

Illegal Trade in Freshwater Turtle Parts

Preliminary findings of turtle trade in major barrages and head-works of Punjab

February, 2008



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Dedicated To: Dr. Khalid Javed Baig (1956-2006)

Illegal Trade in Freshwater Turtle Parts

*Preliminary findings of turtle trade in major
barrages and head-works of Punjab*

February, 2008

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(1956-2006)

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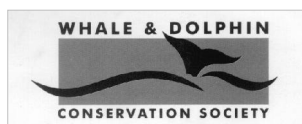
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February, 2008

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List of Acronyms and Abbreviations

CITES	The Convention on International Trade in Endangered Species of Wild Flora and Fauna
D. I. Khan	Dera Ismail Khan
GIS	Geographic Information System
GPS.....	Global Positioning System (Receiver)
IUCN.....	The World Conservation Union
Jabhel.....	A local community in Punjab, dependent on freshwater resources for subsistence
Kehal	A local community in NWFP, dependent on freshwater resources for subsistence
Kg.....	Kilogram
Mohana	A fishermen community of Northern Sindh and Southern Punjab
NCCW	National Council for the Conservation of Wildlife
NWFP.....	North West Frontier Province
PWP	Pakistan Wetlands Programme
Pakhiwal ...	A local community in Punjab, dependent on freshwater resources for subsistence
Rs.....	Currency of Pakistan (Pak Rupees)
TRAFFIC	A joint venture of WWF and IUCN, Wildlife Trade Monitoring Network
US \$	Currency of United States (Dollar)
%	Percentage

Executive summary

Pakistan has eight species of freshwater turtles including four species of softshell turtles, i.e. Ganges softshell turtle, peacock softshell turtle, Indian narrow-headed softshell turtle, and Indus mud turtle and four species of hardshell turtles, i.e. spotted pond turtle, Indian roofed turtle, Smith's turtle and crowned river turtle. Softshell turtles of Pakistan are illegally traded in the international markets. Absence of legal protection cover at the provincial level is accelerating the trade in turtle parts.

PWP, with its objective to conserve and protect significant wetlands and their associated biodiversity, after conducting successful surveys along the Indus River, visited four principal rivers of Punjab. In all, the investigation covered nine different head-works and irrigation barrages. The objective was to explore trade in parts of softshell species and to investigate the status and threats to freshwater turtles in the Punjab province. It is learnt that the trade in turtle parts has started five years ago, and is taking place throughout the country. It has become a very lucrative business for those who are involved in this trade. The Punjab province was found to be the place from where the turtle trade started. The local communities, particularly Mohana and Jabhel exploit softshell turtles with a single person catching 5-10 turtles per day. This number reaches up to 200 turtles per day when a group of turtle hunters consists of 10-20 persons and they camp out for two or three days. Cost of a fresh piece (soft hinder flap) of softshell turtle ranges from Rs. 200 to Rs. 700. Decline in freshwater resources due to shortage of water and pollution in the Punjab Rivers resulted in an increased poverty and people started adopting turtle hunting as a profitable livelihood option. If the identified target groups are addressed through community based-conservation, provided with better livelihood opportunities and with education and awareness, they can help in protecting the freshwater turtles effectively. In order to conserve the endangered species of softshell turtles, the issue needs to be addressed at international level through CITES, IUCN and TRAFFIC International. Amendments in wildlife legislation and strict execution of laws regarding trade control will help conserve the freshwater turtles of Pakistan.

1. Global and Regional Perspective

There are about 300 species of tortoises and freshwater turtles in the world (the exact number is debated). The IUCN's Red List Authority has so far assessed approximately 200 species and has already found 122 to be threatened¹. In Asia, 70 species of freshwater turtles are found. Turtles are threatened throughout the world by a number of problems. They are being collected, butchered, eaten and traded in overwhelming numbers. They are used for food, pets, and traditional medicines. Their eggs, juveniles, adults and body parts are exploited indiscriminately, with no regard for sustainability. Their habitats are being increasingly fragmented, destroyed, developed and polluted. Species worldwide are threatened and vulnerable, many are critically endangered, others teeter on the very edge of extinction and a few have already been lost forever².

Of all the threats that turtles face recently, the most urgent is the uncontrolled and overwhelming trade for food and traditional medicines in many parts of Asia. Imports of turtles to southern China from the Southeast Asian region have been measured in tons of live turtles per day, with more than 10 million individuals traded per year. All species of turtles in Southeast Asia are traded with, indiscriminate exploitation of all accessible populations. This has resulted in severely depleted and extirpated populations near the consumer source in China, and ever-widening ripples of non-sustainable harvest reaching deep into surrounding Southeast Asian regions and now even beginning to impact turtles in North America, Africa, Europe and elsewhere².

2. Freshwater turtles of Pakistan

Eight species of freshwater turtles are found in Pakistan. These include spotted pond turtle (*Geoclemys hamiltoni*), Smith's turtle (*Kachuga smithii*), Indian roofed turtle (*Kachuga tecta tecta*), Brahminy or crowned river turtle (*Hardella thurjii*) belonging to hard shell species, and Ganges softshell turtle (*Aspideretes gangeticus*), peacock softshell turtle (*Aspideretes hurum*), Indian narrow headed softshell turtle (*Chitra indica*) and Indus mud turtle (*Lissemys punctata andersoni*), the softshell species. The taxonomic classification of freshwater turtles is given in the table 1.

Table 1: Taxonomic classification of freshwater turtles of Pakistan

Class	Sub-class	Order	Sub-order	Super-family	Family	Sub-family	Genus	Species
Reptilia	Anapsida	Testudines	Cryptodira	Testudinoidea	Bataguridae	Batagurinae	<i>Kachuga</i>	<i>Kachuga smithii</i>
					Bataguridae	Batagurinae	<i>Kachuga</i>	<i>Kachuga tecta tecta</i>
					Bataguridae	Batagurinae	<i>Hardella</i>	<i>Hardella thurjii</i>
					Bataguridae	Batagurinae	<i>Geoclemys</i>	<i>Geoclemys hamiltonii</i>
				Trionychoidea	Trionychidae	Trionychinae	<i>Aspideretes</i>	<i>Aspideretes gangeticus</i>
					Trionychidae	Trionychinae	<i>Aspideretes</i>	<i>Aspideretes hurum</i>
					Trionychidae	Trionychinae	<i>Chitra</i>	<i>Chitra indica</i>
					Trionychidae	Cyclanorbinae	<i>Lissemys</i>	<i>Lissemys punctata andersoni</i>

3. Conservation status of freshwater turtles of Pakistan

3.1. Convention on International Trade in Endangered Species of Wild Flora and Fauna

CITES is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Table 2 clearly shows the conservation status of freshwater turtles of Pakistan, globally and nationally.

Table 2: Conservation status of freshwater turtles of Pakistan

#	Species	CITES **		IUCN Red List Status (Year 2007)	Government of Pakistan Provincial Wildlife Acts		
		Appendix I	Appendix II		NWFP Wildlife Act, 1975	Punjab Wildlife Act, 1974	Sindh Wildlife Protection Ordinance, 1972
1	Spotted Pond Turtle (<i>Geoclemys hamiltoni</i>)	+	-	Vulnerable (VU)	Schedule III *	Schedule III *	Not Listed
2	Smith's Turtle (<i>Kachuga smithii</i>)	-	+	Low Risk/Near Threatened (LR/NT)	Schedule III	Schedule III	Not Listed
3	Indian Roofed Turtle (<i>Kachuga tecta tecta</i>)	+	-	Low Risk/Least Concern (LR/LC)	Schedule III	Schedule III	Not Listed
4	Brahminy or Crowned River Turtle (<i>Hardella thurjii</i>)	-	-	Vulnerable (VU)	Schedule III	Schedule III	Not Listed
5	Ganges Softshell Turtle (<i>Aspideretes gangeticus</i>)	+	-	Vulnerable (VU)	Schedule III	Schedule III	Not Listed
6	Peacock Softshell Turtle (<i>Aspideretes hurum</i>)	+	-	Vulnerable (VU)	Schedule III	Schedule III	Not Listed
7	Indus Mud Turtle (<i>Lissemys punctata andersoni</i>)	-	+	Low Risk/Least Concern (LR/LC)	Schedule III	Schedule III	Not Listed
8	Indian narrow headed softshell turtle (<i>Chitra indica</i>)	-	+	Endangered (EN)	Schedule III	Schedule III	Not Listed

* In the provincial wildlife acts, Schedule III is the category of protected animals.

** Appendices I and II to the CITES are lists of species that afford different levels or types of protection from over-exploitation. Appendix I lists species that are the most endangered among CITES-listed animals and plants. Appendix II lists species that are not necessarily now threatened with extinction but may become so unless trade is closely controlled.

Appendices I, II and III, to the Convention are lists of species that afford different levels or types of protection from over-exploitation. Appendix I lists species that are the most endangered among CITES-listed animals and plants. Appendix II lists species that are not necessarily now threatened with extinction but may become so unless trade is closely controlled. Appendix III is a list of species included at the request of a party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation. Pakistan became a signatory to the Convention (CITES) on July 19th 1976. Four species of freshwater turtles are listed in Appendix I, while three are listed in Appendix II of the CITES.

3.2. The World Conservation Union (IUCN)

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. With its strong scientific base, the IUCN Red List is recognised as the most authoritative guide to the status of biological diversity. The overall aim of the Red List is to convey the urgency and scale of conservation problems to the public and policy makers and to motivate the global community to try to reduce species extinction. The species of freshwater turtles which are at risk due to illegal hunting in Pakistan are listed as 'Vulnerable' and 'Endangered' in the IUCN Red List.

3.3. Provincial Wildlife Protection Acts

In Pakistan, protection of wildlife is a provincial responsibility. Freshwater turtles are not listed in the category of protected animals in all the provincial wildlife acts. The NWFP Wildlife Department, after realising the sensitivity of the issue, undertook the initiative to protect freshwater turtles in the province. On August 22nd, 2007, the NWFP Wildlife Protection Act, 1975, was amended and all the freshwater turtles of the province were included in the list of protected animals. Following the steps made by the NWFP Wildlife Department to protect freshwater turtles, the Punjab Wildlife Department revised the Punjab Wildlife Protection Act 1974, on November 30th, 2007, and made an amendment to include the Order Chelonia (Turtles and Tortoises) in the list of protected animals (Schedule III).

4. Population of freshwater turtles in the Punjab Province

Very little is known about the population density of freshwater turtles of Pakistan. The only population based study was conducted by *Akbar et. al.* (2006) in the Punjab Province. Eight species of freshwater turtles were identified from the rivers of Punjab. The most abundant species found was *Kachuga smithii* (43.62%) followed by *Kachuga tecta tecta* (42.06%). The population of *Hardella thurjii* and *Chitra indica* was found rare (0.88% and 0.54% respectively), whereas the population of *Geoclemys hamiltonii* (1.76%), *Aspideretes hurum* (3.09%) and *Lissemys punctata* (1.50%) was recorded as frequent and that of *Aspideretes gangeticus* (6.55%) as common³.

5. Study area

The Pakistan Wetlands Programme, after investigating the status of freshwater turtles in North West Frontier Province (NWFP), and Taunsa and Guddu Barrages, in Punjab and Sindh respectively, along the Indus River, undertook a detailed assessment of the major head-works and barrages of the Punjab Province in October, 2007, to explore the illegal trade in turtle parts. The Punjab province, "land of five rivers" is an important habitat of freshwater turtles. Main rivers of Punjab; Chenab, Jehlum, Ravi and Sutlej were visited. The study was conducted at nine different barrages and head-works constructed on these rivers. Area along the river banks, both upstream and downstream was also covered. Figure 1 shows the rivers of the Punjab Province and the location of barrages and head-works.

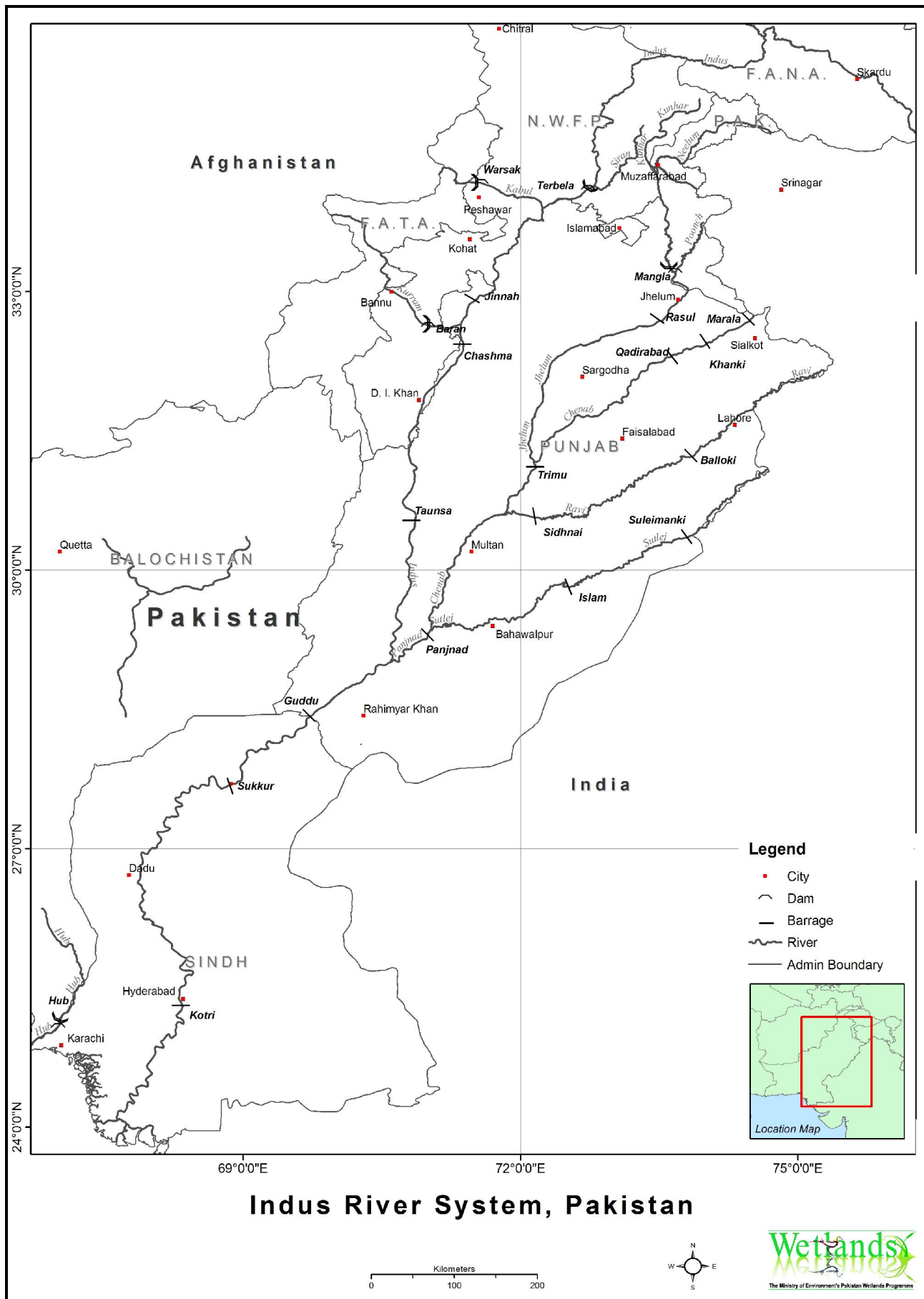


Figure 1: Map of the rivers of the Punjab Province with locations of barrages and head-works

6. Specific Objectives of the Survey

Following were the main objectives of the survey:

- q Establish baseline information on the illegal trade in freshwater turtle parts;
- q Identify the target groups (local communities), who are involved in the business
- q Identify major trade routes for illegal export of freshwater turtle parts;
- q Determine the intensive network of traders/middlemen involved in turtle trade;
- q Identify areas to define scope of field work involving freshwater turtles;
- q Determine the measures undertaken by the Punjab Wildlife Department to stop the illegal hunting of freshwater turtles;
- q Investigate legal status of freshwater turtles; and,
- q Identify threats and recommend actions to conserve freshwater turtles.

7. Survey Methods

7.1. Identification of barrages and head-works

Total of nine barrages and head-works were visited. These include; Qadirabad, Khanki, Trimu, Punjnad (on river Chenab); Rasul (on river Jehlum); Islam, Sulemanki (on river Sutlej); and Sidhnai and Baloki (on river Ravi) as shown in figure 1.

7.2. GIS-based maps

Global Positioning System (GPS) Receiver was used to record the coordinates of the sites where the community was interviewed. Using the coordinates, GIS-based maps of barrages and head-works were prepared to show the study sites. These maps are attached as Annexure 1. Detailed information regarding interviewees and the coordinates of the sites visited is given in Table 3 on page 16.

7.3. Questionnaire data

A questionnaire was developed to investigate threats to freshwater turtles and trade situation in freshwater turtle parts in the Punjab province. Total of 41 interviews were conducted. Number of interviews conducted on each barrage is given in Table 4. In order to investigate the species of freshwater turtles found in the area, the questionnaire was supported by a species identification card. The questionnaire and species identification card are attached as Annexure 2 and 3 respectively.

Table 4: Total interviews conducted at barrages and head-works of Punjab province

#	Barrages/Head-works Visited	River of Punjab	Number of Interviews conducted
1	Qadirabad	Chenab	5
2	Khanki	Chenab	1
3	Rasul	Jehlum	8
4	Tirrimu	Chenab	6
5	Sidhnai	Ravi	3
6	Punjnad	Chenab	6
7	Islam	Sutlej	3
8	Sulemanki	Sutlej	5
9	Baloki	Ravi	4
Total interviews conducted			41

7.4. Focused group discussions

Local community, fishermen, and fish-contractors were interviewed to record the information and where possible group discussions were also held with the community members to secure maximum information regarding turtle trade from that specific region.

8. History of turtle trade in Pakistan

Trade in turtle parts is a recent phenomenon in Pakistan. Illegal trade in turtle parts was first reported by *Dr. Khalid Javed Baig* in 2006, while working on “Environmental Baseline Survey and Monitoring of Taunsa Barrage Emergency Rehabilitation Project”. This study was funded by WWF-Pakistan. He mentioned in his report that a family of about 40 persons, camping at Taunsa Barrage for two months killed *Chitra indica* and *Aspideretes gangeticus* to obtain turtle parts. Body parts of hundreds of turtles were lying with them. They could collect over 200 turtles every week and were selling their parts for Rs. 100-200 to buyers, coming from Lahore and Karachi⁴.

The Pakistan Wetlands Programme (PWP) team during its visit to *Dera Ismail Khan* (D I Khan, NWFP) on April 17th-22nd, 2007, found that the communities called *Kehals* residing along the Indus River, were involved in capturing *Aspideretes gangeticus* and *Aspideretes hurum* to obtain turtle parts. These parts are then exported to the international markets (China) through an extensive network of local middlemen. These communities have been capturing softshell turtles since December 2006 and are paid a minimum of Rs. 50-60 and maximum of Rs. 250 for one hinder part of the softshell turtles. Minimum capture is 37 softshell turtles per day by the local communities⁵.

Another freshwater turtle survey was conducted from June 24th - 30th, 2007, by the PWP team. Two barrages, Taunsa (Punjab) and Guddu (Sindh) along the Indus River were surveyed to investigate trade in turtle parts. Results revealed that turtle trade in Sindh (Guddu Barrage) and Punjab (Taunsa Barrage) started 3-5 years ago and one fresh piece of turtle is sold at Rs. 250-400 depending upon its size. *Pakhiwal* community sells turtle parts of *Aspideretes gangeticus*, *Aspideretes hurum* and *Chitra indica* to local dealers at the rate of Rs. 8,000 - 10,000 per 40 kg. Turtle parts are transported to Lahore, from where; these are exported to China⁶.

Following the investigations of the PWP, the Sindh Wildlife Department seized a huge consignment of freshwater turtle parts at the Karachi International Airport. This consignment was bound for China. According to an article published in the Dawn newspaper, these parts are sold locally at the rate of Rs. 200 - 300 per kg., whereas in the east-Asian countries, the market value could range from US \$ 50 - 100⁷. Another article in the Dawn newspaper includes that the consignment weighs approximately up to 700 kg and over 6,000 freshwater softshell turtles have been massacred by the poachers. The shipment's price in the international market is said to be approximately US \$ 100,000⁸.

The NWFP Wildlife Department seized many consignments of freshwater turtle parts and incinerated them after declaring freshwater turtle species as protected animals. A recent consignment of turtle parts seized, weighing up to 300 kg, by the NWFP Wildlife Department along the Indus River. These parts were purchased at the rate of Rs. 250 - 300 per kg from locals, and were intended to be sold in Lahore or Karachi markets for Rs. 1,500 - 1,800 per kg⁹. The issue of illegal trade in turtle parts was given a great coverage by the national media which is reflected in Figure 2.



Figure 2: Coverage of illegal trade in turtle parts in national papers

9. Softshell turtle species under trade

Total of four softshell turtles exist in Pakistan. Three species i.e. Ganges softshell turtles, Peacock softshell turtles and Indian narrow-headed softshell turtles are threatened due to illegal killing for their parts in Pakistan. These species are provided with a soft flap like piece covering the sides and hinder part of the softshell, and chest pellicle which are exported to China, considered for delicate food as well as for medicinal and other uses. The Indus mud turtle does not possess large-sized soft flap and therefore not hunted. Following is the description of these softshell turtles' biology and diagnostic characteristics:

9.1. Indian narrow-headed softshell turtle (*Chitra indica*)

Chitra indica ranges from Pakistan through Peninsular India, and into Nepal and Bangladesh, where it is known from the following river systems; Indus, Ganges, Godavari, Padma, Mahanadi and Coleroon. The species prefers clear, sandy sections of large rivers, and is highly aquatic, seldom crawling onto land except to oviposit¹⁰. It is listed as 'Endangered' in the IUCN Red List and is included in Appendix II of the CITES. It is distinguished by the long narrow head with eyes situated close to the comparatively short proboscis. Head is black in colour with lighter coloured streaks. There is an inverted chevron on the neck in front of the disc. Disc is olive or grey; black spotted in the young, marked with yellow in the adult and attains a length exceeding 800 mm. It is carnivorous in food habits. It nests from August to September. Nests are flask-shaped holes dug in sand or sandy loam. Clutch size varies from 65 to 178 eggs. Incubation period is 40 to 70 days¹¹.

9.2. Ganges softshell turtle (*Aspideretes gangeticus*)

Aspideretes gangeticus is found in the Indus, Ganges and Mahanadi river systems in Pakistan, northern India, Bangladesh, and southern Nepal. It is listed as 'Vulnerable' in the

IUCN Red List and is included in Appendix I of the CITES¹⁰. It is distinguished by its greenish black streaked head and olive green disc with black reticulation or yellow vermiculation. It is omnivorous in food habits. Eggs are buried under vegetation. Clutch size varies from 13 to 35 eggs¹¹. Incubation may take 251-310 days¹⁰.

9.3. Indian Peacock softshell turtle (*Aspideretes hurum*)

Aspideretes hurum is found in Pakistan, India, Nepal and Bangladesh. It is listed as 'Vulnerable' in the IUCN Red List and is included in Appendix I of the CITES¹². It is provided when young, with well-marked ocelli on an olive green disc with black reticulations. Head, marbled with dark green or black lines and yellow spots. With age, the ocelli and yellow spots tend to disappear¹¹.

10. Results and discussion

Softshell turtles of Pakistan are exploited for their parts and illegally exported to China, through an intensive network of local, national and international contractors and dealers. According to information from the local community, the most abundantly found species in the rivers of Punjab are Indian narrow-headed softshell and Ganges softshell turtles, while peacock softshell turtles are rare. It was also noted that any of the above mentioned species is captured, depending upon its availability. The turtle hunters prefer Ganges softshell turtles over Indian narrow-headed softshell turtles because the soft flap from the former has less fats in it and can easily be dried up in the open air as compared to the soft part of Indian narrow-headed softshell turtles, which needs processing that includes boiling to reduce fat contents.

In the Punjab Province, no local community was found who utilises turtle meat or eggs for eating purposes as compared to the tribe *Kehal*, along the River Indus in *Dera Ismail Khan*, district of NWFP. The results of the questionnaire survey showed that about 80% of the people interviewed are well aware of trade in turtle parts. Among the interviewees, 5% were turtle contractors while 15% were turtle hunters.

10.1. Specific threats to freshwater turtles in the Punjab province

10.1.1. Illegal trade in turtle parts

Major threats to the freshwater softshell turtles are their massive killing by local communities, fishermen and fish contractors, for the purposes of illegal trade. These turtle parts are exported to China where these are used in several traditional Chinese medicines. This high demand has threatened the very existence of the freshwater turtles of Pakistan.

10.1.2. Inadequate legal protection

Globally, seven out of eight freshwater turtle species fall under CITES (Appendix I and II). But within the country, freshwater turtles were not extended legal protection until the illegal trade in their body parts is exposed a year ago, though it was taking place for five years in the Punjab Province. This gap granted the turtle traders enough time to establish their networks and extend their linkages involving poor communities.

10.1.3. Lack of conservation actions

Illegal trade in turtle body parts of softshell species was kept under cover by the traders and no appropriate conservation actions were taken in the Punjab province. Moreover, the field staff of the Customs Department and that of the other law enforcing agencies is not aware of the illegal turtle trade. They are not trained in recognising the turtle body parts and therefore can not contribute effectively to curb this abusive trade at the national and international gateways.

10.1.4. Lack of awareness

The fishermen consider the presence of turtles in the rivers as fish consumers competing with them and also nibble the fishing nets, if caught as by-catch, but they are not aware of

the ecological role the turtles play in maintaining the river ecosystem by consuming the dead organic matter in the river. This provides a healthy ecosystem for other freshwater fauna.

10.1.5. Lack of alternative livelihood opportunities

Turtle hunters and the communities living on the shoreline that depend on river resources for their subsistence do not have valuable livelihood options, after the serious decline in fish populations. The only source of earning for them from the wetlands ecosystem is either to make different products of low market value, such as mats and baskets of *Typha* and *Saccharum* species of plants or to catch turtles for their parts, as an easy option.

10.1.6. Inadequate protection of turtle nests

Nesting sites of freshwater turtles are not protected and the wild animals such as feral dogs, monitor lizards and jackals are a serious threat to their nests. These animals destroy turtle nests, feeding on their eggs and ultimately contributing in the decline of their numbers. In addition, several developmental activities along the banks and reclamation of lands for agricultural purposes are also threatening turtles' survival by destructing their habitat.

10.1.7. Threats to species survival

Maturity of turtles reaches late in their lives and they reproduce slowly. The species survival is possible if it survives for a longer period. The local communities capture the softshell turtles irrespective of their age to get soft hinder part of any size, thus threatening the next generation.

10.1.8. Decline in freshwater resources

Freshwater resources are declining due to the shortage of water in the rivers. Water pollution is another reason for the decline of fish-catch, which ultimately has a significant impact on the livelihood of freshwater dependent communities.

10.2. Identified communities, involved in turtle trade

Investigations of illegal trade in turtle body parts uncovered well organised trade chains involving local communities, local middlemen and national and international contractors. The local communities include *Kehal*, *Jabhel* and *Pakhiwal*; among the poorest people who depend on the available freshwater resources for their subsistence. *Jabhels* are widespread in the Punjab Province and to uplift their socio-economic status, adopted illegal trade in parts of softshell turtles.

Another community, living in southern Punjab and northern Sindh, called *Mohana* (fishermen) is also involved in illegal turtle trade as most of the fish contractors are also the turtle body parts dealers. Fishermen capture turtles as by-catch of fish.

In addition to above mentioned communities, opportunistic young people from different areas of the country are also involved in turtle trade. It has been reported by the communities during the survey that dealers from different cities, i.e. Jhang, Multan, Deena, Lahore, Karachi, and Punjnad visit the areas and collect turtle body parts of softshell turtles.

10.3. Perception of local communities

Local communities and fishermen have different perception about the practice of turtle killing. Fishermen are of the view that wiping out softshell turtles from rivers and streams is beneficial for them and consider softshell turtles as competitors. Some fishermen also claimed that when people capture the softshell turtles, amputate their desired parts and throw the rest in the river. Due to decay and foul smell of dead turtles in the river, fish avoid coming to the area and ultimately the fish production is affected.

Some people among local communities are against turtle killing as they believe that everything created on the face of earth has some purpose and freshwater turtles play an

important role in purification of water by consuming dead organic matter as food, in rivers and streams. Some people complaint about foul smell, produced during the processing of turtle parts, particularly when the turtle body parts are dried in the open air and boiled.

10.4. Turtle capturing techniques and instruments

Softshell turtles are captured throughout the year by the identified communities but the summer season is preferred. The softshell turtle are more active during summer and are easily caught in the net. It is important to note that turtle hunting period includes those months when fishing is prohibited by the Punjab Fisheries Department. It was found out during the survey that maximum softshell turtles are captured, in an organised way, from May to September. Turtle hunters move in groups and collect the softshell species from streams and rivers. A group consists of 5 to 20 persons, sometimes more than 100 people, in small groups are also seen by local communities, including fishermen and local turtle hunters. Some turtle hunters attract the softshell species of turtles by throwing meat near the river bank. As these turtles are carnivorous in their food habit, they gather at one place and turtle hunters avail the opportunity of easily capturing in large numbers. Fishermen also capture softshell turtles as by-catch and use different types of nets and net-hooks, in addition to spear-rods.

10.5. Trade situation

10.5.1. Duration of illegal turtle trade

In Pakistan, mass killing of freshwater softshell turtles and subsequent trade in their body parts started a few years ago. During the recent visit to significant barrages and head-works of the Punjab province, the PWP team found that the turtle trade has its origin in Punjab, where the business is firmly established and now getting widespread in other provinces as well. The survey team recorded that trade in turtle parts started by the immigrant Chinese workers themselves with the support of local communities, fishermen and contractors. Figure 3 shows the duration of turtle trade, recorded at head-works and barrages, along the Punjab Rivers. The information recorded during the survey regarding duration of illegal turtle trade is given in Table 5.

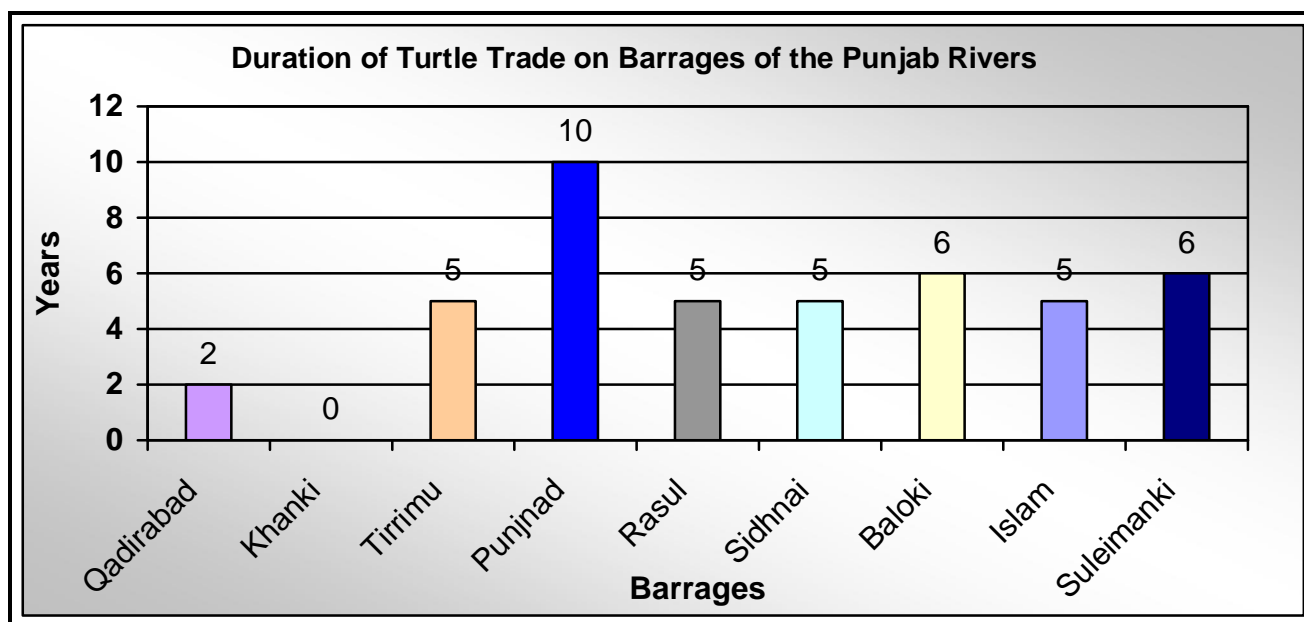


Figure 3: Duration of turtle trade on barrages of the Punjab Rivers

10.5.2. Per day turtle catch

Groups of turtle hunters visit an area, camp out for a few days and collect as many turtles as they can. In the rivers of Punjab, per day catch has declined from 150-200 turtles to 15-20 turtles due to their excessive killing during the past six years. The numbers of turtles captured per day depends on the availability of turtles, season and water level, and the number of persons capturing turtles. It is observed that a single person can catch 5-10 turtles per day. This number reaches up to 200 turtles per day when a group of turtle hunters consists of 10-20 persons and they stay out at one site for two to three days.

10.5.3. Local rates

Three different markets were identified for illegal trade in turtle body parts (soft hinder piece of softshell species); local, national and an international market. Rates of turtle body parts in local and national markets have been identified but the international market is yet to be explored. In local markets, rates of turtle body parts are set by the local contractors that range from Pak Rs. 200-700 (approximately US \$ 3.5-11.5). Minimum cost of a soft hinder piece of turtles recorded was Rs. 200 at the Islam and Sulemanki Head-works, while the highest price recorded was Rs. 700 at the Punjnad Headwork. Figure 4 describes the comparison of rates at different head-works and barrages. Detailed information obtained from the interviews at each barrage along the Punjab Rivers is compiled in Table 6.

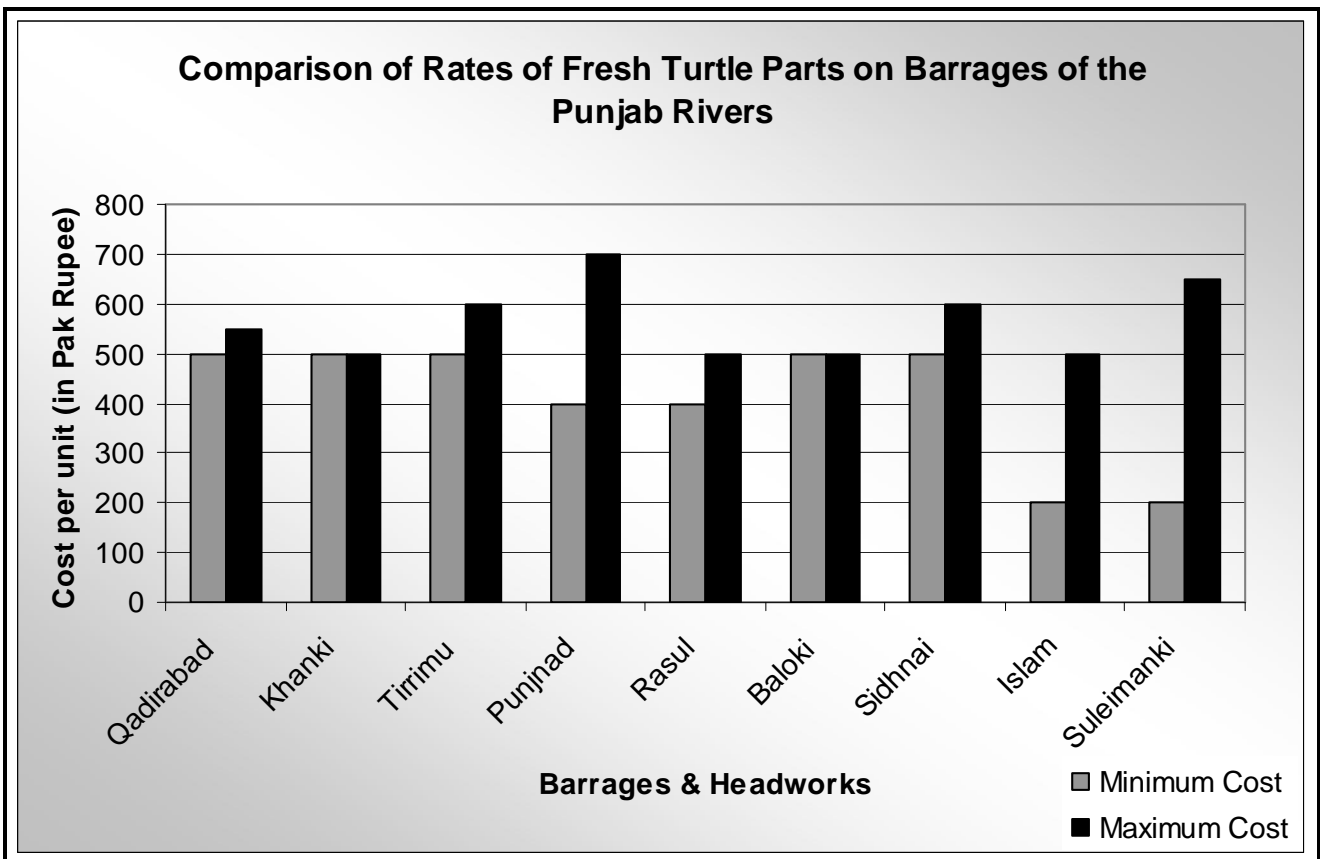


Figure 4: Comparison of rates of fresh turtle parts on barrages and head-works of Punjab Rivers

10.5.4. National rates

Trade in turtle parts has become a lucrative business for turtle contractors. For local communities, it is an eye-catching source of income. Turtle parts collected from different parts of the country are brought to markets in Lahore and Karachi. The dried and processed turtle parts are sold in kilograms in these markets at a cost of Pak Rs. 2,400-4,500 (approximately US \$ 38.9-72.7) per kg.

10.5.5. Trade routes

Contractors and dealers purchase processed body parts of softshell turtles from local communities and turtle hunters. These turtle parts from all over the country are brought to markets in Lahore and Karachi, from where they are exported to China.

11. Recommendations

Conservation of freshwater turtles is on priority agenda in Pakistan and the illegal trade in turtle parts should be controlled on time. It needs collaborative efforts of the relevant agencies, organisations, and governmental departments according to their mandate, within the country and across the border.

11.1. Conservation actions needed at international level

11.1.1. TRAFFIC International

The TRAFFIC International is the wildlife trade monitoring network of WWF and IUCN, works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. In order to monitor the illegal trade in parts of softshell turtles into the Chinese markets, TRAFFIC International should be contacted. It would be effective to stop the illegal trade in parts of freshwater turtles into the Chinese markets. The TRAFFIC International could be considered for;

- q Developing a regional roster of experts for species identification in support of Customs Departments at international gateways;
- q Developing a centralised filing system for recording of illegal wildlife trade cases for identifying the issue and the scale of the problem;
- q Blacklisting individuals and businesses at the regional level that are involved in illegal wildlife trade and share information at the regional and international level;
- q Involving the anti-narcotics agencies in action against smuggling as international studies of the wildlife trade have indicated that similar methods and routes are used by the narcotics and wildlife products smugglers.

11.1.2. CITES

The CITES Secretariat should be contacted to appraise them about the present killing of freshwater turtles in Pakistan, because of the growing demand of specific turtle parts in the Chinese markets. The CITES is required to put pressure on both sides of the border to control the illegal trade of turtle parts.

11.1.3. IUCN

The IUCN Freshwater Turtle and Tortoise Specialist Group needs to be contacted to update information regarding current situation of freshwater turtles in Pakistan. The IUCN can help highlight the plight of freshwater turtles through their publications at the international level. There is a need of assessment according to the IUCN Red List criteria to revise the conservation status of freshwater turtle species found in Pakistan.

11.1.4. WWF-China

The WWF-China should be appraised about the exploitation of freshwater softshell turtles of Pakistan. They also need to be requested to make necessary conservation measures to restrain the illegal trade in softshell species of freshwater turtles on both sides of the international borders. Decrease in demand of the particular turtle species on consumer end, will also help in decreasing the pressure on turtle populations at the supplier end, in addition to discouraging the consignments of illegal parts of freshwater turtle species.

11.1.5. Publish research paper in the international journals

A research paper and other popular articles on freshwater turtles should be published in the international journals, for the dissemination of information. The information can also be shared with TRAFFIC international to be published in TRAFFIC Bulletin.

11.2. Conservation actions needed at national level

11.2.1. Coordination among provinces through NCCW

The turtle trade is taking place in Punjab, NWFP and Sindh province and therefore there is a need for application of management tools at the provincial level. The PWP recommends close coordination among the provinces through;

- q Holding review meetings through NCCW;
- q Inter-provincial coordination on legal status and measures;
- q Inter-provincial mechanism on trade control; and,
- q Enforce ban on export through CITES.

11.2.2. Provincial wildlife acts

Freshwater turtles are not listed as protected animals in all provincial and territorial wildlife laws, therefore, PWP recommends that provincial and territorial wildlife laws of the respective province and territories need to be amended regarding the protection status of the freshwater turtles.

11.2.3. Stricter legislative measures

Stricter legislative measures should be adopted to control illegal trade. The provincial wildlife and fisheries authorities should take the notice of freshwater turtle by-catch during fishing and adopt legal measures on stopping it and making it mandatory for the fishermen to safely release the stranded turtles.

11.2.4. Develop conservation action plan for freshwater turtles of Pakistan

An action plan for the “freshwater turtles of Pakistan” needs to be developed based on the recent findings and specific issue based field surveys by PWP. This will set the basis for the development of country’s freshwater turtle conservation action plan for the next five years. It will not only describe other necessary details about the freshwater turtles but will also address the major threats and suggest the mitigation measures with an appropriate action plan and budget to curb this practice as soon as possible.

11.2.5. Raise public awareness of the illegal turtle hunting

To make the nation aware of the illegal trade hunting of the softshell turtles, articles must be published in the national newspapers. In addition, several other initiatives including the fact sheets relating to illegal turtle trade and posters of the eight freshwater turtle species and the species in danger due to trade, would prove helpful in raising this issue at all levels of the society.

11.2.6. Lack of Federal CITES Law

Pakistan being a party to CITES has a national obligation to enact and notify a federal legislation for effective implementation of CITES in the country. The federal CITES law is in the process of preparation and has not yet finalised. It is recommended that NCCW should finalise the federal CITES law in collaboration with other agencies.

11.3. Conservation actions needed at community level

11.3.1. Community organisation and livelihood improvement

Trade in turtle parts, being a newly emerged livelihood option, seeking attention of the poor local communities to improve their livelihoods. Consequently, it is increasing the risk of

softshell turtle populations being threatened. Dependency of identified local communities on natural resources can be reduced by providing them with improved livelihood opportunities. This could be done by organising local communities with the major objective to conserve the freshwater resources and their associated biodiversity particularly the freshwater turtles and then providing them with better livelihood options. Community based Organisations (CBOs) should be established in collaboration with the provincial wildlife departments and the existing local organisations of the area, to protect freshwater turtles.

11.3.2. Conservation and education

There is a need for developing awareness raising material and awareness raising strategy to promote conservation needs of freshwater turtles among government and non-government organisations, general public and the local communities. The targeted groups can be addressed through following means;

At national level:

- q Prepare field guide to identify turtle species, including the field survey techniques;
- q Develop posters, brochures and leaflets;
- q Open discussion forum using the chat room at www.pakwetnet.com;
- q Providing information regarding freshwater turtles on PWP's website; and,
- q Make documentary on freshwater turtles of Pakistan.

At community level:

- q Initiate conservation education programmes at school level;
- q Raise awareness through religious teachings;
- q Establish information centres or information booth at potential sites;
- q Frequent meetings with communities; and,
- q Install informative boards at potential sites, highlighting the issues.

11.3.3. Training and capacity-building

The customs authorities and the other law enforcement agencies should be trained in identifying parts of turtles, monitoring turtle killing and illegal export of turtle parts.

11.4. Surveys and studies

11.4.1. Surveys on freshwater turtle population statistics

Though various species of freshwater turtles found in Pakistan are well known but the freshwater turtles in context of their population size, range and status are not yet studied. There is a dire need to start scientific research, to study the occurrence, abundance, status and hotspots of all species of freshwater turtles found in Pakistan, for a better understanding of the freshwater turtle population and effectiveness of different management tools.

11.4.2. Surveys to identify market chains and trade routes

Comprehensive market surveys should be conducted on priority basis. The extensive network of national and international dealers should be identified, in addition to market chains at local level.

11.4.3. Surveys to identify livelihood opportunities

Being the newly emerged livelihood opportunity for the adjacent riverine community, a comprehensive study needs to be conducted to assess the economic dependence of the local fishermen on the trade in freshwater turtles of Pakistan.

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13. Tables

Table 3: Information regarding sites surveyed and interviewees

#	River of Punjab	Barrage	Nearest location name	Interviewee	Capture turtles/know about turtle capturing	Coordinates	
						N	E
1	Chenab	Qadirabad	Qadirabad Head	Mehmood	Know about turtle capturing	32°19.541	73°41.004
2	Chenab	Qadirabad	Qadirabad Head	Rasheed	Know about turtle capturing	32°19.541	73°41.004
3	Chenab	Khanki	Khanki Head	M. Bashir	Know about turtle capturing	32°24.136	73°58.205
4	Chenab	Qadirabad	Lily Pond near Barrage	Mushtaq Ahmad	Know about turtle capturing	32°21.593	73°42.956
5	Chenab	Qadirabad	Qadirabad Head Right Bank	Mukhtar	Turtle contractor	32°18.584	73°43.705
6	Chenab	Qadirabad	Qadirabad Head Right Bank	Asghar	Know about turtle capturing	32°18.584	73°43.705
7	Jhelum	Rasul	Kutra Pind	Ali Hassan	Capture turtles	32°40.553	73°32.012
8	Jhelum	Rasul	Kutra Pind	Abdul Razaq	Capture turtles	32°40.582	73°31.915
9	Jhelum	Rasul	Rasul Barrage	Liaqat Ali	Know about turtle capturing	32°41.611	73°30.609
10	Jhelum	Rasul	Maryala	M. Asghar, Abdul Qayum	Know about turtle capturing	32°41.182	73°29.585
11	Jhelum	Rasul	near Maryala	Bashir Ahmad Deewana	Know about turtle capturing	32°40.916	73°29.588
12	Jhelum	Rasul	Dilawar Pur	M. Yaseen	Know about turtle capturing	32°42.052	73°33.594
13	Jhelum	-	Khushab	Fazal Rehman	Know about turtle capturing	32°18.846	72°23.001
14	Jhelum	-	Tetri Pattan	Sadiq Hussain	Know about turtle capturing	31°57.825	72°13.294
15	Chenab	Tirrimu	Koray Wala	Allah Ditta	Know about turtle capturing	31°08.317	72°10.063
16	Chenab	Tirrimu	Koray Wala	Allah Yaar	Know about turtle capturing	31°08.322	72°10.065
17	Chenab	Tirrimu	Koray Wala	Shaban	Know about turtle capturing	31°08.322	72°10.065
18	Chenab	Tirrimu	Koray Wala	Elahi Buksh	Know about turtle capturing	31°08.322	72°10.065
19	Chenab	Tirrimu	Koray Wala	Syed Iftikhar Hussain, Iqbal Hussain	Turtle Contractor	31°08.322	72°10.065
20	Ravi	Sidhnai	Sidhnai Barrage	Sikandar	Know about turtle capturing	30°33.013	72°07.543
21	Ravi	Sidhnai	Sidhnai Barrage	Bashir Ahmad	Know about turtle capturing	30°33.827	72°10.376
22	Ravi	Sidhnai	2-3 km U/S Sidhnai	20 fishermen in group	Capture turtles	30°33.391	72°12.995
23	Chenab	Tirrimu	Muzaffargarh	Maher Imam Bakhsh	Know about turtle capturing	30°04.676	71°16.427
24	Chenab	Punjad	Shehar Sultan	Bashir Ahmad	Know about turtle capturing	29°34.319	71°02.487
25	Chenab	Punjad	Moza Deen	Haji Hazoor Bakhsh, Haji Ghulam Rasool	Know about turtle capturing	29°19.166	71°01.203
26	Chenab	Punjad	Moza Deen	Bahawal Bukhsh	Know about turtle capturing	29°19.619	71°01.879

Table 3: Information regarding sites surveyed and interviewees

#	River of Punjab	Barrage	Nearest location name	Interviewee	Capture turtles/know about turtle capturing	Coordinates	
						N	E
27	Chenab	Punjnad	Moza Deen	Muhammad Ramzan, Allah Ditta	Know about turtle capturing	29°20.819	71°01.914
28	Chenab	Punjnad	Moza Makhan Bela	Ahmad Yaar Khan, Habib Ullah, Ladho Khan, Haji Abdul Ghafar	Know about turtle capturing	29°20.468	71°01.533
29	Chenab	Punjnad	Punjnad Head	M. Nawaz Khan, Munir Hussain	Know about turtle capturing	29°19.578	71°01.972
30	Sutlej	Islam	Islam Head	Barkat Ali	Know about turtle capturing	29°49.726	72°32.956
31	Sutlej	Islam	Basti Sindhian	Muhammad Qadir	Know about turtle capturing	29°49.771	72°33.035
32	Sutlej	Islam	Basti Chaker Qadir Wala	Qaim Muhammad, Rehmat, Akhtar, Manzoor	Know about turtle capturing	29°50.044	72°32.479
33	Sutlej	Suleimanki	Suleimanki Head Left Bank	M. Yousaf	Know about turtle capturing	30°22.474	73°52.204
34	Sutlej	Suleimanki	Suleimanki Head Left Bank	Munir	Capture turtles	30°22.474	73°52.204
35	Sutlej	Suleimanki	Suleimanki Head Left Bank	Muhammad Deen, Shaban	Know about turtle capturing	30°22.407	73°52.219
36	Sutlej	Suleimanki	Suleimanki Head Left Bank	Deen Muhammad, Asad, Shabir	Capture turtles	30°22.327	73°52.249
37	Sutlej	Suleimanki	Suleimanki Head Left Bank	Mehboob	Capture turtles	30°22.290	73°52.207
38	Ravi	Baloki	Baloki Head	Allah Ditta	Know about turtle capturing	31°13.200	73°51.255
39	Ravi	Baloki	Baloki Head	Shoukat (Kaka)	Know about turtle capturing	31°14.149	73°51.961
40	Ravi	Baloki	Baloki Head	M. Ibrahim	Know about turtle capturing	31°13.114	73°51.659
41	Ravi	Baloki	Baloki Head	M. Yasin	Know about turtle capturing	31°13.037	73°51.833

Table 5: Duration of illegal turtle trade

River	Barrage	Location	interviewee	Years	Turtle parts transported to, (city)	Turtle contractor
Chenab	Qadirabad	Qadirabad Head	Mehmood	-	-	-
		Qadirabad Head	Rasheed	2	Lahore	-
		Lilly pond near Barrage	Mushtaq Ahmad	2	Lahore	-
		Qadirabad Head, Right bank	Mukhtar	-	-	Mukhtar (Local)
		Qadirabad Head, Right bank	Asghar	-	Lahore	-
	Khanki	Khanki Head	Muhammad Bashir	-	Lahore	-
	Tirrimu	Koray Wala	Allah Ditta	5	-	-
		Koray Wala	Allah Yar	-	-	-
		Koray Wala	Shaban	4-5	Lahore	Ali Sher (local), Zahid, Jahangir (Lahore),
		Koray Wala	Elahi Bukhsh	3-4	-	-
		Koray Wala	Syed Iftikhar Hussain, Iqbal Hussain	4-5	Lahore	Tasawar (local)
		Muzaffargarh	Maher Imam Bukhsh	-	-	-
	Punjad	Shehar Sultan	Bashir Ahmad	5	Punjad	-
		Moza Deen	Haji Hazoor Bukhsh, Haji Ghulam Rasul	4-5	Karachi	Contractors from Karachi-
		Moza Deen	Bahawal Bukhsh	-	-	-
		Moza Deen	Muhammad Ramzan, Allah Ditta	-	-	-
		Moza Makhan Bela	Ahmad Yar Khan, Habib Ullah, Ladho Khan, Haji Abdul Ghafar	2-3	-	-
		Punjad Head	Muhammad Nawaz Khan, Munir Hussain	8-10 years, but became common 5 years ago	Lahore	Ghulam Ali,
Jhelum	Rasul	Kutra Pind	Ali Hassan	-	Lahore	-
		Kutra Pind	Abdul Razaq	1	Lahore	Mukhtar from Qadirabad
		Rasul Barrage	Liaqat Ali	-	Lahore	Contractors from Lahore

Table 5: Duration of illegal turtle trade

River	Barrage	Location	interviewee	Years	Turtle parts transported to, (city)	Turtle contractor
		Maryala	Muhammad Asghar, Abdul Qayum	-	Deena, Lahore	-
		Near Maryala	Bashir Ahmad Deewana	-	-	-
		Dilawar Pur	Muhammad .Yaseen	-	-	-
		Khushab	Fazal Rehman	4-5	Lahore, Jhang	-
		Tetri Pattan	Sadiq Hussain	3	-	-
Ravi	Sidhnai	Sidhnai Barrage	Sikandar	3-4	Lahore	-
		Sidhnai Barrage	Bashir Ahmad	4-5	-	Contractors from Multan
		Sidhnai Upstream	A group of 20 persons	4-5	Lahore	-
	Baloki	Baloki Head	Allah Ditta	6	Lahore	Contractors from Thokar area in Lahore
		Baloki Head	Shoukat (Kaka)	2	Lahore	Contractor from Qadirabad
		Baloki Head	Muhammad Ibrahim	-	-	-
		Baloki Head	Muhammad Yasin	2	Lahore	-
Sutlej	Islam	Islam Head	Barkat Ali	3-4	Lahore Jhang	Contractor from Jhang
		Basti Sindhian	Muhammad Qadir	4-5	Lahore	Zahid from Lahore
		Basti Chaker Qadir Wala	Qaim Muhammad, Rehmat, Akhtar, Manzoor	3	Lahore, Jhang	Contractor from Jhang
	Suleimanki	Suleimanki Head, Left bank	Muhammad Yousaf	4-5	Lahore	Ejaz Ahmad Rangila (local)
		Suleimanki Head, Left bank	Munir	5-6	Lahore	Zahid from Lahore
		Suleimanki Head	Muhammad Deen, Shaban	4-5	Lahore	Ejaz Ahmad Rangila (local)
		Suleimanki Head	Deen Muhammad, Asad, Shabir	4	Lahore	Contractors from Defence Lahore
		Suleimanki Head	Mehboob	4-5	Lahore	Ejaz Ahmad Rangila (local)

Table 6: Trade in turtle parts along the Punjab Rivers

#	Barrage	Nearest location	Capture/day	Group	Rates	
					Fresh piece (Pak Rs.)	Dried pieces/kg (Pak Rs.)
River Chenab						
1	Qadirabad	Qadirabad Head	-	-	-	-
2	Qadirabad	Qadirabad Head	-	-	500	-
3	Qadirabad	Lily pond near Qadirabad Head	-	-	500-550	
4	Qadirabad	Qadirabad Head, right bank	-	-	500	3,000
5	Qadirabad	Qadirabad Head, right bank	-	-	-	-
6	Khanki	Khanki Head	100-200 turtles/day	In group	500	-
7	Tirrimu	Koray Wala	-	-	500	-
8	Tirrimu	Koray Wala	-	-	-	-
9	Tirrimu	Koray Wala	-	-	600	-
10	Tirrimu	Koray Wala	-	-	500	-
11	Tirrimu	Koray Wala	10-20 turtles Average, sometimes more than 100	-	500	2,400
12	Tirrimu	Muzaffargarh	-	-	-	-
13	Punjnad	Shehar Sultan	5-10 turtles	group of 8-10 persons	-	-
14	Punjnad	Moza Deen	15-20 turtles	-	100	-
15	Punjnad	Moza Deen	-	-	-	-
16	Punjnad	Moza Deen	-	-	-	-
17	Punjnad	Makhan Bela	-	-	-	-
18	Punjnad	Punjnad Head	2-8 Kg of dried pieces/day	Group of 100-150 persons	400-700	4,500
River Jehlum						
1	Rasul	Kutra Pind	10-12 turtles	By one person	500	-
2	Rasul	Kutra Pind	1 or 2 turtles	By one person	400	-
3	Rasul	Rasul Barrage	-		500	-
4	Rasul	Maryala	-		500	-
5	Rasul	Near Maryala	-		-	-
6	Rasul	Dilawar Pur	-		-	-
7	Rasul	Khushab	100-200 turtles	In group	500	-

Table 6: Trade in turtle parts along the Punjab Rivers

#	Barrage	Nearest location	Capture/day	Group	Rates	
					Fresh piece (Pak Rs.)	Dried pieces/kg (Pak Rs.)
8	Rasul	Tetri Pattan	-	-	-	-
River Ravi						
1	Sidhnai	Sidhnai Barrage	10-20 turtles	2-3 persons, group of 30-35 persons	-	-
2	Sidhnai	Sidhnai Barrage	15-20 turtles	By one person	100	-
3	Sidhnai	Sidhnai upstream	100-200 turtles	Group of 10-20 persons	500-600	-
4	Baloki	Baloki Head	10-15 turtles	By one person	500	-
5	Baloki	Baloki Head	-	-	-	127,000/40 kg (3,175/kg)
6	Baloki	Baloki Head	-	-	-	-
7	Baloki	Baloki Head	10-20 turtles at present, 100-200 turtles in the past	-	500 at present, 50 in the past	3,500
River Sutlej						
1	Islam Head	Islam Head	-	A group of 5-6 persons	300-500	2,500
2	Islam Head	Basti Sindhian	3-5 turtles	By one person	300	-
3	Islam Head	Basti Chaker Qadir Wala	300 turtles	A group of 4-5 persons	300	-
4	Suleimanki	Suleimanki Head, Left Bank	4-5 at present, 50 turtles in the past	-	200-400 at present, 25 in the past	-
5	Suleimanki	Suleimanki Head, Left Bank	20-25 turtles	A group of 20-25 persons (locals)	650	-
6	Suleimanki	Suleimanki Head	-	A group of 15-20 persons	500	-
7	Suleimanki	Suleimanki Head	3-5 turtles at present, 50-100 turtles in the past	By one person	500-600	-
8	Suleimanki	Suleimanki Head	-	-	200-600	-

14. Glimpses of the visit



Figure 5: A turtle hunter, dragging a softshell turtle



Figure 6: Dried parts of softshell turtles

Photo credit: Gill T. Braulik



Figure 7: A community member showing dried parts of softshell turtles



Figure 8: Indian narrow headed softshell turtle



Figure 9: A softshell turtle hooked by turtle hunter

Annexure 2.

**Freshwater Turtles of Pakistan
Punjab Rivers Survey**

River: _____ GPS: N _____ E _____

Town Name: _____

Nearest Barrage: _____ Date: _____

Name of Fishermen: _____ Tribe: _____

Background

1. How old are you? 20-30 31-40 41-50 51-60 61-70 71-80 80+
2. How many children do you have? 0-2 3-5 5-8 8-12 13+
3. How many grand children? None 1-5 6-10 11-15 16-25 25+
4. For how many years have you been fishing? 1-5 6-10 11-20 21-30 31+
5. Where do you fish? River Lakes Canals
6. Do you fish Commercially Subsistence Full-Time Part-Time
7. What kind of fishing gear do you use? _____
8. What species of fish do you try to catch? _____
9. Which kinds of fish do you throw away or do you use everything? _____

10. Do you fish mostly during a certain season of year? _____

Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec

11. How good is the fishing these days?

Better than Before Same as Before Worse than Before

12. What kinds of changes have you noticed over time? _____

Freshwater turtles

1. Do you see freshwater turtles in this area? Yes / No
2. Can you recognise different types? List types: _____

3. Have you observed any change in turtle population over the years?

Stayed the Same More turtles now Less turtles now Change in species

4. Name the species that have declined in number compared to the past _____

5. What are the reasons for decline of turtles?

Killing of Adults / Collecting eggs / Pollution / Low water / Habitat degradation / other

6. Are freshwater turtles killed during fishing? Yes / No _____

7. Which turtles have more importance when caught? _____

8. How many turtles are captured per day per person? _____

9. Do you sell turtle parts to dealers Yes / No (when did you start?) _____

10. If so at what rates are turtles and their parts sold? _____

11. Which turtle species have more demand in the market? _____

12. Where are the turtles transported to from here?

Lahore / Islamabad / Karachi / Pindi / Other

13. Do you know the nesting season, clutch size and incubation period of freshwater turtles?

Yes / No

Do use turtle eggs? Yes / No

14. What are the threats to turtle nests? _____

15. How to save freshwater turtles of the area? _____

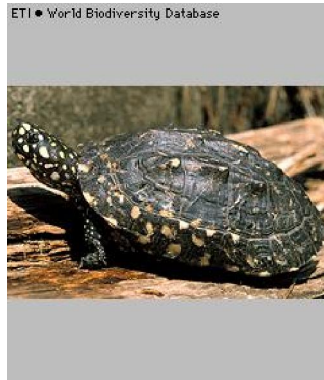
Annexure 3.

Freshwater Turtles of Pakistan Species Identification Card

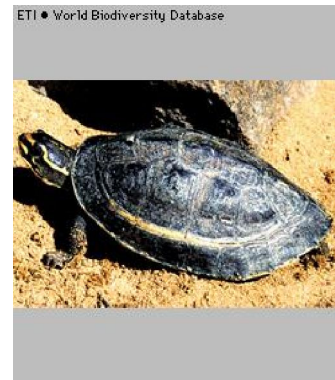
Source: Turtles of the World, <http://nlbif.eti.uva.nl>



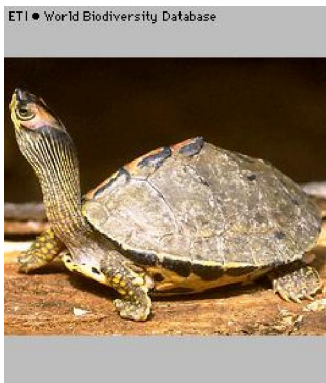
Kachuga smithii
(Smith's Turtle)



Geoclemys hamiltoni
(Spotted Pond Turtle)



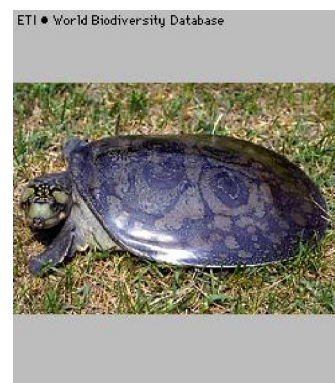
Hardella thurjii
(Crowned River Turtle)



Kachuga tecta
(Indian Roofed Turtle)



Aspideretes gangeticus
(Ganges Softshell Turtle)



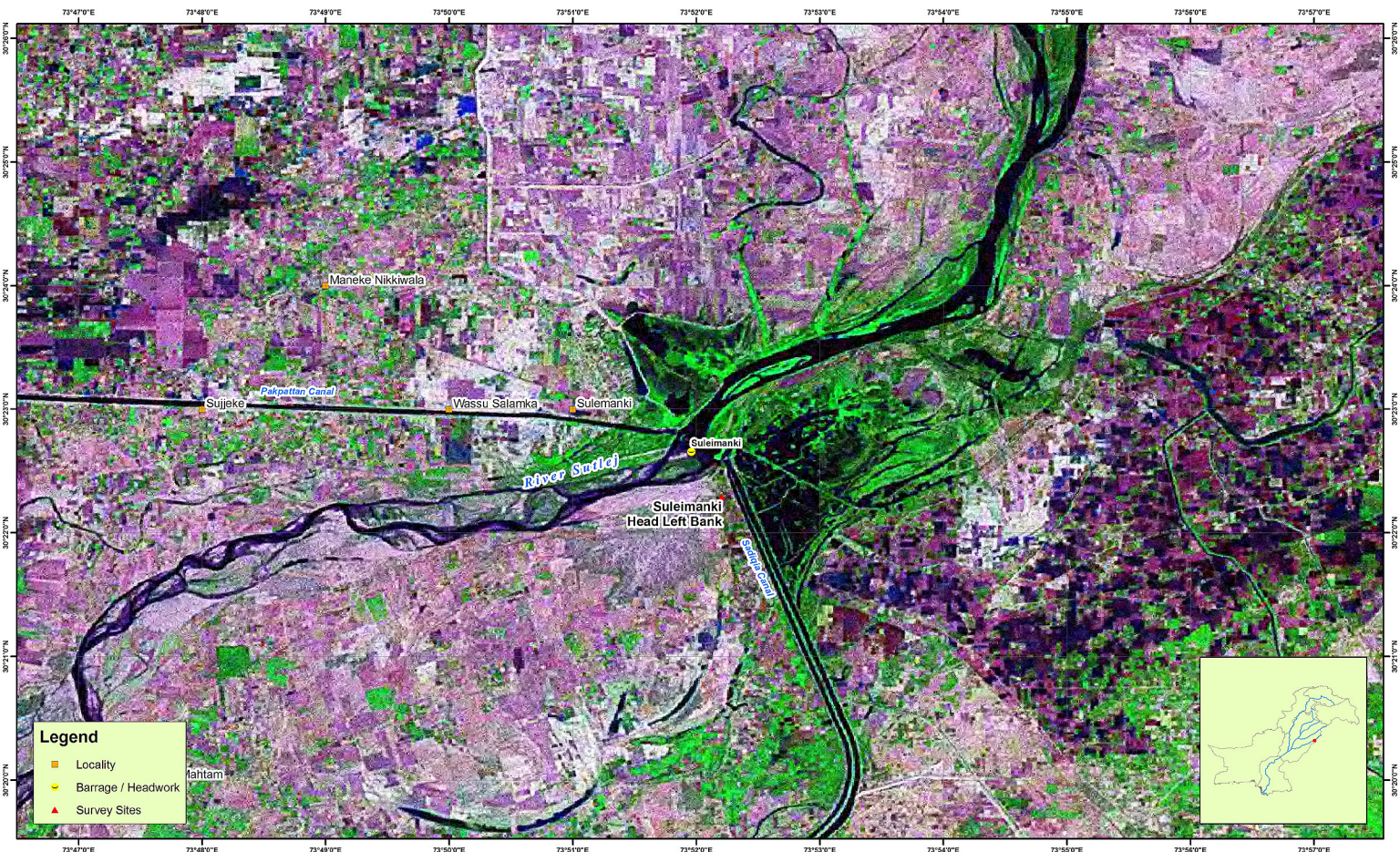
Aspideretes hurum
(Peacock Softshell Turtle)



Lissemys punctata
(Indus Mud Turtle)



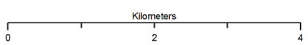
Chitra indica
(Indian Narrow-headed Softshell Turtle)



Head Suleimanki

Survey Sites of Freshwater Turtle, 2007

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 Map Updated December 6th, 2007
 Data Sources LandSat ETM, WWF-Pk

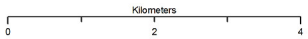




Head Islam

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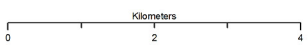




Head Panjnad

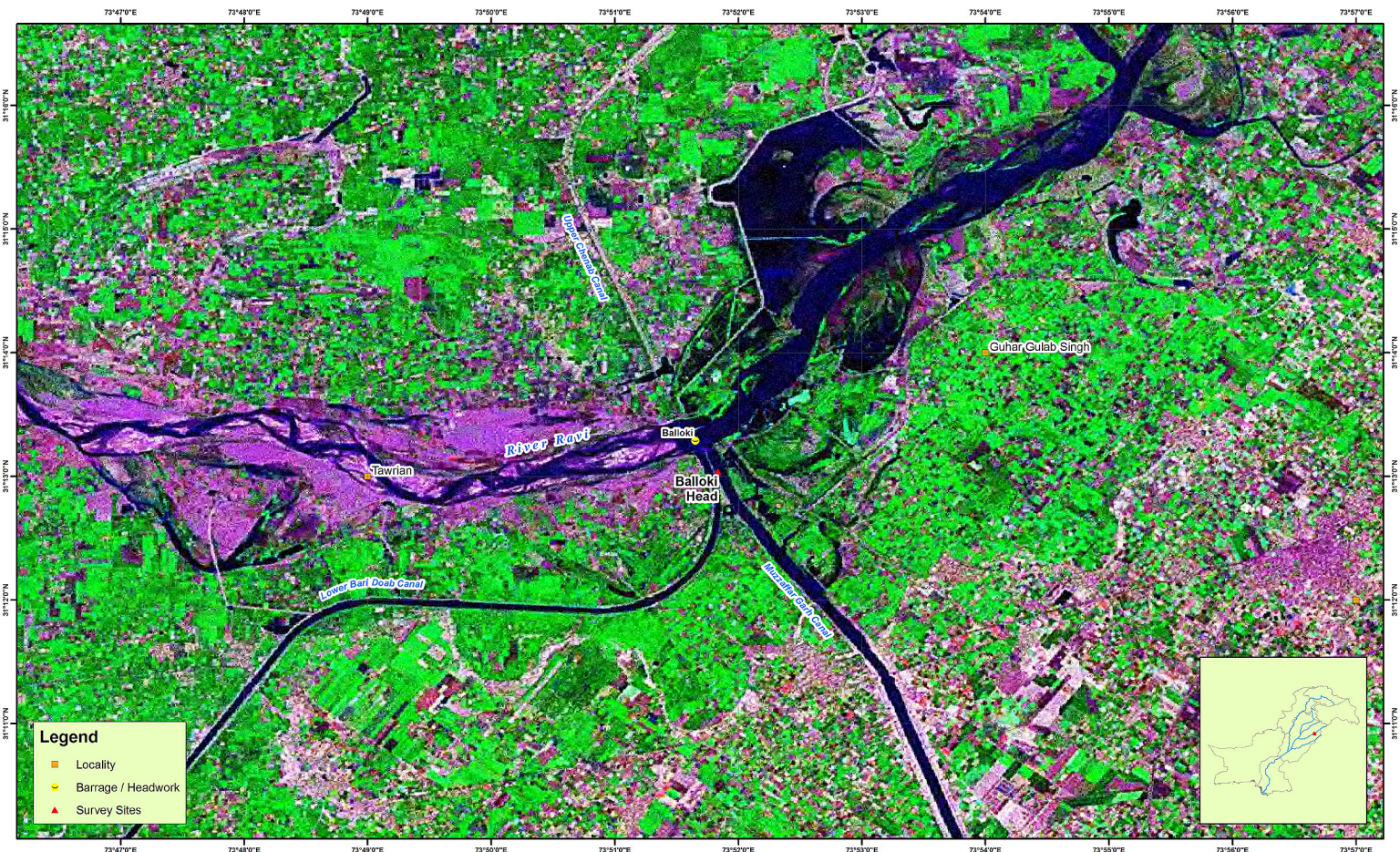
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 Data Sources LandSat ETM, WWF-Pk





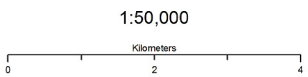
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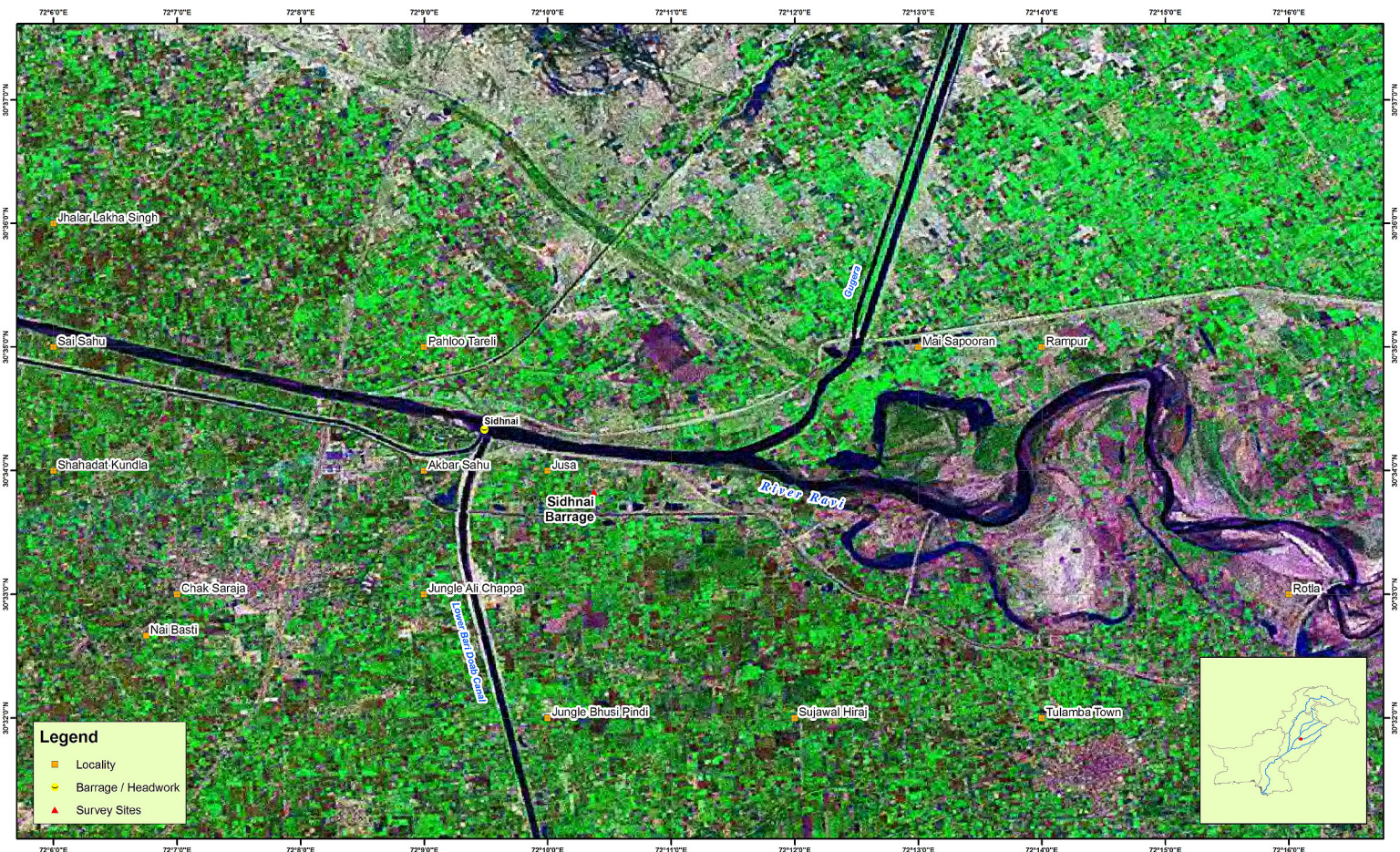
- Locality
- Barrage / Headwork
- ▲ Survey Sites

Head Balloki

Survey Sites of Freshwater Turtle, 2007

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 Map Updated December 6th, 2007
 Data Sources LandSat ETM, WWF-Pk



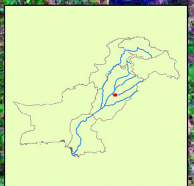
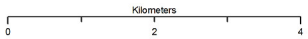


Head Sidhnaï

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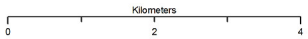


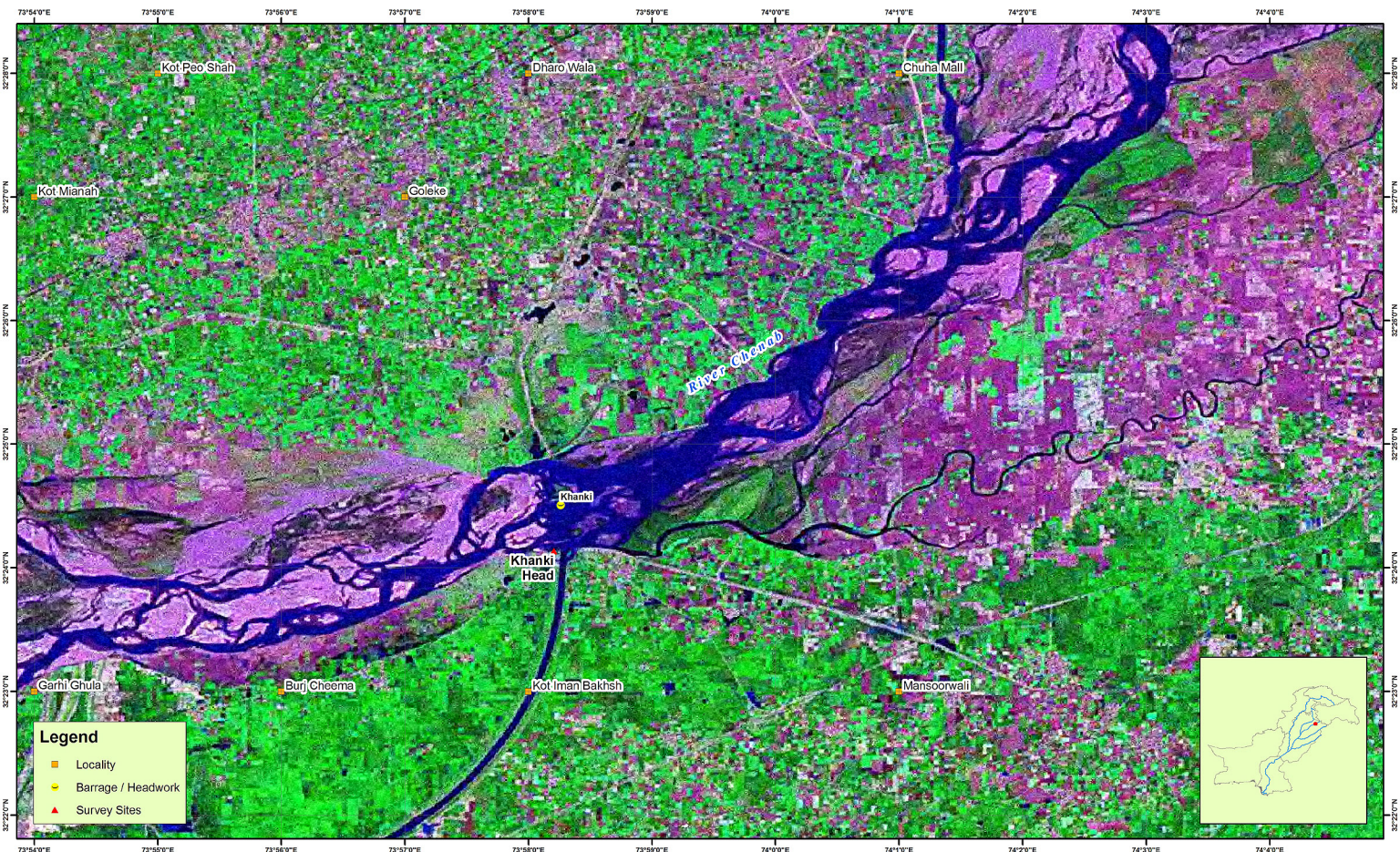
Head Trimu

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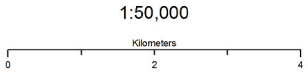


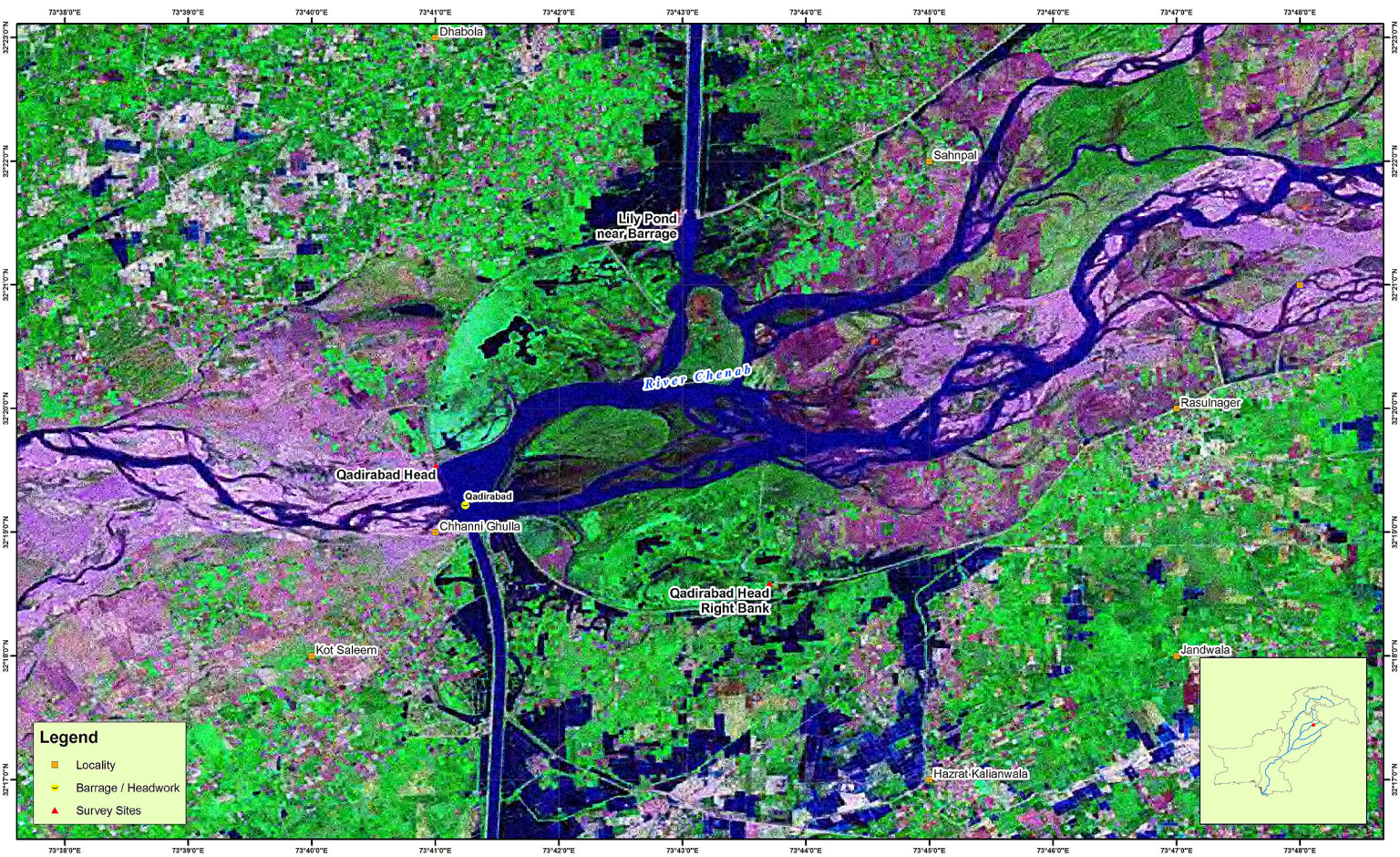


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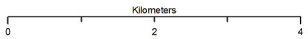


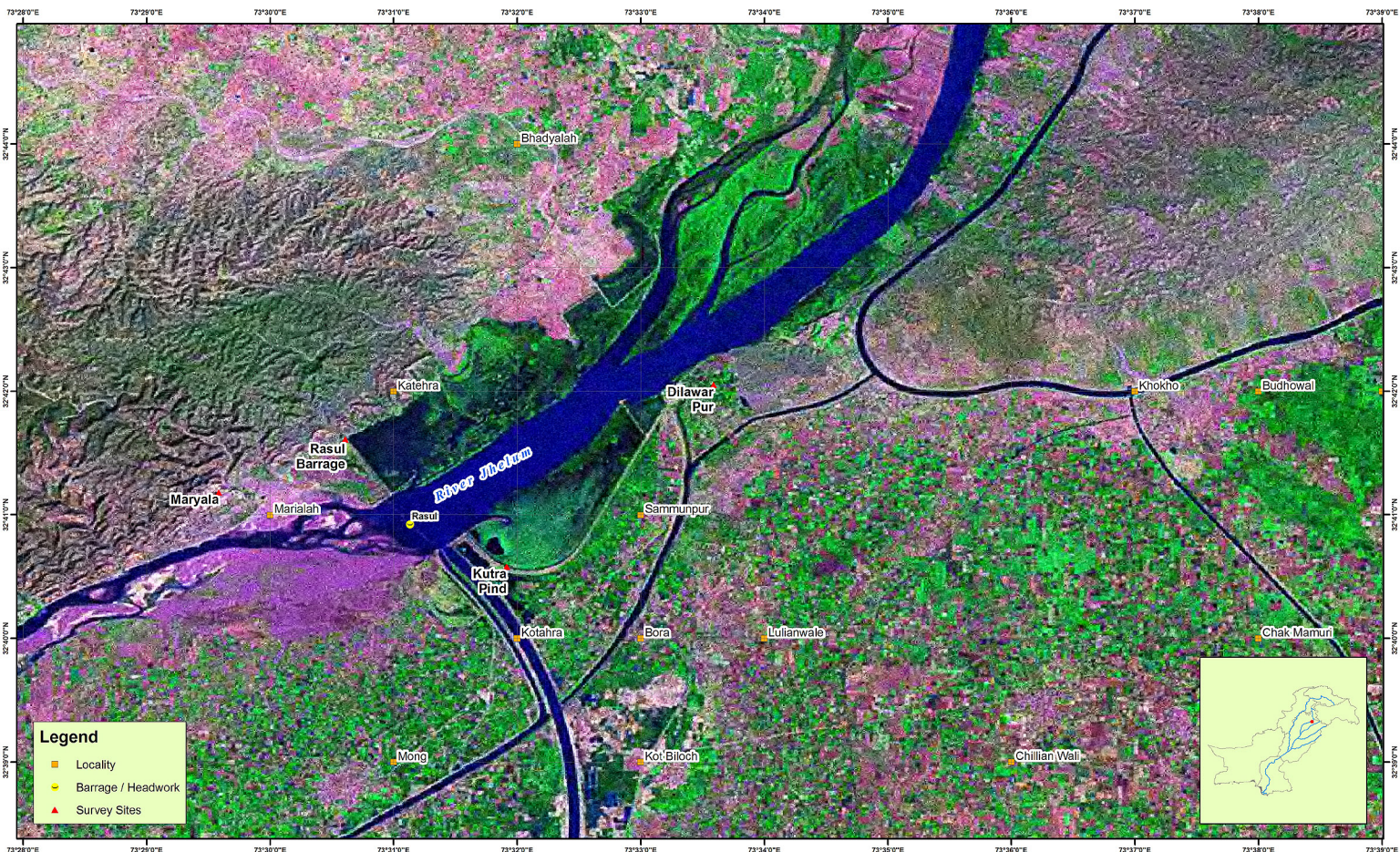
Head Qadirabad

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Head Rasul

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 Data Sources LandSat ETM, WWF-Pk

