

Spatial ecology and seasonal activities of Indian narrow headed softshell turtle (*Chitra indica*) in NCS, India



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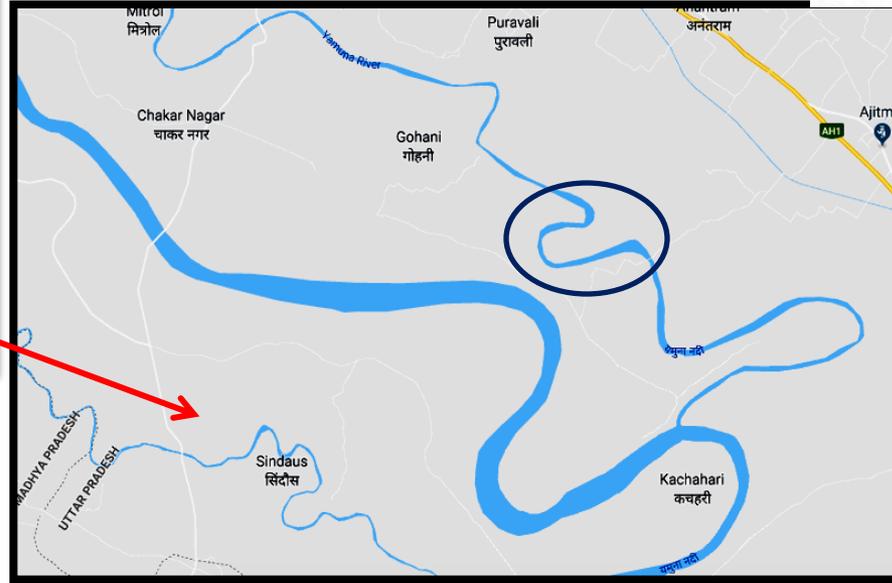
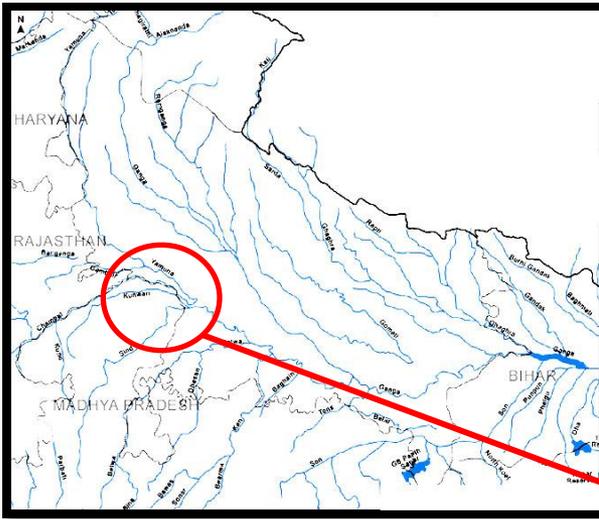
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Introduction

- It is a large riverine soft shell; widely distributed throughout Indian subcontinent (Das, 1995; Engstrom et al., 2002; Das and Singh, 2009).
- Extensively hunted for its calipee and flesh and greatly affected by habitat destruction throughout distribution range

- Endangered” status (IUCN, 2008).



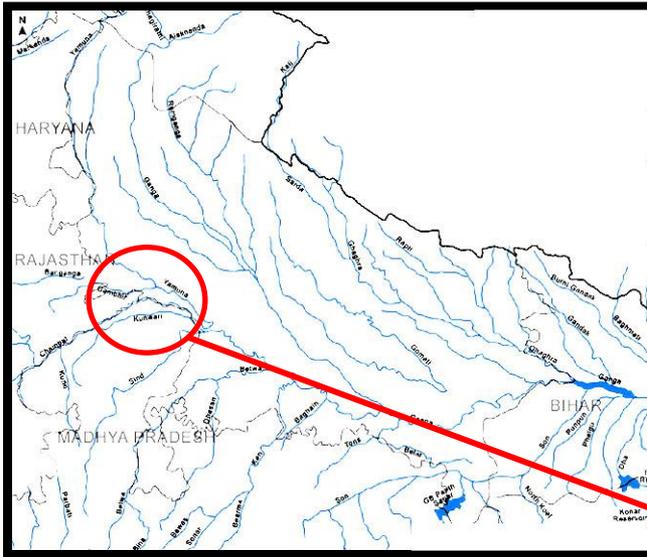


Hypothesis



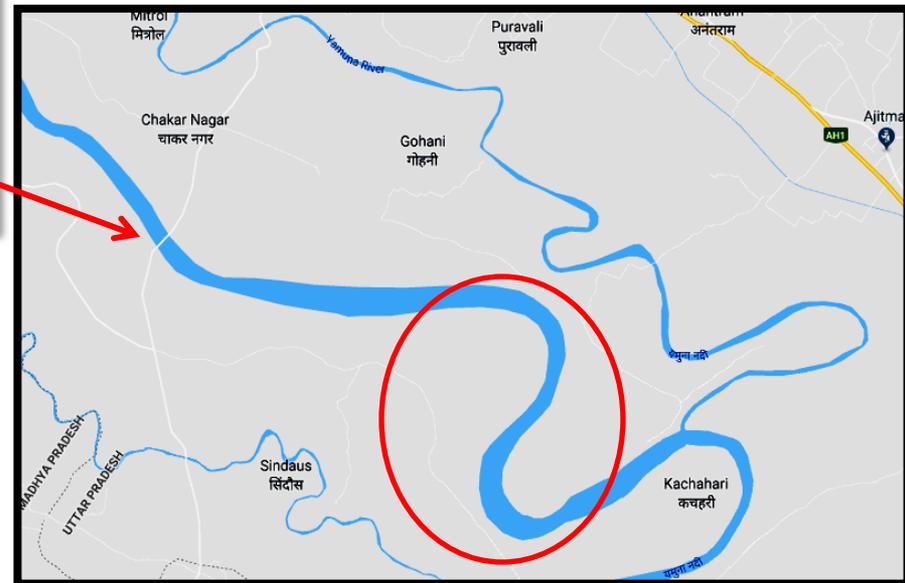
Dec 2017, biotelemetry study on *Chitra* was initiated to

- 1) document seasonal movements of *C. indica*,
- 2) habitat utilization pattern
- 3) study seasonal spatial ecology of adults



Picture of chambal-yamuna confluence

- ~ 172 km river section – reported as main nesting habitat along the lower Chambal, UP



Lower Chambal and Chambal-Yamuna confluence



Methods

Catching and restrain :

Methods developed by local fishermen were deployed for catching.

Capturing attempts are made generally during the dusk and in night.



Radio-transmitters and Tagging process



Transmitters (151MHz) of
1-2 yr life, 0.5-3.0km range, max >5 km

TAGGING PROCESS :

Transmitters attached with the help of Kevlar fishing line through the cartilaginous rear end of carapace and glued with the epoxy 5 minute.

Kevlar line ends locked with the help of oval swage and glued with epoxy.

Soon after tagging the animal released back in the river.

Tagging : pictorial description

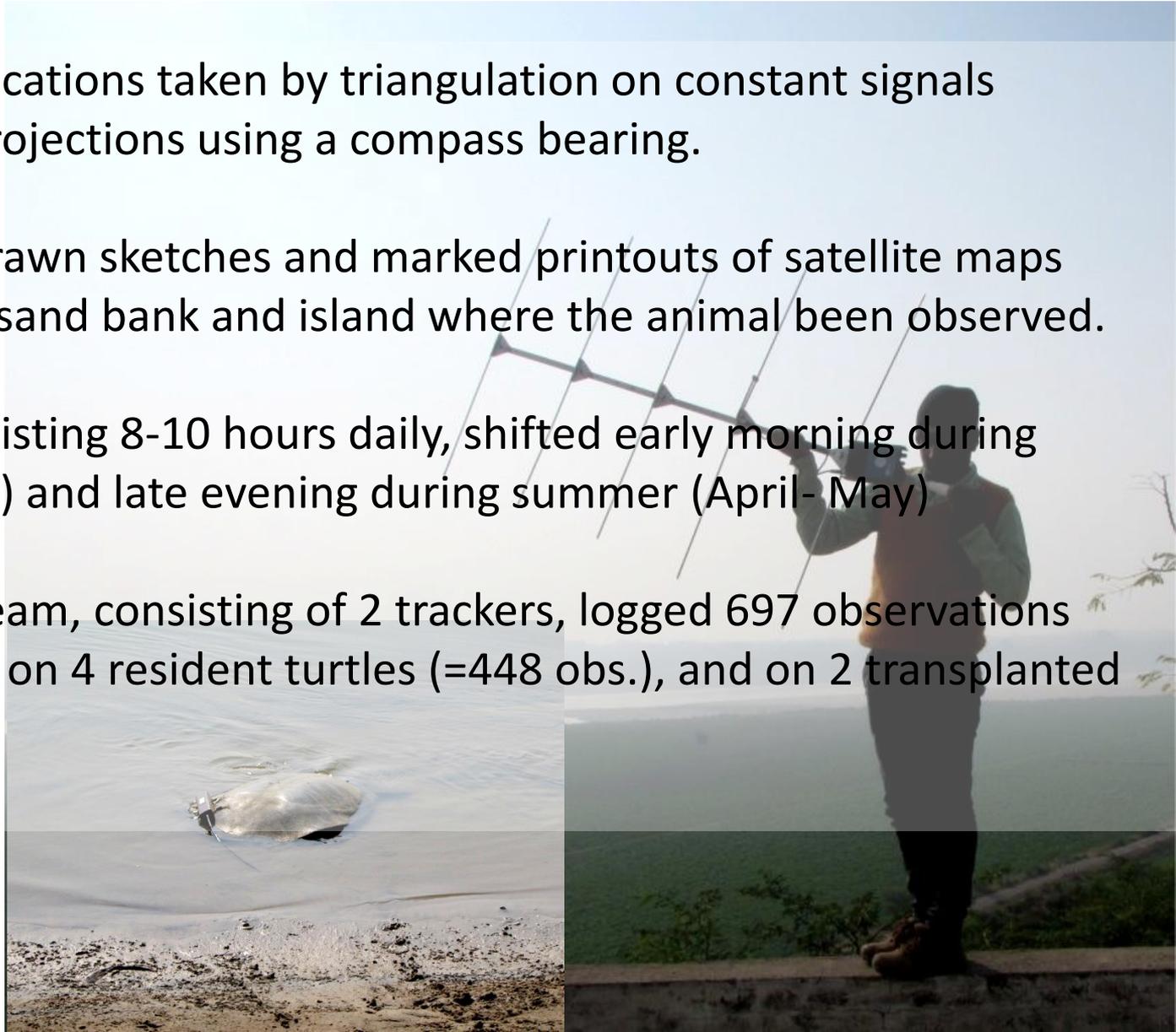


Precautions:

- Deployed gears for catching turtles were examined at every one hour interval to avoid any accidental drowning of turtles and /or other aquatic fauna.
- After catching, wet gunny sack used to restrain the animals to avoid sun and dehydration.
- Tagging operation are pursued at/near the catching site to minimize the strain to animal.
- Radio-tagging exercise is conducted by an expert, under the supervision of the veterinarian and in the presence of a local forest staff.

Radio-tracking and Data collection

- GPS used animal locations taken by triangulation on constant signals through waypoint projections using a compass bearing.
- In addition, hand drawn sketches and marked printouts of satellite maps were maintained of sand bank and island where the animal been observed.
- Tracking effort consisting 8-10 hours daily, shifted early morning during winter (Dec – March) and late evening during summer (April- May)
- The tracking field team, consisting of 2 trackers, logged 697 observations over 389 turtle-days on 4 resident turtles (=448 obs.), and on 2 transplanted turtles (=249 obs.).



Results

TABLE - 1 DISTANCE, HOME RANGE ESTIMATES, RIVER DIRECTION & SUMMED MOVEMENTS OF 6 CHITRA IN WINTER AND SUMMER

SEX	Animal ID	Season	Winter and summer season residence		Home range		River movement direction	SUM all movement (KM)
			Center	Range	Distance (Km)	Area (ha.)		
Transplanted turtles								
M	36	W	KN	KN-SS	4.3	109	UP STREAM	73.8
	36	S	BST	JG-BST	6.5	134	UP & DOWN STR	
F	51	W	KH	PL-BS	5.9	126	DOWN STR	50.6
	51	S	SS	BR- BST	5.5	207	UP & DOWN STR	
Resident turtles								
F	50	W	AS	AS-BN	2.6	64	DOWN STR	23.3
	50	S	BH	AS-DH	2	3.5	NONE	
F	57	W	PL	PL-KH	2.1	94	UP & DOWN STR	26.8
	57	S	SS	SS-BST	1.2	38	UP & DOWN STR	
F	41	W	KH	PL-KR	4.1	166	NONE	27.7
	41	S	KH	PL-KR	1.1	57	DOWN STR	
SA	59	W	KA	PT-LP	1.1	36	UP & DOWN STR	24.4
	59	S	KA	PT-KA	1.5	36	UP & DOWN STR	

Abbreviation: W= winter, S=summer, M= male, F=female, SA=Subadult, KN=Kundol, SS=Shason BST=Baba sidhha temple, AS=Asewa, BN= Babain, BH=Bhareh, PL=Palighar, BS=Bansari BR=Barchauli, DH=Dharmapura, KH=Khera, , KA=Katroli, LP=Lalpura,PT=Patharra,

TABLE : SUMMARY OF WINTER AND SUMMER SEASON RESIDENCY, MAXIMUM MOVEMENT DISTANCES AND SUMMED DISTANCES MOVED FOR SIX TELEMETERED CHITRA IN CHAMBAL RIVER

ANIMAL DETAILS			SUMMARY							
ID	Sex	CL (cm)	Track Days	Cap Site	Rel site	Winter season residency	Summer season residency	Max (km) Distance location	Loc max	Distance (KM) Movement
Transplanted turtles										
36	M	42	69	BS	PL	KN	BR	14.2	BR-KN	73.8
51	F	36	34	BS	PL	KH	BR	16.6	KH-BR	50.6
	1 M, 1F		103					X=15.4		62.2
Resident turtles										
50	F	38.5	59	LP	LP	AS	DH	15.2	AS-DH	23.3
57	F	37	45	PL	PL	KH	SS	2.2	KH-SS	26.8
41	F	36.2	55	PL	PL	KH	KH	4.5	KH	27.7
59	SA	29.5	57	LP	LP	KA	KA	5.82	KA	24.4
	4 F, 1M, 1SA		216					X=6.9		X=25.5

*X=mean value

Abbreviation: BS=Basaiya, PL=Palighar, KN=Kundol, BR=Barchauli, DH=Dharpura, KH=Khera, SS=Shason, KA=Katroli, LP=Lalpura, AS=Asewa

The preliminary results of the study are:-

- The radio-tagged *Chitra* exhibited individually distinct spatial patterns, ranging from residency at a single location (# sub-adult 59) to widely spaced movements upstream and downstream (adult transplanted male 36).
- The two transplanted individuals moved more frequently and over longer distances, relative to the residents that were monitored.
- The min/max home range of the transplanted animals was 4/6km and 105/125 ha in winter, and 6/7km and 134/207 ha during summer. In contrast, the resident observed 1/4 km and 36/166 ha during winter, and 1/2 km and 4/57 ha during summer.

- Movement of male observed too frequent and repeated as compare to female within its primary to secondary residency. There is no significant difference observed among resident animals during winter and summer.
- Transmitter ambient temperatures for 36 transplant male recorded average 13.4 °C ranged from 1.5- 22.2 °C during winter and average 25.2 °C ranged from 20.8 – 29.4 °C in summer. Whereas for 50 resident female it was recorded mean =14.4, ranged 7.5 to 24.5 °C in winter, and average 25.6 °C, ranged from 20.2-29.5 °C in summer.

Conclusion

Major findings to date are:

- 1) each *Chitra* had individually specific spatial pattern,
- 2) activity and home range varied seasonally,
- 3) seasonal movement was not clearly, up or down stream,
- 4) patterns varied with size and sex,

Future step

- Additional data collection and tagging more turtle among different class size and sex
- Continuation of education and awareness for various target groups

Capacity building workshop for forest department frontline staff



Teachers training workshops and schools follow up program



Stakeholder meeting



Education and awareness program for school kids of town



Engagement of fishermen towards conservation



Acknowledgement



Thanks You

