



SOUTH WEST AFRICA ADMINISTRATION

WHITE PAPER

on the

ACTIVITIES OF THE DIFFERENT BRANCHES

for

1977

Nature conservation and Tourism

Introduction

Despite the many factors which are restricting tourism world-wide 286 700 tourists visited the Administration game reserves and resorts in the course of 1977 as compared to 265 633 during 1976. Structurally, tourist and spending patterns have changed and the number of visitors to South West Africa from outside the Territory increased by approximately 8 909 as compared to the number of visitors for 1976.

In the nature conservation field there has been marked progress. The following highlights and problems characterised 1977:

As from 1977 parts of the Skeleton Coast Park have been opened for organised tourism throughout the year.

For the first time the income of farmers from their game exceeded R5 million.

In comparison with 1976 when 127 persons were involved in cases of illegal hunting, 136 persons were prosecuted during 1977. The fines totalled R48 625,60 as compared to R60 378,00 for 1976. In areas where farmers established game protection societies incidents of illegal hunting decreased by up to 90%.

An investigation into the ecology of the entire Kuiseb River has now been inaugurated. The object of the investigation is to determine the optimum utilisation of the natural resources with the least possible environmental damage of the area in question.

Various state departments, the Administration of South West Africa, the Council for Scientific and Industrial Research, the State Museum and universities are participating.

During June 1977, 56 sable antelope, 15 tsessebe and six reed-buck were captured in Western Caprivi and after a three months' quarantine period were transferred by air to Otjovasandu in the Etosha National Park. Some of these animals will eventually be transferred to the Waterberg Plateau Park where they formerly occurred.

The most important breeding place of the lappet-faced vulture is the Namib Desert Park and surveys have shown that the breeding success of this bird has decreased considerably as a result of various disturbance factors.

A study of the Status of the Damara threatened bird species in Southern Africa, showing inter alia that there are only 2 000 of them left in the world, has been completed. It was also established where their South West African breeding sites are and suitable steps are being taken to protect them.

A comprehensive study to determine the grazing of the Etosha National Park has been completed. The results of the study are being incorporated in management plans.

Experiments at Hardap Dam have established that freshwater fish can be utilised economically.

It is estimated that several thousand deaths have occurred mainly amongst adult kudu bulls in those northern parts of the Territory where the trees budded late in the year, This mortality is considerably higher than normal .

26 017 game carcasses, harvested at night under supervision, were exported at a considerable profit. A difference of opinion among farmers, and other problems concerning the harvesting of especially migratory game, still: exist.

The gross income from game reserves and resorts increased from R1 677 688 in 1976 to R2 206 154 in 1977.

23 003 tourists visited the Gross Barmen Hot Springs since the resort was opened in May 1977.

Terrace Bay in the Skeleton Coast Park has been converted from a mining complex to a holiday resort, thereby completing the latest link in the chain of West Coast tourist facilities.

The old Post Office building in Luderitz was restored and converted into a tourist office. The restaurant at the rest camp has been renovated and is now use.

The Naukluft Mountain Zebra Park, which in the past was only to bona fide youth groups and mountaineers was opened to the general public during 1977.

After negotiations with the Diamond Board, Sossus Vlei has once again been opened.

More resorts and game reserves were open to all population groups.

It is conspicuous that coach tours and visits by caravans rose by 33% and 20% respectively as compared to 1976.

The overall occupancy figures for hotels de creased in comparison with 1976.

REST CAMP	NUMBER OF VISITORS		S. W. A.		OVERSEAS		DAY VISITORS		IMPROVED VISITORS		VEHICLES		REVENUE 1975		REVENUE 1977		INCREASE OR DECREASE		PERCENTAGE CHANGE	
	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977
AT-AITS	17 528	17 371	8 799	17 709	8 201	17 000	1 097	15 889	4 615	190 950,00	254 328,00	65 378,00	369,00	254 328,00	65 378,00	+ 35%				
FISH RIVER CANYON	17 528	17 371	8 799	17 709	8 201	17 000	1 097	15 889	4 615	190 950,00	254 328,00	65 378,00	369,00	254 328,00	65 378,00	+ 35%				
HARDOP	33 234	14 371	8 799	17 709	8 201	17 000	1 097	15 889	4 615	190 950,00	254 328,00	65 378,00	369,00	254 328,00	65 378,00	+ 35%				
LUDEWITZ	4 847	1 675	2 848	2 848	324			4 847	1 581	17 701,00	40 852,00	23 151,00		17 701,00	23 151,00	+ 130%				
MAUKLUFT	791	89	663	39	32			759	124	3 244,00				3 244,00						
DAM VILJOEN	62 985	9 482	53 041	54 644	162			8 341	16 604	114 174,00	127 915,00	13 744,00		127 915,00	13 744,00	+ 12%				
VOR BACH	15 012	583	14 344	14 620	50			192	1 085	2 483,00	4 623,00	2 140,00		4 623,00	2 140,00	+ 86%				
GROSS BARNER	23 003	844	22 003	12 958	156			10 045	6 728		156 795,00			156 795,00						
OKRAKUEJO	24 077	11 560	7 783	3 726	4 734			20 351	5 480		397 419,00			397 419,00						
KAMMLOU	21 650	8 842	9 716	7 623	3 292			14 227	4 358	766 977,00	278 682,00	189 704,00		278 682,00	189 704,00	+ 25%				
SHAKOPIIND BUNGALOWS	22 298	6 917	14 692		689			22 298	5 786	262 020,00	235 594,00	26 426,00		235 594,00	26 426,00	- 10%				
SHAKOPIIND SWIMMING BATH																				
MILLE 4 CARAVAN PARK	8 346	2 495	5 675	176				8 316	2 261	47 919,00	49 718,00	1 799,00		49 718,00	1 799,00	+ 4%				
MILE 14 CARAVAN PARK	2 715	312	2 394	9				2 715	481	4 735,00	5 248,00	513,00		5 248,00	513,00	+ 10%				
JAKKALSPUITZ CARAVAN PARK	2 844	558	2 284	2				2 844	703	8 102,00	10 282,00	2 180,00		10 282,00	2 180,00	+ 27%				
MILE 72 CARAVAN PARK	3 374	605	2 762	6				3 374	729	6 360,00	20 113,00	13 753,00		20 113,00	13 753,00	+ 216%				
HENTY'S BAY	2 263	741	1 471	51				2 263	646	5 027,00	19 711,00	14 684,00		19 711,00	14 684,00	+ 292%				
CAPE CROSS	3 020	2 008	5 560	452				1 810	1 810	3 657,00	3 624,00	33,00		3 624,00	33,00	- 0,9%				
TORRA BAY	1 053	104	986	3				1 093	281	14 205,00	12 604,00	1 401,00		12 604,00	1 401,00	- 9%				
TERRACE BAY	59	11	48					59	24		7 204,00			7 204,00						
SANDWICH HARBOUR	4 555	1 101	3 269	185				4 555	2 578	7 899,00	5 541,00	2 358,00		5 541,00	2 358,00	- 29%				
DOLPHIN BEACH	269	49	220					269	36	518,00	215,00	303,00		215,00	303,00	- 58%				
NANIB DESERT PARK	10 551	1 677	8 139	735				4 530	2 160	4 809,00	5 561,00	752,00		5 561,00	752,00	+ 15%				
TOTAL	286 700	86 645	178 501	21 554	142 706	143 994	1 690 618,00	2 208 153,00	517 535,00	+ 30%										

TOUR BUSES 713
 CARAVANS 7 593
 BOATS 477

Game Reserves and Resorts

Etosha National Park

The rainfall was far below average. For purposes of comparison the 1976 and 1977 rainfall figures are given below:

	Average	1976	1977
Otjovasandu	417, 1 mm	419, 6 mm	261, 8 mm
Okaukuejo	418, 3 mm	601, 44 mm	244, 2 mm
Halali	450, 7 mm	422, 0 mm	297, 0 mm
Namutoni	443, 1 mm	551, 0 mm	367, 0 mm

Grazing was reasonable in the sandy veld but poor in the lime areas. According to grazing capacity stipulations it has been established that the winter grazing areas are generally overgrazed. The grazing capacity of the system is + 4 000 large stock units, which is much lower than the present burden.

Eight windmills and five drinking troughs have been erected between Okaukuejo and Otjovasandu. Due to windless periods there are periodic water shortages.

13 Veld fires have occurred in Etosha as compared to five during 1976. 515 700 ha of grazing was destroyed. In 12 of the 13 cases fire was caused by lightning, while one veld fire penetrated the game reserve from Owambo despite a fire-belt of 17 metres in width. Long-term veld burning experiments are still being continued at Olifantsrus to determine the effect of fire on the veld at different intervals.

56 lions were shot by farmers on farms bordering Etosha. 25 lions were driven back or lured from the farms to the game reserve. 300 Wildebeest passed through an elephant break to Owambo. This was almost 10% of the total wildebeest population in Etosha.

During the year nine elephants were shot on farms while officials drove 102 back to the game reserve.

On the northern boundary, 1 841 breaks caused by elephants were repaired. The breaks occurred faster than they could be repaired and apparently the majority was caused by bulls. The research project on elephant ecology is making good progress and data concerning their food preferences, migration habits and herd compositions were collected.

The plant ecology project of the Etosha National Park, which took seven years to finish, was completed this year. The results simplify the compilation of management policies.

According to an aerial census of Etosha, the wildebeest numbers have decreased despite a calving percentage of 19% in March 1977, so that there has been no noteworthy increase since 1976. The plains zebras showed a further decrease of 7%, while the springbok numbers doubled.

The wildebeest project is progressing well.

The evaluation of long-acting sedatives and tranquilisers was continued.

The sable antelope, tsessebe and reedbuck caught in quarantine, successfully transferred by air to Etosha, where they must spend a further three months under quarantine before being transferred to the Waterberg Plateau Park.

In Etosha altogether 81 persons were reported for contravening the regulations. Five cases of poaching in which 21 persons were involved, occurred in the game reserve and the combined fines were: R16 800 or 7 545 days for illegal hunting, and R3 009 for other offences.

Of the 45 927 visitors to Etosha, 20 402 came from the Republic of South Africa, 17 499 from South West Africa and 8 026 from overseas. At Namutoni the number of visitors was 21.850, at Halala 18 159 and at Okaukuejo 24 077. Compared to 1976 the number of visitors at Namutoni decreased, while it increased slightly at Okaukuejo and Halali.

The special accommodation which was being built for tour groups was completed and largely contributed to the fact that the number of tours increased by 36% and that the average occupation of this special accommodation was 73%. As a result of the new caravan camps being completed at the gates, 36% more caravans can also be accommodated.

The Etosha Ecological Institute was once again regularly visited by scientists and other interested persons. Altogether 205 persons, of whom several came from overseas, visited the Institute.

Naukluft Mountain Zebra Park

The rainfall was average and the grazing poor.

Priority was given to the planning and lay-out of hiking trails for visitors. One has been fully charted and marked while two others are nearing completion.

During 1977, 823 persons visited the park as compared to 320 during 1976. Of these, 95 persons were from overseas and 82 from the Republic of South Africa. A brochure for the park is being planned.

Two farms were increasing the size of the game reserve.

One veld fire occurred, destroying +- 1500 ha of grazing.

Officials stationed at this park were also concerned with the control at Sossus Vlei.

Sossus Vlei

In the year, following negotiations with the Diamond Board, Sossus Vlei was opened for limited numbers of tourists. Overnight camping is not allowed and a maximum of 20 tourists per day may visit the vlei.

Daan Viljoen Game reserve

A poor rainfall during the year caused two of the three dams to dry up, while the Augeikas Dam is only 25% full and is considerably silted up.

The year 1977 saw an over-population of gemsbok and kudu in the reserve. Owing to the inaccessibility of the terrain it is virtually impossible to capture these animals economically and consequently 42 gemsbok and 40 kudus were culled. The meat was sold on tender.

Two veld fires occurred and about 50% of the game reserve was destroyed by fire.

Apart from that which was culled, the following game was caught and sold or transferred to the Von Bach Dam:

- 15 mountain zebras
- 17 elands
- 14 gemsboks
- 15 springboks

A causeway to the new quarantine station was completed.

69 persons were prosecuted for various game reserve offences.

The caravan park was completed during the year. The rest camp was awarded a two-star grading.

A relaxation area with its own facilities for large groups was completed and should meet with public approval.

Hardap

Hardap had an above-average rainfall, and the grazing was good. Trees and shrubs were over-utilised by kudu.

Development of the park, apart from a series of tourist roads and the combating of erosion, has nearly been completed. There was a decrease of 16% in tourist figures, as well as a decrease in the number of day visitors, while the number of overnight visitors remained constant.

Roads for anglers on the east side of the dam were planned and will hopefully be completed during 1978.

The eastern boundary of the park was fenced off.

Two poachers who were hunting next to the road were caught red-handed by officials. These persons were convicted and fined R1 500.

The construction of the fish hatchery was nearly completed. The complex now consists of 18 earth dams with a surface area of 2 ha, and 17 round cement dams with diameters of 6 m and 12 m. Fish breeding will commence early in 1978. Experimental breeding with black bass in one of the earth dams produced nearly 2 000 fingerlings which were transferred to Hardap Dam.

The finishing touches and decoration of the terrain have almost been completed.

Waterberg Plateau Park

The rainfall was average and the grazing was sufficient. One veld fire occurred in the western part of the park and destroyed about 20 000 ha of grazing. The fire was caused by lightning.

A comprehensive programme was started to provide water on the Plateau. 34 km of pipeline, six reservoirs and eight drinking places have been constructed, while a further eight drinking places are being planned.

The 52 roan antelope released in the park during 1976 have increased to 65, while the initial impala count revealed that there were 532 elands in the park.

During the year the Alte Kameraden held their jubilee anniversary festival at Waterberg. The cemetery walls were partly repaired, and the weeds eradicated.

The field-work phase of the project on the plant ecology of the Waterberg Plateau Park was completed. The soil samples were submitted for analysis.

The herbarium collection for the Waterberg Plateau Park has been enlarged to about 900 examples.

Von Bach Recreation Resort

There were favourable rains during 1977 and the grazing was good. A small veld fire was extinguished before it could cause any noteworthy damage.

An over-population of kudu caused the Division to investigate the possibilities of culling the surplus animals. Good catches, especially of bass, were made in the dam.

The day camping areas were almost completed and will be opened to the public early during 1978. Because of their situation these day camping areas should be popular.

The popularity of the resort is increasing, and the number of visitors has risen by 21%.

Gross Barmen Hot Springs

The resort was opened during May 1977. Despite the dirt road's carrying heavy traffic, the springs immediately became popular with the public, and more than 23 000 tourists visited them within eight months.

Fish River Canyon and Ai-Ais Hot Springs

Although the rainfall was very poor, the river retained a considerable amount of water from the previous season.

Unprepared and ill-equipped hikers who attempt the canyon excursion are still causing concern. Day visitors who climbed down into the canyon from the look-out point caused considerable pollution. It is planned to make permits for descending the canyon from this point compulsory as from 1978.

According to the register, 558 persons (05 groups) undertook the hike in the canyon. 17 000 persons visited the canyon at the look-out point. The number of visitors to the springs showed a decrease of 9%. This tendency may be largely ascribed to the limited accommodation caused by flood damage.

The National West Coast Tourist Recreation area

Swakopmund

Due to the renovation of the oldest and poorest bungalows and the appointment of additional staff, fewer complaints were received from the public.

33% of the almost 22 000 visitors came from the Republic of South Africa and more than 3% (i.e., 689 tourists) from overseas.

The swimming-pool was visited by 56 453 people. Due to a lack of competent staff the sauna baths could not operate fully although they remained popular. The income was R17 582.

Mile 4 Caravan Park

The number of visitors and caravans decreased but the tariff increase kept the income constant. The decrease in people and caravans may be ascribed to the fact that the Rossing Mining Company, which hired some of the stands to accommodate its employees, vacated the premises towards the end of the previous year.

Dolfynstrand

on an average, the support here was 50% lower than in the previous year. This can be explained by the fact that all the other camping areas are open to all population groups.

Mile 14

Like Mile 72, Mile 14 also shows a tendency towards an increase in tourist numbers and income, viz. 25% and 10% as compared to the previous year.

Jakkalsputz

Here the number of visitors decreased by 24%. No complaints were received about the road which connects Jakkalsputz directly. This road was incorporated in the main road to Henties Bay and was kept in good condition by the Roads Division during the season.

Mile 72

The number of visitors rose by 72%. The income increased by 216% in comparison to the previous year. This year fuel was supplied in underground tanks and the trade turnover was increased. Fishing was good here.

Cape Cross

There was decrease in the number of visitors although touring groups increased by 154.

Henties Bay

Henties Bay was open to tourists throughout the year and the number of visitors increased by 1 894. Of the 2 263 visitors, 1 471 were local, 741 were from the Republic of South Africa and 51 from overseas. The caravan park was very popular with visitors.

Namib Desert Park

Although there were not noteworthy rains in the park, grazing was adequate. Owing to the water shortage it was not possible to situate the staff within the park.

Two boreholes were successfully sunk at Ganab, and temporary housing was purchased. The placing of staff within the park will bring a substantial saving in transport and other expenses.

Only a very small portion of the park has not been given out under prospecting concessions. No meaningful planning or development of the game reserve can be done before certainty has been reached as to the whereabouts of minerals in mineable quantities.

Compared to the previous year there was an increase of 1 062 visitors. The increase in income amounted to R3 200, 00. 4 630 of the total number of visitors stayed overnight. The number of touring groups increased by 33.

Lüderitz

Various factors such as the tarring of the road as far as Halenberg, the fact that Lüderitz became known as a holiday resort, the improvement of facilities and a small but welcome restaurant run by the Division resulted in 1 358 more visitors to the bungalows.

The result of this was an increased income of R40 000 as compared to R17 000 the previous year. Detailed planning requirements have already been compiled for the use of Haifisch Island and are currently being adapted by the architects.

Skeleton Coast Park

Officials in the game reserve aided three stranded boats. In one of the case lives would have been lost if the officials had not rescued the drowning people in time. A control post was established at the Ugab River and housing for staff was erected. The company which held the concession between the Ugab and the Hoanib was liquidated. The buildings which could not be utilised by the Administration were demolished and the rubble was removed on tender.

Torra Bay

The number of visitors remained constant. As in the past, tourist co-operation was excellent, and the visitors saw to it that there was a pleasant holiday atmosphere.

Terrace Bay

On 16 December 1977 the rest camp, built at a cost of approximately R200 000, was opened to all races. 59 Persons visited the camp, and the gross income was R7 200. The rest camp met with the general approval of the public.

Reservations Office

The reservation system has been computerised. At present it still undergoing tests.

Nature Conservation

Otjiwarongo Regional Office

Officers were obliged to shoot two elephants which came from Owambo and Kavango and plundered farms in the white area. Nine elephants were driven back.

One Coyote getter course, in which 2 persons participated, was presented for farmers. Lectures and talks were held at 13 Farmers' Associations and one school. Altogether 606 people attended the lectures and talks. Inspections took place on 160 farms where owners wanted to catch game, have protected game shot, cull game or had other problems, while 22 hunting guides were tested.

84 persons were prosecuted because of illegal hunting, The combined fines amounted to R24 335, While two persons 'sentences have been suspended for three years. Nine kudu skins, one zebra skin, 11 bows and arrows and one assegai were confiscated. 35 persons received warnings for minor offences.

Windhoek Regional office

Staff assisted in testing three-night culling teams. Talks, lectures and film shows were presented at one school, one youth movement and ten Farmers 'Associations. 1 717 people were concerned with these lectures and talks.

18 Persons were prosecuted for illegal hunting. The total fines amounted to R4 810.

Three professional hunters were tested by officers and three hunting farms inspected for registration. Officers carried out 586 farm and 63 town inspections. Officers carried out 586 farm and 63 town inspections. Officials used a lot of their time to supervise night culling.

Poaching still gives rise to concern. Organised gangs make use of radios, female spies, false number plates etc. Tracking down these people is a full-time task.

In areas where farmers established game protection societies, illegal hunting incidents decreased by 90%.

Keetmanshoop Regional Office

Farmers, especially in the south, do not realise how essential it is to report all cases of illegal hunting. At present, it is very difficult to determine the amount of game that has been hunted illegally. Judging from information obtained it is considerable.

13 persons were prosecuted for poaching 25 springbok and 15 steenboks. Fines amounted to R2 680 and a 222 calibre rifles fitted with a telescopic sight was confiscated.

Talks and lectures were held, and guidance was given to 2 Farmers' Associations, four schools and six organisations. Altogether 1 024 people attended the lectures.

One coyote getter course, in which 19 persons participated was presented. 17 persons passed the course.

During the past year a considerable number of scientists showed interest in the South Namib region. 34 persons visited the territory. A considerable number of plants surveys were made. Eight species were discovered. As a result, the herbarium and rockery at Keetmanshoop were extended. Two lizard species were discovered.

Farm Inspections

In comparison with 136 inspections last year, only 54 farm inspections were undertaken this year. The decrease is due to fuel restrictions.

Game Farming

This year game was culled on 182 farms by registered culling teams. The following carcasses were exported –

Springbok	23 695
Gemsbok	1 110
Kudu	1 212

Estimated gross income was R913 234, 00. Farmers themselves also culled and subsequently sold the carses to private persons, butcheries, or other instances. The following animals were shot and sold by landowners –

Springbok	6 657
Kudu	2 689
Gemsbok	3 689

The estimated value is R1 446 565, 00.

Where protected game damaged fencing and grazing, permits were issued to shoot the game. Permits were also issued to correct discrepancies between sexes as well as for

Eland	332
Giraffe	122
Hartebeest	754
Ostrich	1 834
Zebra	1 273

The market value of the above-mentioned animals is estimated to be R326 920, 00.

Trophy hunters increased from 495 in 1976 to 732 in 1977. The estimated income, calculated according to data supplied by various hunting farms, is R698 800.

Gemsbok	105
Springbok	63
Cheetah	4
Hartebeest	14
Kudu	9

When calculated at current market prices the value of these animals amounted to R50 160, 00.

Game sold to game dealers by farmers –

Kudu	91	Gemsbok	105
Springbok	1 406	Eland	502
Hartebeest	646	Gnu	45
Zebra	380	Giraffe	216
Cheetah	25	Leopard	19
Others	62		

Calculated according to the current prices as offered by game dealers, the income from this was R509 570.

Game skins were exported as follows –

Kudu	7 803	Gemsbok	2 219	Eland	9
Springbok	35 829	Hartebeest	181	Zebra	293
Ostrich	1 366	Giraffe	4	Cheetah	21
Lion	8	Leopard	12	Blesbuck	91
Jackal	1 124	Steenbok	32	Cat skins	215
Other	68				

According to the market value, farmers obtained an income of R156 688, 90 for game skins. In most cases, these animals were shot for personal use. The value of the cloven-hoof animals alone is set at R1 715 190.

The four game dealers exported the following game _

Eland	59	Kudu	81	Gemsbok	153
Hartebeest	153	Zebra	93	Giraffe	84
Ostrich	27	Springbok	40	Blesbuck	2
Gnu	13	Redcat	3	Long-eared fox	4
Leopards		Skunk	12	Birds	30
& Cheetahs	138				

Calculated according to current prices the value of these animals was R303 685.

In addition to this two of the dealers sold game to the value of R 149 080 to interested persons in Southwest Africa.

As officials were unable to devote too much time to illegal hunting, they followed up only a small percentage of cases. There is therefore no reason to believe that illegal hunting has decreased. Poachers simply operated elsewhere, for example in Damaraland. Illegally hunted game of which the Division has records has a monetary value of R20 460.

The administration 's income from game is as follows –

Levy on game skins	R 8147, 22
Trophy hunting permits	R 13 800, 00
	R21 914, 22

Turnover on game farming may therefore be summarised as follows -

Export of carcasses	R1 446 565, 00
Shot and cold by farmers	R 558 930, 00
Protected game shot by farmers	R 326 920, 00
Income from trophy hunting	R 698 800, 00
Caught and exported by farmers	R 50 160, 00
Game sold to game dealers by farmers	R 509 570, 00
Income from game skins	R 156 668, 00
Huntable game shot for personal use (according to skins)	R 1 715 190, 00
Game exported by dealers	R 303 685, 00
Game sold locally by dealers	R 149 080, 00
Losses from illegal hunting	R 20 460, 00
Administration income	R 21 947, 22
	R 5 957 975, 22

Research

Several projects, inter alia, that concerning the plant ecology of the Etosha National Park, were completed. An important finding is that whereas the grass plains on the edge of the pan are the driest habitat, they are also the most fertile and tasty. The game therefore prefers these regions and over-grazing is the result.

The rock-rabbit project in the south is nearing completion. The random monthly population tests as well as the laboratory work on the feeding ecology (the aspect which has priority) were completed during 1977. It is intended to undertake further field work concerning the ecology and control of the rock-rabbit in 1978 to continue the remainder of the project.

The kudu control experiments on the Omitara-Witvlei road were delayed because farmers were not in favour of the erection of an experimental barrier.

The project to keep kudu numbers under control in the Hardap Recreation Resort progressed satisfactory and the field work was completed. The data are now being processed.

The field work phase of the project on the plant ecology of the Waterberg Plateau Park is complete and soil samples were submitted for analysis. It was established that the Plateau 's sandy soil is acid and has a low mineral content. At present the theoretical phase is being worked on and considerable progress is being made with the coding process. The herbarium collection for the Waterberg Park was further enlarged to about 900 examples.

Progress was made with the wildebeest project and information obtained has already been programmed for computer analysis. Attention is also being given to mortalities and the movements of the wildebeest, environmental circumstances influencing the distribution of the wildebeest

In Etosha, as well as the physical condition of the animals during the different seasons through analysis of food plasma and dung samples. It is hoped that this will provide reasons for the decline in the wildebeest numbers and that there is a practical solution to the problem.

The evaluation of long-acting sedatives was continued, and they were tested on sable antelope, tsessebe and reedbuck this year. They are highly effective in sable antelope calves and tsessebe but produced no satisfactory results in reedbuck.

A project on the ecology of the elephant in the Etosha National Park has progressed and suggestions for better management have been made in respect of water supply and the construction of drinking troughs, since the current troughs are unsatisfactory. Behaviour, grazing areas and feeding habits have also received attention and suggestions for management practices to restrict the elephants to the park have been made.

From elephant breaks in the fence which were followed up, it seems that all of them were caused by bulls and that there are mainly three reasons for the breaks, viz. (i) water (ii) water plus food and (iii) the revisiting of old stamping grounds. In some cases, the creation of new watering places may provide a solution.

A project on fish production was successfully carried out at Hardap Dam this year. Blue kurper were caught, filleted, and supplied to various restaurants of the Division for serving to the public. 2 500 Fish with a total mass of 3 500 kg were prepared and a total income of R& 700 obtained. The project revealed that the blue kurper can be developed as a protein source both successfully and economically at Hardap Dam.

Surveys on fish were done at Goreangab, Daan Viljoen, Von Bach and Gross Barmen with the object of introducing new species later.

The field work of the Damara tern project has been completed and the results were prepared for publication. It is intended to protect certain nesting areas.

Regular surveys of migrating sea birds were continued at the Sandvis and Walvis Bay lagoons. Important facts revealed by this research are (i) that both the Sandvis and Walvis Bay lagoons are of international importance in terms of the Ramsar Convention and (ii) that the coast between Swakopmund and Walvis Bay is the most important rocky habitat of the tern in Southwest Africa.

As part of the S. A. vulture project a total of 74 adult vultures were ringed in the Etosha National Game Reserve and 41 chicks in the Namib Desert Park.

The ringing of birds of prey in the Namib, and terms at Lüderitz, was continued.

A study of the ecology of the Kuiseb River to determine the optimum utilisation of the water resources with the minimum damage to the environment has commenced.

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During 1977 the Namib Research Institute at Gobabeb was visited by the following numbers of persons:

From	S. W. A	197
	R. S. A	182
	Overseas	173
	Total	552

Game capture

After negotiations on a high level, approval was obtained to catch some of the rarer animal species in Western Caprivi. Sable antelope, tsessebe and reedbuck, which do not occur in other Southwest African game reserves, were caught by the game catching unit. After a quarantine period of three months in Caprivi, these animals were successfully transferred to Etosha where they must be in quarantine for a further three months.

Furthermore, altogether 829 head of game were caught with an average mortality of 79%. The value of game sold amounted to R12 836, 26.

Publications

In the year four editions of the Division 's scientific journal, Madoqua, were published. The journal is gaining international acclaim and visiting scientists from the U. S. A., New Zealand, Australia, Italy, and Israel, as well as several from South Africa have published in it.

The following articles were published during the year:

Madoqua

Volume 9 No. 4

Physiological and behaviour ecology of the Cape Cormorant *Phalacrocorax capensis*
by H. H. Berry

Mass mortality of Cape Cormorants, caused by fish oil, in the Walvis Bay region of Southwest Africa by H. H. Berry

A note on *Phthonodipsa carinata* Gunther in SouthWest Africa, With new distribution records by C. T. Stuart

Madoqua
Volume 10 No. 1

Intersexual dominance and differential mortality of gemsbok *Oryx gazella* at Namib Desert waterholes by William J. Hamilton III, Ruth Buskirk and William H. Buskirk.

Welwitschia mirabilis: structural and functional anomalies by Chris H. Bornman

The distribution of the genus *Aloe* in the districts Bethanien, Lüderitz and Warmbad, Southwest Africa by W. J. Jankowitz.

Reproduction of the catfish (*Clarias gariepinus*) in the Hardap dam, Southwest Africa by I. G. Gaigher.

Drinking times and behaviour at waterholes of some game species in the Etosha National Park by J. S. du Preez and I.D Grobler.

The immobilisation of wildebeest *Connochaetes taurinus* with etorphine and the use of diprenorphine as an etorphine antagonist by h. Ebedes, E. Leibnitz and J. Joubert

Occurrence of C-4 plants in the Central Namib Desert by J. C. Vogel and M. J. Seely.

Observations on the mineral status of springbok *Antidorcas marrsupialis* Zimmerman in Southwest Africa by P. Albi, P. A. Boyazoglu and J. D Bezuidenhout.

Radiocarbon dates for a shell midden complex from Wortel, Walvis Bay by L. J. Jacobson and J. C. Vogel.

Nesting association between groundscraper thrush *Turdus litsipsirupa* and fork-tailed drongo *Dircrurus adsimilis* by W. R. Tarboton and C. F. Clining.

Survey of populations of Aloes in the Namib Region south of the Swakop River by T. G. Molyneux.

Madoqua
Volume 10 No. 2

Anthrax epizootics in Etosha National Park by H. Ebedes

Preliminary observations in the digestive and renal efficiency of Hartmann 's zebra *Equus zebra hartmannae* by E. Joubert and G. N. Louw.

Capture, handling and transport of springbok and the application of haloperidol as a long-acting neuroleptic by J. M. Hofmeyer, H. G. Luchtenstein and P. K. N. Mostert.

Intensity distribution patterns for five species of problem animals in Southwest Africa by J. E. Lensing and E. Joubert

Additions to the bird checklist of Etosha National Park by C. F. Clinning and R. A. C. Jensen

Miscellaneous notes on southwest African birds by J. E. W. Dixon

Madoqua
Volume 10 No. 3

Ecological comments on some gekkonid lizards of the Namib Desert, Southwest Africa by Yehudah I. Werner.

On the origin of sheeting and lanunae in granitic rocks evidence from Antarctica, the Namib Desert, and the Central Sahara by M. J. Selby.

Biological survey of Sandvis I. introduction and faunal list by Brian F. Kensley and M. J. Penrith.

The digestive enzymes of some psammophilous tenebrionid beetles from Southwest Africa by Giorgio Marcuzzi and Marherita Turchetto Loftsea

Paleowind directions in the Central Namib Desert as indicated by ventifacts by M. J. Selby.

Aspects of the geomorphology of the Kuiseb River Southwest Africa by Margaret E. Marker.

Outline geological and geomorphic history of the Central Namib Desert by C. D. Ollier.

Short Notes

Patterned ground near Gobabeb Central Namib Desert by C. D. Ollier and M. K. Seely.

An observation on parental care of young in the steenbok in Southwest Africa by Michael d. Robinson.

Madoqua
Volume 10 No. 4

Mirabib – an archaeological study in the Namib by B. H. Sandelowsky.

Microfaunal remains from Mirabib: Some evidence of palae-ecological changes in the Namib by C. K. and Virginia Brain.

Short Note

List of plant species from the Mirabib Hill Area by E. R. Robinson.

Over and above the articles published in Madoqua, officials of the Division also made contributions to various other international scientific journals.

Publicity

The opening of several resorts during 1977 meant the publication of temporary brochures covering Gross Barmen Hot Springs, Sossus Vlei, Naukluft mountain Zebra Park, von Bach Recreation Resort, Henties Bay, and the Skeleton Coast (Terrace Bay and Torra Bay). A colour brochure on Lüderitz appeared early in the year and a colour brochure on the Gross Barmen Hot Springs is in press and should be delivered early in 1978.

The brochure series was so popular that stocks of the German version ran out towards the end of the year. Tenders for a reprint of the series have been requested. The brochures were distributed in the following numbers:

	Afrikaans	English	German	Total
Ai-Ais Hot Springs	5 004	5 503	3 025	13 532
Daan Viljoen Game Park	5 628	7 185	3 820	16 633
Etosha National Park	7 533	6 947	4 403	18 883
Hardap Recreation Resort	5 997	6 220	3 944	16 161
Skeleton Coast Park	750	750	650	2 150
Lüderitz	1 463	1 396	1 439	4 298
Tourist Guides	4 952	5 985	4 401	15 338
Tariff Guides	3 880	4 767	2 725	11 372
Brochure selections	651	1 413	349	2 413
Total	35 858	40 166	24 756	100 780

1 320 copies of the bilingual Gross Barmen/ Sossus Vlei brochure were distributed as well.

A map of the Fish River hiking trail was published for distribution to hikers. The reverse side provides useful hints and instructions to hikers.

No guidebooks were published.

A second prize was won at the annual Windhoek exhibition. The theme "A Farmer and his Game" elicited much response from farmers and the information leaflet printed for the occasion was very popular.

Only 72 children attended the Land Service camps held at Swakopmund, Hardap and Etosha.

12 New films were purchased over the year at a cost of nearly R3 500. A free copy of a film made in Etosha National Park some years ago was received. During the year 33 films were shown and 12 lectures plus film shows were given.

A number of popular articles were written for publication in newspapers and magazines. Where possible, photographs were taken to illustrate press releases.

The improvements to the interior of the Berg Hotel were completed as envisaged by the artist, thereby making an attraction of the lounge, bar, dining-room, and conference room. Decorations at the Gross Barmen hot Springs were completed while those of Terrace Bay are being executed at present.

Several discussions and interviews on matters concerning nature conservation were broadcasted on radio and television. Several films inter alia Dr David Hughes' film "Namib", which was viewed by British television audiences, were released. The Division's library has been replenished with copies of the films.

- 3 One-star rest camps
- 1 two-star rest camp
- 1 three-star rest camp
- 1 one-star motel
- 1 two-star motel
- 1 one-star safari enterprise
- 2 three-star safari enterprises

Three of the smaller hotels closed during the year, viz Stampriet, Narubis and the Kleiber Hotel, Kalkfeld, the latter because it did not meet the necessary requirements.

The Asab Hotel was reopened and accorded a one-star grading. There are still several accommodation institutions which are ungraded.

In Southwest Africa the bed and room occupancy of the hotels declined by 6,9% and 9,1% respectively.

Since the take-over of Walvis Bay by South Africa the five hotels and graded caravan there now come within the jurisdiction of the Hotel Board of South Africa.

As regards the training of hotel staff, the following are being investigated:

Hotel and catering studies (theory and practice) as examination subjects for Standards 8, 9 and 10.

Cookery and table service as examination subjects for Standards 6, 7 and 8.

Negotiations with the Hotel Board in South Africa are being carried out to present courses in hotel training in Southwest Africa.