

# Exploring illegal trade in freshwater turtles of Pakistan

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## KEYWORDS

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Consumer market  
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## ABSTRACT

The order *Chelonia* is represented by eight species of river turtles in Pakistan (excluding marine turtles and land tortoises). The survival of softshell turtle species however, is at stake due to their unsustainable catch from potential habitats for trade in their body parts. A well organised turtle trade started in Pakistan in 2002. Turtles and their body parts collected from the wild are transported to wildlife dealers in Peshawar (Khyber Pakhtunkhwa), Lahore (Punjab) and Karachi (Sindh). These cities have International exits and therefore preferred by the wildlife traffickers for export of turtle consignments. The known turtle part importing countries include China and its special administrative region Hong Kong, Vietnam and Korea. Turtle trade is not limited to desired body parts of softshell species only but hatchlings of hard shell turtles are also collected for pet trade in Sindh. The market value of turtle parts vary with respect to area. The minimum price of turtle parts is Pak Rs. 167.0 per kilogram (mean value) was observed in Khyber Pakhtunkhwa whereas the maximum price of Pak Rs. 2,663 per kilogram was recorded in Sindh. Controlling illegal trade in turtle parts is highly essential for likely survival of these species in general and softshell turtles in particular. It demands a holistic and participatory approach at community, national and international levels.

## Introduction

Pakistan hosts eight species of freshwater turtles, inhabiting the Indus River, its various tributaries and smaller streams in its drainage system. These include: *Chitra indica* (EN<sup>1</sup>; Appendix II<sup>2</sup>), *Nilssonina gangetica* (VU; Appendix I), *Nilssonina hurum* (VU; Appendix I), *Lissemys punctata andersonii* (LR/LC; Appendix II), *Pangshura tecta* (LR/LC; Appendix I), *Pangshura smithii* (LR/NT; Appendix II), *Hardella thurjii* (VU) and *Geoclemys hamiltonii* (VU; Appendix I). River turtles are keystone species of aquatic habitats and are important scavengers of freshwater ecosystems, which is essential to health of freshwater bodies. They also predate on insects, snails, fish and other aquatic invertebrates. Turtles contribute to maintaining integrity of freshwater ecosystems.

Freshwater turtle populations do not cope well with targeted exploitation of their adult animals. Their life history describes that turtles species are long lived animals, also known as living fossils. A relatively smaller annual recruitment, very high percentages of hatchlings and juveniles falling prey to predators, longer incubation periods and delayed sexual maturity are the characteristics of freshwater turtles (Congdon *et al.*, 1993, 1994). Depletion due to commercial harvest of adults may lead to decline of wild population of these species (Brooks *et al.*, 1991).

Turtle species, both in marine and freshwaters of the world are confronting serious threats to survival in their wild habitats due to the pessimistic environmental changes. Turtles are exploited primarily for use as food and in traditional medicines in China. Trade in tortoises and freshwater turtles is a worldwide

<sup>1</sup>Conservation Status of IUCN Red List: Endangered (EN); Vulnerable (VU); Lower Risk (LR); Least Concern (LC); Not Threatened (NT)

<sup>2</sup>CITES Appendices:

Appendix I (lists species that are threatened with extinction and are or may be affected by trade. Commercial trade in wild-caught specimens of these species is illegal (permitted only in exceptional licensed circumstances); Appendix II (lists species that are not necessarily threatened with extinction, but may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with the survival of the species in the wild);

Appendix III (species that are listed after one member country has asked other CITES Parties for assistance in controlling trade in a species. The species are not necessarily threatened with extinction globally).

phenomenon (Georges *et al.*, 2006; O'Brien *et al.*, 2003; Vargas-Ramirez *et al.*, 2007). Commercial trade in river turtles is intense in Asia, particularly in countries representing well established regional, national and international export markets. Among the Asian countries, Vietnam and Bangladesh were the major suppliers in the beginning but after depleting their native resources, the harvesting pressure shifted to the adjoining countries including India, Myanmar, Laos, Cambodia and Indonesia (Moll and Moll, 2004). The major problem with existing wild populations of turtles in the country is caused by illegal commercial trade in body parts of softshell species. Other threats to freshwater turtles in Pakistan encompass habitat deterioration and fragmentation due to unsustainable development; scarcity of water in rivers, canals and water diversion and extraction projects for irrigation purpose and water pollution. Turtles are perceived to be deleterious to fish economy by the fisherfolk due to lack of understanding and awareness regarding their ecological role in river ecosystems. Turtles are also accidentally caught as by catch of fish during fishing practices.

In Pakistan, freshwater turtle trade was first highlighted in 1990s. An investigative study by WWF - Pakistan and the Sindh Wildlife Department for TRAFFIC International in 1996, reported turtle trade in Sindh Province. The Indian softshell turtles were exported to China that cost Pak Rs. 50 per turtle (Shah, 1996).

Illegal turtle trade, particularly in body parts of softshell species was reported by Baig (2006), during his research studies on "Environmental Baseline Survey and Monitoring of Taunsa Barrage Emergency Rehabilitation Project". The trade network, market value of turtle body parts and the affected turtle species were stated in detail. Body parts of *Chitra indica* and *Nilssonina gangetica* were found with nomads residing nearby Taunsa Barrage. The catch was over two hundred turtles in a week and dried parts were sold to middlemen of Karachi and Lahore at the rate of Pak Rs. 100 – 200/kg (Baig, 2006). Baig (2006) also reported a truck load of turtles got emptied near *Sust*; a customs check-post between Pakistan and China for trading goods between the two countries, during a survey. The reason was improper transportation of these species in a container that resulted in their death before reaching the destination. This incident confirmed illegal export of turtles from Pakistan to China (Umeed Khalid Pers. Comm.).

The Pakistan Wetlands Programme (PWP) conducted baseline studies to explore illegal trade in freshwater turtles and their body parts and investigated other threats to these important wetland inhabitants. The enquiries included investigation of freshwater turtle trade routes, assessment of their market values, identification of local communities involved in trade and exploring the marketing networks. This paper is brief compilation of PWP study of the above aspects of freshwater turtles along the Indus River ecosystem.

**Material and Methods**

**Study Area**

The Indus River System is a core habitat of freshwater turtles in Pakistan. The study area comprised of Indus River and its main tributaries in three provinces; Khyber Pakhtunkhwa, Punjab and Sindh. Priority was given to the areas where fish markets existed and traces of involvement of fishermen and nomadic communities in freshwater turtles killing and trade were found. Pet markets in Sindh Province were also the focus of interest. Fig. 1 shows survey sites of the study area in the three provinces.

*Khyber Pakhtunkhwa Province*

The survey sites consisted of the Indus River in *Dera Ismail Khan*; a city in Khyber Pakhtunkhwa Province connecting it to Punjab Province. The town is situated on the right bank of Indus River and is one of the potential sites for freshwater turtles. The investigative study was conducted in April 2007.

*Punjab Province*

Rivers of Punjab feeding the Indus River including Chenab, Jehlum, Ravi and Sutlej are the likely habitats of freshwater turtles and hence visited to investigate trade in freshwater turtles. The study was focused at nine different barrages and head works constructed on these rivers to regulate water for irrigation purposes. The area along river banks, both upstream and downstream of selected barrages and head works was covered. The detailed assessment of major head works of Punjab was undertaken in October 2007.

*Sindh Province*

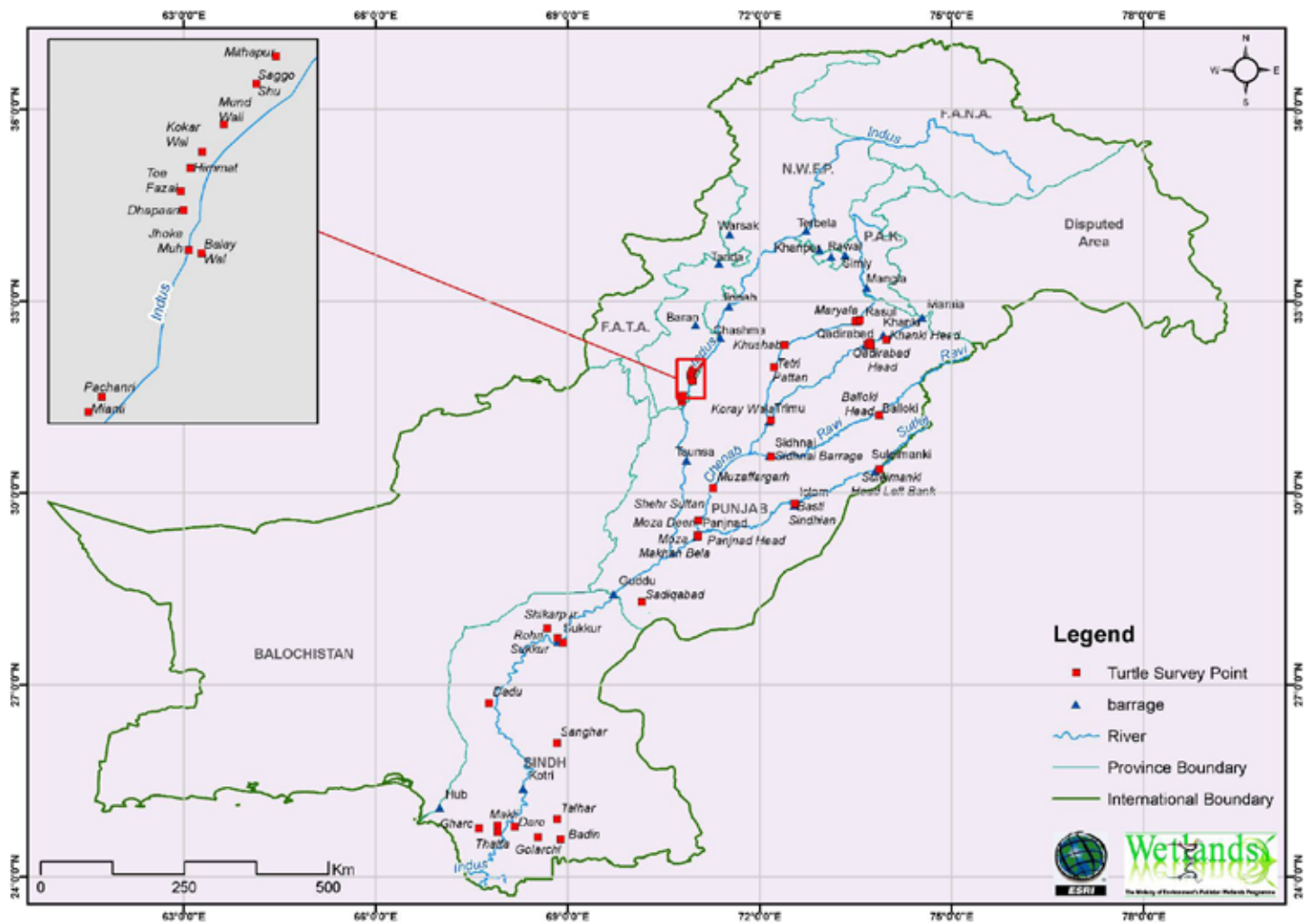
The study area in Sindh Province comprised of the stretch of the Indus River, its major canals and tributaries and natural reservoirs. Kotri, Sukkur and Guddu barrages of the Indus River were considered important study sites. The wetlands of Sindh Province were explored for trade in freshwater turtles in September 2008.

**Survey methods**

For the investigation of turtle trade, an open ended questionnaire was developed to collect maximum information from the targeted local communities. A species identification card was used to support the questionnaire. The geographical coordinates of the study sites were recorded by using Global Positioning System (GPS) Receiver.

**Results**

Freshwater turtle poachers preferentially collect *Chitra indica*, *Nilssonina gangetica* and *Nilssonina hurum* from all over the country. These softshell *Chelonians* are harvested for their body parts;



**Figure 1:** Study area: points showing survey sites based on the geographical coordinates

*calipee* and *chest pellicle*. The season for poaching is not defined but poachers prefer winters and spring when water level is low in the rivers and canals and spearing of freshwater turtles is easy. The capturing techniques vary significantly depending on the expertise of poachers and the gears available to them. Generally, spear rod, hook lines and nets are used to catch freshwater turtles. Softshell turtle species are carnivorous scavenging reptilians and therefore are easily hunted by using poisonous bait.

After capturing, turtles are processed either at the same spot or transported to a nearby processing locality; 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 are finally dried in open air. Turtle meat is stored in freezers to keep it fresh. Alive turtles are kept in earthen water tanks particularly constructed for turtles.

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

#### Wildlife trade dependent local communities

Nomadic communities “*Kehal* or *Mohanas*” reside along the Indus River and its tributaries as they are highly dependent on fish and natural resources of the Indus River for their subsistence livelihood. The wildlife poachers of these communities not only capture turtles but also other reptiles and mammals that they encounter during hunting. These include: snakes, monitor lizard, hedgehogs, jackals, jungle cats and otters. The tribes that were found involved in turtle trade are *Kehals* and *Mohana* (in Khyber Pakhtunkhwa Province); *Jabhel*, *Pakhiwal* and *Mohana* (in Punjab Province) and *Shikari*, *Rawara*, *Barha*, *Gurgula*, *Gogra*, *Jogi*, *Guruwanro*, *Bhaagri*, *Mallah* and *Mir Behar* (in Sindh Province). In addition, the opportunistic people from different areas of the country also collect freshwater turtles for commercial trade. A few nomadic communities consume turtle meat and eggs in Khyber Pakhtunkhwa and Sindh.

#### History of trade in freshwater turtles in Pakistan

According to information, the depleted fish population in the Indus River triggered trade in freshwater turtles, when it started in 2000. In Khyber Pakhtunkhwa, commercial exploitation of turtles for their body parts was introduced in the year 2006. In Punjab Province, turtle trade commenced in 2002 whereas in Sindh, it started in 2003.

#### Commercial value of turtles in local and national markets

Three distinct markets including local, national and international were observed for trade in freshwater turtles and their body parts. The values of freshwater turtle parts vary with markets and area. Local contractors set the rates of freshwater turtles and their body parts which are highly flexible. Comparison of rates in three provinces is given in Table 1, whereas, Figures 2, 3 and 4 show the value of turtle parts in local markets of Khyber Pakhtunkhwa, Punjab and Sindh provinces respectively.

The dried *calipee* and *chest pellicles* are sold in major cities; Lahore, Karachi and Peshawar. The value of freshwater turtles parts in national markets range between Pak Rs. 2,500 and 4,500 per kilogram. Turtle eggs are sold in Pak Rs. 5 - 10 per egg. Hard shell species of turtles are also in demand as pet, the cost of which ranges between Pak Rs. 400 and 500 per specimen, depending on the species. Wild caught hatchlings of hard shell species (*Pangshura smithii*) cost Pak Rs. 50 per turtle.

#### Trade routes

Wildlife dealers of large cities approach local poachers for illicit harvest of freshwater turtles. Processed body parts of wild caught river turtles are transported from local markets in small towns to national markets in large cities. Illegal trade in freshwater turtles in Khyber Pakhtunkhwa has been initiated by the wildlife traders from Lahore. The consignments collected locally are transported to provincial capital Peshawar and finally to Lahore for export. In Punjab, turtle parts gathered from potential sites are sent to Lahore whereas in Sindh, Karachi is the main hub for export of freshwater turtles and their body parts.

China, Hong Kong, Korea and Vietnam are found to be the illicit importers of turtles and their parts from Pakistan. Turtle parts from Pakistan are also exported to Iran due to a long and porous border between the two countries. China being prime consumer, majority of turtle consignments are exported to the country. Fig. 5 shows the international trade routes for turtle trade.

#### Discussion

The PWP's field surveys and subsequent specific investigations (2007-2008) regarding exploitation of freshwater turtles for their body parts exposed a highly organised turtle trade. The wildlife traders' network operates at all levels; local, national and international, making trade in freshwater turtles a lucrative business for impoverished nomadic riverine communities. These communities are dependent on riverine natural resources for their subsistence. Their only source of income generates by producing baskets, mats, brooms and other handicrafts from available vegetation along the river banks. These products however, have very low market value. These people cannot take part in fishing activities without being registered as commercial fishermen by fish contractors of the area. In these conditions, capturing turtles is the sole option left for them to earn money for their better living.

The local markets of freshwater turtle trade indicate high monetary values with well established networks. The newly established local markets, however, show comparatively lower prices. The principal consumer of turtles and their body parts is China where turtle meat is preferred for its delicacy and turtle parts are used in Traditional Chinese Medicines (TCM). Three fourth of Asia's 90 freshwater turtles and tortoises are seriously threatened and 18 of them are endangered (Takehisa and Shun'ichi, 2006). Freshwater turtle parts are speculated to have high medicinal importance. The 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 also large importers (Moll and Moll, 2004).

Pakistan is signatory to the Convention on International Trade in Endangered Species of Fauna and Flora (CITES). The government of Pakistan approved the Federal CITES Law in May

**Table 1:** Comparison of market value of turtle parts in provinces

Provinces	Mean Value	StDev	CoefVar	Minimum Value	Median	Maximum Value
Khyber Pakhtunkhwa	167.0	79.7	47.74	50.0	165.0	300.0
Punjab	566.7	75.0	13.24	500.0	550.0	700.0
Sindh	2,663.0	1,113.0	41.82	800.0	2,750	45,000.0

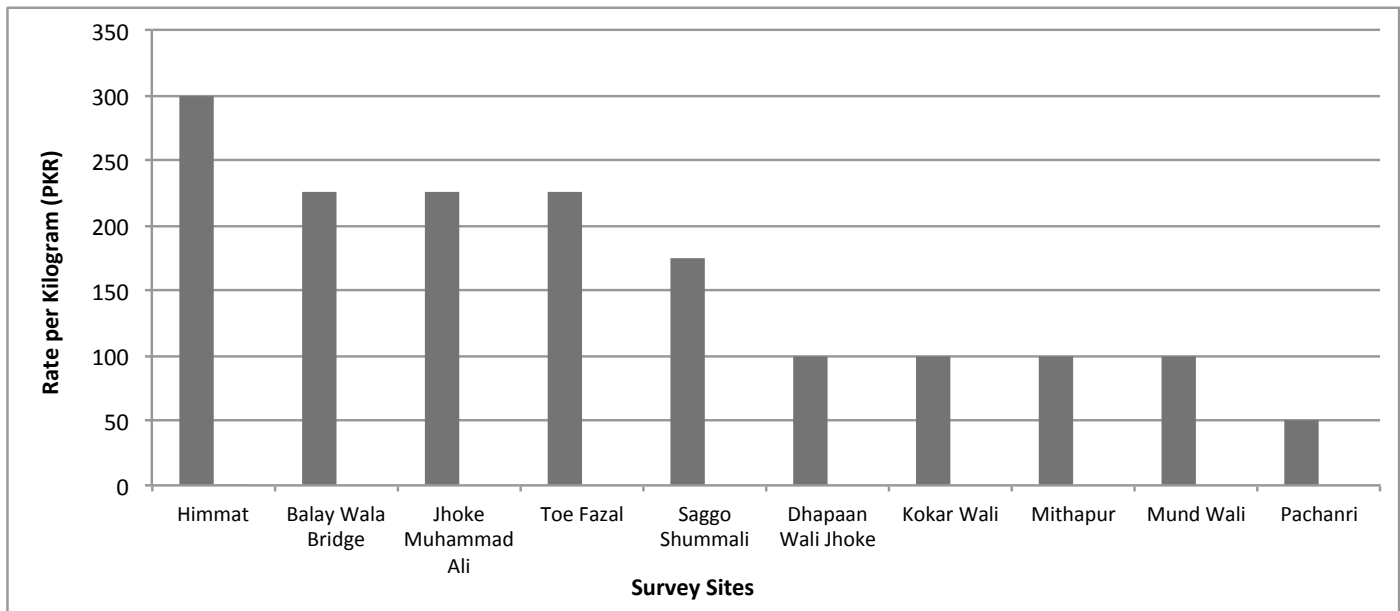


Figure 2: Rate of turtle parts (in Kilogram) in ten different survey sites located in Khyber Pakhtunkhwa

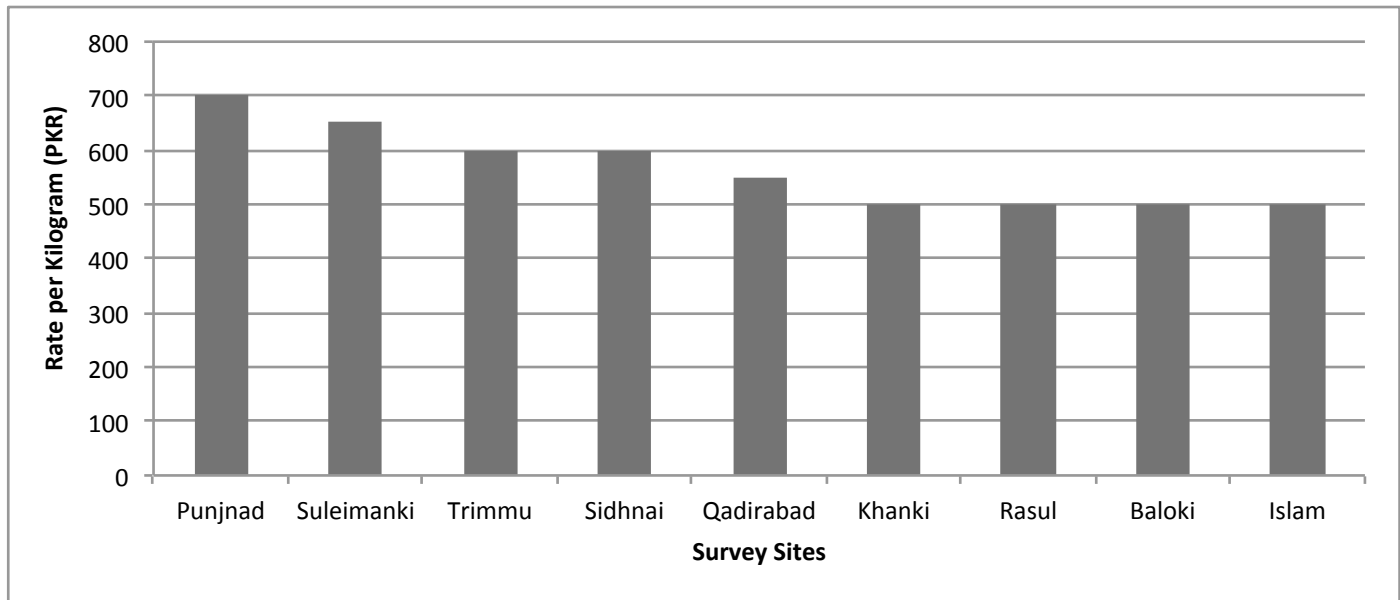


Figure 3: Rate of turtle parts (in Kilogram) in nine different barrages and head works located in Punjab

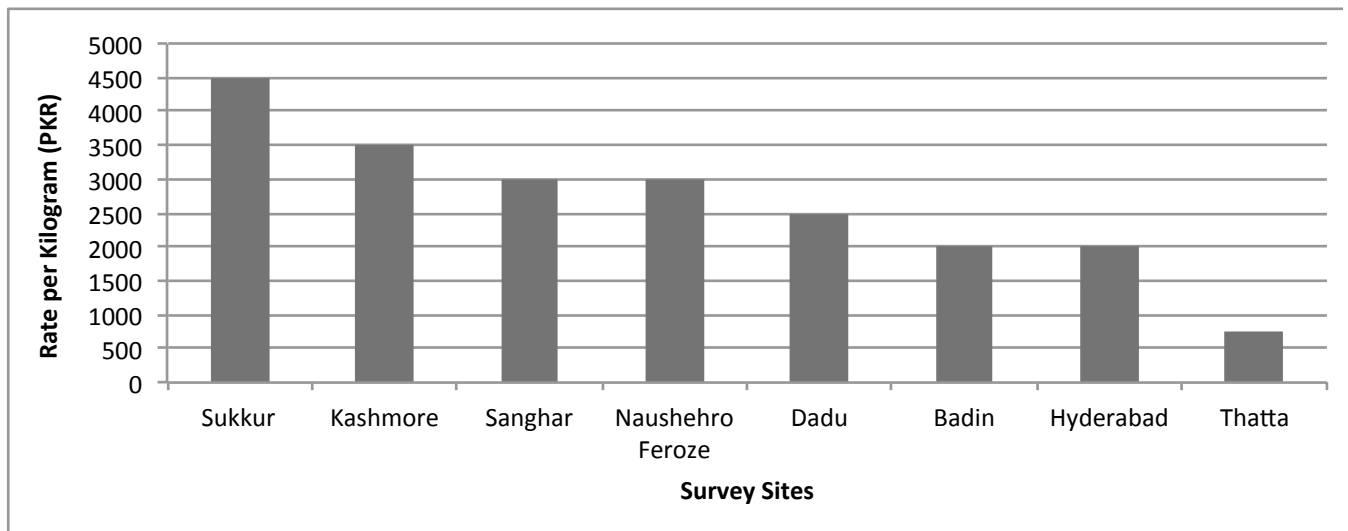


Figure 4: Rate of turtle parts (in Kilogram) in eight different survey sites located in Sindh



**Figure 5:** International routes of turtle trade showing importer and consumer counties of freshwater turtles.

2012, for effective enforcement of CITES legislations in Pakistan. Wildlife being a provincial subject, Khyber Pakhtunkhwa Wildlife Department and Punjab Wildlife and Parks Department revised the conservation status of freshwater turtles in 2007. In Sindh, these species are still not listed in the protected category in wildlife legislation. The confiscation of turtle parts by customs and wildlife authorities at the international airports further confirmed the study results. A huge shipment of 3,650 kg of frozen turtles, bound to Vietnam was held at sea port Karachi in 2005. The customs and wildlife authorities detained 700 kg of dried turtle parts at Jinnah International Airport, Karachi in 2007. The consignment was destined to China. According to wildlife offence records, the provincial wildlife authorities confiscated about 300 kg of dried turtle parts in Peshawar in 2007. Another seizure of 300 kg of turtle parts was made successfully by the wildlife protection authorities in Lahore in 2008.

Customs Department at the international exits, if trained and experienced can significantly contribute in controlling illegal wildlife trade. In this regard, the PWP organised a training workshop for the wildlife and customs staff to build their capacity not only in identification of wildlife and their derivatives but also shared with them national laws and international conventions for their information and awareness. The purpose of organising this event was to create awareness among the relevant government staff about recent trends in wildlife trade; identification of affected species, their body parts and other derivatives; and the potential mean and routes of transportation. The PWP drew attention of international and national media to the matter of turtle trade in Pakistan by involving electronic and print media. The international turtle conservation community invited the PWP representatives to share and discuss the plight of turtle trade at various international forums. The PWP's mass awareness campaigns through events

and dissemination of awareness material positively enhanced awareness level among line departments, general public and rural stakeholder communities.

## Conclusion and Recommendations

Unsustainable commercial exploitation of freshwater turtles is a serious threat to turtle survival and is completely banned for species on CITES Appendices I and II. The provincial wildlife legislations should be revised in conformity with the international commitments of the country under the CITES and the Convention on Biological Diversity (CBD). Effective implementation of wildlife legislation and inter-departmental coordination is required to curb the illegal trade in freshwater turtles and their body parts. The enforcement of the Federal CITES Law will significantly aid in preventing illegal trade in endangered wildlife species including turtles. It will considerably improve the regulation of wildlife trade to and from Pakistan. It is essential to appraise freshwater turtles trade at international level through CITES, IUCN Turtles and Tortoises Specialist Group, TRAFFIC International and other concerned organisations. Target groups need to be addressed through community based-conservation initiatives. Alternative livelihood opportunities and education and awareness programmes can help protect freshwater turtles from unsustainable harvesting. It is of vital importance to investigate turtle trade continuously as traders and poachers keep on altering their means of wildlife exploitation. There is a need for more stringent measures to curb the illegal trade and promote conservation of freshwater turtles at large.

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