(P) N50/7 Cheetah

REPORT ON THE 30 CHEETAH

ACINONYX JUBATUS INTRODUCED TO

THE ETOSHA NATIONAL PARK

13TH JANUARY, 1970 - 25TH MARCH, 1970

BY

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D E P A R T M E N T A L R E P O R T

N. 50/5/3
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26th March, 1970.

The Director,
Nature Conservation and Tourism,
Private Bag 13186,
WINDHOEK.

REPORT ON CHEETAH (ACINONYX JUBATUS)
INTRODUCED TO ETOSHA NATIONAL PARK.

1. INTRODUCTION.

An exchange programme was approved by the S.W.A. Executive Committee whereby 30 cheetah Acinonyx jubatus from a game trapper and game Exporter, Mr. W. Delfs would be exchanged for 150 young Zebra Equus burchelli antiquorum from The Etosha National Park. This exchange is regarded as very commendable in view of the fact that the cheetah population of Etosha is low (an estimated 50 during 1968) and there appears to be an over population of zebra in the Park. Through this exchange the zebra population would be reduced by at least 210 animals (150 to Mr. Delfs and approximately 60 zebra which would be shot and fed to the cheetah over a two month period).

This report reviews and discusses various aspects regarding the introduction of the Cheetah to the Etosha National Park. The results and effects of the release of the cheetah will be studied in detail by Mr. E. Leibnitz, who will submit a separate report on his findings.

2. TRANSPORTATION.

(a) The 30 cheetah arrived in Etosha on 13th January, 1970. They were transported individually in crates by the Nature Conservation Game Capture Unit.

(b) Some of the crates were unsuitable for transporting cheetah comfortably because the animals were unable to turn around in them. These crates, perhaps ideal for small antelope, were loaded on top of each other and next to each in such a manner that some of the cheetah may have suffered from an insufficiency of ventilation and an excess of heat.

(c) Although we were told that the transport would stop en route every hour and that the cheetah

would be watered during the journey, this was not done mainly because it was practically impossible to open the doors of the crates and no watering receptacles were taken on the trip for this purpose.

(d) In transporting any wild animal, the writer is of the opinion that the floor of the crates should be lined with a 2 - 3 layer of river sand or straw. This serves two purposes, viz. anti-slip on wooden floorboards and absorbant material for urine and dung. Because of the stress and panic during the catching and transportation, many of the cheetah had diarrhoe and their coats were soiled with faeces and urine.

(e) The cheetah arrived in very poor condition and some of them were very dehydrated. The rectal temperatures of many of the cheetah were extremely high.

3. HOUSING.

(a) Initially all the cheetah were destined to be housed at Halali. This would have resulted in overcrowding and the writer managed to persuade the officials in charge of the operation to house at least 16 cheetah at Ombika Quarantine Camp. The two antelope pens at Ombika were utilised for this purpose and proved to be highly satisfactory because sufficient shade was available and the pens and stables could be cleaned satisfactorily.

(b) Thanks to the efforts of the students Messrs. R. Bengis, R. Biggs and P. Reyneke who worked non-stop from the 12th January, 1970, when we were officially informed that the cheetah would be arriving on the 13th January, 1970, the rhino holding pens at Halali were modified for cheetah and were ready to receive the cheetah which were off-loaded on the morning of 14th January, 1970. No rangers were available to assist with the modification of the rhino pens and the students are to be congratulated on a fine piece of work.

(c) Although the pens at Halali do not comply with quarantine requirements they were suitable for housing 14 cheetah after additional shade was provided.

4. VETERINARY ASPECTS.

(a) Cheetah are susceptible to a number of infectious viral and bacterial diseases. One of the most serious viral diseases, Rabies, may have

been responsible for the decline in the cheetah population in Etosha.

(b) Anthrax has been causing mortality in zebra, wildebeest, springbok, gemsbok and elephant in the Park over the past few years and could pose a serious threat to introduced cheetah. Although it is accepted that cheetah in the free-living state do not readily eat carrion and probably would not eat meat from an animal that died of anthrax, they could become infected with anthrax by catching and killing ungulates suffering from the disease or by drinking water with anthrax spores.

(c) Cheetah in captivity have succumbed to Feline pan-leucopenia. (Delfs Pers. Com.)

(d) To eliminate the above diseases, the cheetah were innoculated by Delfs against feline pan-leucopenia and against rabies and anthrax by the writer. Unfortunately insufficient rabies vaccine was sent from Windhoek and six of the 30 cheetah could not be innoculated against rabies.

(e) It could be noted here that the one of the conditions of transportation issued by the Department of Agriculture was that the cheetah had to be innoculated against rabies before transportation. (See Permit No. W3/70 of 12/1/1970). This condition was not complied with but 24 of the cheetah were innoculated on release in the holding pens in Etosha.

(f) The rabies innoculation is regarded as effective in carnivora for 3 years and the anthrax innoculation for 1 year.

(g) The cheetah were in very poor condition on arrival. Because they were kept in close contact for a lengthy period at Mr. Delfs' farm the writer suspected that they were infected with internal parasites. Faeces were collected and examined locally and by Dr. Bergmann in Windhoek. A severe Toxacara canis and Toxascaris leonina infestation was confirmed. The cheetah at Ombika were dewormed with piperazine adipate. The cheetah at Halali were released before they could be dewormed.

(h) One of the cheetah at Ombika suffering from a brain injury and weakness was killed and post mortem examination revealed a severe roundworm and tapeworm infection. The Ombika cheetah were dewormed against tapeworm with Dicestal (M & B) and Scolaban (B.W. & Co.). Since the deworming the condition of all the cheetah has improved and they are eating less meat.

(i) IMMOBILISATION.

In order to facilitate the administration of the vaccines, weigh, measure and mark the cheetah, they were all immobilised orally with Sernylan (Park Davis and Co.). An average dose of 50 milligrams Sernylan was given to each cheetah. (Dosage-rate 0.5 to 0.605 milligram per lb. bodyweight). Immobilisation times varied from 12 to 25 minutes.

(j) Fourteen of the cheetah showed epileptiform convulsions. These fits were controlled to a large extent by the injection of 5 to 10 milligrams of triflupromazine ("Siquil"-Squibbs Laboratory). It would appear that animals in poor condition and suffering from dehydration are more prone to epileptiform convulsions than animals on a better plane of nutrition and hydration.

(k) Two cheetah had superficial abscesses which were treated with antibiotics. Two cheetah had callusses on the legs as a result of previous fractures, but these had healed satisfactorily and should not impair normal function of the limbs.

(l) MARKING.

All the cheetah were marked under Sernylan anaesthesia with Dalton Plastic ear tags. The Ombika cheetah were tagged in both ears with white ear tags Nos. ETOSHA 0004 to 0035 and the Halali cheetah with red tags ETOSHA 0001 to 0028.

(m) Some of the tags cracked at the point of insertion which resulted in the tags loosening and becoming lost. To date 14 tags have been recovered and four cheetah are without any ear tags. The majority have at least one ear tag.

(n) WEIGHT.

Because of lack of time and the rush to unload the cheetah at Ombika before sunset, only the Halali cheetah were weighed. The weight of 14 cheetah ranged from 65 lbs. to 98 lbs with an average of 84.5 lbs.

(o) BLOOD SAMPLES.

Blood and serum samples were collected from the 14 cheetah at Halali. The samples were sent by air mail to Prof. D. Osterhoff of Onderstepoort for blood grouping.

(p) BLOOD SMEARS.

Blood smears were collected from the 14 Halali cheetah and sent to the Protozoölogy Section at Onderstepoort for identification of possible blood parasites. To date no results have been received.

(q) EXTERNAL PARASITES.

Hippobosca longipennis were found on some of the cheetah. Dr. Zumpt of the S.A.I.M.R. has taken sections of skin from the cheetah that was destroyed and will investigate microscopically for lice, mites and other ectoparasites.

(r) MORTALITY.

(i) Two of the cheetah offloaded at Halali died. Cheetah, female, Red ear tags ETOSHA 0019 and 0020 was in very poor condition on arrival. She had hyperpyrexia and was extremely dehydrated. Rectal temperature under Sernylan anaesthesia was 109.6°F, which is nearly 9°F above normal. She exhibited continuous epileptiform convulsions with severe salivation. She was treated with 10 mg Siquil I.M. and wetted with cold water to bring her temperature down. Her blood pressure dropped considerably and she died three hours after she was sernylised. Microscopical and post mortem examination of her internal organs revealed starvation, dehydration and evidence of capture myopathy.

(ii) The second cheetah, Red ear tags ETOSHA 0011 and 0012 was also severely dehydrated and had severe epileptiform convulsions which could not be controlled by tranquillisers. She was treated with three intravenous 5% gluco-saline infusions of 300 ml., two injections of 30 mg. Deltacortril, 10 mg. Siquill, 0.5 Grams Chloromycetin. Treatment was of no avail due to irreversible brain damage and after showing signs of improvement after the last treatment of 5% gluco-saline, she suddenly collapsed and died. Post mortem examination revealed hyperpyrexia (112.5°F), dehydration and starvation. Internal organs were not collected for microscopical examination because decomposition had already set in.

(iii) A female cheetah at Ombika, white tags, ETOSHA No. 0022 and 0023 showed signs of nervous derangement within a week of arriving in Etosha. Her condition was poor, but improved gradually for about three weeks and then she rapidly lost weight and appetite. During the last two weeks abscesses developed on both hips. Permission was

received to destroy her and perform a post mortem examination. Post mortem showed degeneration of the liver and kidneys, anaemia and a severe roundworm and tape infestation. The roundworm infestation in the small intestine was so severe that it may have caused bowel obstruction. The tapeworms have not been identified yet, but the roundworms were Toxascaris Leonina and Toxocara canis and an as yet unidentified small nematode.

5. FEEDING.

Feeding of the cheetah was undertaken by Mr. J. du Preez who will submit a separate report.

It is estimated that each cheetah received between 8 and 12 lbs. of meat every second day. On one occasion the writer fed the stomach and small intestines and ribcage of springbok to the cheetah at Ombika and observed that they dit not eat any of the proferred food. This partly confirmed the writer's observation in the field that cheetah usually leave the intestinal tract, do not eat bones and generally prefer eating the skeletal muscles.

The killing of an ungulate every day presented the writer with the opportunity of collecting liver samples for a trace element survey conducted by the Nutrition Section at Onderstepoort and sections of internal organs and internal parasites for histopathological examination and identification of parasites.

The writer also collected blood from the killed animals under aseptic conditions (sterile hypodermic syringes) and was able to determine the effects of storage and cooling on the keeping quality of blood of various species.

A heavily pregnant gemsbok cow was accidentally shot by Mr. J. du Preez. The writer successfully performed a caesarian section and managed to save the calf, which was about one week premature. Colostrum and serum was collected from the cow and fed to the calf. The calf was kept alive for six days and then destroyed because the writer's wife was becoming attached to the animal and difficulties in obtaining a permit to keep the animal would have led to unnecessary heartbreak.

6. RELEASE.

(a) Various opinions have been expressed regarding the effect on the ungulate population following the release of 30 cheetah in the Park.

(b) Reports by Messrs. R. Biggs, P. Reyneke, R. Bengis and E. Leibnitz are attached to this report and

they have all expressed their personal opinions regarding the effect of releasing the cheetah.

(c) Mr. R. Biggs feels that because of the ecological imbalance, overgrazing and effects of drought on the vegetation, more predation on ungulates is necessary. Predation on springbok and juveniles of other ungulate species may be heavy and should be watched.

(d) Mr. P. Reyneke is of the opinion that the natural balance will be upset, but that the balance will adjust itself after a period of time.

(e) Mr. R. Bengis feels that springbok (90%) will be preyed on mostly by the cheetah and estimates that approximately one springbok per week per cheetah can result in 1,560 springbok being killed annually. He also warns of the danger of the cheetah preying on the black-faced impala recently released at Namutoni, of the possibility that the immune introduced cheetah infecting the susceptible cheetah population in the park with infectious feline enteritis and the new cheetah infecting the Park's population with internal and external parasites. He also feels that territorial fights may result which would cause cheetah to move out of the Park.

(f) Mr. E. Leibnitz feels that the cheetah should be released on the plains of Etosha and recommends that they be immobilised, transported and released in pairs in various areas to prevent over-concentration of carnivora in one area.

(g) Mr. P. Stark is of the opinion that cheetah kill eland (based on one observation) and that they will also prey on young zebra and wildebeest.

(h) Mr. B.J.G. de la Bat has seen cheetah killing an adult kudu bull and has information that they kill mountain zebra in the Khomas Hoogland.

(i) Mr. J. Gaerdes (Pers. com. 1967) reported that cheetah preyed heavily on young red hartebeest on his farm.

(j) The writer has only seen cheetah preying on springbok and ostrich in the Park, but feels that the availability of prey and the susceptibility of prey to cheetah predation (killing power) will mainly influence the feeding habits of the released cheetah. Adult zebra and wildebeest may prove difficult for an animal the size of a cheetah to pull down and strangle. The small jaw and teeth may be the limiting factor. They will therefore prey mainly on smaller ungulates - springbok,

steenbok, dik-dik, juveniles of zebra, wildebeest, kudu, hartebeest, eland, gemsbok, hares and a variety of the larger ground birds such as kori-bustard, guinea fowl and black korhaan.

(k) In the Kruger National Park impala form the main prey of cheetah (Brynard & Pienaar, 1960) and in the Serengeti National Park 89% of cheetah kills were found to be Thomson's gazelle (Schaller 1968). According to Schaller zebra foals are rarely caught because adult zebra defend their young and are difficult to attack in the coherine family group zebra form.

(l) Cheetah fill a certain niche in nature and it is therefore understandable that they will prey on animals smaller and a little larger than themselves. Only rarely will they attack adult zebra, wildebeest, eland, kudu, etc.

7. RECOMMENDATIONS.

(a) If cognisance is taken of the fact that the majority of the cheetah have been in captivity for seven months (since August, 1969), it can be accepted that they may have difficulties in catching prey when they are released in the veld. The method used in the Zululand Parks of introducing injured or wounded impala and warthog into a large enclosure and allowing the captive cheetah to catch this prey is commendable. Unfortunately this procedure cannot be adopted in Etosha because no suitable enclosure is available. However this method would be most adviseable if cheetah are introduced into the Park in such large numbers in future.

(b) As an alternative to the above, the writer recommends 2 or 3 cheetah at a time be captured in crates and transported to areas near permanent waterholes and released where small ungulates are abundant. Suitable areas would be Charitsaubvlakte, Chudopvlakte, Ombikavlakte, Okondekavlakte and Gemsbokvlakte. The cheetah can either be enticed into the crates with meat or chased into crates stationed at the opening of holding pens.

(c) In order to determine how the cheetah have settled in the Park, it is recommended that Ranger E. Leibnitz do regular patrols in areas where the cheetah are released to determine the numbers of cheetah, condition and prey selection.

(d) It is recommended that all cheetah and other carnivora introduced into the Park be innoculated against Rabies and Anthrax and if internal parasitism is present that they be dewormed with suitable anthelmintics.

STATE VETERINARIAN.

C H E E T A H

14th January, 1970 All cheetah "Sernylised" orally with a
Rabies and Anthrax. Rectal temperatures taken, weighed, me
temperatures 86°

No.	Red Ear Tag No.	Sex.	Weight/lbs.	Sernylan mg.	Mg/lb.	Temp
1.	0001&0002	M	85	50	.509	10
2.	0003&0004	F	78	50	.510	10
3.	0005&0006	M	93	50	.503	9
4.	0007&0008	M	92	50	.504	10
5.	0009&0010	F	75	50	.605	10
6.	0011&0012	F	75	50	.605	10
7.	0013&0014	M	100	50	.500	10
8.	0015&0016	M	92	50	.504	10
9.	0017&0018	F	75	50	.605	10
10.	0019&0020	F	65	50	.704	10
11.	0021&0022	F	98	50	1501	10
12.	0023&0024	F	82	50	.600	10
13.	0027&0028	F	85	50	1509	108
14.	0027&0028	M	92	50	.504	104
	AVERAGE		84.78			104

A L A L I

erage dose of 50 mg Sernylan, inneculated against
sured, blood, samples and smears taken, External
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F.	H&B	T.	H.F.	G.	H.	E.	REMARKS.
0	52	27	12½	28	32	3	Epileptiform convulsion 5 mg Siquil I.M.
8	53	30	12	26	34½	3	Abscess Right Front Leg.
2	52	27½	11½	29	34½	3	
4	53	27½	11	26½	34½	2¾	
4	48	26	11¼	27½	33½	2¾	Severe Epileptiform fits 10 mg Siquil I.V. + MEDS 200
8	48½	25¾	11	23¼	31½	3	Severe Epileptiform fits 10 mg Siquil 5% Dextrose Saline Drip; 30 mg Delta Certril. 15/1/70 Servere fits 300 ml Fl cose Saline; 30 mg Delta Cortril; 0.5 gm Chloromycetin + 300 ml Gluco Saline.
4	50	28	12	28¼	33	3	Epileptiform Fit 5 mg Siquil I.M.
0	51	27½	11½	25¼	32¼	3	
3	48½	27¼	11	26¾	31½	3	
5	46¼	24½	10¼	21½	30½	2¼	Dehydration very poor condition. Sever Epileptiform fits 10 mg Siquil I.M. HYPERPYREXIA (109.6°F) DIED 15/1/70.
	51	27¼	11½	24½	33	3	Very severe Epileptiform fits 10 mg Siquil I.M.
	48¼	27¾	11	23¾	31¾	2¾	Epileptiform fits 10 mg Siquil I.M.
	52	26½	11	26¾	33	3	Epileptiform fits 5 mg Soquil I.M.
	50	26¾	12	24	33¾	3 1/8	
9	50¼	27.13	11.42	25.78	32.83	2.92	

C H E E T A H

13th January, 1970. All cheetah "Sernylised" orally
against Rabies and Anthrax. Some measured. None weig

No.	White Ear Tag No.	Sex	Sernylan	H&B	T.	H.F.	G.	H.	E
1.	0004&0005	M	50						
2.	0006 0007	F	50						
3.	0008 0009	F	50						
4.	0010 0011	F	50						
5.	0012 0013	M	50						
6.	0014 0015	M	50						
7.	0016 0017	M	50						
8.	0018 0019	M	50						
9.	0020 0021	F	50						
10.	0022 0023	F	50						
11.	0024 0025	F	50						
12.	0026 0027	F	50	46½	26	11	24	30	3
13.	0028 0029	M	50	55½	29½	12¼	30	35	3
14.	0030 0031	F	50	49½	28	11	24	29	2
15.	0032 0033	M	50	51½	27	11¾	26	31	3
16.	0034 0035	M	50						
	AVERAGE			50.75	27.62	11.5	26	31.25	3

M B I K A.

th average dose 40 - 50 mg Sernylan. Innoculated

l. No temperatures taken.

REMARKS
Handled before completely anaethetised
Handled before completely anaethetised
Handled before completely anaethetised
Epileptiform fits 10 mg Siquil I.M. 1 Gm Chloromycetin 40 mg Delta Cortril
Epileptiform fits 10 mg Siquil I,M.
Injured leg - Chloromycetin 500 mg injected. Epileptiform fits 10 mg Siquil I.M.
Arthritis left front leg. Delta Cortril & Penicillin injected.
Epileptiform fits 10 mg Siquil I.M. Ababscesses on leg. 1 Gm Chloromycetin injected.
Epileptiform fits 10 mg Siquil I.M.
Epileptiform fits 10 mg Siquil I.M.