

**A Progress Report on Reconnaissance of Softshell Turtles in
the states of Karnataka and Andhra Pradesh**

Report Submitted to

**Turtle Survival Alliance
&
Madras Crocodile Bank Trust**

Under the

**Turtle Survival Alliance Seed Grant
(TSA-SD-IN-10-01)**

Duration

September-October,2010

By

Shashwat Sirsi

Submitted on 31122010

Introduction

In recent years, there has been an increasing awareness of the need for positive conservation action for chelonians. However there exist, major gaps in our knowledge of the distribution, ecology, behavior and status of chelonian species, that are thus insufficiently known. This renders planning of species conservation all the more difficult but no less urgent (Conservation Action Plan for Endangered Freshwater Turtles and Tortoises, 2006).

All softshells in Asia are highly prized both by gourmands as a delicacy as well as by local communities as a source of protein. Additionally, products derived from chelonians are used in traditional Chinese medicine resulting in extensive human exploitation and consequent population declines (van Dijk *et al.*, 2000).

Trionychid species in peninsular India, particularly *Nilssonia leithii*- Leith's softshell turtle and *Pelochelys cantorii*- Asian Giant softshell turtle- are of interest in this regard as clarity of information is required regarding species distribution, ecology and intensity of threats faced.



PLATE 1: Juvenile Nilssonia leithii: Photo Courtesy B.H. Chennakeshava Murthy.

- *Nilssonia leithii*.

Distribution:

Leith's softshell turtle is understood to be endemic to peninsular India, reports of occurrence include the Chalakudy, Bharathapuzha and Chaliyar River in Kerala (Kumar, 2004; Nameer *et al.*, 2007 and Thomas *et al.*, 1997 as cited by Kumar, 2004); Godavari and Krishna River from Andhra Pradesh, Cauvery and Coleroon River from Tamil Nadu (Kalaiarasan *et al.*, 1992 as cited by Frazier and Das, 1994), Nethravathi from Karnataka, as well as Pawna in Maharashtra and Godavari in Orissa (Deepak and Vasudevan, 2009).

Deepak and Vasudevan (2009), delineate the present distribution range of the species from Pawna (Maharashtra) as Northern and North-Western limit of the species while Balimela reservoir, Godavari in Orissa is the North-eastern distribution limit and the southernmost limit of distribution of the species known so far is the Chalakudy River in Kerala.

The habitat of the species has been recognized as rivers and reservoirs (Deepak and Vasudevan, 2009; Das *et al.*, *in press*). The species is also thought to replace *N. gangetica* in southern India (Das *et al.*, *in press*).

Threats:

Adult and eggs have been reported to be exploited on a local scale- for instance; adults are sold in Kerala at local markets or toddy shops, at the rate of Rs. 100-300 depending on the size of the specimen (Kumar, 2004). The species is under considerable stress from such anthropogenic pressure. Additionally, the species and nesting habitat may also be under threat in certain areas due to change in river morphology from hydrological projects (Das *et al.*, *in press*, personal observation)

Legal Protection: *Nilssonia leithii* is protected under Schedule IV of the Indian Wildlife Protection Act

Leith's softshell turtle has not been listed under CITES.

IUCN categorises *N. leithii* as Vulnerable A1c ver 2.3



PLATE 2: *P. cantorii*: Watercolour and gouache by Peter Schouten

- *Pelochelys cantorii*:

Distribution:

The Asian giant soft-shell turtle has a widespread distribution, apparently in isolated localities from the west coast of India eastwards to Bangladesh (Das, 2008). Nair and Badrudeen (1975) reported on the occurrence of a specimen in Palk Bay. The species is generally considered a freshwater form, inhabiting deep and slow moving rivers. It has also been previously observed that the species is found migrating from the freshwater of the Brahmini and Baitarini rivers, in Gahirmatha area of Orissa state, for nesting on ocean beach (Kar and Rao, 1985 as cited by Das, 2008). A population was confirmed in the delta of Godavari River near Rajamundry- Andhra Pradesh from a survey in November, 2005 (Conservation Action Plan for Freshwater turtles and Tortoises, 2006)

Threats:

The species is exploited for consumption in the form of adults as well as eggs (Das, 2008; Conservation Action Plan for Freshwater turtles and Tortoises, 2006). Human induced habitat alteration through hydrologic projects and activities such as sand mining are increased threats in addition to exploitation pressure.

Legal Protection:

The species is listed under Schedule I of the Indian Wildlife Protection Act

CITES lists *P. cantorii* under Appendix II

IUCN categorises *P. cantorii* as Endangered (EN A1cd+2cd) Assessed 2000

Aim and Objectives:

- Preliminary assessment of occurrence of Leith's softshell turtle and Asian giant softshell turtle along different rivers in the states of Karnataka and Andhra Pradesh
- Dual purpose surveys for gathering primary information regarding Trionychid species occurrence through field surveys as well as secondary information from local fishing communities.
- Identification of local residents with an interest in species conservation incentive and establishing positive links with such individuals wherever possible.

Sampling Methodology:

Selection of Site based on criteria such as presence of deep pools/river bends as seen from remote sensing images, road connectivity to riverine sites and fishing villages, previous distribution records and secondary information from literature and personal communications.

Sampling procedures used on each visit consisted of using cast nets and occasionally single baited hooks wherever possible, else rudimentary visual sampling was carried out along with an additional observer. Additionally, secondary information was obtained primarily from members of fishing communities in proximity to each site.



PLATE 3: Sampling at Dowlaiswaram Barrage, Rajahmundry

Results:

Primary evidence of species occurrence as well as indirect evidence and secondary information obtained across different sites has been summarised as follows:

Karnataka State:

I. River Netravati in Dakshin Kannada

District: The GMR power project at Tanir Bavi and a dam for water supply at the MRPL petroleum refinery at Katipalla as well as the Thumbe barrage for water supply to Mangalore city are among the major hydrological projects on the river. The Government of Karnataka has proposed gravity diversion of the River Netravati towards drought affected villages such as Kolar, Chikballapur, Bangalore rural and parts of Ramanagaram.

At **B.C. Road, Bantwal**, on the National Highway 48, in Dakshin Kannada district- local

fishermen provided information on the accidental capture of an adult *P. cantorii* in the year 2009, between August and September. The specimen is housed at the Pilikula zoo near Polali town, as was confirmed by Scientific Officer of the zoo- Dr. Jerald Vikram Lobo. The scientific officer mentioned that the specimen was rescued from Panemangalore and weighed 20.2 kg, measuring 75 cm in length and 57 cm in width.

Secondary information: Local fishermen identified *N. leithii* as well as *P. cantorii*, while remarking that the frequency of sighting/occurrence, particularly of large sized specimens was diminished in recent times. Leith's soft-shelled turtle is referred to by the vernacular name of Paale poo or Poo paale, wherein Pale refers to the leaf spathe of areca nut palm (Deepak and Vasudevan, 2009). Additionally, Dr Lobo affirms that the vernacular name is derived from the fact that the hemipenis is shaped like inflorescence enclosing structure.

At **Narikombu village**, the river was observed to have several intervening sand bars along with adjacent banks composed of sandy substrate.

Secondary information: Nesting by large softshell species was confirmed by individuals from local community. A proposal to raise the height of Thumbe dam that occurs downstream is a threat to habitat stability. Dynamite fishing has also been observed previously at this location.

At **Kayirgundi**, a deep pool of considerable length reportedly occurs at this riverine site

Secondary information: Large softshell turtles are reportedly observed during the summer months when water levels are relatively low.

Potential for Education Programme: An education programme addressed toward members of riparian communities can be designed and implemented. Mr Raja Bantwal, chief journalist with a local newspaper daily, is of local origin and is a potential candidate in design and execution of

vernacular education programmes, in order to attain community awareness and sensitization towards softshell conservation. The said person also has registered a local charitable organization for the conservation of aquatic fauna of riverine habitat. Lobbying against proposed hydrological projects on River Netravati may also be sourced through such an organization.

Potential Captive Breeding Facilities: Land lease is available in Narikombu village in proximity to Netravati River. In-situ hatcheries could possibly be established within this area.

The Pilikula zoo could in turn be involved as an ex-situ breeding facility, as it is in relative proximity to source areas of Trionychid species. Assurance colonies could thus be maintained at the zoo. Education programmes could also be designed in order to engender a sense of awareness among zoo visitors with regard to conservation of softshell turtles.

The Madras Crocodile Bank Trust, as well, could be involved in maintaining captive assurance colonies of threatened chelonian fauna of the region, as well as in providing critical technical expertise to Pilikula zoo with regard to captive breeding programmes for target softshell turtle species.

II. Sharavathi Valley Wildlife Sanctuary- Shimoga District:

Sampling was carried out on Sharavathi River at Muppane, upstream of the Linganamakki Dam using a row-boat and a single baited hook in the middle of, as well as alongside one bank of the river channel.

Secondary information: Local fishermen at Muppane, Aralgod and Kogar villages identified Leith's soft-shell turtle, acknowledging the occurrence of head colouration as a bruise mark. Capture of turtles was reported to be easier in the ensuing months through summer when water levels recede. The use of a series of unbaited

hooks referred to as '*rampani gaala*' is reportedly used to catch softshell turtles such as *N. leithii*.

Local exploitation was also observed to occur in the summer months at Melmanji village near Kogar range. Similar local exploitation might also be incident at Muppane and adjoining areas.

III. Kali River-Uttara Kannada District:

There are four major dam projects on this river- the Supa reservoir near the headwaters, the Bommanhalli reservoir near the Dandeli forests, the Kodasalli dam near Ganeshgudi and finally, one at Kadra, which is the part of the Kaiga nuclear project and the other two minor dams being at Kaneri and Tattihala. A single location at Ganeshgudi was visited along the river Kali. Yadav et al., (2008) report that six major dams across the river, a nuclear power plant as well as paper and sugar industries on its bank have resulted in a tremendous loss to the biodiversity in the region.

Secondary information: Personnel belonging to a recreational resort in the area reported incidence of large softshelled turtles, wherein one specimen identified as *N. leithii* was accidentally captured on a single baited hook, a month prior to visiting this location. The specimen was retained for a period of a week as a display to resort guests following which it was released. The specimen was thought to weigh in the range of 10-15 kg. Large softshell turtles are also thought to occur in a large wetland in the Dandeli Wildlife Sanctuary. 3-4 single baited hooks were set overnight by local fishermen at Ganeshgudi.

Mr Umesh, owner of Hornbill Resorts at Ganeshgudi evinced his interest in gathering any data on incidental occurrence of softshell species as well as in providing assistance for logistics during future surveys.

Andhra Pradesh:

- IV. Of two specimens of *N. leithii* in the Government Museum, Chennai- one of the localities recorded is of the Tungabhadra

River in **Kurnool district**, Andhra Pradesh (Kesavaram, 1988 as cited by Frazier and Das, 1994). **Alampur village** in Kurnool District, off the National Highway 7, at **Tungabhadra River** is of religious interest, being the site of ancient Hindu temples. Tourist inflow is relatively low in volume. However a large fishing community, constituted of about 120 families translates into a high fishing activity carried out at this site with cast nets in coracles.

Secondary information: Leith's softshell turtle was identified at this site, wherein any turtle occurrence at this site shall be reported by the fishermen telephonically. Turtle incidence as accidental capture is thought to be higher when water level recedes following the winter season.

- V. **Rajahmundry at Godavari River-East Godavari District** was observed to be a site for a population of *P. cantorii* as was reported from a previous survey in November, 2005 as per the Conservation Action Plan for Freshwater turtles and Tortoises (2006).

The river is well connected by road and is subject to a high level of fishing as well as ferrying of tourists.

Secondary information: Local fishermen provided information regarding the occurrence of *P. cantorii*, saying that the occurrence of the species had diminished in recent times. Adult and juvenile Leith's softshell turtle were also identified, wherein Amalapuram village was also recognized as an area of their occurrence.

- VI. Someshwar temple tank at **Kotipalli village, West Godavari District** was visited on the basis of recorded occurrence of specimens of *N.leithii* (Moll and Vijaya, 1986 as cited by Das *et al.*, *in press*).

Secondary information: Temple authorities and priests identified Adult and juvenile Leith's softshell turtle from photographic field guides.

The temple tank has been leased out to the local fishing community over a period of two years, at a yearly rate of Rs. 110,000. High mortality of adults reportedly occurred four years previous to visit when water levels were extremely low, while presumably exploitation by fishermen may result in continued chelonian mortality.

Another temple tank at **Draksharam village**, is thought to contain stocks of *N. leithii*. Additionally, **Bhimavaram town** is said to have certain large wetlands/tanks under private ownership which might contain large softshelled turtles. Sampling at the said locations is thus requisite in the near future.

- VII. At **Srisailam-Kurnool District on Krishna River**, the Biodiversity Research Centre of the Andhra Pradesh Forest Department was visited. A *Chitra indica* adult reportedly weighing about 95 kg was obtained in the year 2008, between November and December from the river Krishna- the fishermen having injured the specimen upon capture. Photos of the carcass were provided and the skeleton of the species was also measured to have a carapacial length of 54 cm

10 star tortoises, *Geochelone elegans* were also retained at the Research Centre, having been seized from houses in nearby localities. All specimens were measured for dimensions and weight.

Secondary Information: Three to four 'varieties' of turtles were remarked upon by local fishermen. One of the varieties mentioned, with a vernacular name of '*Naamaalu Tabelu*' which refers to a turtle with the mark of Vishnu, the Hindu God. Both *N. leithii*, possibly due to dark lines that extend to side of the head, as well as *C. indica* were identified in this regard.

The fishing areas of Neetiganga, Amudalapenta and Kadiravanam have been reported as potential turtle habitat while additional locations at Nagarajuna Sagar and downstream to Guntur

have been broadly indicated as likely turtle habitat by local fishermen.

Capacity building: Research assistants employed with the Biodiversity Research Centre can be trained in chelonian specific surveys and recording of data in this regard

Future Directions:

- Redirection of survey efforts through intensive sampling at sites with robust secondary information
- Survey and study of new sites on basis of reports of species occurrence, such as Hospet on Tungabhadra and Gaddina Kere cross in Bijapur district. Population studies could be conducted at potential key populations
- Survey of institutions with vouchers of specimens of target turtle species- to ascertain areas of distribution
- Survey of zoological gardens to compose inventory of Trionychid species in zoos across south India
- Market Surveys to provide information on level and scale of exploitation
- Identification of stakeholders for captive breeding programmes for captive breeding of species as well as key local individuals in aiding *In-situ* conservation measures for threatened chelonian species
- Identification of personnel for involvement in Turtle Conservation Education programmes
- Identification of potential field investigators for involvement in field work

REFERENCES

- Centre For Herpetology/Madras Crocodile Bank Trust (2006) Conservation Action Plan for Endangered Freshwater Turtles and Tortoises of India. Madras Crocodile Bank Trust, Post Bag-4, Mamallapuram, 603 104. Tamil Nadu, India.
- Das, I. (2008) *Pelochelys cantorii* Gray, 1864- Asian Giant Softshell Turtle. Chelonian Research Monographs, No. 5. Conservation Biology of Freshwater Turtles and Tortoises. IUCN/SSC Tortoise and Freshwater Turtle Specialist Group.
- Deepak, V. and Vasudevan, K. (2009) Endemic Turtles of India. pp 25-42. *In:* Vasudevan, K. (Ed.), 2009 Freshwater Turtles and Tortoises of India. ENVIS Bulletin. Wildlife and Protected Areas. Vol 12(1). Wildlife Institute of India, Dehradun, India. Pp 177
- van Dijk, P.P., Thirakhupt, K., Webb, R.G., (2001) Chitra chitra—Southeast Asian narrow-headed softshelled turtle. In: Pritchard, P.C.H., Rhodin, A.G.J. (Eds.), The Conservation Biology of Freshwater Turtles. Chelonian Research Foundation, Lundberg, MA
- Frazier, John G., and Das, I. (1994) Some Notable Records of Testudines from Indian and Burmese Subregions, Hamadryad. 19: pp 47-66
- Kumar, Biju A., (2004) Records of Leith's Softshell Turtle, *Aspideretes leithii* (Gray, 1872) and Asian Giant Softshell Turtle, *Pelochelys cantorii* (Gray, 1864) in Bharatapuzha River in Kerala. Zoo's Print Journal. 19(4): 1445
- Murthy, B.H.C.K. and Das, I. (2009) The Turtle Collection of the Zoological Survey of India, Kolkata, India. pp 15-24. *In:* Vasudevan, K. (Ed.), 2009 Freshwater Turtles and Tortoises of India. ENVIS Bulletin. Wildlife and Protected Areas. Vol 12(1). Wildlife Institute of India, Dehradun, India. pp 177

Nair, P.N.R. and Badrudeen, M. (1975) On the occurrence of softshell turtle *Pelochelys bibroni* (Owen) in marine environment. Indian Journal of Fisheries. 22: pp 270-274

Nameer, P.O., Unnikrishnan, K.R. and J. Thomas. (2007). Record of Leith's Softshell Turtle *Aspideretes leithii* (Gray, 1872) (Family Trionychidae) from Kerala. Reptile Rap – Newsletter of the South Asian Reptile Network. 8: pp 5

Yadav, Amit S., Gururaja, K.V., Karthik, B., Rao, G. R., Mukri, Vishnu, Chandran, Subash M.D. and Ramachandra, T.V. (2008) Ecological Status of Kali River Flood Plain. Centre for Ecological Sciences, Indian Institute of Science. pp-42.

HTML address

<http://wgbis.ces.iisc.ernet.in/energy/water/paper/ETR29/index.htm>

HTML address for Watercolour of *P. cantorii* at

Andrew Isles, Natural History Books

<http://www.andrewisles.com.au/all-stock/publication/asian-giant-softshell-turtle-and-lt-i-and-gt-pelochelys-cantorii-and-lt-i-and-gt-original-artwork-from-and-lt-i-and-gt-astonishing-animals-and-lt-i-and-gt->

ACKNOWLEDGEMENTS

I would like to thank in all sincerity the Turtle Survival Alliance especially Rick Hudson, TSA Chair for providing seed grant (TSA-SD-IN-10-01) under which this preliminary survey was initiated.

I am grateful to Madras Crocodile Bank Trust- especially Patrick Aust, Gowri Mallapur and Nikhil Whitaker- for all logistic support and inputs provided while carrying out field surveys

The guidance and inputs provided by Professor B.C. Choudhury of the Wildlife Institute of India were crucially important in survey implementation

I am thankful to Shailendra Singh, Program Director- Indian Turtle Conservation Program, for his supervision and support.

I greatly appreciate the help provided by Sri Hitesh Malhotra, Chief Wildlife Warden of Andhra Pradesh Forest Department

I am grateful to Mr. Thulsirao, Assistant Chief Conservator of Forests and Head of Biodiversity Research centre at Srisailam, Andhra Pradesh Forest Department for the support and guidance provided

Last but not the least; I am thankful to all Field Assistants who provided sampling assistance and secondary information while on field.
