D. 2.2.77

						Remark
1	210	600	1130	6.5 kg	♂	①
2	200	570	1000	6 kg	♀	2
3	220	680	1210	9 kg	♀	3
4	250	730	1380	12 kg	♀	④
5	170	500	980	5 kg	♀♂	5
6	170	500	1000	4.5 kg	♂	⑥
7	140	390	810	2.5 kg	♀	7

(Total (7) Sirens in the big moat & Python moat—)

One ♂ was seen by the stream corridor during summer '77

measurements

MARKING CROCODILES FOR IDENTIFICATION FOLLOWING RELEASE BACK INTO THE WILD

H.R. Bustard & B.C. Choudhury

INTRODUCTION

The GOI project C B & M under technical and financial assistance from FAO /UNDP is rearing large numbers of all three species of Indian crocodilians for release back into the wild. In order to evaluate the success of these releases it is essential that full-scale monitoring programmes are associated with each release. In order to be able to monitor the released crocodilians they must be readily identifiable visually from naturally occurring individuals of their species. This involves a marking method.

Marking falls into two main categories - applying a physical tag or marking (mutilating) the animal in some way. In lizards mutilation marking by toe clipping has been widely used (Stebbins and Robinson, 1946; Bustard, 1968, 1969a and b, 1970, 1971). A recent symposium on animal marking (Stonehouse, 1978) provided no information on the marking of crocodiles in the wild. It referred only to the temporary marking of the Nile Crocodile (Crocodylus niloticus) with paint (Pooley, 1962). Ashtom (1978) noted that crocodiles are tattooed on the ventral surface in the femoral region at Oklahoma Zoo. Dowling and Gilboa (1968) report the use of metal tags for crocodiles in New York Zoo. The sites of tagging are not specified. Lang (pers. comm.) has used coloured plastic tags attached to the tail scutes for short term captive observations on crocodiles in Papua New Guinea. Singh and Bustard (197) described an individual identification method using naturally occurring markings on the tail which was successfully

used to individually separate very large numbers of juvenile gharial in the husbandry units at Tikerpada. They pointed out that this technique could perhaps be applied to wild gharial also and would be useful for other species of crocodilians.

We here descrive a permanent ~~xxxxxx~~ method, easy to use, for marking crocodiles, which is equally suitable for captives and for free raninging wild individuals. This method has been widely used by the Crocodile Project in many parts of India and should now be adopted as standard by any Projects in the Country not yet using it. There is great scope for adopting this internationally.

THE MARKING METHOD

The mutilation marking method adopted here comprises cutting of the dorsal scutes of the caudal region ~~xfxxxxxxxxx~~ to indicate:

1) sex
2) year of release, and if required
3) individual identification

~~THE CROCODILE TAIL SCUTES~~

The tail of the crocodile is surmounted by elongated, laterally flattened, scutes ~~whhh~~ enhance its power of propulsion. Towards the base of the tail posterior to the hind legs, the tail is thick and muscular and the scites are in two rows, one along each edge of the tail (Figure 1). This double scuted portion of the tail extends for almost half of the total tail length. This region, particularly towards its base, The lower half of the tail becomes progressively thinner and towards its tip smaller and is surmounted by a single ~~x~~ row of enlarged scutes (Fig. 1). There are 18-20 scutes on the double

MUGGER (Crocodylus palustris)

Date received	Total no	size	from whom received	Total	Remarks
10.11.64	one (1)	Small	Asst Director Fisheries Mahabobnagar	(1)	
4.1.66	(1)			(2)	
4.9.72	(1)		Purchased locally	(3)	
10.5.74 (73)	(3)		Gift from Forest Officer	(6)	
10.3.75 (73)	+(1) 4		Purchased locally	(7)	
18.3.75 (73)	4+(1) 5		Forest Officer Hd Purchased locally	(8)	
20.4.75 (73)	5+(4) 9		Do	(12)	
18.5.75 (72)	9+(1) 10		"	(13)	
two escaped from enclosure on			8.7.76 —	(11)	
9.7.76	9+(1) 10		Manchery Rly FO	(12)	
25.7.76	10+(1) 11		Do	(13)	
8.8.76 (74)	11+(1) 12		Kalgoorlie FO	(14)	
one died on 2.2.77 and four released at E.P. falls.				→ (9)	

Children Corner

DATES OF MUGGER & GHARIAL RECEIVED IN THE NZP Hyderabad

Children's Corner

Approx Size when received

1) 10.11.64 → Gift from Asst Director Fisheries, Mehboobnagar Dt
2) 4.1.66 → Gift from
3) 4.9.72 → Purchased locally

MUGGERS

				Hatched
10.5.74	Gift from Forest Officer	(3 nos)		73 May/June
meat				
X 10.3.75	Local purchase	(1)		74 May/June
18.3.75	Forest Officer Hyd Circle	(1)		74 May/June
20.4.75	Forest Officer Hyd Circle	(4)		74 May/June
18.5.75	Hyderabad Circle	(1)		74 May/June
9.7.76	DFO Mancherial	(1)	Laiya	76 May/June
25.7.76	DFO Mancherial	(1)	Modgu	76 May/June
8.8.76	Nalgonda Dist	(1)	Njigan	~~76 May/June~~ Big Size

one escaped — 13

Gharials

18.8.66 - Purchased from Mr Usman size 2½" to 3½" in size

Mancherial

25.2.77 - one mugger baby from Manjara Barrage - Farm of Narayanakallu of Sowl Hafaiba, Sangareddi Medak Dt

3 MT / 4 OT / 7 TT

~~70~~ cm / 125 gm released in the moat

total 8 muggers in the moat on 25.2.77
3 male + 4 female and one undetermined sex

(P TO)

Gharials — From Bihar Patna

18. 8. 66 - Purchased from Md Usman Khan, Hyderabad - 2½ to 3 ft size

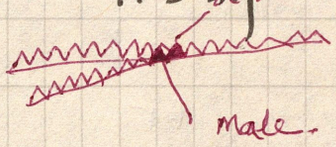
brother Lion keeper - Mr Razak.

SEXING OF CROCODYLUS PALUSTRIS IN THE NEHRU ZOOLOGICAL PARK, HYDERABAD AP

All Ethiopathalus Cross — First- SCW
Last- left- DCW

Date - ~~3 Feb 77~~
Time - 11.30 ~~am~~ pm

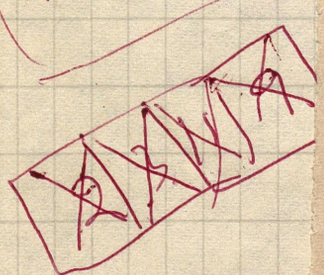
Last- left & DCW
First- SCW



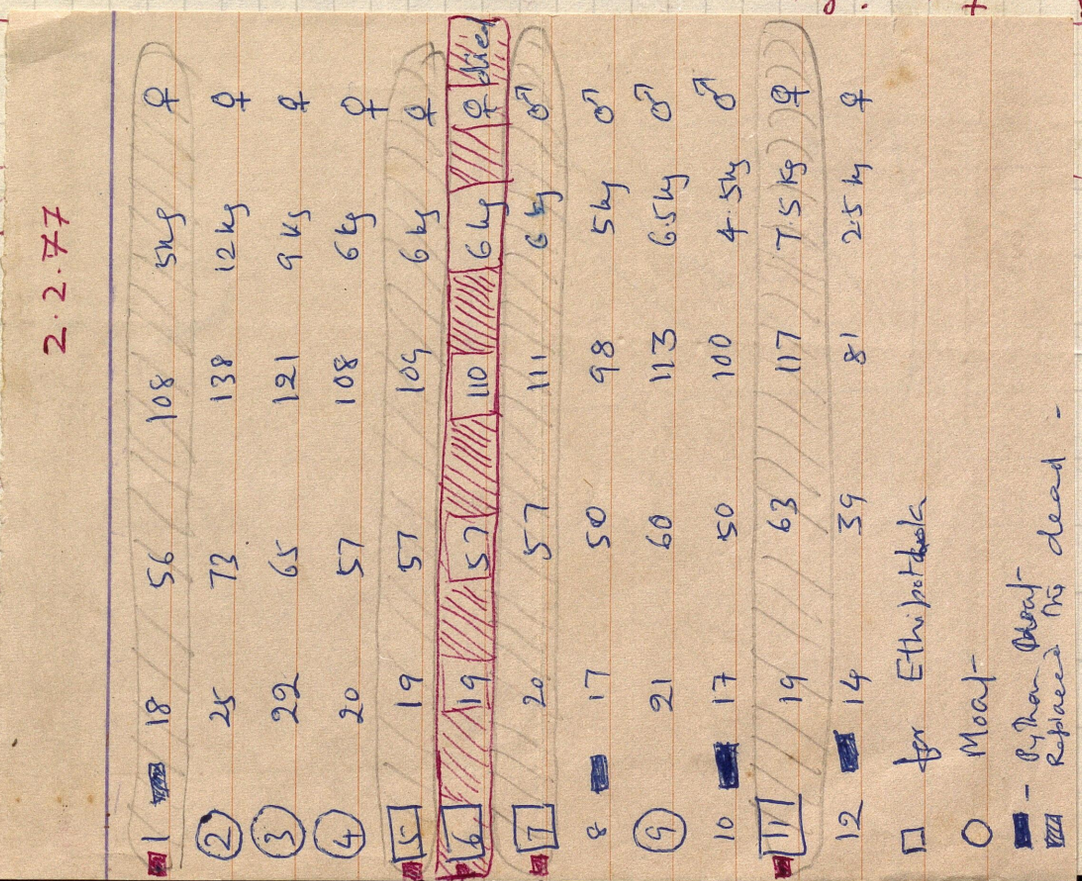
		Head	S-V	VT	TT	weight	sex.
♀	1	18	56		108	5kg	F ♀ ✓
♀	(2)	25 Moat	73		138 - M	12 kg	M ♂ F ♀
♀	(3)	22 Moat	65		121 M	9 kg	M ♂ F ♀
♀	(4) ♀	20	57		108	6 kg.	M ♂ F ♀
♀	5	19 EP	57		109	6 kg.	M ♂ F ♀ ✓✓
died ♀	6	19 EP	57		110	6 kg.	M ♂ F ♀ ✓✓
♂	7 EP	20 EP	57		111	6 kg.	M ♂ ✓
♂	8 ✓✓	17	50		98	5 kg.	M ♂ ✓
♂	9 ✓✓	21	60		113 M	6.5 kg.	M ♂ ✓✓
Bit ♂	10 ✓✓	17	50		100	4.2 kg.	M ♂ ✓
♀	(11)	19 EP	63	~~57~~	117	7.5kg.	F ♀ ✓
♀	12	14	39		81	2.5kg.	F ♀ ✓

Male —

Female —



2.2.77



PYTHON MAT

	RF	HF
1	40	80
2	50	100
3	4.5	8.5
4	4.5	80
5	4.2	8.5
6	40	8.2
7	40	80
8	40	7.5
9	46	90
10	3.8	80
11	4.5	90
12	3.5	6.5

All Grips to be marked - 1st Single Scout

Male - Arrives Left.
Last 1 knuckle scouts

8 - Last Left of CW - Male

March 1978

Two females removed from the main
pen mixed with the 2 males & 2 females
left in the main pen

[4 - (2 males + 2 females)]

June 1978

March 1978

Measurement of 200 mud crocodiles

Sl no	Head	SV	TBL	HF	RW	WT	Remarks Sex
1	240	710	1350	115	330	12.100	♀
2	170	530	1040	80	270	4.500	♂ Mud.
3	230	630	1200	100	280	6.500	♀
4	250	770	1400	115	400	8.800	♀ Mud
5	220	650	1240	105	330	13.300	♂ Mud
6	290	850	1640	120	470	20.500	♀ Mud

October 1978.

NZP Children's Corner Muggers caught on 23.10.78 as Measured

23.10.78

Slno	Head	S-V	TBL	Wt	Girth	FF	HF	Sex	Remarks
1	—	1120	2120	5½g	580	90	180	♂	★
2	—	1220	2300	62kg	620	100	190	♂	

third one could not be measured on 23.10.78 as it has gone in to the burrow tunnel. This was measured again later. The first two males were transferred to the moat on 23.10.78

27.11.78

On 27.11.78 the third mugger came out of the tunnel and was captured and measured. ★★.

3	300	920	1700	—	440	80	150	♂	This was also shifted to the moat

Shifted to Reptile 240

★ On 23.10.78 in the moat there were two female muggers and two male. When the two males were released at 10.30 AM there was no appreciable change in behaviour but the original inhabitants were territorial seeing the bigger male. In the evening the two male started fighting injuring each other severely. Later being removed elsewhere. But the smaller male seemed to have been ill as it was seen to avoid water and lay at one corner most of the time.

★★ on 27.11.78 when the third male was released into the moat the bigger male chased it and injured it and did not allow it to come to water.

January 1979

24 January 1979 -

Alpha male (M_1) removed out - from the main to give company to the S.W. Crocodile brought from Krishna river.

(Total off in main - - 6 (4 male + 2 female)

March 1979

15 March 1979

Alpha male (M_1) bumped Sally to the mount from female crouch home. Intervened in do the last al-
11.30 AM.

M_2 chased M_1 (new male) and gives defense bites M_1 keeps distance.

(Total in mod — 7 — 5 male + 2 female)

December 1979

Nehru Zoological Park Tiger Breeding Pit

Water Temperature

Date	8 AM	5 PM	5 PM	Remarks
1				
2				
3	21°C			
4	21°C	21.4		
5	21°C	23.		
6	21°C	23		
7	22°C	23.5		
8	21.4	23.		
9	20.5	25.5.		
10	20°C	22.		
11	20.5	22		
12	20.5	24.		
13	20 C	22		
14	19.5°C.	21.5°C		
15	20 C	22.5°C		
16	21 C	23.5°C		
17	21.5	23.5°C		
18	21 5°C	23 C.		
19	21 5°C	23 5°C		
20	21.5°C	20.5 C		
21	22.5°C	24 C.		
22	22 C	23.5°C		
23	22 5°C	23.°C		
24	19 5 C	21.5.°C		
25	18 5 C	20 5°C		
26	18.5.C	21.5.°C		
27	18 5°C	21 °C		
28	18.5°C	20 5°C		
29	18.5°C	20 5°C		
30	18.5°C	21. 5°C		
31	18.5°C	21 C.		

December 1975 Mating Activity & Temp

Date	Time of Mating	Water Temp	Air Temp	
1				
2				
Monday 3				
4	8 AM, ♂1 & ♀II	24°C.	18.5	
5	—	—	—	
6	—	—	—	
7	—	—	—	
8	—	—	—	
9	—	—	—	
Monday 10	12 noon ♂1 & ♀I	21.5°c	24°c	
11				
12				
13				
14				
15				
16				
Monday 17				
18				Second ♂ injured by male one.
19				
20				
21				
22				
23				♂3 & ♀1 2nd ♀I injured
Monday 24				
25				
26				
27				
28				
29				
30				
31				

January 1980 Breeding Pool water temperature

Date	Morning 8 AM	Evening 4:30 PM	Remarks
1	19°C	21.5°C	జంగమన్ని
2	19°C	22.5°C	విరామలు
3	20°C	22°C	జంగమన్ని
4	20.5°C	22.5°C	జంగమన్ని
5	20.5°C	22.5°C	జంగమన్ని
6	21°C	22.5°C	K. Yadgiri
7	21°C	23.5°C	జంగమన్ని
8	21°C	22.5°C	జంగమన్ని
9	21°C	22.5°C	విరామలు
10	20°C	22.5°C	విరామలు
11	19.5°C	22°C	జంగమన్ని
12	20°C	22.5°C	జంగమన్ని
13	20.5°C	—	—
14	—	—	[illegible]
15	19.5°C	21.5°C	జంగమన్ని
16	19.0°C	21.5°C	
17	19.5°C	21.5°C	జంగమన్ని
18	19°C	21°C	జంగమన్ని
19	19°C	21.5°C	జంగమన్ని
20	19.0°C	21.5°C	విరామలు
21	19.0°C	21.5°C	విరామలు
22	19°C	22°C	జంగమన్ని
23	20°C	—	విరామలు
24	—	—	
25	—	—	
26	—	21°C	జంగమన్ని
27	19.0°C	22.0°C	విరామలు
28	20°C	23.5	జంగమన్ని
29	20°C	22.5°C	జంగమన్ని
30	20.0°C	22.5°C	విరామలు
31	20°C	22.5°C	జంగమన్ని

January — Mating activity & water temp

Date	Time of mating observed	Water Temp	Air Temp	Remarks
1/1/1880				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17	9 AM for half an hour	19.5	24°C	♂1 & ♀1
18				
19	8.30 AM for 15m	19.5	24°C	♂1 & ♀1
20				
21	8.30 am to 9.30 am	19.5		♂1 & ♂1 firing before first of foxes to mate with ♀1 & ♀2 not successful.
22				
23				
24				
25				
26				
27				
28				
29				
30	9 AM to 9.30	19.5°C	25°C	♂1 & ♀1
31	~~9 AM to 9.30~~			

February 1980 Breeding Pond Water Temp

Date	Morning	Evening		Remarks
1-2-80	21°C	22.5	వివరములు	
2-2-80	21°C5	23°C5	చుంగమ్మ	★
3-2-80	21°C5	23°C5	చుంగమ్మ	★
4-2-80	22°C	26-C	చుంగమ్మ	
5-2-80	22°C		చుంగమ్మ	★ Pond cleaned
6-2-80	22.C	23.C5	వివరములు	★
7-2-80	22°C5	25°C	చుంగమ్మ	
8-2-80	22°C5	25[illegible]	చుంగమ్మ	★
9-2-80	22°C5	25°C	చుంగమ్మ	★
10-2-80	23°C	25°C	చుంగమ్మ	
11-2-80	23°C		చుంగమ్మ	★
12-2-80	23.C5	26°C	L. Mohapatra	9.5.A.M
13-2-80	23.C5	24.C5	వివరములు	
14-2-80	23.C	26.C	చుంగమ్మ	★
15-2-80	23.C5	25.6°C	వివరములు	
16-2-80	23°C	25.4°C	చుంగమ్మ	
17-2-80	23°C5	25.5°C	చదవలేదు	★
18-2-80	23°C5	26°C5	చుంగమ్మ	
19-2-80	23°C5	26°C	చుంగమ్మ	
20-2-80	23.C5	26.C5	వివరములు L. Mohapatra	★
21-2-80	23.C5	26.C5	చదవలేదు	
22-2-80	23.C5	26.C5	వివరములు	
23-2-80	23°C5	26.8°C	చుంగమ్మ	★
24-2-80	23°C5	26.5°C	చుంగమ్మ	
25-2-80	23°C	26°C	చుంగమ్మ	
26-2-80	23°C5	26°C5	చుంగమ్మ	★
27-2-80	23°C5	26.C5	చదవలేదు	
28-2-80	23°C5	26°C	చుంగమ్మ	
29-2-80	24-C	26°C	చుంగమ్మ	★
~~30-2-80~~				

February Mating activities observed / water/Air. temp

Date	Time of Mating	water Temp	Air temp	Remarks
1	9.15 to 9.45	21°C	25°C	♂ 1 ♀ 1
2	8.30 – 10m	21.5°C	25°C	♂ 1 ♀ 1
3				
4				
5				
6	9.30 to 10.30	23°C		♂ 1 ♀ 1 female spawned eliminated Pattern observed time.
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20	9.16 to 9.38	23.5°C		♂ 1 ♀ 1 - ♀ 1 refused
21				
22				
23				
24				
25				
26				
27				
28				
29				

1-3-80

1-3-1980

	Morning 8 AM	Evening 4 30 PM	Remarks	Signature
1-3-80	24.C	27		ఉంగమన్ని.
2-3-80	24 C	26 C 6		ఉంగమన్ని
3-3-80	23 C 5	26 C 5		ఉంగమన్ని
4-3-80	23 C 5	26. C 5		ఉంగమన్ని
5-3-80	23 C	26. C 5		విరామలు
6-3-80	23 C 5	26 C 5		ఉంగమన్ని.
7-3-80	24-C	26 C 5.		ఉంగమన్ని
8-3-80	23. -C 5	27 C		విరామలు
9-3-80	23 C 5	27. C 5.		ఉంగమన్ని
10-3-80	23 C 5	27 C 5		ఉంగమన్ని.
11-3-80	24 C 5	27.		ఉంగమన్ని
12-3-80	25 C. 5	26. C 5		విరామలు
13-3-80	25 C			ఉంగమన్ని
14-3-80	24 C 5	28 C.		ఉంగమన్ని
15-3-80	25 C 5	28 C 5		విరామలు
16-3-80	25 C 5	28 C 5		ఉంగమన్ని
17-3-80	25 C	28 C 5.		ఉంగమన్ని
18-3-80	25 C 5	28. C 5		ఉంగమన్ని
19-3-80	25 C. 5	28. C 5.		విరామలు
20-3-80	25 C 5	28 C 5		విరామలు
21-3-80	25 C 5	28. C 5		ఉంగమన్ని
22-3-80	25 C	28 C		ఉంగమన్ని
23-3-80	25 C	28 C 5		ఉంగమన్ని
24-3-80	25 C 5	28 C 5		ఉంగమన్ని
25-3-80	25-C 5	28. C 5		ఉంగమన్ని.
26-3-80	25-C-5	28 C 5		విరామలు
27-3-80	25. C 5	28 C 5		విరామలు
28-3-80	25. C 5	28 C 5		ఉంగమన్ని.
29-3-80	26. C 5	~~28 C 5~~ 80		విరామలు
30-3-80	76 C	80		
31-3-80	76 C	78		ఉంగమన్ని.

Marsh: Mating activity observed & water/Air Temps

Date	Time / Mating	water Temp	Air Temp	Remarks

	8 A.M.	4.30 P.M		
30-3-80	65.05			

1-4-80

1-4-80	78	80		చుంగవున్ని
2-4-80	76	78		చుంగమన్ని
3-4-80	75	28		చుంగంమన్ని.
4-4-80	25c5	29		చుంగమన్ని.
5-4-80	26e3	29.		యదియు
6-4-80	26c5	30 c5		చుంగమన్ని.
7-4-80	26c5	30		విరామలు
8-4-80	26.	3c.		విరామలు
9-4-80	27	31		యదియు
10-4-80	27e5	30c5		చుంగమన్ని
11-4-80	27c5	30c5		చుంగంమన్ని
12-4-80	28e1	30e5		విరామలు
13-4-80	28c	31. c5		చుంగమన్ని.
14-4-80	28c	31 c5		చుంగమన్ని
15-4-80	27c5	32. c5		యదియు
16-4-80	27c5	32 c5		విరామలు
17-4-80	27c5	30c5		చుంగంమన్ని
18-4-80	27c5	32. c5		యదియు
19-4-80	27e5	3.2. c5		చుంగమన్ని.
20-4-80	27e5	30e5		విరామలు
21-4-80	27c5	3.2e5		చుంగమన్ని.
22-4-80	28c5	32c		చుంగమన్ని.
23-4-80	27 4c	29.		యదియు
24-4-80	27e5	30.		విరామలు
25-4-80	28 c	30 c 5		చుంగమన్ని.
26-4-80	28e1	31. c5		చుంగమన్ని
27-4-80	29 c	30e5		చుంగమన్ని.
28-4-80	29c5	31c5		చుంగమన్ని.
29-4-80	29c	30c5		చుంగవున్ని
30-4-80	27c	3. c5		చుంగవున్ని.
~~31-4-80~~	27e3			

కొలని-5-80

May 1980 Hyderabad Pond

Live fish

1-5-80	2.7e3	30e5		యథాతథం
2-5-80	28 e5			చుంగమ్మ.
3-5-80	—	—	—	—
4-5-80	—	—	—	—
5-5-80	29.e3	32.e5		వివరములు
6-5-80	—	—	—	—
7-5-80		3174		యథాతథం
8-5-80	29.4e	32.5		Egg laid in Plant stage development.
9-5-80	28.5	30 5		☆ & ☆ on land. ☆ & ☆ maintenance.
10-5-80	28 e.	31 e.		చుంగమ్మ.
11-5-80	28e	30.e5		యథాతథం
12-5-80	28.e5	31.e5		L. Mahajini
13-5-80	28e.	31.e5		చుంగమ్మ.
14-5-90	28e.	31.e5		వివరములు
15-5-80 ☆	28e.	31.e5		చుంగమ్మ Water changed
16-5-80	28e.	32.e		వివరములు
17-5-80	2.8e.	33 e	1.500 gm.	వివరములు
18-5-80	2.8e.	32 e5		చుంగమ్మ.
19-5-80	28e.	33.e		చుంగమ్మ.
20-5-80	28e	33. e		చుంగమ్మ.
21-5-80	29.e	32.e5		వివరములు
22-5-80	28e	33.e.		వివరములు
23-5-80	28 e5	31 e.	1.500 gm	చుంగమ్మ
24-5-80	27.e	32 e.		వివరములు
25-5-80	—	—	—	—
26-5-80	—	—	—	—
27-5-80	—	—	—	—
28-5-80	-	—	-	—
29-5-80				
30-5-80				
31-5-80				

#	Length	Breadth	Wt	Remarks
1	77	45	75 gm	Leather Egg without shell decoration

Nehru Zoological Park Hyderabad

Year of breed	Date of egg laying	Clutch size	Date of Hatching	No. Hatched	Spoiled Eggs	Age of female
1980	not known	10	31.5.80 to 4.6.80	2	8 (2 infertile 6 dead embryo)	
	8/5/80	1	—	—	—1—	

Old Tokyo Breeding Pool - NZP

Temperature Record For Sept 1980

SEPTEMBER 1980

Date	Morning	Evening	Remarks
1.9.80			
2			
3			
4	24°C	25°C	♀ II introduced (2)
5	24°C	25°C	♀ II bites ♀ III
6	25°C	25°C	female ♀ I) bites ♀ III
7	26°C	29°C	
8	26°C	28°C	
9	26°C	29°C	
10	27°C	29°C	
11	27.5°C	29°C	
12	27°C	29°C	
13	26°C	29°C	
14	26°C	27°C	
15	26.4°C	—	— 2♂ removed (6)
16	26°C	28°C	S.O. falls to M4 & M5
17	26.5°C	29°C	
18	26°C	28°C	
19	27°C	28°C	
20	26°C	29°C	
21	27°C	28°C	
22	26°C	28°C	
23	26°C	28°C	
24	26°C	28°C	
25	26.2°C	28°C	విరామము M1 injured M2 on the tail at 8.30 pm.
26	27°C	29°C	విరామము
27	26.1°C	30°	విరామము

(27&28) All mugers removed to newbreeding pool at NZP.

Mating activity

Date

4 breeding III ♂ 153 cm released in to the enclosure as a III-rd possible female for

7 Mating activity observed at 8 hrs/day ♂I & ♀I. Contd.

old Tulugey Breeding Pool. NZP

Temperature Record For Sept 1980

SEPTEMBER 1980

Date	Morning	Evening	Remarks
1.9.80			
2			
3			
4	24°C	25°C	♂ II introduced (8)
5	24°C	25°C	♂ II bites ♂ III +
6	25°C	25°C	female ♀I) bites ♂ III +
7	26°C	29°C	
8	26°C	28°C	
9	26°C	29°C	
10	27°C	29°C	
11	27.5°C	29°C	
12	27°C	29°C	
13	26°C	29°C	
14	26°C	27°C	
15	26.4°C	—	— 2♂ removed ★ (6)
16	26°C	28°C	♂ fails to M4 & M5
17	26.C	29°C	
18	26°C	28°C	
19	27°C	28°C	★
20	26°C	29°C	
21	27°C	28°C	
22	26°C	28°C	
23	26°C	28°C	
24	26°C	28°C	
25	26°C2	28°C	విరామము M1 injured M2 ♂ tail
26	27°C	29°C	విరామము
27	26°C	30.	విరామము
28			
29			
30			

27&28 All muggers removed to newbreeding pool at NZP.

Sept 15th 1980

Serial number 182 (Bom males) were released at E.P falls on 16.9.1980 (Today in the moat)

[3 males + 3 females children are]

Sept 1980 Measurements

Moat Crocodiles	Head	S-V	TBL	HF	BW	WT	Remarks
1	43	124	239	190	–	–	♂ M_1
2	41	115	216.5	–	–	–	♂ M_2
3	35	102	186.5	155	50	–	♂ M_3
4	39	115	213	140	61	–	♀ F_1
5	33	105	195	115	55	–	♀ F_2
6	28	82	161	115	45	–	♀ F_3

1980 Measurement (Sept 1980)

No	Head	S-V	TBL	Belly width	HF	Wt	Remarks / sex
1	1		190		—	♂	M4
2	2		163		—	♂	M3
3	39	145	213	61	140	—	♀	F1
4	~~39~~ 33	109	195	55	115		♀	F2
5	~~28~~ 28	~~88~~	163	45	115	20kg	♀ (F3 Delhi Zoo mort)	

Childrens Corner Males (not measured) Sept 80

1	36	102	186.5	53	15.5	M3
2	43	124	215	~~49~~	15.0	M1
3	41	115	216.5	—	—	M2

Bronx September 1980 The two females released in to Delhi Zoo mort (1 died in June 80 in Bronx)

The other measuring 164cm was born in Sept. to the mort. T

Total number of mugger in the mort,

(5 males + 3 females)

(U. Maniter) Old mayyu breeding pool, NZP
September 1951 Observations.

Date	Observations
1	
2	
3	
4	
5	Seven (2 male + 5 female) of 1972 TN origin released at 1.20 pm.
Sunday 6	At 11.30 am 2 Males fight. One male dominates the water calling a female.
7	
8	-do-
9	-do-
10	-do-
11	
12	One male still remains in water most of the time
13	-do-
14	-do-
15	-do-
16	-do-
17	-do-
18	M1 & M2 both found on land separately after.
19	"
20	"
21	"
22	"
23	"
24	"
25	"
26	"
27	"
28	"
29	All seeking 3 females near M1 and two females after M2 alone
30	
31	

September 1981

On 5th Sept 1981, Seven (7) C. palustris of Tamil Nadu origin were released into the old Crocodile marsh (Gr. monitor marsh) of No 200. There included 2 males and five females. meeting the following.

Sl no	TBL	Wt	Sex	Age (estimate)	Origin
1	210	50kg	♂	June 1977	Sethanur FM
2	208	46kg	♂	"	"
3	187	36	♀	"	"
4	178	35	♀	"	"
5	188	35	♀	"	"
6	187	37.5	♀	"	"
7	192	40	♀	"	"

These seven were taken out from the yearling pool of the CRS where a total of 20 (6 male + 14 female) were housed in a 7m × 7m enclosure with a 5m × 5m × 1m deep pool. The analysis showed no sign of hostility towards each other at all. At the date of release into the new pool (Gr. mound pool)

From,

B.C.Choudhury,
Research Assistant,
Crocodile Scheme,
Nehru Zoological Park,
Hyderabad- 500 264.

To,

The Curator,
Nehru Zoological Park,
Hyderabad.

Sir,

Sub - Old mugger crocodile breeding pool - Sand requirement-Reg.

...

I am to inform you that the lone gharial that has been housed in the old mugger breeding poll near the crocodile complex has now been shifted to the childrens' corner original crocodile exhibit poll. In the old mugger breeding pool I have introduced a total of seven 1977 year class mugger crocodile consisting of two male and five females. Muggers have not bred anywhere in their fifth year but looking at their size and activity I personally feel they might breed in 1882 June. Last year (1980) the mugger that nested in this pool could not open the nest as the nest laid in the black cotton soil in the pool was compact. This year it may be good to bring two truckloads of sand and mix them with the black cotton soil already existing in that pool. I have already cleared all vegetation in the pool and request you to kindly arrange to provide two truck load of sand with instructions to the Works Supervisor and Park Supervisor to get this work completed before the onset of winter. During winter there will be lots of courtship and mating activity in the pool and it may not be a good time for any work inside the pool.

Thanking you sir,

Yours faithfully,

24/9

Dated 24th September 1981.

(B.C.Choudhury)

O/C

From

B.C.Choudhury,
Research Assistant,
Crocodile Scheme,
Nehru Zoological Park,
Hyderabad- 500 264.

To

The Curator,
Nehru Zoological Park,
Hyderabad - 500 264.

Sir,

Sub - Old mugger crocodile breeding pool - Sand requirement -Reg.
Ref - My letter to the Curator,N.Z.P. dated 24.9.1981.

.....

As already informed to you in my letter reference cited the 1977 hatched mugger crocodiles of Tamil Nadu origin have settelled down very well in the old mugger pool (in front of the present water monitor pool).

Formation of a pecking order(dominance heirrarchy) courtship had been observed in this pool since the month of November 1981. Last week mating has also been observed confirming my view that they may breed this year.

Last ~~year~~ (1980) the mother crocodile could not dig open the nest compacted in the black cotton soil and I had requested you vide my letter referenc to kindly arrange spreading of some sand in this enclosure.

I request you to kindly look in to this and arrange spreading of sand in this enclosure to ensure breeding. Incidentally if these mugger breed they will be the yongest crocodiles to have ever bred.

Yours faithfully,

sd/

(B.C.Choudhury)

18.1.1982

Dated 18.1.1982.

January 1982

Date

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15 Mating observed around 11 AM - 4 women
16
17
18 Mating observed by me around 10.30 AM ♂ + 2♀.
19
20
21
22
23
24
25
26
27
28
29
30
31

Dec 1982

28th Dec 1982 - Mating observed in field at 11.00Am to 11.25Am.

December 29th 1982 - Mating observed in field at 9.30 Am.

January 3rd 24th 1983 - Mating observed in field at 10.30 Am.

Feb 7th 12.10 noon - Mating observed M + F
Feb 7th 2.10 pm - " " M, + two females

14.5.83 One egg laid on land by ~~one~~ female (photographed)

83 - 1984 season

1/3/84 - One nest located (eggs not) with one trial nest left in site

1/5/84 - nest collected (12 eggs) and incubated in simulated nest

1/5/84 - 2 eggs laid on the ground (with no nest dug)

1/6/84 - four eggs hatch

(one nest laid in 84 (March?) but not hatched but was located in 1985 nesting season

4/3/85 2yr boy returned - 85 season - Incubator

10/3/85 - not I 7 eggs

14/3/85 - not II 4 eggs

not known not II 9 eggs (?)

Outside mail - 1985

complex Breeding Pool

Eggs laying date / Date	To be collected on / avoid meal
10/3/85 (1)	We checked ~~Pool~~ Complex Breeding ~~Pool~~, found Eggs neat
	24/4/85 completed 45 days.
14/3/85 (2)	We Checked complex Breeding Pool found Eggs neat.
	on date 27/4/85 completed 45 days
(3)	Hatched on 4/
17/3/85	complex Breeding checked and found Eggs neat on 17/3/85
	on date 1/5/85 completed 45 days.

4/3/85 to 17/3/85
Nesting days

out side male

Date 27/4/85
TOTAL Eggs 17

DATE	Morning	after noon	Evening	No of Days	Remarks
28/4/85	30	31	30	1	ఉన్న
29/4/85	31	30	30	2	ఉన్న
30/4/85	30	30	30	3	
1/5/85	30	31	33	4	పెరాయులు
2/5/85	30	30	32	5	చుంచుపోగి
3/5/85	29	30	31	6	
4/5/85	30	31	30	7	పెరాయులు
5/5/85	31	31	32	8	పెరాయులు
6/5/85	31	31	32	9	పెరాయులు
7/5/85	30	30	31	10	చుంచుపోగి
8/5/85	30	30	31	11	చుంచుపోగి
9/5/85	29	32	34	12	చుంచుపోగి
10/5/85	30	31	32	13	చుంచుపోగి
11/5/85	31	31	33	14	పెరాయులు
12/5/85	31	32	33	15	పెరాయులు
13/5/85	31	32	32	16	పెరాయులు
14/5/85	30	30	31	17	చుంచుపోగి
15/5/85	31	31	32	18	
16/5/85	30	31	32	19	చుంచుపోగి
17/5/85	32	30	32	20	ఉన్న
18/5/85	30	29	31	21	ఉన్న
19/5/85	31	31	31	22	
20/5/85	30	31	33	23	
21/5/85	30	31	32	24	
22/5/85	30	30	30	25	
23/5/85	30	31	31	26	చుంచుపోగి
24/5/85	30	31	32	27	ఉన్న
25/5/85	30	31	31	28	
26/5/85	31	31	33	29	
27/5/85	31	29	29	30	ఉన్న
28/5/85	29	32	32	31	ఉన్న
29/5/85	29	32	33	32	పెరాయులు
30/5/85	30	32	33	33	చుంచుపోగి

3/6/85	30	30	31	34	(1) ఉంది
~~4/6/85~~	~~28~~				

Date 27/4/85

Acid side Note. TOTAL Eggs 4

DATE	Morning	afternoon	Evening	No. of Days	Remarks
28/4/85	29	30	33	1	
29/4/85	30	29	29	2	
30/4/85	29	29	34	3	
1/5/85	30	30	34	4	
2/5/85	32	32	33	5	
3/5/85	30	31	31	6	
4/5/85	30	32	32	7	
5/5/85	31	32	32	8	
6/5/85	31	32	32	9	
7/5/85	30	32	33	10	
8/5/85	28	32	33	11	
9/5/85	31	32	34	12	
10/5/85	31	30	33	13	
11/5/85	31	30	33	14	
12/5/85	31	32	33	15	
13/5/85	31	32	34	16	
14/5/85	30	33	34	17	
15/5/85	31	32	34	18	
16/5/85	30	32	33	19	
17/5/85	31	31	32	20	
18/5/85	29	32	32	21	
19/5/85	31	32	34	22	
20/5/85	32	32	34	23	
21/5/85	31	32	33	24	
22/5/85	31	31	31	25	
22/5/85	30	30	31	26	
24/5/85	31	32	33	27	
25/5/85	30	30	32	28	
26/5/85	31	32	33	29	
27/5/85	30	30	30	30	
28/5/85	—	—	—	—	
29/5/85					
30/5/85					

Del. vida Real

Date	Morning Temperature	Afternoon Temperature	two eggs Evening	Signature	Number of days
2/3/85	25°		26		1
3/3/85	23	24	24		2
4/3/85	27	26	26		3
5/3/85	26	29	26		4
6/3/85	26	27	27		5
7/3/85	26	28	29		6
8/3/85	25	28	29		7
9/3/85	25	26	27		8
10/3/85	25	26	27		9
11/3/85	25	26	27.5		10
12/3/85	24	25	26		11
13/3/85	24.5	26	27		12
14/3/85	26	27	28		13
15/3/85	25	27	28		14
16/3/85	27.5	27	30		15
17/3/85	30	30	33		16
18/3/85	29	30	32		17
19/3/85	29	29	30		18
20/3/85	28	29	29		19
21/3/85	28	29	28		20
22/3/85	28	29	29		21
23/3/85	26	28	29		22
24/3/85	28	28	29		23
25/3/85	31	30	31		24
26/3/85	29	30	31		25
27/3/85	29	31	31		26
28/3/85	26	26	26		27
29/3/85	25	27	28		28
30/3/85	—	—	—		29
31/3/85					30
1/4/85	26	27	27		31
2/4/85	27	27	28		
3/4/85	27	28	29		

Date	Morning	Afternoon	Evening	Remarks	Number of days
4/4/85	27	28	29	చుంటేయ్	32
5/4/85	26	29	30	చుంటేయ్	33
6/4/85	29	29	30	[illegible]	34
7/4/85	28	29	30		35
8/4/85	28	29	30	[illegible]	36
9/4/85	29	30	32	విరామలు	37
10/4/85	30	30	31	విరామలు	38
11/4/85	29	30	30		39
12/4/85	30	31	31	[illegible]	40
13/4/85	30	31	33		41
14/4/85	30	30	31	విరామలు	42
15/4/85	30	30	31	[illegible]	43
16/4/85	31	34	34	[illegible]	44
17/4/85	28	34	34	విరామలు	45
18/4/85	29	33	33	[illegible]	46
19/4/85	30	30	30	[illegible]	47
20/4/85	30	32	32	విరామలు	48
21/4/85	31	34	32	చుంటేయ్	49
22/4/85	32	32	33	చుంటేయ్	
23/4/85	30	30	31	[illegible]	50
24/4/85	30	30	31	[illegible]	51
25/4/85	30	33	32		52
26/4/85	30	31	31	[illegible]	53
27/4/85	29	30	32	[illegible]	54
28/4/85	30	31	31	[illegible]	55
29/4/85	30	30	31	[illegible]	56
30/4/85	30	31	34		57
1/5/85	30	31	34	విరామలు	58
2/5/85	31	31	34	చుంటేయ్	59
3/5/85	31	31	32	చుంటేయ్	60
4/5/85	30	31	32	చుంటేయ్	61
5/5/85	31	31	32	చుంటేయ్	62

6/5/85	31	32	33	చుంగెచ్చి	63
7/5/85	30	30	32	చుంగచ్చి	64
8/5/85	29	30	30	చుంగచ్చి	65
9/5/85	31	31	32	చుంగచ్చి	66
10/5/85	30	30	33	చుంగచ్చి	67
11/5/85	31	30	32	విరామము	68
12/5/85	31	30	33	విరామము	69
13/5/85	32	31	32	విరామము	70
14/5/85	31	31	31	చుంగచ్చి	71
15/5/85	31	31	31		72
16/5/85	31	31	32	చుంగచ్చి	73
17/5/85	30	32	31		74
18/5/85	31	30	32		75
19/5/85	30	30	31		76
20/5/85	31	31	32		77
21/5/85	31	32	32		78
22/5/85	31	31	31		79
23/5/85	30	30	31		80
24/5/85	31	31	32		81
25/5/85	31	31	31		82
26/5/85	31	31	31		83
27/5/85	32	32	33		84
28/5/85	31	32	32		85
29/5/85	31	31	32		86
30/5/85	31	31	32		87
31/5/85	31	32	32		88
1/6/85	25	29	29		89
2-6-85	28	28	28		90
3-6-85	27	27	28		91
4-6-85	28	28	28		92
5-6-85	26	27	27		93
6-6-85	26				

we shifted Breeding Pool and Wiard Eggs next on 11/3/xx

Zoo, ~~Breeding Pool be shifted~~

24/4/xx ~~to~~ completed 42 Days

4th not.	3 pol.	outside	Central not.
22	2	7	17
14	5	4	17
2	6	11	34
3	17	13 spoiled	
41		24	

41
34
11
13
99
13
112

Binod C. Choudhury

NEHRU ZOOLOGICAL PARK
HYDERABAD - 500 264.
INDIA

Eggs laid in T.P-4 13/3/85

Total Eggs laid - 18 on 13/3/85 in T.P-4
damaged - 4

Sl.no	Length mm	Breadth mm	Wt- grms	Remarks
1	76	48	100	
2	73	37	100	
3	65	45	80	
4	69	45	90	
5	65	45	80	
6	73	47	100	
7	71	47	100	
8	70	45	90	
9	69	43	80	
10	69	47	100	
11	71	46	90	
12	71	47	100	
13	67	46	80	
14	67	44	80	

outside Kozal - 1986 Season

Nest laid on

5/3/86, 6/3/86, 9/3/86 & 12/3/86

9/3/86 - 12 eggs (9 damaged) 3 incubated

12/3/86 - 7 eggs laid (4 damaged) 3 incubated

21.4.86

3 nest collected

Nest - I - 24 eggs (5 rejected as damaged) 19

Nest - II - 13 eggs

Nest III - 24 eggs

MUGGER BREEDING - NEHRUZOO (OLD POOL

Year	Clutch	C Size	Hatchlings	Hatch Date	Total Hatch	Remarks
1980	2	14	8/5/80	20/5/80	2	1 hatch by itself 1 opened from nest - 5/6/80 2 infertile eggs 6 dead embryo
		10	not known	2 3/6/80		

NZP hatched Muggers

Number of Eggs in Clutch - 10

Live hatched - 2

Dead embryo - 6

Infertile Eggs (Rotten) - 2

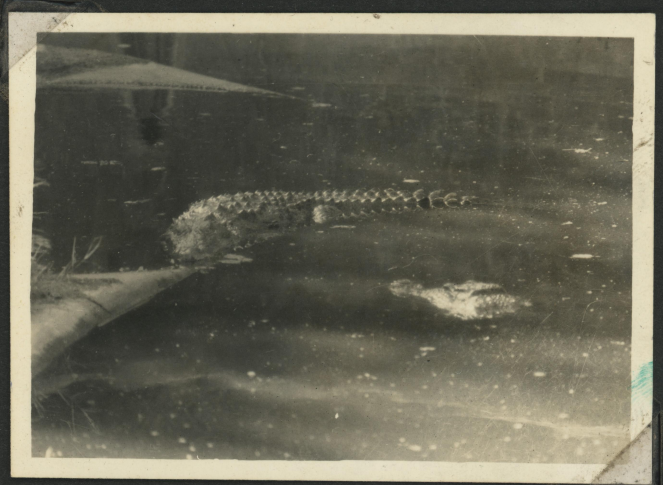
Hatching date - 2nd June to 6th June 1980

1

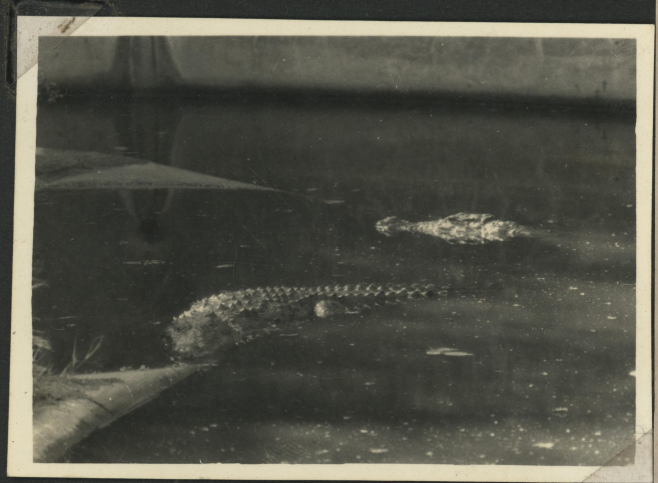
2

OCTOBER 1979

3



4



5

6

7

8

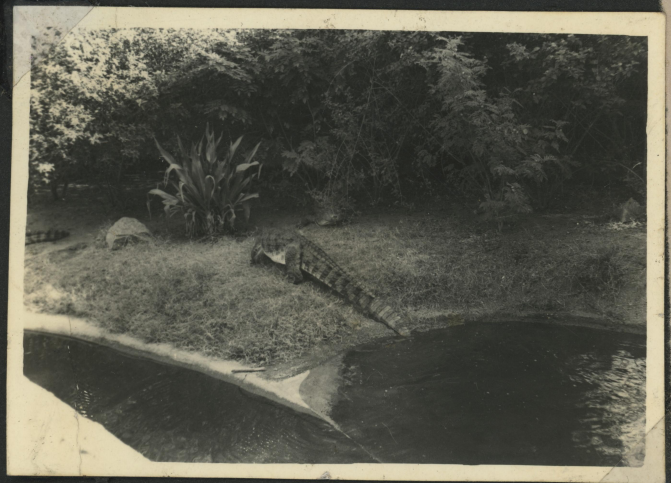
05 NOVEMBER 1975

DECEMBER 1979/23

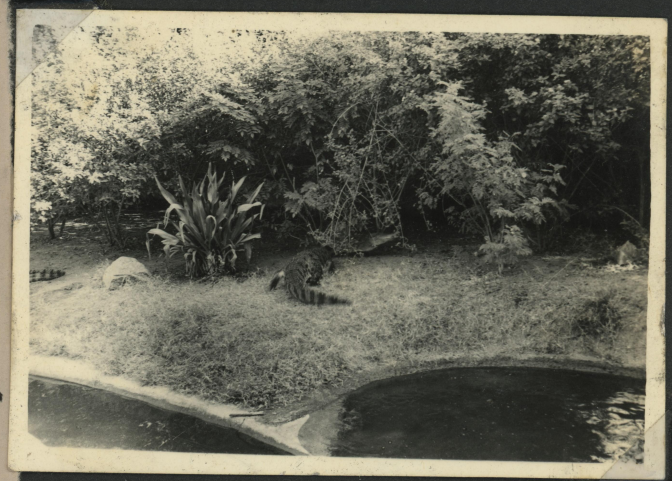
1

2

JANUARY 1980



3



4

5

6

1

2

3

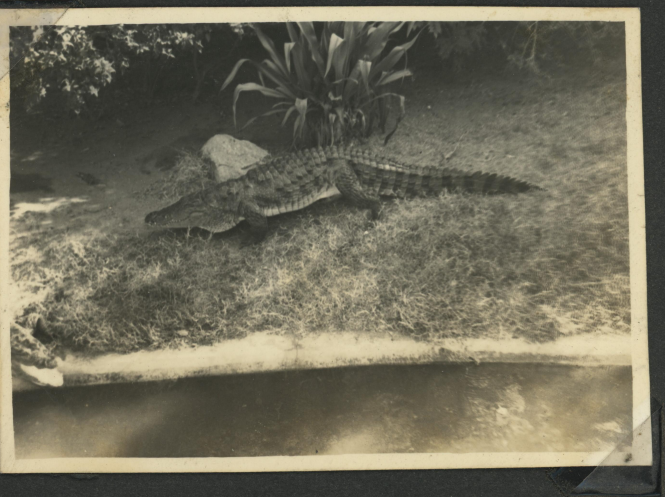
JANUARY 1980's

4

5

6

7



8

1

2

3

4

JANUARY 1980 12

5

1

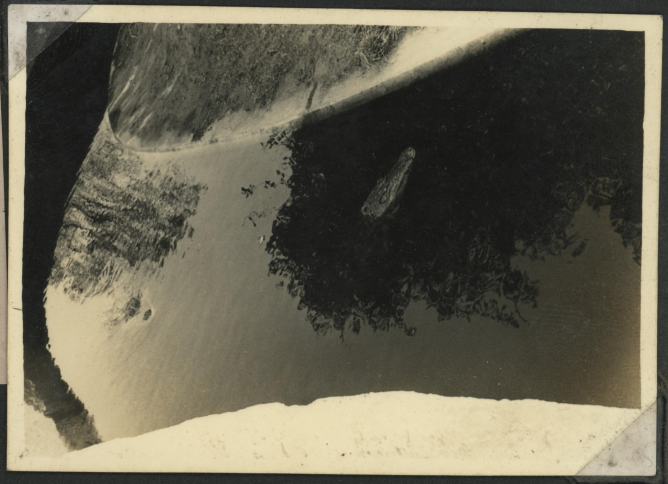
2

3

JANUARY 1980 12

4

5



6