground sesame, flours including roasted flours of chickpea (*Cicer arietinum*), cooked rice, and roasted flour of safflower mixed with cooked rice.

We would like to quote here comments from Hora (1951), which are valid today.

". . . Somesvara shows a greater insight into the feeding habits of the fishes by dividing them into groups and then prescribing a suitable ground bait for each group or kind. Further Somesvara also prescribes the limit in size for the morsel of each variety of fish. He wants the ground bait to be prepared into balls but he also indicates that feeding should be done morning and evening from the steps used for taking water. The bottom is probably not steeply shelving in this place and the balls do not roll away. MacDonald (MacDonald, A.St.J. 1948. Circumventing the mahseer and other sporting fish in India and Burma. Bombay Natural History Society, Mumbai, India) suggests a mixture of mud with food but Somesvara feeds fishes on articles of food only. . . . On the whole the technique of ground baiting seems to have been better developed in Somesvara's time than at the present day."

The fishing rope, rod, and bait

We think Someshvardeva has given an excellent description of how to make the ropes, required for angling, from the local resources. He described materials from which ropes can be made of different strengths, lengths, and thickness. Likewise a very useful description of the rods, hooks, baits, and striking, and playing fish has been given.

Fish preparations

The thirteen verses (1524 –1536) basically describe the procedure to clean and cook the fish, which is not different from what is done today. Preservation by salting cleaned fishes has also been mentioned.

Table 1. Names of fishes in Manasollasa and their Latin equivalents.

Sanskrit name	Devnagari script	Latin name
Bala	बल	*Carcharhinus macloti* Day
Chanvilocha	चंविलोच	*Pristis microdon* Latham
Dantapatala	दन्तपाटल	*Odonus niger* Ruppel
Gagdhara	गाग्धर	*Xenentodon cancila* Ham.
Gojjala	गोज्जल	*Ompok bimaculatus* Bl.
Kahlava	कह्लव	*Catla catla* Ham.
Kantakara	कण्टकार	*Plotosus canius* Ham.
Kantharaya	कण्ठरय	*Barilius bendelisis* Ham.
Kaurattha	कौरत्थ	*Pseudosciaena diacanthus* Lac.
Khandalipa	खण्डालिप	*Mastacembelus armatus* Lacel.
Khirida	खिरीड	*Rita gogra* Sykes
Koraka	कोरक	*Pomadasys hasta* Bl.
Kovakiya	कोवाकीय	*Pseudosciaena sina* C.
Kovasaka	कोवासक	*Mystus seenghala* Sykes
Mahashila	महाशील	*Tor tor* Ham.
Marila	मरिल	*Channa marulius* Ham.
Nadaka	नडक	*Barbus curmuca* Ham.
Pallaka	पल्लक	*Hilsa ilisha* Ham.
Pandimana	पण्डीमान	*Chanos chanos* Forsk.
Patalapicchaka	पाटलपिच्छक	*Mystus aor* Ham.
Pathina	पाठीन	Wallago attu Schn.
Rohita	रोहित	Labeo rohita Ham.
Sankuchaka	संकुचक	Dasyatis sephen Forsk.
Shringasora	शृंगसोर	Sphyrna blochii C.
Simhatundaka	सिंहतुण्डक	Bagarius bagarius Ham.
Sora	सोर	Galeocerdo tigrinus N.H.
Swarnamina	स्वर्णमीन	Barbus sarana Ham.
Thogyara	थोग्यर	Cirrihinus reba Ham.
Tomara	तोमर	Belone annulata Day
Tumbaya	तुम्बय	Glossogobius giuris Ham.
Vadisha	वडिश	Acrossocheilus hexagonolepsis McClell.
Vami	वामी	Channa gachua Ham.
Vanchi	वाञ्ची	Silonia childreni Sykes
Vatagi	वटगी	Channa leucopunctatus Sykes
Vidruva	विद्रुव	*Oxygaster clupeoides* Bl.

Conclusion

It is clear that a systematic body of knowledge of both marine and inland fishes had accumulated in India by 12th century AD. Recognition of this knowledge was never recorded properly either by the Mughals or by the British. Hora (1951) tried to take this ancient knowledge to the fishery scientists of India. However, Indian scientists in general were looking only "westwards" then and apparently did not take Hora's paper seriously. It is high time we look for documents that would reveal our wisdom on this subject. It is relevant to mention here a statement from Hora (1951).

"In (my) account, I have assessed point by point Somesvara's knowledge about the sporting fishes of India and the art of angling by comparison with the most up-to-date work on angling for Indian sporting fishes by MacDonald (reference cited earlier) recently published by the Bombay Natural History Society. In the absence of records of any observational data, which must have formed the basis of the knowledge embodied in Matsyavinoda, one must wonder as to the length of time that our ancients must have taken to accumulate so much factual and deductive knowledge. In some respects, it has not been surpassed even now."

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