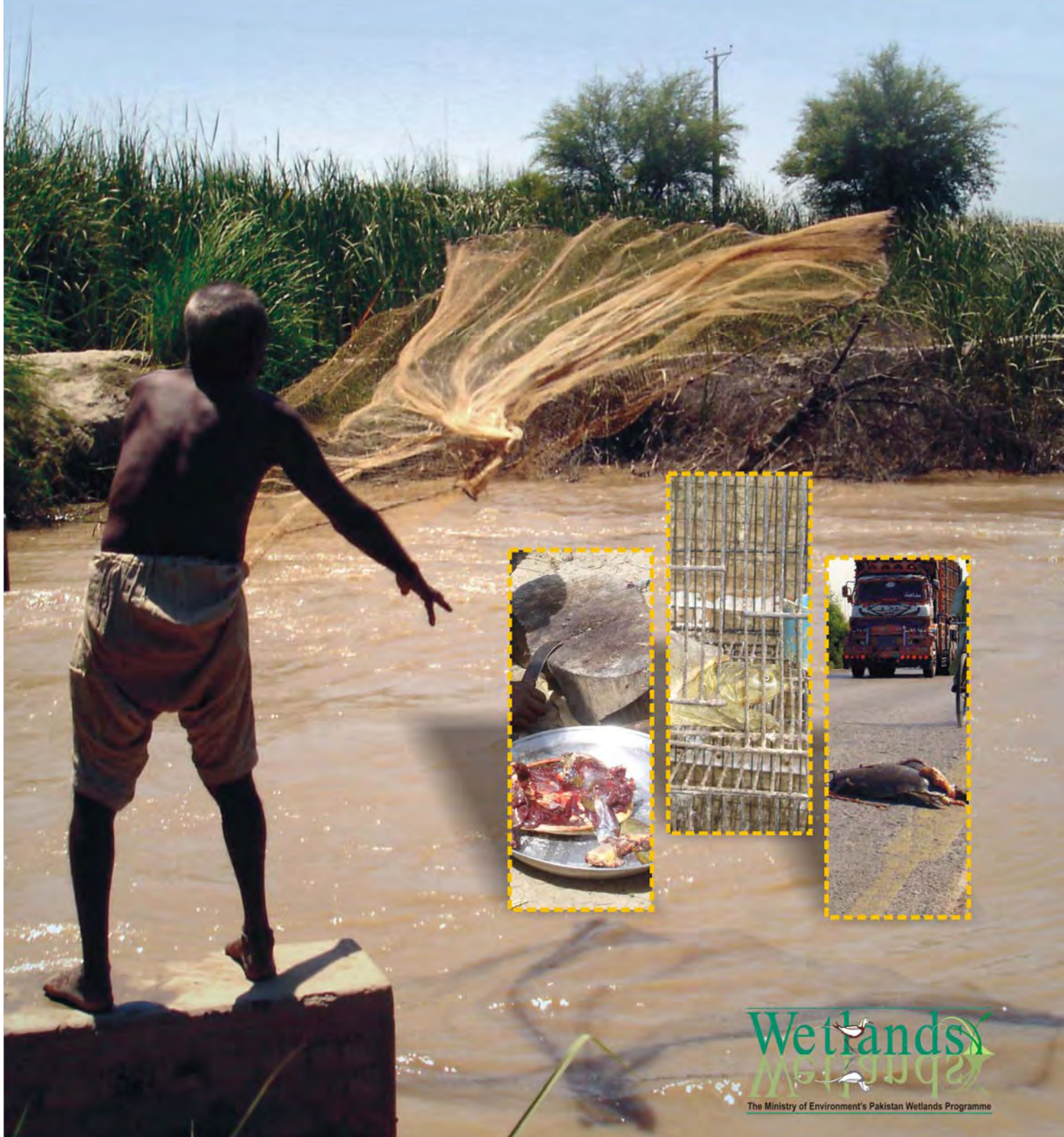


# Freshwater Turtles of Pakistan

**Illegal trade in Sindh**

*Preliminary findings of trade in freshwater turtle parts*

November, 2009



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**November, 2009**

Title page designed by: Fakhr-e-Alam, Graphic Designer, Pakistan Wetlands Programme

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Report dedicated to: Rafiq Ahmad Rajput (1961-2008)

# **Freshwater Turtles of Pakistan**

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**Dedicated to: Rafiq Ahmad Rajput**  
(1961-2008)

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**Uzma Noreen**

November, 2009

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## List of Acronyms and Abbreviations

CITES.....	The Convention on International Trade in Endangered Species of Wild Flora and Fauna
GIS .....	Geographic Information System
GPS .....	Global Positioning System (Receiver)
IUCN.....	The World Conservation Union
Kg .....	Kilogram
NCCW .....	National Council for Conservation of Wildlife
NWFP .....	North West Frontier Province
PWP .....	The Pakistan Wetlands Programme
Rs. ....	Currency of Pakistan (Pak Rupees)
TRAFFIC .....	A joint venture of WWF and IUCN, Wildlife Trade Monitoring Network
US \$.....	Currency of United States (Dollar)
TCM.....	Traditional Chinese Medicines
EN.....	Endangered, in IUCN Red List
VU.....	Vulnerable, in IUCN Red List
LC.....	Least Concern, in IUCN Red List
NT.....	Near Threatened, in IUCN Red List
LR.....	Low Risk, in IUCN Red List
ZSD .....	Zoological Survey Department





# Freshwater Turtles of Pakistan

## Illegal Trade in Sindh

### *Preliminary findings of trade in freshwater turtle parts*

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### Executive Summary

*Pakistan has a wide spectrum of biodiversity resources including eight species of freshwater turtles, found in the Indus River system. Indian softshell turtle, Indian peacock softshell turtle, Indian narrow-headed softshell turtle, and Indian flap-shell turtle are the representatives of softshell species while black spotted turtle, Indian roofed turtle, brown roofed turtle and crowned river turtle are the hard shell species. River turtles display a considerable range of foraging pattern and are well adapted for filling their trophic roles in riverine ecosystems. They contribute in cleaning up freshwater resources by scavenging on dead organic matter.*

*Pakistan Wetlands Programme's surveys to investigate turtle trade, after exploring two provinces of the country; NWFP and Punjab, has also confirmed this practice in Sindh province. The stretch of the Indus River in Sindh province and its major canals and tributaries including Kotri, Sukkur and Guddu barrages of the Indus River were studied during the present survey. Results revealed that people who exploit freshwater turtles belong to Shikari, Rawara, Barha, Gurgula, Gogra, Jogi, Guruwanro, and Bhaagri tribes. Fishermen community belonging to Mallah and Mir Behar tribes also catch turtles as by-catch of fish. They have very limited livelihood options that include weaving of carpets, selling bangles and begging, in addition to fishing and hunting of wildlife. Some people work as tenants and labourers on daily wages. The research indicated that turtle trade has been taking place throughout the region while at the major barrages of the Indus River (i.e. Kotri, Sukkur and Guddu barrages) this business has been introduced since 2003. In Sindh, all the turtle trade is destined to Karachi, from where turtles and their body parts are exported to other countries.*

*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. 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. Amendments in wildlife legislation and strict execution of laws regarding trade control will help conserve the freshwater turtles of Pakistan.*

### 1. Global perspective

Turtles are found in all the warmer regions of the world. They are an ancient group of animals, dating back at least 200 million years. Today, most species live in freshwater for all or part of their lives, although some, including tortoises, live entirely on land. In addition, seven species of sea turtles have also been recorded (Beatty *et al.*, 2001).

There are around 300 species of turtles worldwide; estimates vary, because many species are divided into subspecies. Freshwater turtles usually live in lakes and rivers rich in vegetation, providing plenty of plant and animal food for them to eat. Different species vary in their habits; some spend most of the time on land, while others never leave the water except to find new habitats or to lay eggs. Most turtles are omnivores, which mean they eat a wide range of organisms. Their food includes invertebrates, fish, tadpoles and frogs, carrion (dead animals), underwater plants, and sometimes even shorebirds and other turtles. In turn, turtles

can fall prey to large fish, birds, and mammals, or (in the case of sea turtles) sharks. Along with other reptiles, turtles breathe air. Many of them, however, can also take in oxygen through their skin or via water-filled chambers. This allows them to hide, sleep, or even hibernate underwater. Some species have nostrils on the top of their heads so that they can remain hidden while breathing. Unlike mammals, turtles do not maintain a constant body temperature. They are dependent on the environment to maintain their temperature and can often be seen basking on logs and sandbanks in the morning (Beatty *et al.*, 2001).

People have long hunted turtles for their meat and eggs, and the horny covering of the marine hawksbill turtle, called tortoise-shell, has been a popular material for making decorative objects. Only in modern times has the exploitation of turtles become a serious threat to their survival. Many freshwater turtles and all sea turtles are currently under threat. Marine species are caught in fishing nets and are also threatened by the development of their nesting beaches for tourism. Conservation programmes aim to protect turtle nesting sites and to hatch and release young turtles to the wild. Freshwater turtles in South-east Asia are collected in huge numbers and exported to China, where they are used for food and in traditional medicines. Attempts are now being made to get international agreements to conserve Asian turtles (Beatty *et al.*, 2001).

## 1.1. Threats to turtles

### 1.1.1. Turtles as a food source

Turtle capture for food is one of the direct causes of wild animal population decline. Much of the freshwater turtles and tortoises meat is consumed especially in East Asia. Three fourth of Asia's 90 freshwater turtles and tortoises are seriously threatened and 18 of them are endangered (Takehisa and Shun'ichi, 2006).

### 1.1.2. Turtles in medicines

The medicinal use of turtles has a long history and turtle-derived drugs have been used by the Chinese for treating ailments since at least 2737 BC. Zhao (1995) stated that the plastron of hard-shelled turtles and carapace of softshells has been used in traditional Chinese medicines (TCM), since at least 202 BC to 9 AD. *Unani*, the Greco-Arabic system of medicines which forms an important foundation for medicinal practice in India and many other modern countries prescribe the use of various turtle body parts for curing human ailments. The ecological stress resulting from increased harvesting of TCM products is felt far beyond China's borders (Moll and Moll, 2004). Many species of Asian turtles, used to make a popular "turtle jelly" are now threatened with extinction (<http://www.worldwatch.org>).

The greatest consumers of turtles for medicines and tonics are the Chinese. As resident species have been depleted, and increasingly protected by laws, China has become an importer of turtles in huge quantities from other countries including the United States. It should also be noted that other countries with large Chinese populations (e.g. Taiwan, Singapore) and other oriental countries with a tradition of turtle use for food and medicines (e.g. Japan and South Korea) are large importers (Moll and Moll, 2004).

### 1.1.3. Habitat destruction

The threats to the tortoises and freshwater turtles are further magnified by changes to their habitat resulting from human activities. Conversion of wetlands to agricultural lands, water pollution, and damming and channelling of rivers are key factors in damaging turtles' habitats. These threats also decrease the life expectancy of turtles (<http://web.conservation.org>).

Humans have exerted a particularly strong pressure on habitats adjacent to streams. Human uses of riparian areas principally include agriculture, cattle grazing, and urbanization. Stream channelization is used worldwide to control flooding, increase agricultural acreage, improve navigability, or maintain an efficient flow of water. However, the direct and indirect effects of

channelization include reduction of food resources, habitat loss, and concomitant shifts in species composition (Bodie, 2001).

## 2. Exploitation of turtles in Asia

Commercial pressure on river turtles is currently greatest in the tropics, and while not insignificant in other areas, is most intense in Asia where vast regional, national, and international export markets exist. Local trade is heavy in location and cultures where riverine species are prized as food. River turtles are also under pressure in other areas inhabited by non-turtle eating cultures where turtle meat may be shunned but their eggs may be relished, and where turtles may be collected for marketing (Moll and Moll, 2004).

Turtles are remarkably resilient in the face of the extremely high levels of mortality, normally encountered by their eggs, hatchlings and small juveniles. Heavily armoured and elusive, adult turtles typically couple very slow mortality rates with considerable longevity that allows them to compensate for the earlier carnage with impressive lifetime fecundities. When even moderate numbers of adults are removed from the population this vital linkage is compromised, and the population declines. When so few adults remain that reproduction will never again be able to balance the continually high levels of attrition of the eggs and young, then the population is functionally extinct-even though the remaining adults may, for a time, present the illusion viability (Moll and Moll, 2004).

Commercial exploitation of turtles in Asia over the last 15-20 years, mainly for food but also for traditional medicines and other uses, has been more instrumental in bringing more turtle species towards this sorry condition, than any other force in history. It is ironic that their greatest modern persecutor, the Chinese, have traditionally revered *Chelonian* more highly than any other modern culture. Based upon the most recent available data at least 13,000 metric tonnes of live turtles, the vast majority of which are wild caught are shipped to Eastern Asia (i.e. China and its Hong Kong Special Administrative Regions and Taiwan) from Southeast and South Asia countries annually (Moll and Moll, 2004).

In addition to the Chinese pressure and that of continuing subsistence consumption, all tropical Asian supplier countries are involved in varying amounts of internal or regional trade where turtles and their eggs, whether collected purposefully or incidentally, are sold in local markets to middlemen, or directly to restaurants (Moll and Moll, 2004).

Initially the main providers of turtles for the Chinese market were Vietnam and Bangladesh. However, in the typical pattern of unsustainable exploitation of wildlife, as these countries depleted their turtles to levels which could not sustain profitable trade, (i.e. commercially extinct), they contracted suppliers from their neighbours (i.e. India, Myanmar, Laos, and Cambodia), and trans-shipped them to Chinese markets, thereby widening the circle of destruction. The trade has shifted to the southeast and currently, Indonesia is the hottest Asian turtle exporter to the Chinese market (Moll and Moll, 2004).

## 3. River turtles of Pakistan

Eight species of freshwater turtles are found in Pakistan. Indian narrow-headed softshell turtle, Indian softshell turtle, Indian peacock softshell turtle and Indian flap-shell turtle, are categorised as softshell turtles. Hard-shell species include black spotted turtle, brown roofed turtle, Indian roofed turtle, and crowned river turtle. The taxonomic classification is shown in Table 1. Diagnostic features and natural history of the freshwater turtles of Pakistan is explained in Table 2.

**Table 1:** Taxonomic Classification of Freshwater Turtles of Pakistan

Kingdom	Phylum	Class	Order	Family	Genus	Species	Common Name
Animalia	Chordata	Rapitilia	Testudines	Trionychidae	<i>Chitra</i>	<i>Chitra indica</i>	Indian Narrow-headed Softshell Turtle
					<i>Nilssonina</i>	<i>Nilssonina gangetica</i>	Indian Softshell Turtle
					<i>Nilssonina</i>	<i>Nilssonina hurum</i>	Indian Peacock Softshell Turtle
					<i>Lissemys</i>	<i>Lissemys punctata andersonii</i>	Indian Flap-shell Turtle
				Geoemydidae	<i>Geoclemys</i>	<i>Geoclemys hamiltonii</i>	Black Spotted Turtle
					<i>Hardella</i>	<i>Hardella thurjii</i>	Crowned River Turtle
					<i>Pangshura</i>	<i>Pangshura smithii</i>	Brown Roofed Turtle
					<i>Pangshura</i>	<i>Pangshura tecta</i>	Indian Roofed Turtle

#### 4. Existing turtle trade situation in Pakistan

In Pakistan, turtle trade was first highlighted in 1990s. An investigative study was conducted by WWF Pakistan and the Sindh Wildlife Department for TRAFFIC International in 1996, where trade in freshwater turtles was reported in Sindh Province at Larkana and Manchar. The Indian softshell turtles have been exported to China that cost Pak Rs. 50 per turtle. The Chinese and the other far eastern companies who visit Sindh for engineering projects are known to buy this species from *Mohana* community (local fishermen). The Indian softshell turtles were also found in Thatta and Badin where they cost Pak Rs. 15 per turtle. These turtles were supposed to be exported to China and other far eastern countries (Shah, 1996).

Illegal trade in turtle parts was reported by Baig (2006), during his research studies on “Environmental Baseline Survey and Monitoring of Taunsa Barrage Emergency Rehabilitation Project”, funded by WWF-Pakistan. Baig (2006) mentioned that a family of about 40 persons, camping at Taunsa Barrage for two months had killed Indian narrow-headed softshell turtle (*Chitra indica*) and Indian softshell turtle (*Nilssonina gangetica*) 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 Karachi (Baig, 2006).

The Pakistan Wetlands Programme (PWP) team during its visit to *Dera Ismail Khan*, North West Frontier Province (NWFP) during April 17<sup>th</sup>-22<sup>nd</sup>, 2007, found that *Kehals* (local fishermen) residing along the Indus River, were involved in capturing the Indian softshell turtle (*Nilssonina gangetica*), Indian narrow-headed softshell turtle (*Chitra indica*) and the Indian peacock softshell turtle (*Nilssonina hurum*) to obtain their body parts. These parts are then exported to the international markets 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 haul of softshell turtles. Minimum

average capture is 37 softshell turtles per day by the local communities (Noureen and Khan, 2007a).

Another freshwater turtle survey was conducted from June 24<sup>th</sup> - 30<sup>th</sup>, 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 on commercial scale and one haul of softshell turtle is sold at Rs. 250-400 depending upon its size. The *Pakhiwal* community sells turtle parts of Indian softshell turtle (*Nilssononia gangetica*), Indian narrow-headed softshell turtle (*Chitra indica*) and Indian peacock softshell turtle (*Nilssononia hurum*) 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 China (Noureen and Khan, 2007b).

The PWP, during its field expedition to Punjab Province, which was undertaken in October, 2007, visited four principal rivers of Punjab. In all, the investigation team covered nine different head-works and irrigation barrages. 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* exploited 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 haul of softshell turtle ranges from Rs. 200 to Rs. 700 (Noureen et al., 2008).

## 5. Role of freshwater turtles in aquatic ecosystem

River turtles display a considerable range of foraging pattern and are well adapted for filling their trophic roles in riverine ecosystems. Turtles are seldom as diverse as fishes in the rivers they share, but their capacity to attain very high densities and biomass in both lentic and lotic ecosystems suggest their substantial contribution to energy flow and nutrient cycling patterns in these ecosystems (Moll and Moll, 2004). They contribute in cleaning up freshwater resources by scavenging on dead organic matter.

## 6. Conservation status of freshwater turtles of Pakistan

### 6.1. 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. 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 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. Crowned river turtle (*Hardella thurji*) has not yet listed in any CITES appendix.

### 6.2. The World Conservation Union (IUCN) Red List

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 globally. 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, 2008.

Table 3 shows the conservation status of freshwater turtles of Pakistan, globally and nationally.

**Table 3:** 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	Black Spotted Turtle ( <i>Geoclemys hamiltonii</i> )	+	-	Vulnerable (VU)	Schedule III *	Schedule III *	Not Listed
2	Brown Roofed Turtle ( <i>Pangshura smithii</i> )	-	+	Low Risk/Near Threatened (LR/NT)	Schedule III	Schedule III	Not Listed
3	Indian Roofed Turtle ( <i>Pangshura tecta</i> )	+	-	Low Risk/Least Concern (LR/LC)	Schedule III	Schedule III	Not Listed
4	Crowned River Turtle ( <i>Hardella thurjii</i> )	Not Listed		Vulnerable (VU)	Schedule III	Schedule III	Not Listed
5	Indian Softshell Turtle ( <i>Nilssonia gangetica</i> )	+	-	Vulnerable (VU)	Schedule III	Schedule III	Not Listed
6	Indian peacock Softshell Turtle ( <i>Nilssonia hurum</i> )	+	-	Vulnerable (VU)	Schedule III	Schedule III	Not Listed
7	Indian Flap-shell Turtle ( <i>Lissemys punctata andersonii</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
<p>* In the provincial wildlife acts, Schedule III is the category of protected animals.</p> <p>** 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.</p>							

### 6.3. Provincial Wildlife Protection Acts

In Pakistan, wildlife protection and conservation is a provincial subject. Prior to 2007, freshwater turtles were not listed in the category of protected animals in any provincial wildlife act. The NWFP Wildlife Department, after realising the sensitivity of the issue, undertook the initiative to protect freshwater turtles in the province. On August 22<sup>nd</sup>, 2007, the NWFP Wildlife Protection Act, 1975, was amended and all the freshwater turtles of the province were listed in Schedule III, a category of protected animals in wildlife act (Notification is attached as annexure 1(a)). Following the steps made by the NWFP Wildlife Department to protect freshwater turtles, the Punjab Wildlife and Parks Department revised the Punjab Wildlife Protection Act 1974, on November 30<sup>th</sup>, 2007, and made an amendment to include the Order *Chelonia* (Turtles and Tortoises) in Schedule III (Notification is attached as annexure 1(b)). The Sindh Wildlife Protection Ordinance, 1972, does not extend any protection to the freshwater turtles of the region.

## 7. Study area

The study area comprised of the stretch of the Indus River in Sindh province and its major canals and tributaries. Kotri, Sukkur and Guddu barrages of the Indus River were considered important study sites and were thus surveyed from September 5<sup>th</sup> to 16<sup>th</sup>, 2008. Necessary support was provided by the Sindh Wildlife Department, Indus For All Programme, and WWF-Pakistan in Sindh Province.

Priority was given to the sites where the targeted communities were found, covering the whole region from the city of Karachi to Guddu, along the Indus River, its major canals, tributaries and barrages. Local areas where Sindh Wildlife Department confiscated consignments of freshwater turtles were also surveyed.

Karachi is considered as the hub of wild animal trade. There are various markets where endangered animals are sold as pets. In order to investigate pet trade in local turtle species, all the potential animal trade markets of the city were also visited as a result.

## 8. Specific objectives of the survey

Following were the specific objectives of the survey of the Sindh region:

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

## 9. Survey methods

### 9.1. Mapping turtle capture and trade locations

Global Positioning System (GPS) Receiver was used to record the coordinates of the areas which were visited to conduct interviews during the survey. Based on these geographical coordinates, a GIS-based point map of survey sites was prepared. A location map of survey sites is attached as annexure 2.

## 9.2. Keeping local communities on board

For the investigation of turtle trade in Sindh, an open ended questionnaire was developed to collect maximum information from the targeted local communities. In order to investigate the species found in the area, a species identification card was used to support the questionnaire. The questionnaire and species identification card are attached as annexure 3 and 4 respectively.

## 9.3. keeping wildlife department on board

Offence record form was also prepared and distributed among district offices of Sindh Wildlife Department to compile the trade record data of the region. The offence record form is attached as annexure 5.

## 10. Population status of freshwater turtles in Sindh

The only information about the distribution and abundance of freshwater turtles in Sindh was compiled by the Zoological Survey Department of Pakistan in 2005. A survey on distribution and status of freshwater turtles was conducted in River Indus adjacent to Sukkur Barrage, Guddu Barrage, Jamaldin Wali and pond areas adjacent to Kandhkot during March and April, 2003. A total of six species of turtles i.e. *Pangshura smithi*, *Pangshura tecta*, *Hardella thurjii*, *Chitra indica*, *Nilssonina gangetica* and *Lissemys punctata andersonii* were recorded from the study area. *Chitra indica* and *Pangshura smithii* were observed to be abundant in various parts of the study area (Azam *et al.*, 2005).

## 11. Results and discussion

### Freshwater turtle trade in Sindh Province

It is evident from the survey that turtle hunting takes place everywhere in the region and people are well aware of this business. Wildlife trade, particularly in freshwater turtles, has been taking place in a well organised manner in Sindh Province. The results of survey showed that all eight species of freshwater turtles are found in Sindh. Table 4 explains vernacular names of these species in *Sindhi*, local language of Sindh Province.

**Table 4:** Vernacular names of freshwater turtles (in Sindh Region)

S.#	Scientific Name	Vernacular Names
1.	Indian Softshell Turtle <i>Nilssonina gangetica</i>	<i>Jahiro, Punyalo, Denjo, Suker, Paatar, Jateera</i>
2.	Indian Peacock Softshell Turtle <i>Nilssonina hurum</i>	<i>Mudh, Sutihar, Pomlo, Dembho, Rangeen terni</i>
3.	Indian Narrow-headed Softshell Turtle <i>Chitra indica</i>	<i>Mohro, Dhoor, Paatar, Sawa terni</i>
4.	Indian Flap-shell Turtle <i>Lissemys punctata andersonii</i>	<i>Kachan, Kumi, Kachwa, Kathero, Dhebri, Sheshai kumi</i>
5.	Brown Roofed Turtle <i>Pangshura smithii</i>	<i>Khoonti, Kuma</i>
6.	Indian Roofed Turtle <i>Pangshura tecta</i>	<i>Pehr, Sivi</i>
7.	Black Spotted Turtle <i>Geoclemys hamiltonii</i>	<i>Terniyo, Rangeen Khopro, Bhir, Peeli dhaari</i>
8.	Crowned River Turtle <i>Hardella thurjii</i>	<i>Bhir, Tanjaano, Kumi Khopro</i>



General perception of the people interviewed about turtle trade revealed that it has been introduced in Pakistan by the Chinese while working on different projects; such as construction of highways, canals and small dams. Local people of the respective areas sold turtles to Chinese for eating purposes initially. No local use of turtles in this region on commercial scale has led Chinese to introduce turtle trade business in the country by involving local people, who are deprived of basic necessities of life.

A total of 35 interviews were conducted during this survey. Information about the interviewees is given in Table 5. Turtle hunting groups search for turtles not only in rivers but also in small canals, nearby water courses and agricultural fields. The average size of small turtle hunting group is 4-6 persons while in large groups, average number of individuals range from 15 to 30 persons.

The number of turtles captured per day depends on size of the turtle hunting group and on the availability of turtles at a particular location. Out of 35 interviews conducted during the survey, only 17 interviewees responded to the question of how many turtle they can capture in a day. The results showed that minimum average of turtle capture per day is 49.88 with standard deviation of  $\pm 54.18$ , while the maximum average of turtle capture per day is 111.35 with standard deviation of  $\pm 127.72$  depending on the size of turtle capturing group.

There's no defined season for poaching freshwater turtles and people catch them throughout the year. Some people have expertise in collecting turtles from wild when the water level is low in canals. According to them, it becomes very easy to locate turtles in low water when they are less active in winter season. While other turtle hunting groups are of the view that turtles are easily caught in high water when active during summer.

It has been noted during the field expedition that some of the professional wildlife poachers not only capture turtles on a commercial scale but also other reptiles and mammals that they encounter during hunting such as snakes, monitor lizard, hedge hog, jackals, jungle cats, otters and crocodiles etc. Some wildlife traders export different kinds of wildlife, they get order of, from the international buyers. They are supposed to use Karachi ports to export their consignments but some have also extended their circles to Quetta, Balochistan Province, and use the Pakistan-Afghanistan border to export wildlife through illegal means.

### **11.1. Communities identified in Sindh**

Local communities identified in Sindh have been divided into two major groups based on their religion;

#### **11.1.1. Hindu tribes**

People who exploit freshwater turtles belong to *Shikari, Rawara, Barha, Gurgula, Gogra, Jogi, Guruwanro, and Bhaagri* tribes.

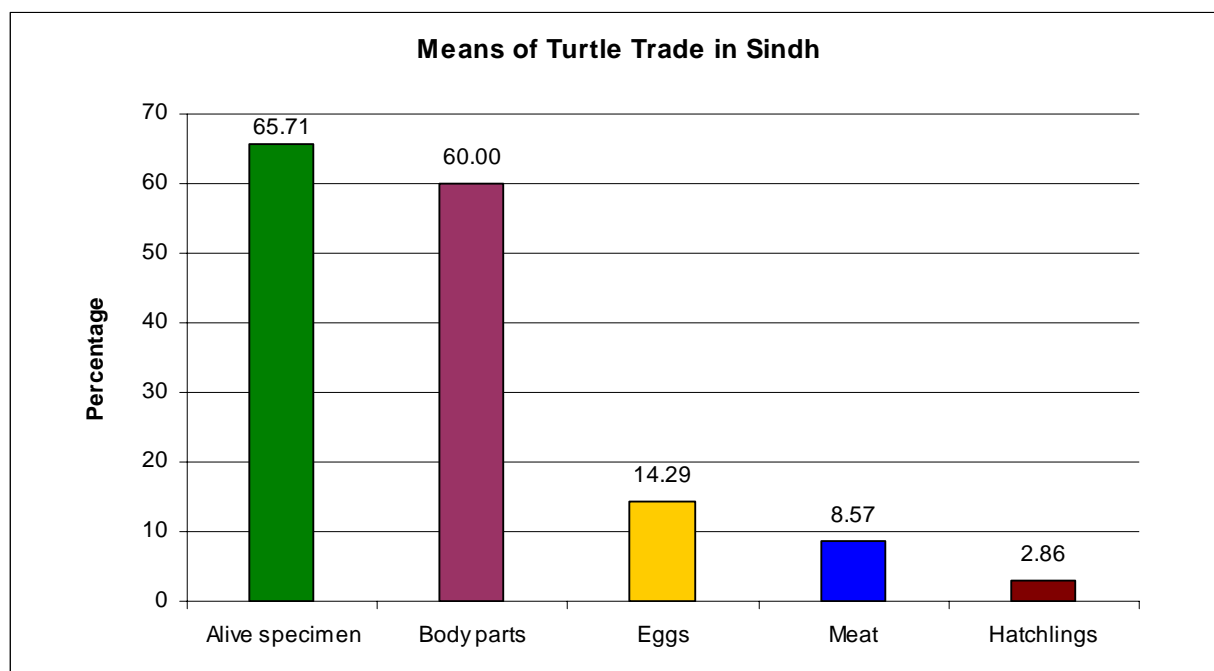
#### **11.1.2. Mohana tribes (Muslims)**

Fishermen community belongs to *Mallah and Mir Behar* tribes. They catch freshwater turtles as *by-catch* of fish. Nomadic tribes, who are dependent on water resources for their survival, contribute in exploitation of natural resources, particularly wetlands dependent species like freshwater turtles. They migrate from one place to another depending on the availability of natural resources and poverty is the major reason for this. Turtle hunting has become a very lucrative business for these impoverished people. They have very limited livelihood options that include weaving of carpets, selling bangles and begging, in addition to fishing and hunting of wildlife. Some people work as tenants and labourers on daily wages.

### **11.2. Exploitation of freshwater turtles**

Impoverished people have adopted turtle trade as an important source of income. In order to earn more profit, new means of turtle trade are introduced in the market. According to the

surveys conducted by PWP, in Punjab and NWFP provinces, softshell turtles have been exploited for their body parts only. In Sindh most of the trade is in alive turtles. Body parts of softshell turtles, eggs, meat, and hatchlings are also in trade. Figure 1 explains different categories of turtle trade recognised during the field expedition in Sindh based on the percentage of interview responses.



**Figure 1:** Categories of turtle trade in Sindh recognised during field expedition

### 11.2.1. Turtle capturing techniques

Local people are well trained in capturing and handling turtles by traditional means. Some professional people catch turtles by diving when water is low in canals and rivers. Omnivorous turtles are attracted ashore by throwing rotten vegetables, meat and fruits. When turtles come out of water to eat rotten food, they are captured on the spot with the help of nets.

Where turtles are apt to hide, on or in the substrate of shallower waters near river banks or lake margins, finding them by feel with hands or feet can be an effective technique. Probing undercut banks with hands or a short pole (sometimes called “noodling”) where turtles may find refuge is a variation on this theme (Moll and Moll, 2004). Local people also collect softshell turtles from the rice fields nearby, by using these techniques. These people impale the animal with spear rod, consisted of bamboo stick and sharply pointed ironed head.

Hook-lines and net hooks are used to catch turtles. Single-baited hook and line, and multiple baited hook arrays are common turtle capturing methods with numerous local variations and expertise. Single-baited hook and line approach is often more suited to subsistence harvesting and turtles caught may be the objective or incidental to the main goal of catching fish. Nevertheless, turtles which are landed often end up as human food or are killed vindictively and discarded by the fisherman. Chicken intestine is used as bait for hooks.

### 11.2.2. Treatment of the captured turtles and transportation

After capturing, turtles are processed either at the same spot where captured or transported to a nearby processing centre; a rented house in most cases. Desired turtle parts are chopped and boiled in water with mustard powder to avoid foul smell and insect attacks, which at last are dried in open air. Turtle meat and eggs are also kept aside. Some hunters are provided with freezers to keep turtle meat fresh until the dealer comes and collects it.

Alive turtles are kept in earthen water tanks particularly constructed for turtles in their private lands.

Freshwater turtles and their body parts are transported mostly by local transport during night times. Dealers have good terms with transporters that carry their consignment to the said destinations. Some dealers use their own vehicles for transportation of turtle consignment. Freshwater turtles if alive are packed in jeans bags that are kept wet so that turtles survive even after long journey. Wooden boxes and cages fitted with thermopole sheets are also used to transport alive turtles. Turtle parts if dried are carried in cartons and jute bags. Consignments are also transported by train to Karachi.

### **11.2.3. Rates or market value of turtles**

**Rates of alive turtles:** Rates of fresh water turtles and their body parts vary from area to area, depending on the availability of the turtles and access to fish markets. Value of softshell turtle species is observed very high as compared to the hard shells turtles. In some areas, three species of softshell turtles which are in demand by wildlife traders (*Nilssonina gangetica*, *Nilssonina hurum* and *Chitra indica*) cost about Rs. 50-400/alive turtle<sup>1</sup>, irrespective of animal's body size. However, some turtle dealers weigh turtles in kilograms and then fix their prices that vary between Rs. 600-1200/alive turtle. Alive specimen of *Lissemys punctata andersoni* costs about Rs. 400-500/animal. Hard shell species of turtles are also in demand as pet and priced Rs. 50-500/turtle.

**Rates of turtle body parts:** Freshwater turtles are exploited for their body parts which are exported to East-Asian countries. Haul of softshell turtles, called "Seero" in local language "Sindh" is sold in two different ways. Hunters are ordered to supply, either fresh body parts or dried ones. Rate of fresh turtle parts varies between Rs. 50-250/piece. If fresh body parts are put up for sale in kilograms, they cost about Rs. 150-600/kg. Turtle body parts when dried, are sold at the rate of Rs. 2,000-4,500/kg in national markets in larger cities like Karachi.

**Rates of turtle eggs:** Turtle eggs which are extracted during processing of softshell turtles for their body parts are sold to turtle dealers. These eggs cost about Rs. 80-250/kg or Rs. 5-10/egg.

**Rates of turtle hatchlings:** It is evident from the survey that turtle hatchlings of hard shell species are also collected from wild for the purposes of pet trade. Local people are well aware of the nesting grounds of turtles and hatchlings are caught when they get order from dealers. One hatchling costs about Rs. 50.

### **11.2.4. Dealers' network and their strategy**

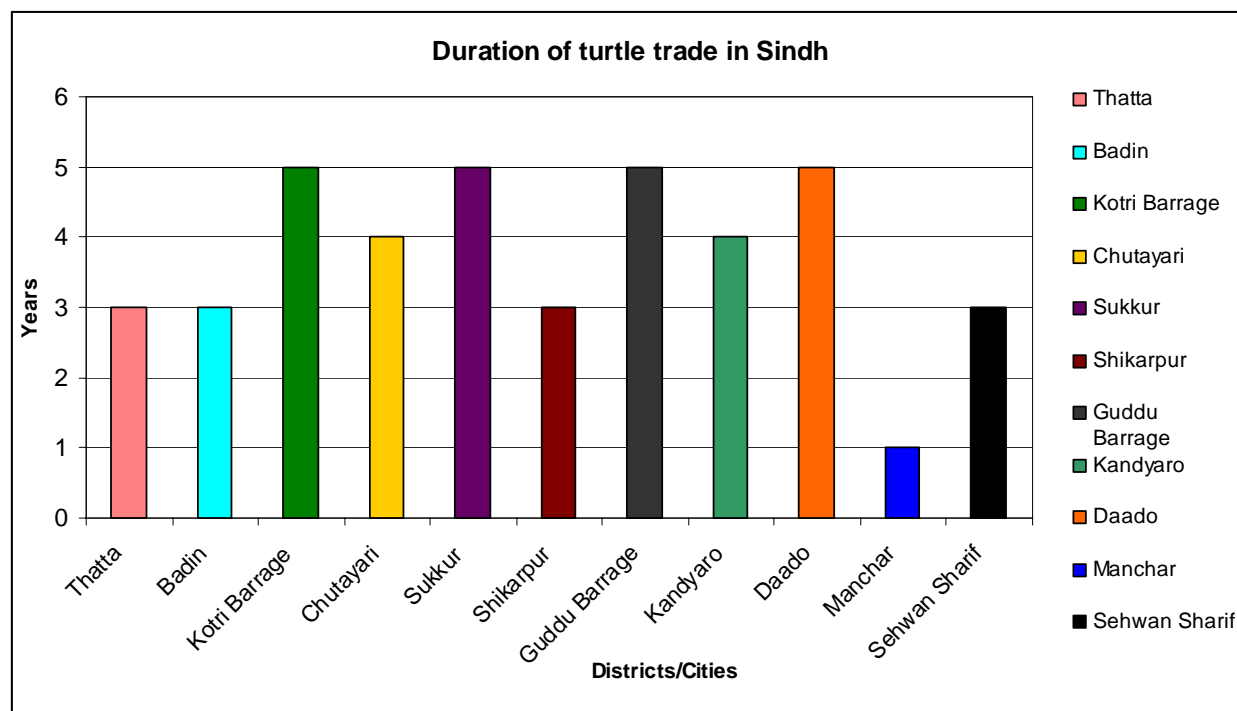
Wildlife trade dealers in larger cities like Karachi, Hyderabad and Sukkur, have established their comprehensive trade network. They have contacts with local dealers at all potential areas of turtle habitats. These local dealers are given handsome amount of money (Rs. 20,000-40,000) in advance, to catch turtles and for supervising the activity for a period of one week to one month. Some local dealers are also provided with vehicles and boats for free movement to all places from where they can collect enough turtles. Local hunters are given free food and accommodation when they are in the field. These local dealers hire nomads on daily wages for this purpose. They earn Rs. 150-300/day as wage for catching turtles. At other places, local hunters are also given Rs. 2,000 in advance for catching turtles. Some of these dealers also have good terms with influential feudals of the area and do not allow other turtle hunting groups to catch turtles from their area.

### **11.2.5. Duration of turtle trade in Sindh**

Commercial exploitation of freshwater turtles is observed in the Indus River and its major canals and tributaries, including the agricultural fields, in Sindh Province. Turtle trade

<sup>1</sup> 1.00 US \$ = 84.01 Pak Rupees

business was found well organised and established in places where fish markets exist. Poaching of turtles started in the year 2003, at Kotri, Sukkur and Guddu barrages along the Indus River. Figure 2 shows the duration of turtle trade in Sindh Province.



**Figure 2:** Duration of turtle trade in Sindh Province in terms of year

### 11.2.6. Trade routes

In Sindh, most of the freshwater turtle trade is destined to Karachi, from where turtles and their body parts are exported to other countries such as China, Hong Kong, Vietnam and South Korea. A map of district, national and international level trade routes identified during the investigative survey of Sindh Province is attached as annexure 6.

## 11.3. Threats to freshwater turtles in Sindh Region

### 11.3.1. Overexploitation of freshwater turtles

Freshwater turtles in Pakistan are highly threatened because of illegal trade in their body parts. Softshell turtle are being hunted in large numbers everyday from the Indus River and its tributaries and canals. Three species of softshell turtles are preferred; these include; Indian softshell turtle, Indian peacock softshell turtle and Indian narrow-headed softshell turtle. Overexploitation of turtle species not only results in population decline of that species but also destroying the ecological balance of freshwater ecosystems. Eggs of softshell turtle that are being captured for their body parts are also collected and sold in the market. Jackals and feral dogs also destroy turtle nests.

### 11.3.2. Alive turtles in trade

Evidences of live turtle trade in both softshell and hard shell species have been recorded during the survey. Hatchlings of hard shell species are also collected from their nesting grounds by the local nomadic communities. It is a significant threat to the likely survival of turtle population in the wild.

### 11.3.3. Increased developmental activities

Developmental activities such as channelling of river and canals for promoting agriculture in the area, is making turtles more vulnerable to trade being accessible to people. Water in the

canals is released for fixed period and people who catch turtles, plan their activities accordingly. Water pollution due to industrialisation and an increase in human population are contributing in population decline of freshwater turtles due to deterioration of their freshwater habitat.

#### **11.3.4. Road accidents**

Turtles when move from one place to another across the roads, encounter accidents due to speedy traffic. Many turtles were found dead on highways and roads along rivers and canals, near agricultural fields, and barrages.

#### **11.3.5. Lack of awareness regarding ecological role of turtles**

Fishermen consider the presence of turtles in the rivers as fish consumers competing with them. The turtles 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. Their role provides a healthy ecosystem for other freshwater fauna.

#### **11.3.6. High price-tag of turtles in international market**

Turtle hunters and the communities living on shoreline that depend on natural resources for their subsistence do not have valuable livelihood options, after the serious decline in fish populations. These people are being easily attracted to the price tag, turtles' offer in the local and international markets. It encourages local communities to engage themselves at certain level in this business in order to earn more money for their families.

### **11.4. Visits of aquarium and fish markets in Karachi**

Turtles are valued as pet animals and Karachi is one of the mega cities of Pakistan where markets exclusive for pet animals exist. Aquarium shops and fish markets were investigated for pet trade of local freshwater turtles. Empress Market in Karachi Saddar was found to be the largest animal market, where signs of turtle pet trade were observed. Two animals of softshell species; Indian flap-shell turtle (*Lissemys punctata andersonii*) were found in captivity. Cost of these turtles was Rs. 450/animal. In aquarium and fish market on Burns Road, Saddar, another Indian flap-shell turtle was observed costing Rs. 400/animal. It was discovered in all the fish and aquarium markets visited, that local turtle species are brought into these markets occasionally by local fishermen when caught accidentally during fishing. Table 6 explains fish and fish markets explored in Karachi.

**Table 6:** Markets visited in Karachi to explore turtle pet trade

S.#	Markets	Found turtles or not	Quantity	Rate (Pak Rs.)
1.	Aquarium Fish Market, Lalo Khait	No local turtle found	-	-
2.	Burns Road, Saddar	Indian flap-shell turtle	1	400
3.	Fish Market Saddar	No local turtle found	-	-
4.	Empress Market, Saddar	Indian flap-shell turtle	2	450
5.	Fish Market, Lines Area	No local turtle found	-	-
6.	Sunday Market, Lalo Khait	No local turtle found	-	-
7.	Fish Market, Lee Market	No local turtle found	-	-
8.	Korangi Sunday Market	No local turtle found	-	-

## 11.5. Efforts of Sindh Wildlife Department to conserve turtles

Sindh Wildlife Department has been playing an important role in controlling turtle trade in the region. Consignments of turtle meat and their body parts, bound to the East Asian countries were confiscated by the Department at sea and airports of Karachi. Sukkur division alone recorded 22 cases of turtle capture for subsistence and commercial use. Details of offence records are given in table 7 (a) and 7 (b). Records of local turtles found in markets of Karachi are given in table 7 (c).

## 12. Recommendations

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

### 12.1. International level

#### 12.1.1. 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. The TRAFFIC International could be asked to;

- Develop a regional roster of experts for species identification in support of Customs Departments at international gateways;
- Develop a centralised filing system for recording of illegal wildlife trade cases for identifying the issue and the scale of the problem;
- Blacklist individuals and businesses at the regional level that are involved in illegal wildlife trade and share information at the regional and international level; and,
- Involve the anti-narcotic 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 product smugglers.

#### 12.1.2. 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.

#### 12.1.3. IUCN Freshwater Turtles and Tortoises Specialist Group

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. PWP's publication on freshwater turtles can be used as effective lobbying tools in this regard. There is a need to assess and review the criteria (IUCN Red List) to revise the conservation status of freshwater turtle species found in Pakistan.

#### 12.1.4. 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 at 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.

## **12.2. National level**

### **12.2.1. 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;

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

### **12.2.2. Revise provincial wildlife acts**

The provincial wildlife protection acts of the country should provide the same status to threatened animals for their maximum protection. The provincial wildlife acts of NWFP and Punjab have already been revised in 2007, to designate freshwater turtles as protected animals. Sindh Wildlife Act, 1974 needs to be amended to protect freshwater turtles in Pakistan.

### **12.2.3. Revise wildlife rules**

The defined wildlife rules should be revised for special cases like that of illegal trade in parts of freshwater turtles, so to control it at provincial level. It has been observed that turtle part consignments confiscated by the departmental authorities, are returned back to the offender after paying penalty. As a result, the consignment circulates in the trade again, which requires serious consideration by the wildlife authorities. It is recommended to destroy all consignments of turtle parts confiscated and safe release of alive confiscated animals to their suitable habitat.

### **12.2.4. Strict legislative measures**

Stricter legislative measures should be taken to discourage turtle poaching. It is recommended to raise fines and penalty of offenders and Issuance of fake licenses for turtle capture and transportation must be considered by the concerned authorities.

### **12.2.5. Devise wildlife trade controlling strategy**

A strategy on controlling illegal wildlife trade exclusively for turtles should be devised in collaboration with the TRAFFIC International, to control illegal turtle trade from Pakistan.

### **12.2.6. Turtle Conservation Action Plan**

Keeping in view the current situation of freshwater turtles of the country, a comprehensive turtle conservation action plan should be formulated.

### **12.2.7. Involve the Customs, Livestock and Fisheries Departments**

Many consignments of turtle parts have been exported, labelled as dried fish skin under the licence issued by the Livestock and Fisheries Department. Both departments should be made aware of turtle trade and no licence be issued for the export of turtle meat or its parts and false certification should not be issued. In addition, smuggling of turtle meat along with fish should be checked.

Proper screening of any consignment exported to foreign countries at dry and sea ports can help stopping illegal trade in wildlife and their products.

### **12.2.8. Designation of protected area for freshwater turtle species**

For the protection of endangered species of freshwater turtles such as *Chitra indica*, suitable areas should be designated as protected.

### **12.2.9. Patrolling of wildlife markets**

Wildlife markets in Karachi should be given priority while patrolling to discourage the business of local turtles in these markets by the concerned departmental authorities. In order to stop the illegal turtle pet trade, fish and aquarium markets in Karachi should be regularly checked for wildlife trade.

## **12.3. Endangered species conservation**

### **12.3.1. Establishment of turtle rescue centre**

In collaboration with Sindh Wildlife Department, a turtle rescue centre can be established, preferably in close collaboration with the Sindh Indus Dolphin Conservation Centre at Sukkur. The objective of rescue centre should be to de-stress captured turtles and their safe release back to their natural habitat after assessment. A database can also be established for identification of captured turtles. In case of turtle parts, strategies can be formulated for eco-friendly disposal of confiscated parts to discourage trade cycle.

### **12.3.2. Wildlife Trade Controlling Cell**

Wildlife trade controlling cell should be established by the wildlife departments in collaboration with TRAFFIC International and other relevant organisations. The responsibility of the cell should be to extend its network throughout the country to check wildlife poaching and illegal wildlife harvest, including freshwater turtles.

### **12.3.3. Rehabilitation programmes**

Population status of freshwater turtles, particularly those species that are under illegal trade should be assessed and for endangered species, rehabilitation programmes should be initiated.

### **12.3.4. Protection of eggs and hatchlings**

Massive hunting of turtles throughout the country, have exerted pressure on turtle population. It is recommended to provide protection to turtle nesting grounds in order to sustain their population.

## **12.4. Awareness-raising**

Environmental awareness and education is the key to conservation as it brings change in mind-set of common people. Raising awareness about the turtle's importance in aquatic ecosystem among the hunting communities, general public, and government authorities will significantly help in controlling trade.

For Hindu tribes, their religious leaders can be involved in awareness raising process. At some places, these people have already abandoned hunting of any kind of wildlife because of their religious teachings. Fishermen kill turtles because of human-wildlife conflict and also exploit turtles as by-catch of fish.

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:*

- Prepare field guide to identify turtle species, including the field survey techniques;
- Develop posters, in local *Sindhi* language;



- ❑ Open discussion forum using the chat room at [www.pakwetnet.com](http://www.pakwetnet.com);
- ❑ Providing information regarding freshwater turtles on PWP's website; and,
- ❑ Make documentary on freshwater turtles of Pakistan.

*At community level:*

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

## **12.5. Biological environmental impact assessment**

It has been recommended that before initiating any developmental project, the biological environmental impact assessment should be given priority. No developmental project should pose negative impacts on endangered species of turtles and their habitats.

## **12.6. Training and capacity-building**

There's a need to build capacity of the government authorities in identifying and distinguishing between turtle body parts and fish skin. It will help in confiscating consignments of turtle body parts at ports.

## **12.7. Community-based wildlife conservation**

Trade in turtle parts, being a newly emerged livelihood option, seeking attention of the impoverished 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.

Turtle hunting wetlands dependent communities have already been identified for Sindh Province. It is recommended to involve these communities in conservation by organising them. These people should be provided with suitable livelihood alternatives so that their dependence on turtles can be minimised.

## **12.8. Proposed surveys and scientific studies**

### **12.8.1. Surveys on freshwater turtle population statistics**

Though various species of freshwater turtles found in Pakistan are well known but the freshwater turtles in the 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.

### **12.8.2. 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.

### **12.8.3. 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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**Tables:**

**Table 2:** Description of freshwater turtle species found in Pakistan

S.#	Species	Diagnostic Features	Carapace Size	Breeding Season	Clutch Size	Feeding Habit	Habitat
1.	Black spotted turtle ( <i>Geoclemys hamiltoni</i> )	It is distinguished by its elongated, oval, three-keeled, domed carapace. The head and carapace are black in colour with yellow or white spots.	25-36 cm	Twice a year, before and after monsoon	13-24 eggs	Carnivorous but also eats plants	Oxbow lakes, swamps, quiet, shallow rather clear water with ample aquatic vegetation
2.	Brown roofed turtle ( <i>Pangshura smithii</i> )	It has an elliptical carapace, brown to tan in colour with a dark medial stripe. The head is yellowish gray.	23-24 cm	April-mid September	7-8 eggs	Omnivorous	river channels and large canals; occasionally found in lakes and ponds connected to rivers
3.	Indian roofed turtle ( <i>Pangshura tecta</i> )	It is identified by its brown carapace, sometimes yellow or orange bordered, with a red to orange medial stripe. The head is black with a large crescent-shaped, orange to yellowish red blotch.	23 cm	March-May	8-12 eggs	Vegetarian; Occasionally carnivorous	still streams, canals, oxbows, ponds, and man-made water tanks; Its preferred habitat is soft bottoms with abundant aquatic vegetation.
4.	Crowned river turtle ( <i>Hardella thurjii</i> )	It is distinguished by a dark brown, flattened carapace. The head is brown with four orange-yellow bands.	Female 15-23 cm, Male 10-15 cm	September-January	8-13 eggs (multiple clutches of up to 100 eggs)	Herbivorous	water bodies with a slow current, muddy bottoms and abundant aquatic vegetation
5.	Indian softshell turtle ( <i>Nilssonina gangetica</i> )	It is distinguished by the greenish-black streaked head and olive-green disc.	42-75 cm	April-May	20-40 eggs	Cannibalistic, Omnivorous, Scavenger	Deep rivers, streams, large canals, lakes and ponds with loamy bottoms; It seems to prefer turbid waters.
6.	Indian peacock softshell turtle ( <i>Nilssonina hurum</i> )	It is distinguished by its olive green disc with black reticulations. The head is marbled with dark green or black lines.	40-60 cm	winter	-	Omnivorous	rivers, streams, lakes and ponds with loamy bottoms

**Table 2:** Description of freshwater turtle species found in Pakistan

S.#	Species	Diagnostic Features	Carapace Size	Breeding Season	Clutch Size	Feeding Habit	Habitat
7.	Indian narrow headed softshell turtle ( <i>Chitra indica</i> )	It is identified by an olive or grey disc, which is black-spotted in a young, and marked with yellow in an adult. The head is black in colour with lighter coloured streaks.	35-115 cm	August-September	60-120 eggs	Carnivorous	clear, sandy sections of large rivers
8.	Indian flap-shell Turtle ( <i>Lissemys punctata andersoni</i> )	Its carapace is grey green with numerous large yellow spots with black borders. The greenish head also has numerous yellow spots.	Female 17-28 cm, Male 14-20 cm	Summer (May-June)	6-14 eggs	Cannibalistic, Omnivorous,	Shallow, quiet, often stagnant waters of rivers, streams, marshes, ponds, lakes, irrigation canals, and storage tanks; Waters with sand or mud bottoms are preferred.

**Table 5:** Information about interviewees

S. #	Date	Location	Name of Interviewee	Tribe	Sources of income	Dependence on natural resources
1	7-Sep-08	Gharo, (near Haleeji lake). District Thatta	Yaqoob, Muhammad Younis Sheikh	Shikari	Fishing, Hunting, Paper collection,	Snakes, Turtles
2	8-Sep-08	near Sakro canal, (Ghulam ullah town). District Thatta	Adam Hussain	Shikari	Fishing, Tenants	Fish, Snakes, Turtles
3	8-Sep-08	Sakro (Majnoo Goth). District Thatta. Near Sakro Shakh	Ali Ahmed, Majnoo	Sandhanri (Mohana)	Fishing, Hunting, Tenants	Fish, Monitor Lizard, Snakes, Turtles
4	8-Sep-08	Peer Patro Road, near Zarka Hotel, District Thatta, (Bhagar Canal)	Sidique, Sajan	Shikari (Gogra)	Fishing, Hunting, Begging	Snakes, Monitor Lizard, Jackals, Turtles
5	8-Sep-08	Makli	Yaar Muhammad	Shikari	Fishing, Agriculture, Daily wages in Poultry Farms	not interested in giving information
6	8-Sep-08	Sajawal	Wasaya	Barha (Hindu)	Sell Bangles	Monitor Lizard, Turtles

<b>Table 5: Information about interviewees</b>						
<b>S. #</b>	<b>Date</b>	<b>Location</b>	<b>Name of Interviewee</b>	<b>Tribe</b>	<b>Sources of income</b>	<b>Dependence on natural resources</b>
7	8-Sep-08	Moro Jogi Goth	Ghulam Haider, M. Ali (Muslim)	Jogi, Barha (Hindu)	shopkeeper, Sell Bangles, Weave carpets	Snakes, Monitor Lizard, Snails, Turtles, or any kind of animals
8	9-Sep-08	Daro	Meero Bheel	Bheel	Hunting, Labourer	Turtles
9	9-Sep-08	Jaati	Salman (Piayaro's brother)	Hindu	Hunting, Labourer	Turtles
10	9-Sep-08	Golarchi	Papu	Baloch	Fishing, Hunting Turtles	Fish, Turtles
11	9-Sep-08	Suni Ghani (Markha Got, Badin)	Syed Umeed Ali Shah		Hunting, Tanents, Empolyement	Turtles, Snakes
12	10-Sep-08	Badin	Hashim, Sajan, Kirishan	Gurgula	Tanents, Daily wages with Water Management Board, Masons and labourer	Turtles
13	10-Sep-08	Haji Muhammad Goth (Badin)	Heera, Abdul Hameed Khosa	Rawra	Tanents on rice fields, Masons and labourer on roads, hunting, fishing. Turtle hunting is their side business.	Fish, Turtles
14	10-Sep-08	Talhar (near Badin)	Punno, Somji	Rawra	Tanents, labourer, Beggars, hunters	Turtles, Fish
15	10-Sep-08	Maatli	Kaajeo, Parson	Rawra	Labrouer, tanents, also have livestock	Turtles
16	10-Sep-08	Kotri Barrage	Muhammad Hassan	Mir Behar	Fishing, Labourer, employment	Fish
17	11-Sep-08	Kotri Barrage	Manohar, Chando	Guruwanro	Fishing, Hunting	Fish, Turtles, Monitor lizard, Snakes
18	12-Sep-08	Chutyari Reservoir, Sanghar	Pir Bukhsh, Ali Bukhsh, Ali Asghar	Mir Behar	Fishing	Fish
19	12-Sep-08	Sehri Goth-old Nara Canal, Sanghar	Raza Muhammad, Raheem Bukhsh	Mir Behar	Fishing	Fish
20	12-Sep-08	Soomar Mallah Goth	Muhammad Yameen, Sher Muhammad	Mallah	Fishing	Fish

**Table 5:** Information about interviewees

S. #	Date	Location	Name of Interviewee	Tribe	Sources of income	Dependence on natural resources
21	12-Sep-08	Wadhki Patan (on Nara Canal)	Abdul Aziz, Azhar Ali, Khair Muhammad, Suleiman	Mallah	Fishing, Hunting	Fish, Otters, Turtles, Crocodile, Wild Bore
22	12-Sep-08	Sukkur Barrage	Javed	Mirani	Fishing, Hunting	Fish, Turtles
23	13-Sep-08	Sukkur	Hakeem	Mallah	Fishing	Fish
24	13-Sep-08	Rohri	Mor Khan, Shahnawaz	-	Fishing	Fish
25	13-Sep-08	Sukkur	Narayan Das, Praim Kumar	Bhagri	Fishing, Hunting	Fish, Turtles
26	13-Sep-08	Sukkur	Muhammad Deedan	Mir Behar	Fishing, Hunting	Fish, Turtles
27	14-Sep-08	Shikarpur	Sardaro	Shikari	Fishing, Hunting	Fish, Turtles, Hedge Hog, Jungle Cat, Jackals
28	14-Sep-08	Kandh Kot	Indar Das	Bhagri	Teaching	-
29	14-Sep-08	Guddu Barrage	Abdul Rasheed	-	-	-
30	14-Sep-08	Guddu Barrage	Fateh Muhammad, Ghulam Rasool Mirani	Mir Behar	Boat driving	Fish
31	14-Sep-08	Guddu Barrage	Muhammad Mureed Hussain	Mirani	-	-
32	15-Sep-08	Kandyaro (Wazeer Bandi)	Mitha Ram, Kewal Das	Gurgula	Bangle seller, Decoration stuff, Hunting turtles	Turtles
33	15-Sep-08	Bhan Saeedabad, near Dadu	Krishan Das, Praim Das	Hindu	Bangles seller, Hunting	Turtles, other animals
34	15-Sep-08	Manchar Lake	Jafar Mallah	Mallah	Fishing, Hunting	Fish, Prawn
35	15-Sep-08	Sehwan Sharif	Waheed	Sheikh	Fishing, Hunting	Fish, Turtles

**Table 7 (a):** Turtle trade record of Sindh (consignments confiscated, bound to other countries)

S.#	Consignment type	Quantity	Species identified	Date	Consignment bound to	Port used	Consignment confiscated by
1.	Frozen body parts of turtles	3,600 Kg	Indian narrow-headed softshell turtle ( <i>Chitra indica</i> )	June 29 <sup>th</sup> , 2005	Vietnam	Karachi Sea Port	Karachi Customs Authority
2.	Dried body parts of turtles	700 Kg	Indian softshell turtle ( <i>Nilssonina gangetica</i> ), Indian narrow-headed softshell turtle ( <i>Chitra indica</i> )	July 27 <sup>th</sup> , 2007	Beijing-China	Karachi Air Port	Sindh Wildlife Department

**Table 7 (b):** Turtle trade record of Sindh (consignments confiscated, locally-Sukkur)

S. #	Date of Chalan	Place of offence	City	Nature of offence	Compensation Recovered (Pak. Rupees)
1.	21/09/2006	Indus River	Guddu	Illegal catching of 4 freshwater turtles	10,000
2.	06/10/2006	Indus River	Rohri	Illegal catching of freshwater turtle	10,000
3.	06/10/2006	Indus River	Guddu	Illegal catching of freshwater turtle	10,000
4.	12/10/2006	Indus River	Kashmore	Illegal catching of freshwater turtle	10,000
5.	17/10/2006	Indus River	Sukkur	Illegal catching of freshwater turtle	8,000
6.	22/10/2006	Indus River	Rohri	Illegal catching of freshwater turtle	8,000
7.	16/02/2007	Ghoti Feeder	Ubaro	Illegal catching of freshwater turtle	6,000
8.	01/05/2007	Indus River	Guddu	Illegal trapping of 12 turtles	23,000
9.	05/06/2007	Indus River	Kashmore	Illegal catching of freshwater turtle	5,000
10.	10/01/2007	Indus River	Kashmore	Illegal catching of freshwater turtle	2,000
11.	02/07/2007	Samno lake	Ghotki	Illegal catching of freshwater turtle	11,000
12.	02/07/2007	Indus River (Guddu	Guddu	Illegal catching of freshwater turtle	5,000



S. #	Date of Chalan	Place of offence	City	Nature of offence	Compensation Recovered (Pak. Rupees)
		Barrage)			
13.	19/09/2007	-	Puno Aqil	Illegal catching of freshwater turtle	13,000
14.	14/03/2008	Shahi Wah	Kashmore	Illegal trapping of 4 turtles	7,000
15.	14/04/2008	Kirthar Canal	Sukkur	Illegal trapping of 4 turtles	5,000
16.	14/04/2008	-	Kandhkot	Illegal trapping of 6 turtles	5,000
17.	14/04/2008	-	Kandhkot	Illegal trapping of 10 turtles	10,000
18.	22/04/2008	Begarji Rice Canal	-	Illegal catching of freshwater turtle	3,000
19.	05/05/2008	Indus River (Guddu Barrage)	Guddu	Illegal trapping of 8 turtles	8,000
20.	11/07/2008	Saifullah Canal	-	6 kg turtle meat	30,000
21.	29/05/2008	Murad Wah	Kashmore	Illegal trapping of 10 turtles	5,000
22.	25/06/2008	-	Puno Aqil	25 kg turtle meat	30,000

**Table 7 (c): Records of local turtles found in Karachi Markets**

S.#	Date of Raid	Market (Shop)	Number of species	Measures taken by the Sindh Wildlife Department
1.	June 16 <sup>th</sup> 2005	United Fish, Street # 1, Burns Road, Karachi	Freshwater turtles, 2	Fine imposed, animals released in wild
2.	June 16 <sup>th</sup> 2005	United Fish, Street # 1, Burns Road, Karachi	Freshwater turtle hatchlings, 2	Fine imposed, animals released in wild

**GOVERNMENT OF THE NORTH-WEST FRONTIER PROVINCE  
ENVIRONMENT DEPARTMENT.**

**NOTIFICATION**

*Peshawar dated the, 22/08/2007*

**No.SO(Tech)ED/VIII-10/2004/KC.** In exercise of the powers conferred by clause (i) of section 42 of the North-West Frontier Province Wildlife (Protection, Preservation, Conservation and Management) Act, 1975 (N.-W.F.P Act No. V of 1975), the Government of the North-West Frontier Province is pleased to direct that in the Third Schedule to the North-West Frontier Province Wildlife (Protection, Preservation, Conservation and Management) Act, 1975 (N.-W.F.P. Act No. V of 1975), the following shall be added at the end, namely:

"7"	S.#	Technical Name	English Name
	1.	<i>Kachuga Smithii</i>	Smith's Turtle
	2.	<i>Kachuga tecta</i>	Indian Roofed Turtle
	3.	<i>Geoclemys hamiltoni</i>	Spotted Pond Turtle
	4.	<i>Hardella thurjii</i>	Brahminy or Crowned River Turtle
	5.	<i>Aspideretes hurum</i>	Peacock Soft Shell Turtle
	6.	<i>Aspideretes gangeticus</i>	Ganges Soft Shell Turtle
	7.	<i>Chitra chitra</i>	Chitra Turtle
	8.	<i>Lissemys punctata</i>	Indus Mud Turtle.

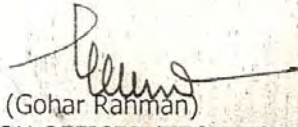
-sd-

**SECRETARY TO GOVT. OF NWFP  
ENVIRONMENT DEPARTMENT**

**Endst: No. & Date Even.**

Copy is forwarded to:

1. Secretary to Governor NWFP, Peshawar.
2. Secretary to Chief Minister NWFP, Peshawar.
3. PS to Minister for Environment NWFP, Peshawar.
4. PS to Chief Secretary NWFP, Peshawar.
5. PS to Secretary Law Deptt: NWFP, w/r to his No.Legis:2(1)/1976/Vol-II/7951-52, dated 10.08.2007.
6. PS to Secretary Environment Deptt: NWFP, Peshawar.
7. The Chief Conservator Wildlife, NWFP, Peshawar.
8. The Chief Conservator of Forests, NWFP, Peshawar.
9. The Manager, Govt. Printing & Stationery Deptt: NWFP for publication in the next official gazette.

*usdel*  
  
(Gohar Rahman)  
SECTION OFFICER (TECHNICAL)



GOVERNMENT OF THE PUNJAB  
FOREST, WILDLIFE AND FISHERIES  
DEPARTMENT

Dated Lahore, the 30<sup>th</sup> November, 2007

**NOTIFICATION**

**No. SOP(WL)12-17/2001-III:** In exercise of the powers conferred upon him under Section 45(i) of the Punjab Wildlife (Protection, Preservation Conservation and Management) Act, 1974, the following further amendments shall be made:-

**AMENDMENTS**

In the said Act, in Third Schedule, after the existing entry at serial No.94, the following new entry at serial No.95 shall be inserted:-

"95. Order Chelonia (Turtles & Tortoises)".

**BY THE ORDER OF THE GOVERNOR OF THE PUNJAB**


SECRETARY  
GOVERNMENT OF THE PUNJAB  
FOREST WILDLIFE & FISHERIES DEPARTMENT

**No. & date even**

A copy is forwarded for information and necessary action:-

- ✓ 1- Inspector General Forests/Member Secretary, NCCW, Government of Pakistan Ministry of Environment, CDA Block No.IV, Islamabad w.r.t his letter No.F.6-2/97-NCW dated 31-03-2007.
- 2- The Director General Wildlife and Parks, Punjab.
- 3- The Conservator, National Council for Conservation of Wildlife, CDA Block No.IV, Islamabad.
- 4- The Superintendent, Government Printing Press, Punjab, Lahore for publication in the next issue of the Punjab Government Gazette and supply twenty printed copies of Notification.
- 5- All District Coordination Officers in Punjab.

IGF

  
**(MUHAMMAD NAEEM BHATTI)**  
UNDER SECRETARY (WILDLIFE)

cc  
1- PS to the Secretary, FW&F Department.  
2- PA to the Additional Secretary, FW&F Department.  
3- PA to the Deputy Secretary (Planning), FW&F Department.

add for

121

Annexure 3:

**Sindh Visit  
(September, 5<sup>th</sup>-16<sup>th</sup>, 2008)**

**Questionnaire**

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

Location: \_\_\_\_\_

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

Name(s) of the interviewee: \_\_\_\_\_

**Socio-economic condition of the area**

Tribe: \_\_\_\_\_

Population: \_\_\_\_\_

Major sources of income:

Fishing / Hunting

Agriculture

Employment

Others: \_\_\_\_\_

Dependence on natural resources for livelihood:

\_\_\_\_\_  
\_\_\_\_\_

**Freshwater Turtles**

1. Have you seen freshwater turtles in the area

Yes

No

2. Hunting of freshwater turtles in this area

Yes                      If yes, since when \_\_\_\_\_

No

3. Hunting season: \_\_\_\_\_

4. Any use of these species by local people?

Hunting

Parts/organs used in local medicines

Use of turtle eggs

5. Specific turtle species demanded by the dealers (By showing species identification card):

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---

6. Use of captured turtle or its parts

---

---

7. Processing time of turtle parts: \_\_\_\_\_

---

8. Means of capturing turtles

---

---

9. Number of turtles captured per day (individually) (in group): \_\_\_\_\_

Group size:

5-10      10-15,      15-20,      > 20      or \_\_\_\_\_

10. Where these turtles or their parts are sold and to whom in this area?

---

---

11. Dealers visit the area to collect turtle parts;

After \_\_\_\_\_ days      After \_\_\_\_\_ weeks      After \_\_\_\_\_ months

12. Which area the turtle parts dealers come from? \_\_\_\_\_

---

13. Does the local turtle market exist in this area?

Local Markets: \_\_\_\_\_

14. Where the dried turtle parts are taken to, from this area?

---

15. Do you know about the turtle markets in larger cities?

---

---

16. Cost of captured turtles;

Alive turtle: \_\_\_\_\_

Fresh body parts of turtles: \_\_\_\_\_

Dried parts: \_\_\_\_\_

17. \_\_\_\_\_ turtles are killed to obtain 5 kg of turtle parts

18. Route of turtle trade within the country

---

19. How many people are involved in turtle hunting from this area?

---

20. What do you think if the turtle trade is no more happening, then what are your alternatives for livelihood?

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**Freshwater Turtles of Pakistan  
(Species Identification Card)**

<http://nlbif.eti.uva.nl>

**Hard shell Turtles (4 Species)**



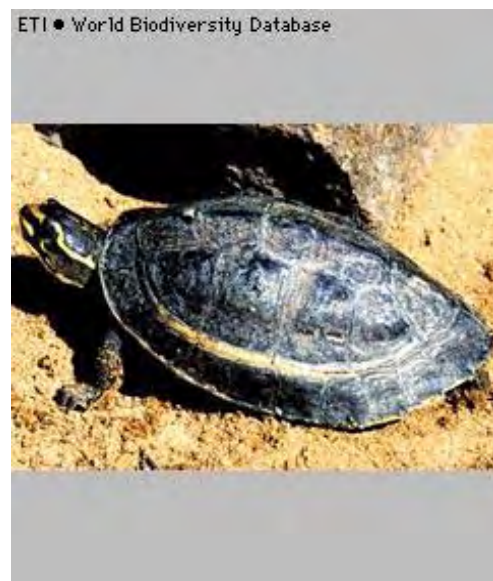
*Pangshura smithii*  
(Brown Roofed Turtle)



*Geoclemys hamiltonii*  
(Black Spotted Turtle)



*Pangshura tecta*  
(Indian Roofed Turtle)



*Hardella thurjii*  
(Crowned River Turtle)

## Softshell Turtles (4 Species)

ETI • World Biodiversity Database



*Nilssonia gangetica*  
(Indian Softshell Turtle)

ETI • World Biodiversity Database



*Nilssonia hurum*  
(Indian peacock Softshell Turtle)

ETI • World Biodiversity Database



*Lissemys punctata*  
(Indian Flap-shell Turtle)

ETI • World Biodiversity Database



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



Annexure 5



**Pakistan's Freshwater Turtles  
Illegal Trade Offence Record Form  
Sindh**

#	
Case #	
Date of confiscation	
consignment confiscated by	
Location where consignment confiscated	
Consignment bound to	
Type of consignment (live animals/Body parts/ Derivatives)	
Animals/body parts collected from (Region)	
Species (if identifiable)	
Number/Quantity	
Offender's details	
Decision taken (Penalty/Fine)	
Investigating officer	
Details recorded by	
Date recorded	

## 14. Glimpses of the survey

### Turtles in markets



*Empress Market, Karachi  
Karachi*



*Indian flap-shell turtle found in Burns Market,  
Karachi*



*Indian flap-shell turtle found in Empress Market*



### **Turtles crossing road**

*Two different species of turtles crossing river bridge at night, Sukkur Barrage*

### **A turtle road kill**

*Nilssonia gangetica hit by vehicles while crossing road*



### **Turtles; a source of food**

*A lady from Barha tribe cutting a turtle for cooking meal*

## Livelihoods of impoverished people



*A person throwing net to catch fish*



*A person weaving fishing net*



**Community-based interviews**

*PWP survey team  
interviewing local people*