

# Freshwater Turtles of Pakistan

*Taunsa (Punjab) & Guddu (Sindh)*  
June 24<sup>th</sup> – 30<sup>th</sup>, 2007



Ganges softshell turtles. Photo: Uzma Noureen

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**August 2007**

Cover photograph: Ganges softshell turtles

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*A preliminary assessment of their status in Punjab and Sindh*

**Taunsa (Punjab) and Guddu (Sindh)**

June 24<sup>th</sup> – 30<sup>th</sup>, 2007



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August, 2007

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## List of Acronyms & Abbreviations

<b>CBO</b>	Community Based Organisation
<b>CIWC</b>	Central Indus Wetlands Complex
<b>CITES</b>	The Convention on International Trade in Endangered Species of Flora and Fauna
<b>IUCN</b>	The World Conservation Union
<b>NCCW</b>	National Council for Conservation of Wildlife
<b>NWFP</b>	North West Frontier Province
<b>PWP</b>	Pakistan Wetlands Programme

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## Summary

*Pakistan has eight species of freshwater turtles. Softshell turtle species are Ganges softshell turtle, peacock softshell turtle, Indian narrow-headed softshell turtle, and Indus mud turtle. Hard-shell species include spotted pond turtle, Indian roofed turtle, Smith's turtle and crowned river turtle. Softshell turtles of Pakistan are exploited for turtle parts and are exported to China. Absence of legal protection cover at provincial level is accelerating the trade and traders are establishing firm roots of turtle parts business in Pakistan.*

*PWP team conducted surveys to study the current status and threats to freshwater turtles at three potential sites along the River Indus; Dera Ismail Khan (NWFP), Taunsa (Punjab) and Guddu (Sindh). It is learnt that the trade in turtle parts is taking place all along the Indus River and many other areas in Pakistan. Mohana and Kail/Pakhiwal communities kill turtles and cut their parts that they sell to local traders. Poverty is the only reason for their involvement in trade of turtle parts, as basket weaving and begging is their only professions. These homeless people are willing to leave the business if any other livelihood opportunity is provided to them. If this target group is addressed through community based conservation, provided with better livelihood opportunities and with education and awareness, they can help in protecting the freshwater turtles of Pakistan better than others. Amendments in wildlife legislation and strict execution of laws regarding trade control will help conserving the freshwater turtles of Pakistan.*

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## 1. Introduction

There are about 300 species of tortoises and freshwater turtles in the world (the exact number is debated). IUCN's Red List Authority has so far assessed approximately 200 species and has already found 122 to be threatened <sup>1</sup>. 74 percent of the 90 species of Asian freshwater turtles and tortoises are considered as threatened. According to the IUCN/Species Survival Commission Tortoise and Freshwater Turtle Specialist Group and the Asian Turtle Trade Working Group, consider over half of the Asian freshwater turtle and tortoise species as endangered, including 18 critically endangered species <sup>2</sup>.

### 1.1 Importance of freshwater turtles

Freshwater turtles are major biodiversity components of the aquatic ecosystem, often serve as keystone species benefiting other animals and plants, and represent major resources of their environments. They participate in the web of interacting and co-dependent species that constitute a healthy functioning of ecosystem. Without turtles, those aquatic ecosystems would gradually degrade in ways still incompletely understood, and would suffer from the loss of biodiversity <sup>3</sup>.

### 1.2 Threats to freshwater turtles on global scale

Turtles and tortoises have existed for nearly 300 million years, since the Triassic Era, long before many dinosaurs walked the earth. Turtles and tortoises have evolved remarkable body armour that has remained relatively unchanged through evolution, and while other vertebrate species have arisen and subsequently gone extinct. The basic body form of the turtle shell has remained an obvious testament to the success of turtles and their ability to survive millions of years of natural selection pressures. Successful adaptations that helped turtles survive in the past include, delayed sexual maturity, high juvenile mortality, and a long adult life-span with low natural mortality. These adaptations however have left turtle populations vulnerable to new, potentially devastating threats posed by human exploitation and development related pressures <sup>3</sup>. Following are the major threats to freshwater turtles on global scale;

#### 1.2.1 *Illegal trade of freshwater turtles*

Two main types of turtle trade occur in Asia. One is a high-volume, commodity type trade in turtles or turtle parts for consumptions; the other is pet trade, which involves smaller number of animals, and often smaller animals, with high individual value. From a conservation perspective, the consumption trade can be further divided into the trade in commercially farmed turtles and the trade in turtles captured from nature. Each of these trade segments gives causes for concern, but the mass exploitation of wild-caught turtles for consumption is the more significant one <sup>4</sup>.

#### 1.2.2 *Freshwater turtles- a source of food*

Demand for turtle meat is met from the commercial trade of turtles from Vietnam to Bangladesh to Indonesia-even from parts of North America. Shipments of thousands of live, adult turtles arrive daily in major Chinese markets <sup>5</sup>.

#### 1.2.3 *Parts of freshwater turtles used in traditional Chinese medicines*

The ecological stress resulting from increased harvesting of Traditional Chinese Medicine products is felt far beyond China's borders. Many species of Asian turtles, used to make a popular "turtle jelly" are now threatened with extinction <sup>6</sup>.

#### 1.2.4 *Habitat destruction*

The threats to the tortoises and freshwater turtles are further magnified by changes to their habitat resulting from human activities. From logging to slash-and-burn agriculture to

pollution, plus the damming and channelling of rivers and the landscapes, turtles call homes, are being damaged. These threats also decrease the life expectancy of turtles <sup>5</sup>.

### 1.3 Turtles of Pakistan

Turtles of Pakistan are divided into three main categories;

#### 1.3.1 Marine turtles

Green sea turtle (*Chelonia mydas*) and Olive Ridley turtle (*Lepidochelys olivacea*) are the common species of marine turtles in Pakistan. Hawksbill turtle (*Eretmochelys imbricate*), Logger-headed turtle (*Caretta caretta*) and Leatherback sea turtle (*Dermochelys coriacea*) <sup>7</sup> are also found occasionally.

#### 1.3.2 Tortoises or land turtles

Two species of tortoise are found in Pakistan; Afghan tortoise (*Agrionemys horsfieldii*), and Sindh star tortoise (*Geochelone elegans*).

#### 1.3.3 Freshwater turtles

There are eight species of freshwater turtles found in the rivers of Pakistan. The taxonomic classification is given in the table 1.

**Table: 1:** Taxonomic Classification of Freshwater Turtles <sup>8</sup>

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>

### 1.4 CITES species

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) 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. 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 <sup>9</sup>.

Pakistan became a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) on July 19<sup>th</sup> 1976. Four species of freshwater turtles are listed in appendix I, while three are listed in appendix II of the CITES.

**Table: 2:** Freshwater turtles listed in CITES appendices

#	Species	Listed in Appendix I	Listed in Appendix II
1	Spotted Pond Turtle ( <i>Geoclemys hamiltoni</i> )	+	
2	Smith's Turtle ( <i>Kachuga smithii</i> )		+
3	Indian Roofed Turtle ( <i>Kachuga tecta tecta</i> )	+	
4	Ganges Softshell Turtle ( <i>Aspideretes gangeticus</i> )	+	
5	Peacock Softshell Turtle ( <i>Aspideretes hurum</i> )	+	
6	Indus Mud Turtle ( <i>Lissemys punctata andersoni</i> )		+
7	Indian narrow headed softshell turtle ( <i>Chitra indica</i> )		+

### 1.5 IUCN status of freshwater turtles

All the eight species found in Pakistan are present in the River Indus. Conservation status of these species, according to the IUCN Red List is given in the table 3.

**Table: 3:** IUCN status of freshwater turtles

#	Species	Distribution in Pakistan	IUCN status
1	Spotted Pond Turtle ( <i>Geoclemys hamiltoni</i> )	River Indus	Vulnerable
2	Smith's Turtle ( <i>Kachuga smithii</i> )	River Indus	Low Risk/Near Threatened
3	Indian Roofed Turtle ( <i>Kachuga tecta tecta</i> )	River Indus	Low Risk/Least Concern
4	Brahminy or Crowned River Turtle ( <i>Hardella thurjii</i> )	River Indus	Vulnerable
5	Ganges Softshell Turtle ( <i>Aspideretes gangeticus</i> )	River Indus	Vulnerable
6	Peacock Softshell Turtle ( <i>Aspideretes hurum</i> )	Lower reaches of River Indus	-
7	Indus Mud Turtle ( <i>Lissemys punctata andersoni</i> )	River Indus, In Ponds,	Low Risk/Least Concern
8	Indian Narrow-headed Softshell Turtle ( <i>Chitra indica</i> )	River Indus	Endangered

## 2. Literature reviewed

Akbar et al (2006) identified eight species of freshwater turtles from the rivers in Punjab. The most abundant species found was *Kachuga smithii* (43.62 %) followed by *Kachuga tecta tecta* (42.06 %). The status of *Hardella thurjii* and *Chitra indica* was rare (0.88 % and 0.54 % respectively), whereas the status 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 common<sup>10</sup>.

Dr. Khalid Javed Baig in his report of Taunsa visit in May 2006 mentioned that a family of about 40 persons, camping at Taunsa Barrage for two months killed *Chitra indica* and *Aspideretes gangeticus* to obtain plastron and chest pellicles. They could collect over 200 turtles every week and were selling their parts for Rs. 100-200 to buyers.

The Pakistan Wetlands Programme team in its visit to *Dera Ismail Khan* (North West Frontier Province) on April 17<sup>th</sup>-22<sup>nd</sup> 2007 found that the communities called *Kails* residing along the River sides were involved in capturing *Aspideretes gangeticus* and *Aspideretes hurum* to obtain plastrons and chest-pellicles. These parts are then exported to the international markets (China) through an extensive network of local middlemen. These communities have been capturing turtles since December 2006 and are paid minimum of Rs.50-60 and maximum of Rs.250 for a piece of plastron and chest-pellicle. Minimum capture is 37 softshell turtles per day. The sites visited in *D.I.Khan* are shown on the map in figure 1.

## 3. Objectives of the study

- Meeting with officials of the provincial wildlife departments to discuss legal status of freshwater turtles;
- Know measures taken by the wildlife departments to stop illegal hunting of freshwater turtles;
- Identify areas to define scope of field work involving freshwater turtles;
- Establish baseline data of freshwater turtles and trade in their parts; and
- Identify threats and recommend actions to conserve freshwater turtles.

## 4. Freshwater turtles and the Pakistan Wetlands Programme

Pakistan has a broad spectrum of biodiversity that include 225 significant wetlands, which cover about 10 % of the country. Wetlands are generally degrading due to various human induced threats. The Ministry of Environment's "Pakistan Wetlands Programme", is a seven years programme, implemented by the World Wide Fund for Nature-Pakistan. The programme aims at conserving important wetlands of Pakistan and the associated biodiversity.

The Central Indus Wetlands Complex (CIWC) is one of the demonstration sites of Pakistan Wetlands Programme. It consists of a continuum of wetlands resources along the main stem of the Indus River between the town of Chashma in the north and the city of Sukkur in the south. The main output of Central Indus Wetlands Complex is to conserve riverine biodiversity in the designated area by implementing an inter-related suite of interventions that are essentially community-based, sustainable and poverty alleviating. Map of the Central Indus Wetlands Complex showing the sites visited for freshwater turtle survey is given in figure 1.

## 5. Methodology

Methodology adopted includes the combination of both direct and indirect observations.

## 5.1 Direct observations

The potential sites were visited and transect walks were made to see turtles in wild. The use of binocular was found necessary as the turtles have sharp senses and any disturbance can make them jump suddenly into water. At Head Punjnad, freshwater turtle species were seen but these couldn't be identified properly due to disturbance to them.

## 5.2 Indirect observations

Interviews were conducted from the community to obtain information about status and local use of freshwater turtles, following an open questionnaire. Species identification card was shown during interviews to identify the species, and to record local names of freshwater turtles found in the Indus River. Questionnaire and species identification card is attached as Annex 1 and Annex 2 respectively. The local communities were asked for turtle capturing techniques, the instruments they use to capture turtles and about the dealers to whom they sell the turtle parts.

The concerned departments were also visited to discuss the legal status of the freshwater turtles in Pakistan.

## 6. Results and discussion

### 6.1 Introduction to Pakhiwal community

The local community, involved in capturing of freshwater turtles is called *Pakhiwal* in *Saraiki*, the local language spoken along the River Indus in Punjab and Sindh. These communities live in temporary settlements, near the river, and frequently move to suitable places. They are dependant upon natural resources of the River Indus for their survival. They weave baskets using *Typha* and beg in addition to fishing and selling turtle parts for their survival.

### 6.2 Communities visited

#### 6.2.1 Sindh Province

At *Guddu* and *Kandhkot* (Sindh) two local dealers of turtle parts were interviewed. According to them there are three main dealers, one has established his collection center at *Kandhkot* and the other two have established their centers at *Guddu*. They collect freshwater turtle parts from the local communities and then transport them to Lahore. They mentioned that this business is more profitable than fishing. Turtle parts, plastron & chest-pellicle are sold at Rs.150-200 per kilogram (approximately Rs.7,000 per 40 kg) while fish is sold at Rs.25-30 per kilogram (approximately Rs.900 per 40 kg). A local hunter captures 20-50 turtles per day in winters, when the water level in rivers is low. In summer, when river flow is high, a hunter still manages to capture 3-5 turtles per day.

#### 6.2.2 Punjab Province

Two local communities were visited in the Punjab province.

##### 6.2.2.1 Mohana community

The fishermen (*Mohana*) community near *Rahim Yar Khan* at *Bangla Icha* mentioned that due to illegal capturing, populations of the softshell turtles (Ganges softshell turtle and Indian narrow headed softshell turtle) have reduced by 80%. About a year ago, 50 turtles could be seen while fishing but now this number has reduced to only one or two. Local community sells turtles to local dealers after capturing at the rate of Rs.8,000 to 10,000 per 40 kg.

According to interviewee these parts are transported to Karachi and Lahore, from where these are exported to China. The trade in turtle parts is taking place along the Indus River from Chashma to Sukkur.

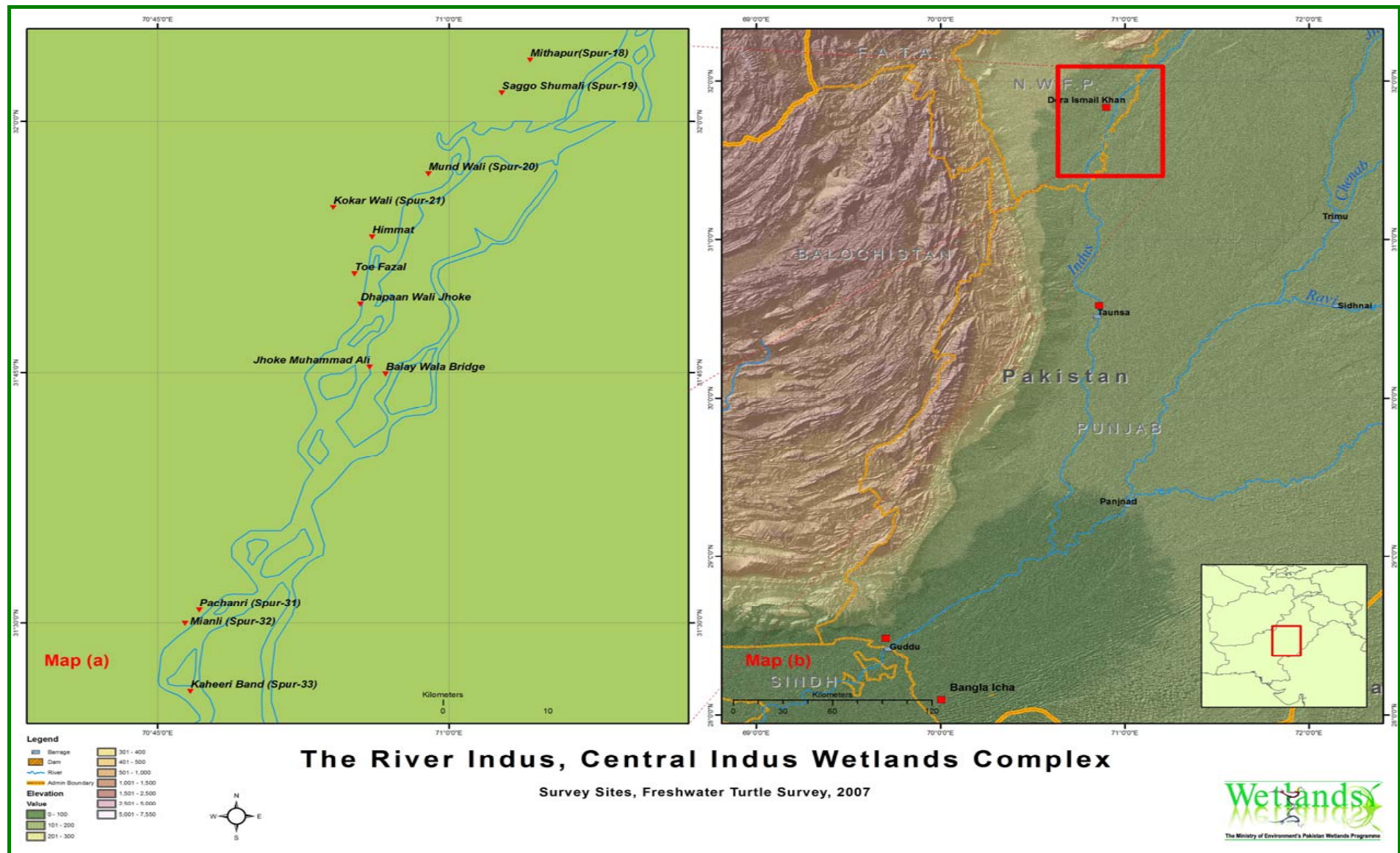


Figure: 1 Survey Sites, Freshwater Turtle Survey, 2007



The Chinese living around Chashma also buy turtles for Rs.200 to 500 per turtle. Freshwater turtles make a part of their diet.

#### 6.2.2.2 Pakhiwal community

A *Pakhiwal* community visited at Head Taunsa is involved in this business for the last three years. They capture turtles throughout the year. The average turtle capture is 3-5 turtles per day. The people of the area, other than *Pakhiwal*, are also attracted to this business as it is profitable and has international importance. One piece of plastron is sold at Rs.250-400 depending upon the size. Dealers from Vehari, Lahore, Peshawar, and Karachi visit these communities and collect the turtle parts.

### 6.3 Turtle capturing techniques and instruments

The techniques of capturing turtles are traditional. They use net-hook, spear rod, and a net fitted with many hooks called (*Teend*) to capture turtles. They fit nets in shallow water and check them for turtles, twice a day; early morning and at evening. Groups of community members camp at different sites for few days and capture as many turtles as they can from that particular site.

### 6.4 Species of freshwater turtles under trade

Three species of softshell turtles, Ganges softshell turtle (*Aspideretes gangeticus*), Peacock softshell turtle (*Aspideretes hurum*) and Indian narrow headed softshell turtle (*Chitra indica*) from the rivers of Pakistan are reported to be captured and their parts exported to China, where these are used in the Chinese medicines.

### 6.5 Start of business in Punjab and Sindh

After interviewing locals and the *Pakhiwal* communities, it was noted that the business of turtle parts started in Punjab and Sindh in 2003 and since then the turtles are being captured and their parts exported to China.

### 6.6 Dealers involved in turtle trade

It was observed that almost all the main dealers belong to Lahore, which is the gateway for export to China. In Pakistan, the business of softshell turtle parts is at its peak in Punjab and Sindh. This business is expanding to other parts of the country and now the dealers are focusing on involving local fishermen in addition to *Pakhiwal*, who are already involved in killing freshwater turtles. The fishermen community called *Mohanas* in the local language gave information that a group of dealers came to visit the area and offered them to start the business with them. They were asked to provide those softshell turtles that are caught accidentally (by-catch) in the net during fishing.

### 6.7 Ecological role of freshwater turtles (softshell turtles)

The softshell turtles particularly those in which traders have interest are carnivorous and are scavengers. They help in the purification of river water by consuming the dead animal bodies as food. Fishermen are against the turtle capturing in the fishing areas. They claimed that when people capture the softshell turtles, remove or cut the desired parts, they throw rest of the turtle in the river. Due to decay and foul smell of dead turtles in the river, fish avoid coming to the area and their fish production is affected.

### 6.8 Root cause of freshwater turtle population decline

There could be many reasons to start the business in turtle parts but the root cause is poverty as for as these *Pakhiwal* along the Indus River are concerned. The groups of fishing community don't allow these people to go for fishing which was the major source of livelihood for them in the past. Groups of turtle traders contact these people and offer them handsome amount of money in advance to start the business and adopt it as their

profession. The local people don't mind the *Pakhiwals* killing freshwater turtles, as these are considered of no value. But since knowing their economic value, now the trade is catching eyes of the local fishermen community also.

### 6.9 Legal status of freshwater turtles in Pakistan

In Pakistan, conservation of species is a provincial responsibility; each of the four provinces and the capital territory of Islamabad have their own wildlife conservation legislations. A federal ban was imposed in August 1981 on the export of all wild mammals, reptiles and certain birds including their parts, products and derivatives, except for limited numbers of authorised hunting trophies <sup>11</sup>.

The freshwater turtles are not included in the list of protected animals in the provincial wildlife protection acts. However, freshwater turtles are on the appendices I & II of the CITES that doesn't allow their international trade. Also, the import and export of wildlife species without a lawful certification, is prohibited according to Section 14 of the Punjab Wildlife (Protection, Preservation and Management) Act, 1974, Section 12 of Sindh Wildlife Protection Ordinance, 1972, and Section 13 of the NWFP Wildlife (Protection, Preservation and Management) Act, 1975.

**Table: 4:** Legal status of freshwater turtles in Pakistan

#	Legislation	Status
1	Punjab Wildlife (Protection, Preservation and Management) Act, 1974	Not Protected
2	NWFP Wildlife (Protection, Preservation and Management) Act, 1975	Not Protected
3	Sindh Wildlife Protection Ordinance, 1972	Not Protected

### 6.10 Steps taken by the government of Pakistan

Punjab Wildlife Department has taken the notice of illegal hunting and trade of freshwater turtles. The Punjab Government, in order to conserve freshwater turtles, will establish a turtle hatchery at Head Islam.

### 6.11 Threats to freshwater turtles in Pakistan

#### 6.11.1 Illegal trade of freshwater turtle's parts (*plastron & chest-pellicle*)

Freshwater turtles of Pakistan are being exploited for use in traditional Chinese medicine. Illegal traders have set up an extensive network involving local, national and international dealers, who are busy in exporting the softshell species of freshwater turtles to China. The trader take advantage of the gap in the laws of Pakistan, wherein it is not reflected in the provincial wildlife laws.

#### 6.11.2 Threat to species survival

The maturity of turtles reaches late in their lives and they reproduce slowly. The species survival is possible if it survives for a long period. The local communities capture the softshell turtles irrespective of their age to get plastron and chest-pellicle of any size.

#### 6.11.3 No protection provided to nesting sites of freshwater turtles

Nesting sites of freshwater turtles are not protected and the wild animals such as monitor lizards and jackals eat their eggs.

#### 6.11.4 No legal protection

The turtles are not protected by the Wildlife Protection Acts.

### 7. Recommendations

#### 7.1 Legislation

While reviewing the legal status of the freshwater turtles and the legal protection extended to them, it was revealed that it is not listed. Therefore, the PWP recommends the following;

- Review status of freshwater turtles to extend appropriate legal status to the species.
- The provincial wildlife and fisheries authorities should take 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.
- Export of the freshwater turtle meat and parts should be banned.

#### 7.2 Conservation education & awareness

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 organizations, general public and the local communities. The targeted groups can be addressed through following means;

##### 7.2.1 At national level

- Prepare field guide to identify turtle species, including the field survey techniques;
- Develop posters, brochures and leaflets;
- Press release on status of freshwater turtles and trade in their parts;
- Open discussion forum regarding freshwater turtles on PWP's website;
- Highlight issues regarding turtles in monthly newsletter published by PWP;
- Make documentary on freshwater turtles of Pakistan.

##### 7.2.2 At community level

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

#### 7.3 Enhance coordination among provinces

The turtle trade is taking place in all provinces and therefore there is need for application of management tools in all the provinces. The PWP recommends close coordination among the provinces through;

- Review meetings through NCCW
- Inter-provincial coordination on legal status and measures
- Inter-provincial mechanism on trade control

#### 7.4 Need for scientific and social research

There is a need to start scientific research for a better understanding of the freshwater turtle population and effectiveness of different management tools. The Pakistan Wetlands Programme recommends the following studies;

- ❑ Population status and trend of freshwater turtles in Pakistan;
- ❑ Impacts of water pollution on freshwater turtles in major rivers of Pakistan;
- ❑ Monitoring of habitat change and its impacts on freshwater turtles;
- ❑ Assessment of sites for the hatcheries and farming centers of freshwater turtles;
- ❑ Ecological role of freshwater turtles of Pakistan or the biology of freshwater turtles of Pakistan;
- ❑ Identification of the nesting sites of freshwater turtles along the River Indus; and
- ❑ Socio-economic status of local communities (*Mohana* and *Kail/Pakhiwal*) and its impacts on Indus River ecosystem.

### **7.5 Social organisation and improved livelihood of local communities**

The local communities involved in capture and killing of freshwater turtles, live below poverty line. They consider it as an opportunity for livelihood. These communities traditionally make several items from *Typha* species, however, due to poor quality and no proper marketing of their products; this is not a profitable profession for them. Some people are willing to killing of turtles if any other livelihood opportunity is provided. Dependency on natural resources can be reduced by providing local communities with improved livelihood opportunities. In order to organise these communities, community based organisations (CBOs) should be established in collaboration with the provincial wildlife departments to protect freshwater turtles.

### **7.6 Establish turtle hatcheries and protection of nesting sites**

Surveys should be conducted to identify suitable places for establishing hatcheries for freshwater turtles. Protection of nesting sites of turtles is necessary for their survival. Nest protection during breeding season can be promoted through CBOs.

### **7.7 Trainings and capacity building**

The trainings should be organised for the government officials to build their capacity in captive care of turtles. The customs staff should be trained in recognising parts of turtles to stop the illegal export of turtle meat and parts.

### **7.8 Market surveys**

Market surveys should be conducted and the extensive network of national and international dealers should be identified, in addition to market chains at local level.

### **7.9 Protected areas for freshwater turtles**

The areas should be assessed for the presence and abundance of threatened freshwater turtles and designated as reserves or protected areas for freshwater turtles.

## 8. References

1. Tortoise and freshwater turtle conservation program- <http://science.conservation.org>
  2. A Global Action Plan for Conservation of Tortoises and Freshwater Turtles, 2002-2007, [www.turtlesurvival.org](http://www.turtlesurvival.org)
  3. World Wildlife Fund: Half of Asia's Turtles Endangered, Scientists Say <http://www.commondreams.org>
  4. Trade in Tortoises and Freshwater Turtles in Asia, [www.traffic.org](http://www.traffic.org)
  5. Caught in the Trade- Threatened Animals: Freshwater Turtles, <http://web.conservation.org>
  6. Conference on Traditional Chinese Medicine Marks Shift towards Global Market, Raises Concerns about Social and Ecological Impact- <http://www.worldwatch.org>
  7. Reptiles of Pakistan Checklist- <http://www.wildlifeofpakistan.com>
  8. Turtles of the World, <http://nlbif.eti.uva.nl>
  9. <http://www.cites.org>
  10. Akbar, M. et al. 2006. Distribution of Freshwater Turtles in Punjab, Pakistan. Caspian Journal of Environmental Sciences, vol. 4 No. 2. pp. 142-146.
  11. Consideration of Proposal for Amendment of Appendix I and II, Prop. 12.31
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## 9. Glimpses of visit



**Figure 2** Pakhiwal community-living below the poverty line, Taunsa



**Figure 3** Plastrons & chest pellicles of softshell turtles



**Figure 4** A local showing plastron & chest pellicle of Ganges softshell turtle



**Figure 5** Dried plastrons & chest pellicles of softshell turtles

FRESHWATER TURTLE SURVEY  
QUESTIONNAIRE

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Village: \_\_\_\_\_

Coordinates: \_\_\_\_\_

Nearest Village: \_\_\_\_\_

*Community*

1. Tribe: \_\_\_\_\_

2. Population: \_\_\_\_\_

3. Major Sources of Income:

Male: \_\_\_\_\_

Female: \_\_\_\_\_

Children: \_\_\_\_\_

4. Literacy Rate: \_\_\_\_\_

5. Economic activities: \_\_\_\_\_

*If they capture turtle;*

1. Do they sell it?

Yes/No

2. If yes, then they sell whole or any specific part?

\_\_\_\_\_

3. If specific part, then which part is to be sold and of which species?

\_\_\_\_\_

4. At which rate that part is sold and to whom?

\_\_\_\_\_

5. Which size of turtles are more in demand?

\_\_\_\_\_



6. What is the mean of capturing turtles?

---

7. How many turtles they capture per day?

---

8. Which species is mostly demanded by dealers?

---

9. How many species are there in river?

---

10. Which species is abundantly present in river?

---

11. What do they do with the rest of turtle after removing the required parts?

---

12. What do they do with eggs of turtle?

---

13. If eaten, then eggs of which species are mostly used for eating purposes?

---

14. Is there any other use of turtle's egg?

---

15. When they started capturing turtles?

---

### *Major Threats to Turtles*

1. Poaching/Killing

---

2. Egg collection:

---

3. Boat(propeller/noise):

---

4. Pollution:

---

5. Habitat Conversion/degradation:

---

6. Effect of explosive material or drugs/Poison use for fishing:

---

*Other Information*

1. Local names of turtles:

---

2. Clutch size:

---

3. Egg protection by community;

Yes/No

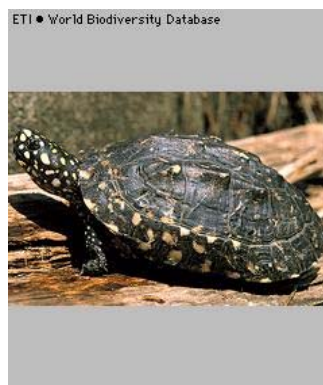
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## Freshwater Turtles of Pakistan Species Identification Card

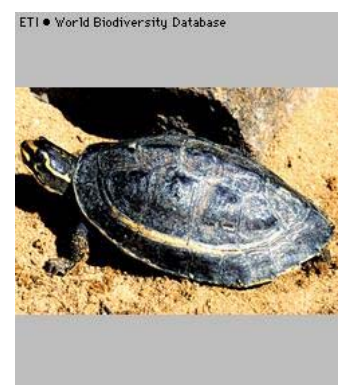
Source: Turtles of the World, <http://nlbif.eti.uva.nl>



*Kachuga smithii*  
(Smith's Turtle)



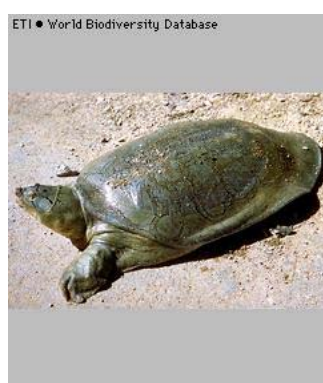
*Geoclemys hamiltoni*  
(Spotted Pond Turtle)



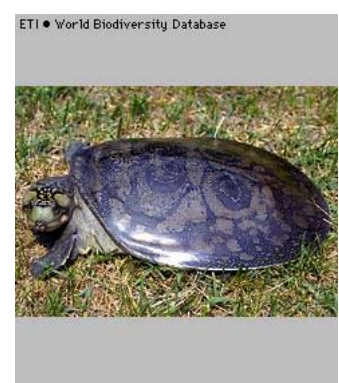
*Hardella thurjii*  
(Crowned River Turtle)



*Kachuga tecta*  
(Indian Roofed Turtle)



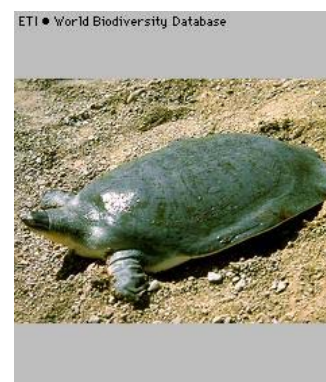
*Aspideretes gangeticus*  
(Ganges Softshell Turtle)



*Aspideretes hurum*  
(Peacock Softshell Turtle)



*Lissemys punctata*  
(Indus Mud Turtle)



*Chitra indica*  
(Indian Narrow-headed Softshell Turtle)