

## DISTRIBUTION AND STATUS OF THE STAR TORTOISE (*GEOCHELONE ELEGANS*) IN GUJARAT STATE, INDIA

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### Abstract

The Indian Star Tortoise is widely distributed north of Narmada River in Gujarat State. The species is not common in the state and is mainly found in agricultural fields, and hence associated threats may rapidly decline the population.

### Introduction

The Indian Star Tortoise (*Geochelone elegans*) is the most common tortoise compared to the other three species (*Indotestudo elongata*, *I. forestenii* and *Manouria emys*) found in India (Moll, 1989). The species is widely distributed in the arid parts of Indian subcontinent -- Pakistan (Thar Desert), India (Rajasthan, Gujarat, Karnataka, Andhra Pradesh, Orissa, Tamil Nadu, Madhya Pradesh and Kerala) and Sri Lanka (Das, 1995). The main land Star Tortoise has two separate populations, on the bases of morphometric characters (Frazier, 1992).

Based on literature and last survey report of Frazier (1987) and Rao and Choudhary (1996) the species has wide distribution throughout the Saurashtra and Kachchh peninsula, North Gujarat, Ahmedabad and Vadodara Districts. In spite of Frazier's efforts, the number of authentic locality records are small. We made a detailed survey of the species in Gujarat using Frazier's questionnaire (1989).

The species is listed in Schedule IV of the Indian Wildlife (Protection) Act 1972 (amended in 1991) and Appendix II of the CITES.

### Methods

A detail survey was made during 1989-98, covering the entire state as part of the herpeto and avian fauna diversity study. Information such as present status of Star Tortoise, habitat condition and available potential habitat were recorded. Rapid surveys were conducted in important protected areas of the state to determine the status of this species. In addition, secondary information was gathered from forest personnel, wildlife enthusiasts, animal breeders and local pet trade dealers.

### Results

We collected live tortoises (29 females; 3 males; 1 sub-adult and 2 hatchlings) from 30 localities in 15 districts of the state (Table

1, Map 1). The species was not recorded in the districts south of Narmada River. However, we received secondary information regarding the species occurrence from two localities i.e. Nargol and Umergaon of Valsad District and outskirts of the city of Surat, Surat District (A.A. Shah & K.S. Bhatt, pers. comm.). The present habitat structure of these areas is such that there is no possibility for the natural existence of Star Tortoise. The secondary information might have been on the basis of accidentally escaped tortoise from private pet collections. We obtained information regarding presence of Star Tortoise from 17 districts out of a total of 19 districts in the state.

Out of the 16 protected areas, the species was found in 11 protected areas (Table 2). There seems to be no special measures taken for the conservation of the species, except the State Forests Department's efforts in Gir National Park and Sanctuary. A few specimens are kept at the crocodile hatchery at Sasan for claimed breeding purposes. Every year, the State Forests Department takes preventive measures against forest fires by drawing fire lines in all deciduous protected areas, which has a negative impact on the species population. The fire lines are made by clearing land by burning vegetation in 10-12 meters long paths and dividing the entire forest into many compartments, which in Gir covers a minimum of 2-4 per cent of forest area.

### Pet trade

The Indian Star Tortoise is one of the most popular pets today. We found the species as pet in 25-100 houses each in all major cities of the state. Specimens that have been in captivity for 10-40 years were examined at Ahmedabad, Bhavnagar, Jamnagar, Surat and Vadodara. Also many farmhouses and captive breeders maintained a small population to breed them regularly.

Annually, some (50-75 approx.) tortoises are collected from the wild and sold in local markets of major cities of the state. In addition a few tortoises come from the zoos and captive breeders and get into illegal pet trade.

Star Tortoise trade statistics by confiscation internationally and within India (Table 3) show that more than 5,000 tortoise were illegally caught from the wild during 1991-97. One thousand eight hundred tortoise in two different consignments seized at Amsterdam, Netherlands and Adipur, Kachchh, India indicate that the entire stock was from the west coast of India (Anon,

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Table 1 Locality recorded for live *G. elegans* during the present study

Districts/Locality	No. sighted (Sex)	Habitat
AHMEDABAD		
1. Koth	1 (Female)	Scrub land
2. Sarkhej	1 (Female)	Babul forest
AMRELI		
3. Dhari	1 (Female)	Scrub land
BANASKANTHA		
4. Dhanera	3 (Females)	Scrub land
5. Dantivada	1 (Hatchling)	Agriculture field
6. Iqbalgadh	1 (Female)	Scrub land
7. Palanpur	1 (Female)	Agriculture field
BHAVNAGAR		
8. Sihar	1 (Female)	Grass land
GANDHINAGAR		
9. Koba	1 (Female)	Agriculture field
JAMNAGAR		
10. Lalpur	1 (Female)	Agriculture field
JUNAGADH		
11. Satadhar	1 (Sub-adult)	Scrub land
KHEDA		
12. Chakalasi	1 (Female)	Agriculture field
13. Borsad	1 (Female)	Agriculture field
14. Isanpur	1 (Female)	Agriculture field
15. Kapadvanj	1 (Female)	Agriculture field
16. Mahemdabad	1 (Female)	Agriculture field
17. Sevalia	2 (Male, Female)	Scrub land
KACHCHH		
18. Dhruv	1 (Female)	Agriculture field
19. Borana, Nanavadiya	1 (Female)	Agriculture field
20. Samaghogha	1 (Female)	Agriculture field
MAHESANA		
21. Becaraji	1 (Female)	Scrub land
22. Vijapur	1 (Female)	Agriculture field
PANCHMAHAL		
23. Chapaner	2 (Females)	Scrub land
RAJKOT		
24. Vankaner	1 (Female)	Agriculture field
SABARKANTHA		
25. Vatrak	1 (Hatchling)	Agricultural Field
26. Idar	1 (Female)	Scrub Land
SURENDRANAGAR		
27. Dhangadhra	1 (Male)	Babul Forest
28. Wadhvan	1 (Female)	Scrub Land
Total number of tortoises	35	

1997; Choudhury & Bhupathy, 1993; Katwal, 1996; Tiwari, 1996). On the basis of examination of the seized specimens, the authorities suspect that the origin of the tortoises was Gujarat State.

Present data indicates a high demand for Star Tortoise in the international pet trade market. It is also very clear that a systematic network is active both at national and international level engaging people in collection of live specimens, shipment of stock and its despatch. Such on going trade is a warning to

the authorities to develop new strategies for tackling trade and enforcement of law.

#### Captive population

We recorded tortoise in nine captive centres (Table 4). Barring the Surat and Rajkot zoos, all captive centres breed the species regularly, but none of them take keen interest in further care of the hatchling or in their research, except Sayaji Baug Zoo, Vadodara (Acharjyo, 1999). We also noticed that a few royal families still maintain a small breeding population of this species.

Most people in Gujarat are vegetarians and believe in saving animals, but a few tribals, especially Vaghari and Bhil hunt the tortoise for food. Some temples (e.g. Golibar Hanuman, Bhavnagar; Haveli and Nav-garh temples, Vadodara; Bhimnath Mahadev, Ahmedabad) maintain a few Star Tortoises for their devotees. It is believed that offering prayers to Star Tortoise can lead to better and longer life. The Star Tortoise is known in various Gujarati vernacular names depending upon the region.

#### Threats to the species

We could recognise four major threats to the survival of this species. They are habitat destruction, agricultural practice, pet trade and forest management.

#### **Discussion**

Star Tortoise (*Geochelone elegans*) is widely distributed throughout the state but not south of Narmada. It seems that the river has served as physical barrier for its distribution in the state.

During the survey, over 50 per cent of the specimens were collected from agricultural fields, which is a secondary habitat. Since agricultural landscape is changing very fast due to industrialisation, the species is likely to disappear soon.

Habitat destruction is the main threat to the species. The protected areas are limited and distributed far apart. Even protected areas are prone to fragmentation or alteration. Certain management practices of the protected area have adverse effects on the species (e.g. fire line, wall construction to demarcate area, elevated roads and vehicular traffic and railway line which prevents free movement of animals and often leads to accidental death).

The present distribution pattern, changing habitat structure, status of the species in protected areas, survival potential of a large population in the agricultural landscape and possible indirect or direct threats to the species suggests an uncertain future of this species in the state of Gujarat. It calls for immediate action of drafting new strategies and management plans for stabilising the wild population of the Indian Star Tortoise.

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Table 2. Present status of the Indian Star tortoise (*G. elegans*) in the Protected Area of Gujarat.

No.	Name of the Protected Area.	Area of the PA (sq. km)	Presence(P)/ Absence(A)	Status*
1	Balaram-Ambaji Wildlife Sanctuary	542.08	P	Common
2	Jessore Sloth bear Sanctuary	180.66	P	Common
3	Jamughoda Wildlife Sanctuary	130.38	A	-
4	Ratanmahal Wildlife Sanctuary	55.65	A	-
5	Shoolpaneshwar Wildlife Sanctuary	607.0	A	-
6	Vansda National Park	23.99	A	-
7	Barada Wildlife Sanctuary	192.31	P	Uncommon
8	Gir National Park & Sanctuary	1414.13	P	Common
9	Hingolghadh Nature Education Sanctuary	6.54	P	Uncommon
10	Pania Wildlife Sanctuary	39.63	P	Uncommon
11	Rampara Wildlife Sanctuary	15.01	P	Uncommon
12	Velavadar National Park	38.08	A	-
13	Gaga Bustard Sanctuary	3.33	P	Uncommon
14	Wild Ass Sanctuary	4953.70	P	Uncommon
15	Lalaji Bustard Sanctuary	2.03	P	Uncommon
16	Narayan Sarovar Chinkara Sanctuary	765.79	P	Common
	Total area	8969.01		

\*Based on State Forests Department and personal assessments of the area.

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Table 3. The star tortoise (*G. elegans*) confiscation by law enforcement authorities in India and abroad, during 1991-1997.

No. of tortoise	Place and authority	Year	Source of information
0292	Pet shop & Air Port, Calcutta, India. West Bengal Forests Department	1991 - 1993	Kalayan Das, 1993 (pers. comm.)
0200	Amsterdam Air Port, Netherlands	1993	Choudhury and Bhupathy, 1993
1600	Adipur Port, Kachchh, India	1993	Tiwari, 1996
1000	Official forest report, India	1996	Anon, 1997
232	Canadian customs		
2000	Chennai Air Port, India	1990 - 1997	On three occasions. Katwal, 1998
Total: 5124			

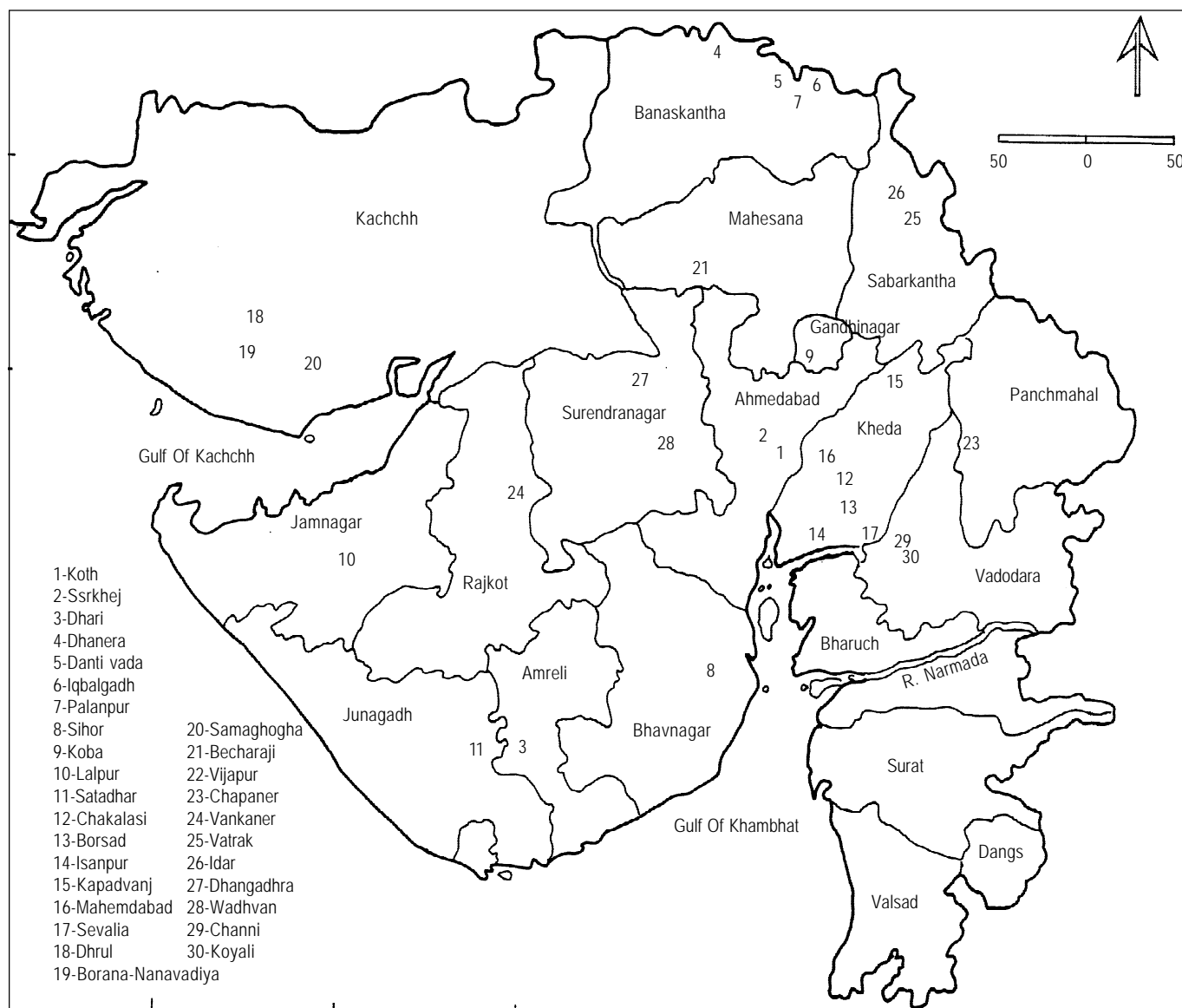


Figure 1. Map of Gujarat showing locality records for Star Tortoise.

Table 4. List of zoos and captive centres maintaining and breeding *G. elegans* in Gujarat (up to July 1999).

No.	Name	Breeding	Male	Female	Unsexed	Total
1	Kankaria Zoo, Ahmedabad	B	12	23	13	48
2	Sundervan, Ahmedabad	B			36	36
3	Indroda Park, Gandhinagar	B	3	9		12
4	Sakkarbaug Zoo, Junagadh	B	4	9		13
5	Rajkot Zoo, Rajkot	-	4	8		12
6	Sayaji Baug Zoo, Vadodara	B	12	13	25	50
7	Sasan Crocodile Rearing Centre, Sasan, Junagadh	B	5	11	63	79
8	Peter Scott Trust, Jamnagar	B	5	16		21
9	Surat Zoo, Surat	-	1	11		12
	Total		46	100	137	283