

SERVIÇOS DE VETERINÁRIA

IONA NATIONAL PARK : ADMINISTRATION, MANAGEMENT, RESEARCH AND TOURISM

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----- Contents -----

1. INTRODUCTION
2. ADMINISTRATION
 - 2.1 Introduction
 - 2.2 Administrative Centre and Outposts
 - 2.3 Future of Espinheira Camp
 - 2.4 Personnel
 - 2.5 Responsibilities and Duties
 - 2.6 Patrol Zones
 - 2.7 Communications
 - 2.8 Finances
 - 2.9 Staff Accommodation
 - 2.10 Leave
 - 2.11 Transit through the Park
 - 2.12 Road Maintenance
3. MANAGEMENT
 - 3.1 Introduction
 - 3.2 Water availability and utilization
 - 3.3 Range Management
 - 3.4 Re-settlement of Ovahimba Pastoralists
 - 3.5 Game Management
4. RESEARCH
 - 4.1 Introduction
 - 4.2 Research Facilities
 - 4.3 Research Projects
 - 4.4 Research by Park Personnel
5. TOURISM
 - 5.1 Introduction
 - 5.2 Optimum visitor numbers
 - 5.3 Rest Camp accommodation
 - 5.4 Camping Facilities
 - 5.5 Picnic Sites
 - 5.6 Tourist Routes
 - 5.7 Reservations and Fees
 - 5.8 Regulations
 - 5.9 Information Service
6. ACTION PLAN AND BUDGET
7. ACKNOWLEDGMENTS
8. REFERENCES
9. APPENDICES

1. INTRODUCTION

Considerable controversy and criticism have been witnessed during the last few years over the apparent neglect on the part of the Serviços de Veterinária to do anything constructive towards the development and utilization of Iona National Park. While much of this criticism was justified, the lack of means, both in money and personnel, and more important, the absence of any thorough knowledge of the Park's ecology, have been the chief reasons why the responsible authorities have been hesitant to formulate and execute development plans.

Several mutually conflicting proposals (Wearne 1972 a, b; 1973) added to the confusion. None of these reports was based on an intimate knowledge of the Park and the unfortunate results illustrate the absolute necessity of a comprehensive understanding of the Park ecosystem before any attempt is made to define development plans. While the present report cannot claim an exhaustive ecological survey as its base, familiarity with the area obtained during the course of seven visits totalling 18 weeks over the past two years, in addition to detailed aerial and ground reconnaissances of game populations, vegetation types and water availability, provide a better background than has previously been available for such plans.

The present proposals are aimed at establishing a working plan for the Park's development and utilization over the next five years.

2. ADMINISTRATION

2.1 Introduction

The execution of any national park development programme is dependent on the existence of an efficient administrative structure. Thus far the administration of Iona has been without plan or direction despite the ease with which a simple, but effective, park administration could have been established. The system suggested here does not require any appreciable change in the presently available personnel or funds, but rather their more efficient utilization.

2.2 Administrative Centre and Outposts

The impassable natural frontiers of Iona, its remoteness and its unique ecological conditions, account for the simplicity of the administrative system required for the Park - comprising a central administrative base and a peripheral network of control points and outposts.

The administrative centre, to be established at Iona Posto, would serve as the base of the Administrator and one Ranger, while further Rangers would be stationed at control points at Charojamba and Montenegro. A series of outposts on the periphery would be manned by teams of Game Guards at Foz do Cunene, Techibonlambonga, Uadiva, Ovipaca, Pediva and Techicolonga.

A small tourist rest camp would be sited close to the Administrative Centre and managed by a Camp Superintendent.

It has been argued, on largely theoretical grounds, that the administrative centre and rest camp should be located on the Park's periphery. While such arguments are valid in small parks or in those where water is abundantly available and where accessibility to all points is easy and rapid, the conditions prevailing in Iona make such concepts inapplicable.

The choice of Iona Posto as the location for administrative and tourist centres is based primarily on its water supply and secondly on its strategic position. Ecological considerations involving avoidance of disturbance to the game and habitat will naturally have to be strictly observed, but the relatively small size of both administrative and tourist centres, dictated by the spring's restricted water supply, will guarantee that the developments at this location will never mushroom to a degree incompatible with the environment.

2.3 Future of Espinheira Camp

Once the proposed administrative and tourist centres at Iona Posto have been established, the remaining buildings at Espinheira should be removed. Reasons for the complete replacement of Espinheira are numerous, chief amongst these being its exposed position - both to view and dust storms - the absence of a fresh water supply and the ecological and aesthetic disturbance it creates in the close vicinity of the main game concentration area.

In view of the necessity of maintaining Espinheira as a temporary Rest Camp at least until the end of 1975, minor repairs to the visitors bungalows and communal diningroom should be undertaken without delay.

2.4 Personnel

The administration of the Park will depend on the availability of the following personnel:-

- 1 Administrator or Chief Ranger
- 3 Game Rangers
- 1 Camp Superintendent
- 21 Game Guards
- 3 Gate Guards
- 1 Carpenter
- 1 Builder
- 12 Servants
- 4 Tourist Guides

The new Diploma Organica of the Veterinary Services requires all National Parks to have as the officer-in-charge (Administrator) a Veterinarian of the rank Medico-Veterinario-Director. Such a requirement is impractical in view of the improbability of obtaining the services of a person of such high qualifications to administer a remote park with a staff of only four officers. It is therefore recommended that the Administrator of the Park should be a Chief Ranger until such time as the requirements of the Diploma Organica can be satisfied.

The Administrator of the Park should be responsible for the execution of the Park development plan as outlined in this preliminary report and detailed in subsequent work programmes.

The Administrator would be assisted in the conduct of his duties by three Game Rangers and one Camp Superintendent. The Game Rangers would be posted at Charojamba, Montenegro and Iona Posto. The Administrator would also have his base at Iona Posto, while the Camp Superintendent would be based at the Rest Camp in the close vicinity of Iona Posto.

The ranging staff would be assisted by a team of 21 Game Guards distributed at six outposts, while the Camp Superintendent would have a staff of 9 camp servants and four tourist guides.

A builder and carpenter will be employed to construct all Game Guard accommodation and any other minor buildings during the initial phase of this programme.

2.5 Responsibilities and Duties

Unless the duties of the Park's staff are clearly defined it is apparent that no initiative will be taken by them to do anything other than physically occupy their posts. In an interview with the three Rangers presently stationed on the Park I was informed that none had been given any indication, either verbal or written, of what their duties and responsibilities were. When asked why patrols, ordered by despatch of the Director, Serviços de Veterinária, had not been undertaken, the Rangers replied that they had been instructed, verbally, by local authorities, not to leave their posts in case visitors arrived unexpectedly and required the Rangers' assistance.

It is to be regretted that such a situation has arisen and it is recommended that all Rangers are informed in writing of their duties and their sole responsibility to the Director, Serviços de Veterinária, before taking up their posts in any national park.

The most important requirements and duties of a ranger on a national park include the following:-

- i Intimate knowledge of the entire park - obtained through covering all accessible areas by vehicle, and inaccessible but strategically important areas by foot. A ranger should be able to read all maps of the Park and be able to locate and describe any point on the map without difficulty. All rangers should be issued with complete sets of the 1 : 100 000, 1 : 250 000 and 1 : 500 000 series topographical maps of the Park.

A ranger should also know the location of all permanent water points, native villages and other features of special importance.

- ii All rangers should possess a sound knowledge of larger mammals, birds and reptiles of the Park. Such knowledge should be acquired through contact with the animals in the field, but can also be supplemented by the study of such books as da Silva, 1970 "A grande fauna selvagem de Angola", Dorst and Dandelot, 1970 "A field guide to the larger mammals of Africa" and McLoughlan and Liversidge, 1971 "Roberts Birds of South Africa". These books should be made available to rangers on the Park.
- iii A ranger should submit regular reports on all matters of interest that he may encounter during the course of his duties. Such reports should be compiled monthly and follow the format of the appended example.
- iv Contact with the public should be limited to providing information on the Park, its fauna and flora, and in exercising firm, but respectful control on their activities. Only in exceptional circumstances should a ranger be called upon to act as a guide to visitors; properly trained tourist guides should be available at the Rest Camp.

* Spanish edition

v By means of frequent patrols, a Ranger should ensure that no poaching occurs within the Park. Only by developing respect for Iona's status as a national park by all inhabitants of the Park and its periphery can any hope be entertained of ending the present blatant poaching activities.

The Camp Superintendent will be responsible for the maintenance of the Rest Camp and picnic sites and the supervision of the camp staff. He will be assisted by nine camp servants.

The Bricklayer and Carpenter, assisted by three servants, will be responsible for the construction and maintenance of all buildings in the Park and will be answerable to the Camp Superintendent.

The duties of the Game Guards will be to maintain permanent vigilance on the Park borders by undertaking foot or bicycle patrols within a radius of 30 to 50 km of their outposts. Gate Guards posted at the entrances at Charojamba, Ovipaca and Uadiva, will keep a record of the movement of all vehicles and persons entering or leaving the Park.

Tourist Guides will be carefully selected from the ranks of the Game Guards to accompany, inform and control all tourists utilizing the Park. Such Guides should have a detailed knowledge of all tourist routes within the Park, should know the names of all larger mammals and the more important birds and reptiles, and should report any irregular behaviour by tourists to the Park Administrator.

All personnel should be properly dressed in the official department uniform at all times and should conduct themselves in a manner becoming the Department's respect and importance.

2.6 Patrol Zones

For purposes of control, the Park will be divided into three zones, each with one Game Ranger and a variable number of Game Guards.

The northern zone, with its base at Charojamba, will include the area traversed by the road from Charojamba to Espinheira, Espinheira to Iona Posto, and Pediva to Charojamba via Tambor.

The eastern zone will have Montenegro as its base and will include the area defined by the route Montenegro - Oncocua - Ovipaca - Biquecemo - Tchique - Montenegro.

The southern zone with its base at Iona Posto will include the area Iona Posto - Dondio - Techibonlambonga and Iona Posto - Espinheira - Foz do Cunene.

In addition to poaching control patrols through their areas, the Rangers will make at least three surveys per month of game distribution, water availability and human occupation along fixed routes as defined in the research programme.

2.7 Communications

Contact between Luanda and Iona will be maintained via the normal channels, but more efficient communication will be achieved by the appointment of a full-time administrative officer of the Serviço de

Protecção à Fauna in Moçâmedes. This officer will act as the Park's agent in Moçâmedes, undertaking the purchase of all material required on the Park, receipt and despatch of correspondence and salaries, reservation of accommodation in the Park and, if advisable, he would assume the responsibilities of secretary of the district hunting committee.

Radio contact would be maintained between the Park, Moçâmedes and Luanda at regular scheduled hours. Within the Park each Ranger should be provided with a mobile unit of frequency 6540. At present the Rangers are equipped with units of frequency 4015. Due to the mountainous terrain this frequency is unsuited to Iona conditions and it is recommended that the 5 sets of this frequency be transferred to either Quiçama or Bicular and the radios from these Parks' internal network, which are of frequency 6540, be transferred to Iona.

Contact between Rangers and Game Guards would be maintained by frequent patrols by the Rangers to the Game Guard outposts; these patrols should be undertaken at least once per week.

2.8 Finances

All funds allocated to Iona should, if possible, be administered directly by the Administrator following the Park's development programme and budget. In the past considerable inconveniences have been occasioned by delays in the receipt of authorization from Luanda for trivial purchases and repairs. If authority cannot be granted to the Administrator for the control of all Park funds, an arrangement should be made by which he is authorized to make purchases of up to 10 000 \$ 00 per month without previous authorization from Luanda.

2.9 Staff Accommodation

Within the government services in Angola there is probably no department which provides more modest living conditions for its employees than the Fauna Conservation Department. In many cases the accommodation provided Game Rangers is barely fit for human occupation and only on Cangandala and Luando does the accommodation compare with that provided other government officials in Angola.

It is therefore a matter of the greatest importance that healthy and comfortable accommodation be planned and budgetted for all personnel working in the Fauna Conservation Department if competent staff are to be attracted to the national parks.

Improvements to the houses at Charojamba and Iona are receiving attention and should shortly render these houses comfortable. Permanent quarters for Game Guards are also being constructed at these posts. The house rented at Montenegro is beyond repair and it is recommended that one of the pre-fabricated houses at Espinheira be transferred to Montenegro at the earliest convenience. Accommodation for three Game Guards at this post should also receive urgent attention.

The Administrative Centre at Iona Posto will comprise two residences, one for the Administrator and one for the Ranger; a small bungalow for use by Rangers visiting the Administrator or in transit to their outposts, a small block of offices, store rooms, vehicle shelter, workshop and Game Guard quarters (see appended site plan).

The existing house, when repaired, will serve as the Administrator's residence, while one of the pre-fabricated houses at Espinheira should be transferred to Iona for the Ranger. The transfer of this house should only be undertaken once the other facilities at Iona Posto have been established.

Accommodation for game guards and servants should provide conditions for either single or married staff and should be provided with adequate cooking, washing and toilet facilities.

2.10 Leave

All personnel on national parks are obliged to be available for duty at all hours of the day and on all days of the year. In compensation for such extended hours of service they are entitled, in addition to their normal leave, to a maximum of five days leave per month. This special leave should be used during their monthly visit to Moçâmedes to collect provisions, fuel and correspondence.

The Administrator should establish a roster of such leave in order that the trips to Moçâmedes are evenly spread through the month and not, as at present, all during the last week of the month.

The Administrator should also be responsible for allocating the periods in which the Park staff may take their annual leave. Such a leave programme should be submitted with relevant applications to Head Office by the end of January every year.

Leave during the Christmas/New Year period should be distributed by the Administrator in order that the Park is at no time left with less than two officers on duty.

2.11 Transit through the Park

The existence of a proclaimed national road through Iona National Park presents a potential but not insurmountable administrative problem.

At present the road is used mainly by officials of the Foz do Cunene Pumping Station and Police Post, the total movement of vehicles between the Foz and the Charojamba entrance amounting to less than 20 vehicles per month. Movement through the Oncocua entrance is considerably less. Furthermore, the exceptionally bad state of the road, being well-nigh impassable even to 4 wheel drive vehicles, makes the maintenance of its status as a National Road a source of considerable amazement, especially to foreign visitors.

It is recommended that a proposal be made to JAEA for its deproclamation as a public thoroughfare, in order that permanent gates can be erected at its entrance and exits to facilitate the control of transit through the Park. In such a case only authorized officials and bona fide tourists would be allowed into the Park.

In the event of the JAEA not agreeing to the road's deproclamation, JAEA should be requested to maintain the road in a state becoming its designation as a National Road. An agreement should also be reached between Serviços de Veterinária, JAEA and the District Government of Moçâmedes for the erection and maintenance, by the Park authorities, of control points at both points of entry.

Transit along the Montenegro - Tchique - Biquecemo road should be controlled by placing a Game Guard at the Uadiva - Erora turnoff. A gate should be erected at this point to prevent the continued illegal entry of traders and poachers into the Tchique area.

2.12 Road Maintenance

Until the status of the national roads from Charojamba to Foz do Cunene and Espinheira to Oncocua is changed the maintenance of these roads will remain the responsibility of JAEB. All other roads within the Park are the responsibility of the Park administration.

The tourist routes referred to in the section on Tourism, plus the patrol routes already mentioned, should, if possible, be put into order with the assistance of either JAEB or the Road Unit of Quiçama National Park. Once the major repairs to these roads have been undertaken their subsequent maintenance should be the responsibility of the Park staff. A small tractor-grader of the type utilized in Quiçama should be purchased for such minor repairs.

3. MANAGEMENT

3.1 Introduction

The term management as used in conservation matters refers to aspects dealing with the stabilization and maintenance, according to scientific principles, of an ecosystem or national park's natural equilibrium. The term administration is reserved for aspects of routine bureaucracy such as personnel affairs, finances, control of visitors and poachers, purchase of vehicles and equipment, construction of buildings and roads, etc.

The distinction of these two concepts is important, as is the need to distinguish between the rôles of conservation personnel in the formulation and execution of administration and management policies. Whereas the planning and execution of administrative matters is the responsibility of administrative officers, rangers, engineers, architects and artisans, management matters require detailed ecological studies for their planning and execution.

3.2 Water availability and utilization

Without doubt the most important key to the management of any national park is water. The importance of water in desert and semi-desert environments such as Iona is magnified many times as are the disastrous effects of its improper use in such areas, hence the need for a thorough understanding of the water ecology of desert environments.

A brief introductory account of some aspects of the water conservation and utilization adaptation of desert animals and plants is given in Report nº 6 "Parque Nacional do Iona - the question of water". The article presents evidence illustrating that the fauna and flora of Iona's ecosystems have evolved in harmony with the arid climate and unless artificial conditions are introduced by Man no need exists for any alteration of the natural water supplies. That rather drastic changes to the availability of water to game have been made in Iona is well known - we must therefore examine methods of re-stabilizing the situation.

In addition to the permanent water supplies of the Cunene river and

the seasonal supplies of the Curoca and Otchifengo rivers, Iona possesses 31 natural springs and wells. The distribution of these springs is illustrated in the attached map. Of the 31 known sources, only six; Iona, Candave, Caionona, Cambeno, Dondio and Muholo produce a good permanent flow of fresh water. Of the remainder two are fresh but with very small supplies, eight are brak with good flows, nine are brak with very small flows while four are extremely saline with very small flows. Two further springs have not yet been visited but are believed to have small brak water supplies.

It may therefore be appreciated that in the past there was a good availability of water to game, even though the majority of springs were small and brak. Such water supplies were no doubt adequate for the water-dependent species such as Elephant, Rhinoceros, Burchell's Zebra, Black-faced Impala, Kudu, etc. Today no fewer than eight of the 16 best supplies are permanently occupied by Ovahimba pastoralists while the remainder are occupied seasonally. The effect of this occupation is firstly to inhibit the utilization of the supplies by game and secondly to provide ideal conditions for poachers to ambush game coming to drink at night. The very small size of the population of Elephant, Black Rhinoceros, Burchell's and Hartmann's Zebra, Black-faced Impala and Kudu which are presently found in Iona is due almost entirely to the occupation of the critically important water points by pastoralists and poachers.

It is of interest to note that no fewer than five water points visited during January 1974 had well-constructed poaching hides within 50 metres of the water. At one, Biquecemo, two recently shot Black Rhinoceros were found.

While poaching can be reduced or eliminated by more efficient patrols throughout the Park, the supply of water to game can only be guaranteed if the Ovahimba pastoralists are prohibited from building barricades around springs and wells. Furthermore, no permanent occupation - such as huts, corrals or agricultural clearings - should be permitted within 500 metres of springs. Those springs which have had their flow stabilized by the construction of concrete reservoirs at their bases should be provided with permanent overflow pipes to feed drinking troughs for game.

Once the existing natural water supplies are made accessible to game there will be no need to create artificial supplies by the construction of dams or sinking of boreholes. The potentially disastrous effects of such a policy have been discussed in Report n° 6.

3.3 Range Management

The purpose of range or pasture management is to ensure the optimum utilization of vegetation by the herbivore population. In natural ecosystems the production of forage is usually in excess of the needs of herbivores which in turn are in excess of the needs of the carnivore population. Such ideal conditions are rarely found today and because of the resultant ecological imbalance artificial means are required to compensate one or other of the over or under utilized components of the environment.

In Iona a drastic deterioration of range conditions has followed the invasion of cattle and goats and the decimation of carnivores. The effects of these conditions are tragically obvious at present because

the Oryx numbers which have built up considerably during the last decade have now depleted the grasslands of their favoured plains habitat and have been forced to move east into the mountains. Unfortunately the normal food reserves of the inter-montane basins have been totally consumed by goats and cattle with the result that hundreds of Oryx are presently dying of hunger.

The effects of the thousands of cattle and goats now living in the Park have been equally disastrous with respect to the Hartmann's and Burchell's Zebra populations, the bulk of which appear to have left the Park in search of grazing.

While numerous carcasses of adult Oryx, Springbok and Zebra have been found during the current drought, the greatest loss is going to be through calf mortality. During February 1972, 27,5% of 561 Oryx and 39,5% of 681 Springbok examined were calves (Report n^o 5 - Visit to Parque Nacional do Iona, Feb 1972). During the survey made in January this year only two Springbok out of a total of 1050 and five Oryx of a total of 1650 counted were calves. ⊕ While the Feb 1972 and January 1974 figures are not exactly comparable due to the difference in time of the surveys, it is obvious that vast numbers of calves have died this year. Such alarming calf mortality can only be attributed to the depletion of reserve forage by the cattle and goats of Ovahimba pastoralists.

Considering the above situation it is to be regretted that the recommendation made in Report n^o 5, February 1972 - viz:- "The livestock of (Ovahimba) residents should not be permitted to move westwards of the Iona airfield" - was not observed. This recommendation was repeated in several later reports of Ranger F. Costa but never put into effect by resident rangers. ⊕ Had the recommendation been enforced during 1973, over 150 km² of optimum Oryx, Zebra and Springbok habitat would not have been destroyed by livestock during mid winter 1973 and would have been available to the game when they were forced to leave the plains grasslands in the spring.

The mass mortalities currently being experienced will, in effect, reduce the herbivore population to numbers within the carrying capacity of the plains grasslands, which comprise less than 600 km² or 4% of the Park's total area. In other words the Park's game population will be maintained by only 4% of the Park area while Ovahimba cattle and goats will effectively occupy nearly 25% of the area (see map). Obviously such a situation is unacceptable and if optimum use is to be made of the Park a solution to the live-stock problem will have to be found.

3.4 Re-settlement of the Ovahimba Pastoralists

It has been shown in the foregoing discussion that the presence of Ovahimba pastoralists is extremely prejudicial to the future of Iona. In the first place they occupy nearly all water points, secondly their livestock depletes virtually all available grazing and browse in the inter-montane basins and eastern hill country, and thirdly they conduct or assist in extensive poaching activities, especially in terms of zebra skins, rhino horn and ivory.

The Ovahimba population of Iona is distributed in four main zones:-
(i) the lower Curoca; (ii) the Otchifengo Valley, including the people of Pediva, Ovipaca and Erora; (iii) the eastern escarpment

of the Tchamalinde, including the people of Tchique, Sulua and Mupaca; (iv) The Cambeno/Caiombo valley, including the people of Iona, Humbi, Cambeno, Dondio and Tchicongo. Details of their population size and structure are unavailable but it appears that they do not number more than 300 persons of which about 40 occur in zone (i), 80 in zone (ii), 60 in zone (iii) and 90 in zone (iv). Due to their nomadic habits great seasonal fluctuations in the population size of any of these zones are of frequent occurrence. The total numbers of their livestock lie between 2 000 to 3 000 cattle and 5 000 to 6 000 goats.

In terms of importance to the Park the evacuation of zone (iv) has the highest priority. This area is the zone of greatest seasonal migration of game from the plains into the mountains, it contains vast areas of drought reserves for Oryx, over 350 km² of optimum Black Rhinoceros habitat, it is the only area in the Park where Black-faced Impala can be regularly seen and is of very great tourist interest due to its spectacular scenery, abundant fresh springs and great diversity of animal species.

The valley is also of minor strategic importance in that it is the traditional route of Ovahimba moving from South West Africa into Angola via Iona and the Curoca river. Movement of people and livestock across this frontier continues unchecked.

The re-settlement of the people occupying zone (iv) will require the selection of suitable lands for them east of the Tchamalinde Range. That such an area is available is evident from the fact that virtually the entire population has left the valley during the current drought and has settled in the Tchique area. Their motive for returning once the rains have fallen is mainly due to the abundance of water and grazing in the valleys and also due to their recently acquired custom of growing maize, vegetables and tobacco irrigated with the waters of Iona and Cambeno springs. The flow of these springs was stabilized in 1969 by the construction of storage reservoirs by DSGM. An essential first step towards re-settling these people east of the Tchamalinde escarpment will be the provision of similar conditions for them at the Muholo and Ondiamongundo springs, both of which have a production of about 280 litres per hour, are fresh and/or slightly brak respectively and which at present are unoccupied by other human populations. The springs are also considerably closer to trading centres (Oncocua and Montenegro) and an added incentive to the occupation of these areas by the zone (iv) population may be found in allowing traders to visit Muholo or Tchique in the company of a Ranger once per month to sell provisions, clothing etc. Under no condition should such privilege to the traders be permitted to lead to the establishment of a trading post within the Park.

To recapitulate, therefore, the highest priority should be given to the re-settlement of the people presently occupying the Iona, Cambeno and Dondio springs. It is suggested that a committee be appointed by the Provincial Secretary to formulate a re-settlement programme, the committee preferably comprising representatives of the Serviço de Protecção à Fauna, Serviços de Geologia e Minas, Governo de Moçâmedes and the Comissão Distrital de Planeamento e Ordenamento da Pastoreia.

3.5 Game Management

The term game management refers to the maintenance of wild animal populations in equilibrium with their habitat. It is therefore the corollary of range management - both are obviously interdependent.

In a Park such as Iona the first requirement will be to stabilize the habitat conditions by the re-settlement of Ovahimba pastoralists as discussed above. Once the natural water and forage supplies are available to the game populations, detailed analyses of herbivore numbers and population dynamics will be needed on which to base control measures should these be required to avoid their over-utilization of the habitat. As soon as is practicable, the carnivore population should be increased by the introduction of lion and cheetah. The assistance of the South West African Conservation Department has been offered with regard to the latter species. Other species which should be supplemented are Brown Hyaena, Black-faced Impala, Hartmann's Zebra and Black Rhinoceros, all of which face an uncertain future outside the Park.

The possibility of the re-introduction into Iona of certain species known to have occurred within the Park in earlier times should also be investigated although such re-introductions should be regarded as a lower priority to the supplementation of the species just mentioned.

4. RESEARCH

4.1 Introduction

An active research programme is a basic necessity in any national park. The field of research requiring special emphasis in Angola's parks includes studies aimed at the identification and solution of ecosystem management problems. While some of these aspects can be studied in isolation, a broad background of ecological information is an essential base to the solution of any wildlife problem and surveys of Iona's vegetation types, game distribution patterns and water availability and utilization are of prime importance. Such applied research should be conducted by the Ecological Survey Unit of the Fauna Conservation Department.

Detailed studies on specialized aspects of animal or plant physiology, ethology, productivity, etc., are beyond the present capabilities of the Ecological Survey Unit and specialists from other institutes should be encouraged to conduct such projects.

4.2 Research facilities

Simple accommodation and laboratory facilities will be required by research workers visiting Iona. The establishment of a fully equipped Research Centre is an objective of great importance but until funds are available it is recommended that one of the bungalows of the proposed Rest Camp be reserved exclusively for the use of the Ecological Survey Unit and visiting research workers.

In view of the vast size of the Park and the consequent necessity spending extended periods in the field, the temporary research facilities should include adequate camping equipment and if possible the availability of a team of pack donkeys to be used in foot reconnaissances by both research workers and the ranging staff.

4.3 Research projects

A comprehensive research programme for the national parks of Angola is in preparation and will include details of projects planned for Iona. The need for greater co-ordination and control of research

projects in the Park is apparent as in the past numerous "research" visitors have made use of the Park's facilities and personnel without ever providing a report on their activities or findings.

It is recommended that in future all projects proposed by persons outside the Veterinary Services should be examined by the Ecological Survey Unit before receiving authorization. Visiting research workers should be granted free accommodation but should provide all other requirements.

4.4 Research by Park personnel

Game Rangers in national parks have unique opportunities to witness interesting wildlife phenomena. All such observations should be reported in routine monthly reports which should replace the present weekly reports.

Regular surveys of game distribution, water availability and human occupation should be undertaken by the Rangers. Fixed survey routes have been selected and routine data check-sheets prepared in order that the surveys, to be undertaken at least three times per month, can be used to assess seasonal changes in game distribution, water availability and human occupation patterns.

Rangers should also be responsible for the recording of climatic data at their outposts, in particular rainfall, for which gauges have been provided by the Meteorological Service.

5. TOURISM

5.1 Introduction

The concept that national parks are created for the benefit and enjoyment of mankind in addition to their fundamental rôle in the conservation of ecosystems has been fully discussed in Report n° 24 "Tourist utilization of National Parks". The report provides an outline plan for the development of tourism policy in Angola's national parks and emphasises the need to distinguish between mass tourism and conventional tourism in wildlife areas.

The plan recommends that Iona National Park be reserved for low-intensity utilization by conventional tourist parties while facilities be provided in the nearby Moçâmedes Reserve and more distant Chimal-avera and proposed Ruacana Regional Parks for the development of mass tourism in the desert and sub-desert environments of south west Angola.

The tourism development programme for Iona comprises two phases. The first phase, detailed in the present report, will provide accommodation for 30 persons in bungalows, 30 persons in tents and picnic facilities for a further 60 day-visitors. This phase will be initiated in 1975 at an estimated capital investment of 3 500 000 \$ 00.

The second phase, to be initiated by 1980, will include the establishment of additional rest camps on the Park periphery at Charojamba, Montenegro, Pediva and Ovipaca. This phase will require at least 15 000 000 \$ 00 to execute as it will require the construction of storage dams, roads, airstrips, administrative centres and tourist camps. The second phase will nevertheless be an essential extension

of the tourism development programme as water availability and ecological considerations prohibit the expansion of the facilities proposed for phase one.

5.2 Optimum visitor numbers

Estimates of Iona's present and future tourist numbers are impossible to make due to the absence of any basic data. Even more difficult to predict is its optimum tourist capacity. Despite its great size the Park's specialized desert environmental conditions, comprising extensive treeless plains, rugged mountains and impassable dunes, and the virtual absence of drinkable water, make it extremely vulnerable to high tourist densities. In contrast to Quiçama, Bicular and Luando, the total length of all tourist roads will be very small, for road-building is impossible over at least 80% of the Park and the open character of the plains makes the construction of a series of closely sited roads undesirable. Limited water availability restricts the number of potential rest camps, camping sites and picnic spots and similarly restricts the number of visitors which each site can carry.

A rough guide to the maximum number of visitors that the Park will be able to carry in terms of the availability of facilities can be obtained by totalling the potential of all such tourist installations. Overnight visitors would therefore number 30 at the Iona Rest Camp, 10 at the Iona camp site, 10 at Dondio and 10 at Foz do Cunene, a total of 60 persons. Day visitors would be limited by the availability of picnic sites to a total of 60.

Thus the total number of visitors that the Park would be capable of carrying at any one moment during phase one is 120 persons. This number is considered more than adequate for present and future demands, at least until phase two is initiated. It may be noted that Quiçama, only 100 km from Luanda and with facilities for a similar number of visitors, has an average of only 25 visitors per day during the six month open season. Whether this number is above or below the optimum number that the Park can carry without influencing its wilderness qualities will have to be learnt by experience. Should these numbers prove excessive, they can easily be reduced by limiting the number of day visitors or campers allowed within the Park. Should it be found that greater numbers can be admitted into the Park, provision for their needs will be made during phase two.

5.3 Rest Camp Accommodation

The provision of tourist accommodation within national park space has recently become the subject of much controversy due mainly to the disturbance caused to their surroundings by large, badly sited rest camps. While the argument for the siting of such facilities on the periphery of parks rather than within them is strong in most cases, Iona's size, unique ecological conditions and practical considerations, makes the concept untenable in the Park.

In brief, the main factors opposing the location of tourist facilities on the Park periphery are accessibility and water supply. The only site on the present northern approach to the Park, Charojamba, has no drinking water available within 105 km, lies 170 km from the closest town and lies over 80 km from the main game concentration area. The site will, nevertheless, be important in the future when the growth in the Park's popularity, improvement in road conditions and increase in game numbers in the surrounding area, make the construction of a storage dam on the Curoca river a feasible investment.

An alternative northern entry point, at Pediva, is also without drinking water and lies considerably further away from the main plains. It may nevertheless also prove important in the long-term provision of peripheral tourist facilities.

The eastern approaches to the Park, via Oncocua and Montenegro, have better water supplies than the northern frontier but are 150 km and 170 km respectively from the plains. The roads linking these points with the Park interior are furthermore in extremely bad condition and will require the investment of considerable capital before they fulfil the requirements for tourist use. These entry points will, however, be suited to use in the long-term tourist programme.

Both southern and western limits to the Park have no entry points, as they are formed by the Cunene River and the Atlantic Ocean.

In view of the impossibility of establishing tourist facilities on the Park periphery during the first phase of the long-term tourism plan, an alternative site was sought within the Park.

The choice of site has been influenced by three main requirements. Firstly, the Rest Camp should be relatively close to, but ecologically and topographically isolated from, the main game concentration area. Secondly, sufficient water should be available for all visitor and staff needs without influencing the availability of water to the local fauna. Thirdly, the site should be scenically attractive, exposed to cooling breezes but not to dust storms, and at as high an altitude as possible.

Following extensive surveys of game distribution and movements, water availability and distribution, climatic factors and accessibility by road and air, the only site which answered all the basic requirements was found near Iona Posto.

The proposed site lies in an ecological transition zone between the extensive plains of the Espinheira-Marinde area, the high mountains of Cafema and Tchamalinde and the vast rolling hills of the Park's north-west sector. It is close to, but isolated from, the main game concentration areas and is in easy reach of the Park's wide variety of tourist attractions.

The site is within one kilometre of three fresh water springs which can supply sufficient water for the camp, its staff, the proposed Administrative Centre and the local fauna.

Finally, the site is located at the head of an isolated valley with magnificent mountain scenery, is well ventilated by breezes and, at an altitude of 795 m, is over 350 m higher than the present camp at Espinheira.

The size of the Rest Camp will be restricted by the availability of water. From measurements made on several occasions during the last two years the flow of the springs at Iona Posto has been determined as roughly 1 500 litres per hour. After making provision for the continuous supply of water to the area's fauna and an adequate supply for the Administrative Centre, less than 500 litres per hour will be available to the Rest Camp. The stabilization of this supply in reservoirs will, however, ensure enough water for a camp with accommodation for a maximum of 30 visitors.

It is suggested that the Rest Camp comprise a communal lounge and diningroom with adjoining kitchen and eight bungalows with two, four or six beds, private bathrooms and verandas, (see appended plans).

The bungalows will be fully furnished and provided with all linen requirements. A room servant, cook and waiter will be allocated to each group of bungalows comprising a maximum of ten beds. The kitchens will be provided with pantries and fridges so that all foods brought by visitors will be stored in the kitchen and not in the bungalows. The cook will be responsible for the preparation of all the visitors' meals which will be served in the communal diningroom. All cooking utensils, cutlery and crockery will therefore be provided at the camp, the visitors only being required to bring food and drinks to the Park.

It is proposed that the buildings be constructed of conventional bricks or cement blocks but all exterior walls be faced with local slate. The effects of this facing, which has been used at the Furnas safari camp, is extremely attractive and blends perfectly with the surrounding landscape. The roofs should be of corrugated asbestos with a light covering of thatch grass or palm leaves to provide additional insulation and a more pleasing rustic appearance.

The Rest Camp would be run by a Camp Superintendent and his staff. The Camp Superintendent's residence and the camp staff accommodation would be located close to, but out of sight of, the Rest Camp.

5.4 Camping facilities

Many visitors to national parks prefer the rustic atmosphere of camping in tents to the greater comfort of Rest Camps. Such visitors are usually sincere lovers of nature and better behaved than the conventional tourist. Where exceptions to this trend are found it is almost invariably due to Park authorities providing a holiday camp atmosphere rather than preserving the essential wilderness qualities.

It is suggested that camping sites be established at Charojamba, Iona, Dondio, Foz do Cunene, Ovipaca and Montenegro. The sites would comprise a small grassed area for erecting three or four tents, a water supply, an open fireplace, refuse bins and toilet and washing facilities.

The use of such sites would be restricted to a maximum of ten persons per night who would be required to supply all their own tenting, cooking and other camping equipment in addition to their food.

The camp sites would be maintained by the Game Guards stationed at each site.

5.5 Picnic sites

The great size of Iona necessitates the provision of picnic sites for visitors wishing to enter and leave the Park on the same day. Such picnic sites should be provided within easy reach of the main tourist attractions but should be sited out of view of the game concentration areas.

The picnic sites will each comprise a rustic shelter with tables and benches for ten people, drinking water, refuse bins and toilet facilities. The Camp Superintendent will be responsible for maintaining the picnic sites.

5.6 Tourist routes

Tourist routes should provide the visitor with an opportunity of viewing the Park's fauna, flora and scenery with maximum comfort and minimum disturbance to the surroundings. To achieve this end roads should be carefully planned to pass through representative examples of all the main habitat and scenery types. The roads should be built with local materials and as far as possible blend with the landscape. Until funds are available for the purchase of road building equipment sufficient to maintain tourist routes in a condition passable to light vehicles, only 4 wheel drive vehicles should be allowed into the Park.

All entrances, crossroads, picnic spots, camp sites etc., should be indicated by signposts. It is recommended that 1,0 m high pyramidal signposts be constructed of concrete faced with local slate with directions engraved on white marble plaques inset into the pyramids. Signposts of this design are not subject to damage by either animals or weather, are permanently legible and blend with the natural surroundings.

5.7 Reservations and Fees

Persons wishing to visit the Park should contact either the Luanda or Moçâmedes offices of the Serviço de Protecção à Fauna. Both of these offices will be in daily radio contact with the Park. Reservation of accommodation or camping facilities could be made at either of these offices and payment made with the reservation. Such fees will not include the Park entrance fee paid at Charojamba or at the eastern entry points once these are established.

Entry and camping fees should be similar to those in effect at Quiçama, but Rest Camp fees should be higher (100 \$ 00 per person per night) due to the increased services provided at Iona.

5.8 Regulations

All regulations currently enforced by the Regulamento dos Parques Nacionais should be observed by visitors to Iona.

In particular the clauses relating to the picking and damage of plants, collecting of geological specimens and littering of camp and picnic areas should be strictly enforced.

Heavy "spot-fines" should be applied to anyone leaving the recognized tourist routes and/or chasing animals whether on such roads or not.

In all cases visitors should be required to be accompanied by guides specifically selected and trained to inform visitors and report on any incidents of misbehaviour.

5.9 Information services

An illustrated brochure should be prepared for distribution to all visitors. The brochure should contain notes on all larger mammals, birds, reptiles and the more interesting plants found in the Park, maps illustrating the tourist routes and facilities, information on fees and reservation procedure and all Park regulations. The brochure should be published in both Portuguese and English.

Further information should be available at the Iona Rest Camp, where a detailed 1:100 000 map of the Park, reference literature on the local fauna and flora, post-cards, slide collections and brochures on

other parks of Angola should be obtainable from the Camp Superintendent's office.

6. ACTION PROGRAMME AND BUDGET

The execution of the proposed development plan should follow a carefully timed and budgetted programme. The first requirement will naturally be the approval of the present proposals by the Director, Serviços de Veterinária in consultation with the planning committee of the Serviço da Fauna. The committee should visit Iona at its earliest convenience, preferably before mid 1974 in order that the first step in the programme can be initiated with money from the 1974 budget.

The first step will be the establishment of the Park administrative centre at Iona Posto. The appointment of a Chief Ranger as Administrator or Assistant Administrator of the Park is of the greatest urgency, as the implementation of the programme is dependent on the presence of a Park Administrator.

During 1974 the restoration of the old Iona Posto residence, the transfer of one of the Espinheira pre-fabricated houses to Iona Posto, the construction of an office block and game guard accommodation, and the improvement of water supplies to the administrative centre should be completed. Furthermore, a pre-fabricated house should be transferred from Espinheira to Montenegro. The remaining buildings at Espinheira should be repaired and rendered suitable for visitor use.

An essential aspect of this first step in the development programme will be the construction of accommodation at, and the occupation of, Game Guard outposts at Charojamba, Ovipaca, Uadiva, Montenegro and Iona. Guards recruited to record the transit of vehicles and persons through Charojamba, Ovipaca and Uadiva should be able to read and write, as should all Game Guards serving as Game Rangers' assistants. The salary paid these persons (2 400 \$ 00 per month including subsidies) is considerably better than that obtained outside the public services and no difficulty should be experienced in recruiting competent staff. Illiterate game guards and camp servants should receive a minimum salary of 1 650 \$ 00 per month including subsidies.

The budget for 1974 should therefore provide 450 000 \$ 00 for the construction and repair of buildings, 735 000 \$ 00 for salaries and subsidies, 145 000 \$ 00 for maintenance and 190 000 \$ 00 for miscellaneous expenses. Should this first step be successfully completed by the end of 1974 the essential basis for the initiation of the tourism development plan will be ready.

In view of the limited resources of the Fundo da Caça an application should be made to the IV Plano do Fomento for support in the execution of the tourism plan. Approximately 4 540 000 \$ 00 will be required for Iona in the 1975 budget of which 2 800 000 \$ 00 will go towards the establishment of the Rest Camp at Iona Posto. Should money be available, accommodation for 20 visitors, plus all additional facilities such as the communal diningroom/loung/kitchen building, camping sites, picnic sites, staff accommodation etc., should be built in 1975.

The administrative infrastructure should also be strengthened during 1975 by the establishment of Game Guard outposts at Techicolonga, Foz do Cunene, Techibonlambonga and Pediva, while the Administrative staff should be consolidated with a total of four Rangers (including the Administrator) and 24 Game Guards.

During 1976 the provision of tourist facilities should be completed in terms of phase one of the long-term development programme. Visitor accommodation at the Rest Camp will be increased to its maximum potential of 30 beds while the camp staff will be increased to its full complement of one camp superintendent, 10 servants and four tourist guides.

From 1977 until the initiation of phase two the only expected expenses will be the general park administrative costs in terms of salaries, subsidies, maintenance, vehicle replacements, fuel, etc - amounting to slightly less than 2 000 000 \$ 00 per annum.

In summary therefore, the total cost of implementing the proposed development plan for Iona National Park will be 12 140 000 \$ 00 over the first five years, 1974 - 1978. The distribution of these funds would approximate 4 540 000 \$ 00 for the construction and equipping of buildings, 4 855 000 \$ 00 in salaries and subsidies (not including funds provided by the Fazenda Nacional) and 2 745 000 \$ 00 for the purchase of vehicles, fuel and miscellaneous items.

The successful completion of the development plan will not only consolidate Iona National Park as an ecosystem conservation area of international status, but will also provide facilities for a potential of 43 800 visitors per year. Such an achievement would admirably fulfil the Fauna Conservation Department's obligations to conservation and the nation.

7. ACKNOWLEDGMENT

The preparation of this report has benefitted considerably from numerous discussions and field trips with Ranger F. Costa whose knowledge of the Park is unequalled. Responsibility for the opinions expressed in the report is nevertheless my own.

8. REFERENCES

Huntley, B.J. 1972 a Report on visit to Iona National Park. Ecologist's report nº 5. April 1972.

1972 b Iona - the question of water. Ecologist's report nº 6. May 1972.

1974 Tourist utilization of National Parks. Ecologist's Report nº 24. March 1974.

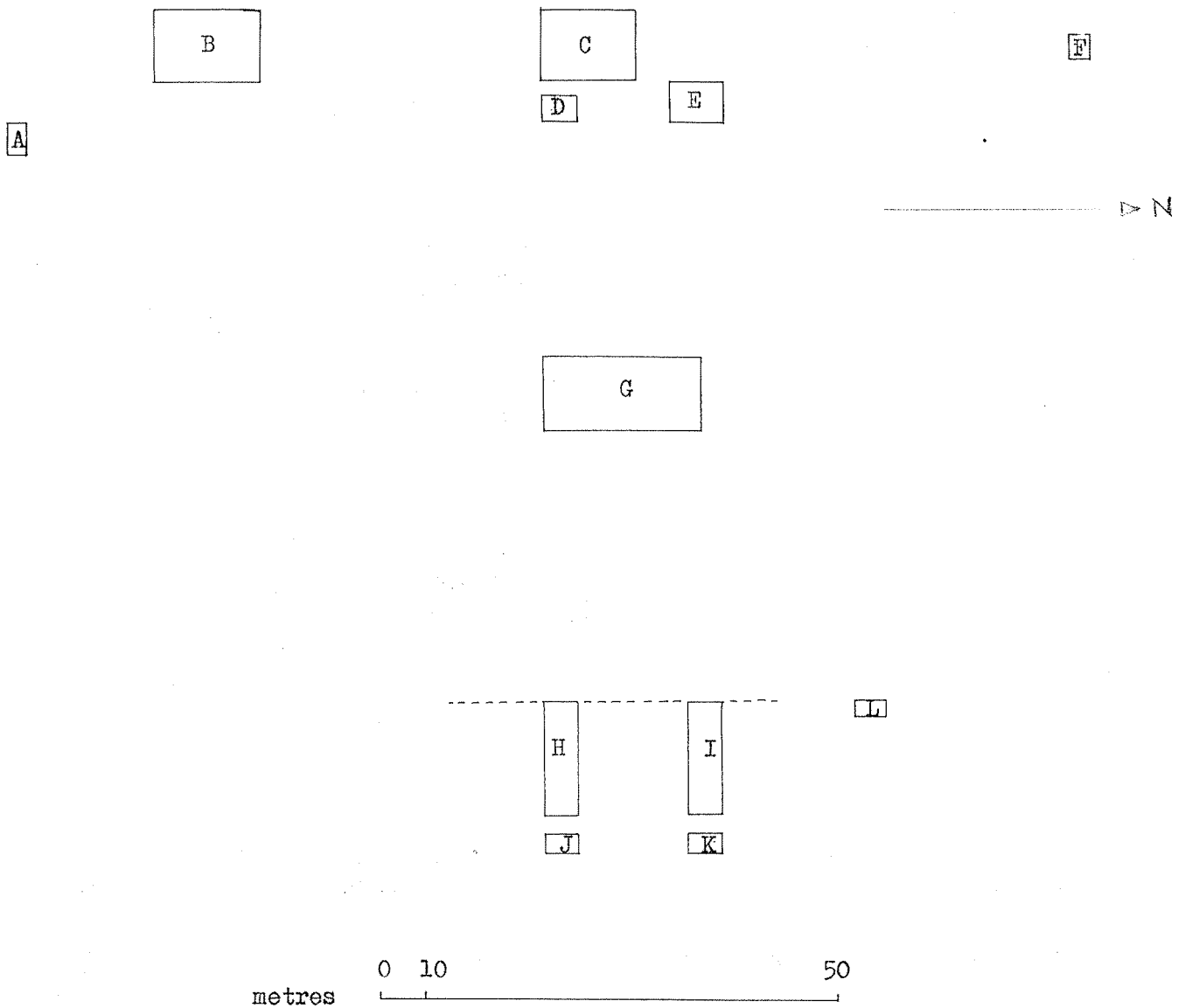
Wearne, W.D. 1972 a Estudo para a instalação de um novo acampamento no Parque Nacional do Iona.

1972 b Um esclarecimento sobre as reservas de animais selvagens de Angola.

1973 O turismo nos Parques.

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APPENDIX 1. Site plan of proposed Administrative Centre, Iona Posto.



————— LEGEND —————

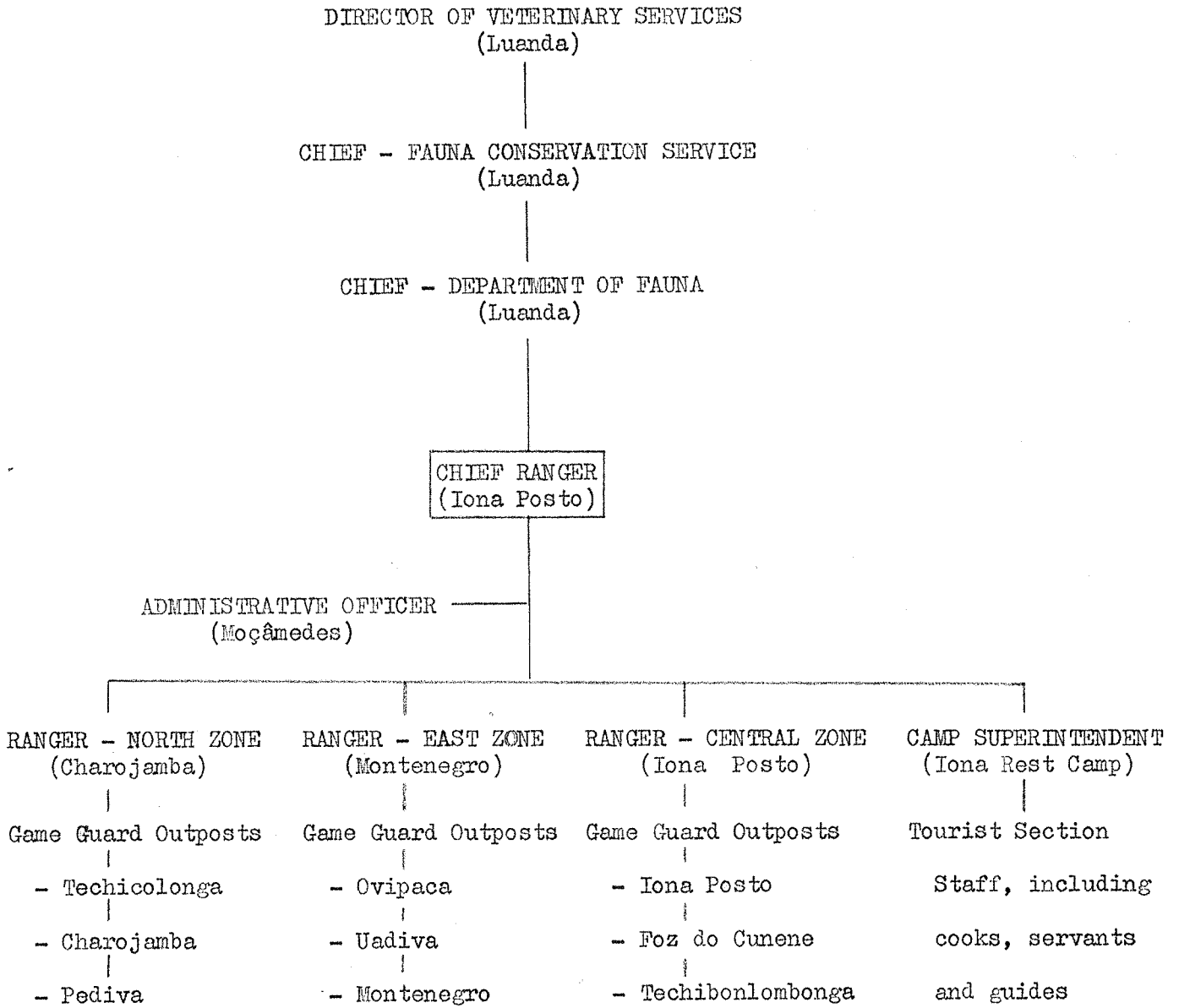
- | | | | |
|---|----------------------------------|---|----------------------------|
| A | Water reservoir | G | Office Block & Garage |
| B | Ranger's house (prefabricated) | H | Game Guards' accommodation |
| C | Administrator's house (existing) | I | Game Guards' accommodation |
| D | Kitchen of Administrator's house | J | Ablution block |
| E | Relief house | K | Ablution block |
| F | Generator house | L | Fuel store |

water

electricity

- - - - - roads

APPENDIX 2. Organogram of Park personnel.



APPENDIX 4. Data Sheet format for routine surveys by Rangers.

IONA NATIONAL PARK - GAME SURVEY

ROUTE N^o DATE OBSERVER

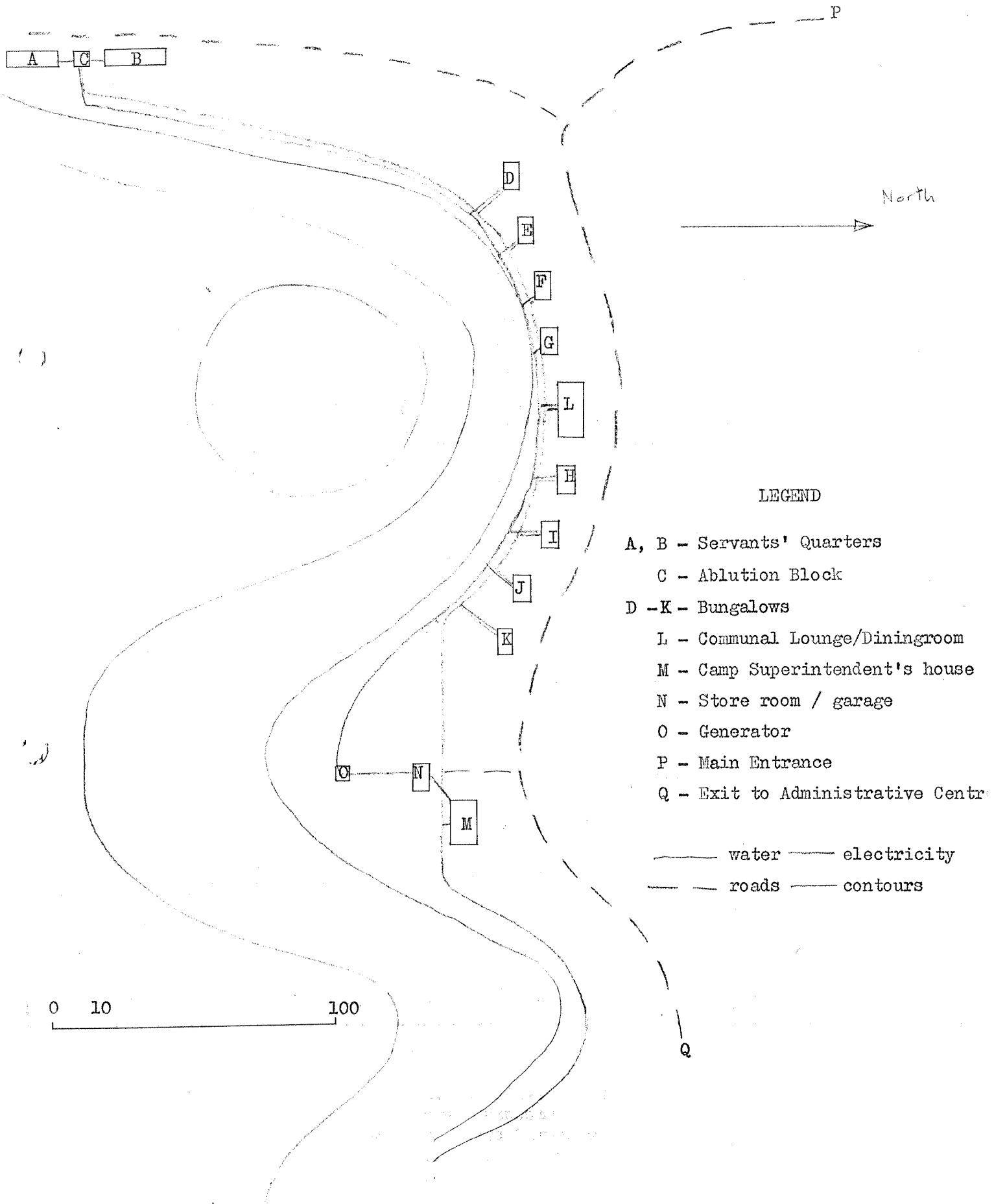
	kms	hrs		kms	hrs		kms	hrs
Charojamba			Montenegro			Iona		
Pediva			Oncocua			Espinheira		
Ovipaca			Ocipaca			Cruzamento		
Biquecemo			Biquecemo			Foz do Cunene		
Iona			Iona			Cruzamento		
Espinheira			Biquecemo			Morro Murmor		
Muende			Uadiva			Marinde		
Charojamba			Montenegro			Cruzamento		
						Cacolo		
						Iona ou Espinheira		

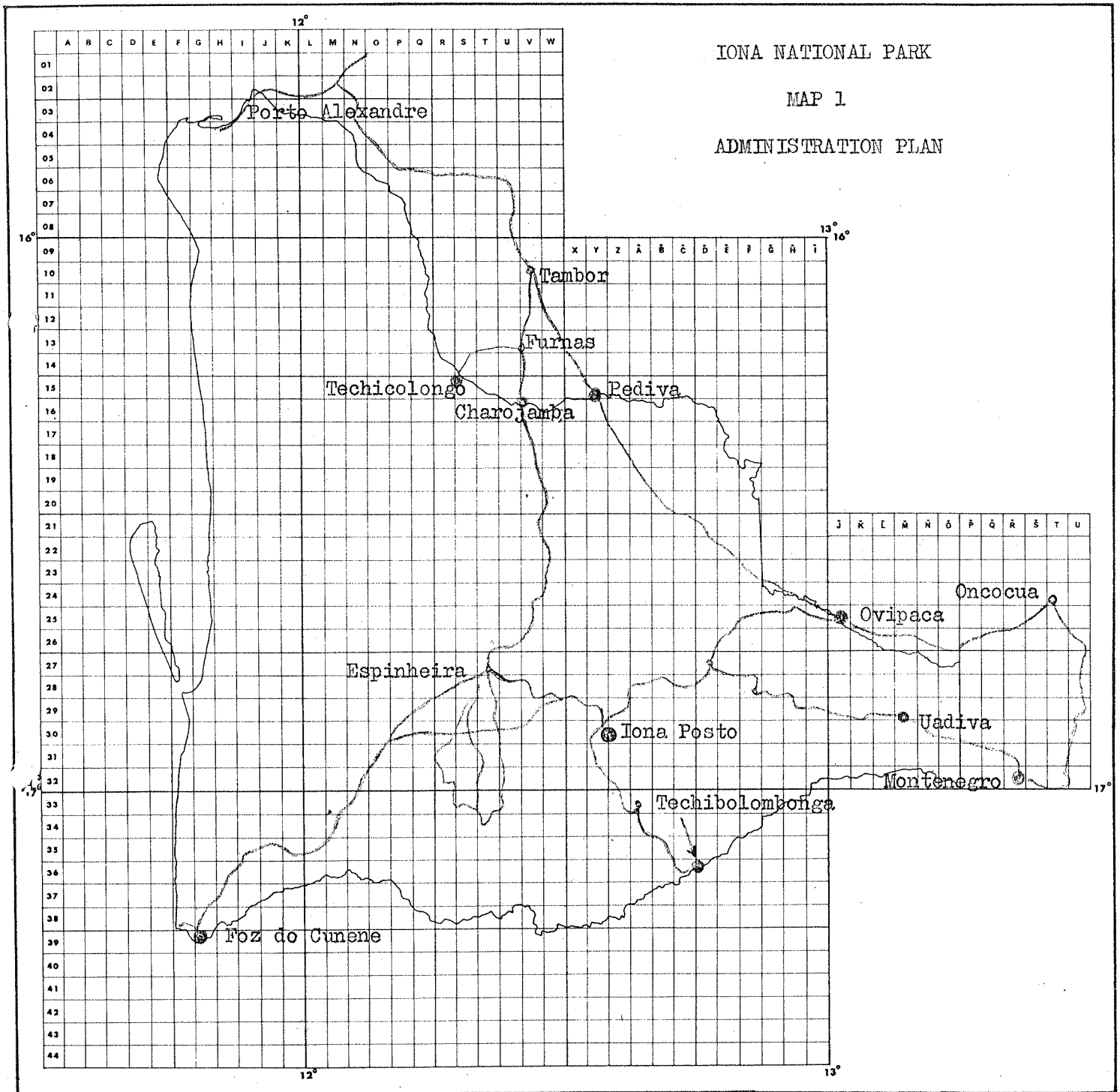
KMS	SPECIES	DISTANCE	NUMBER	KMS	SPECIES	DISTANCE	NUMBER

OBSERVATIONS

Rainfall
 Human occupation
 Mortalities
 Births

APPENDIX 5. Site plan for proposed Rest Camp.





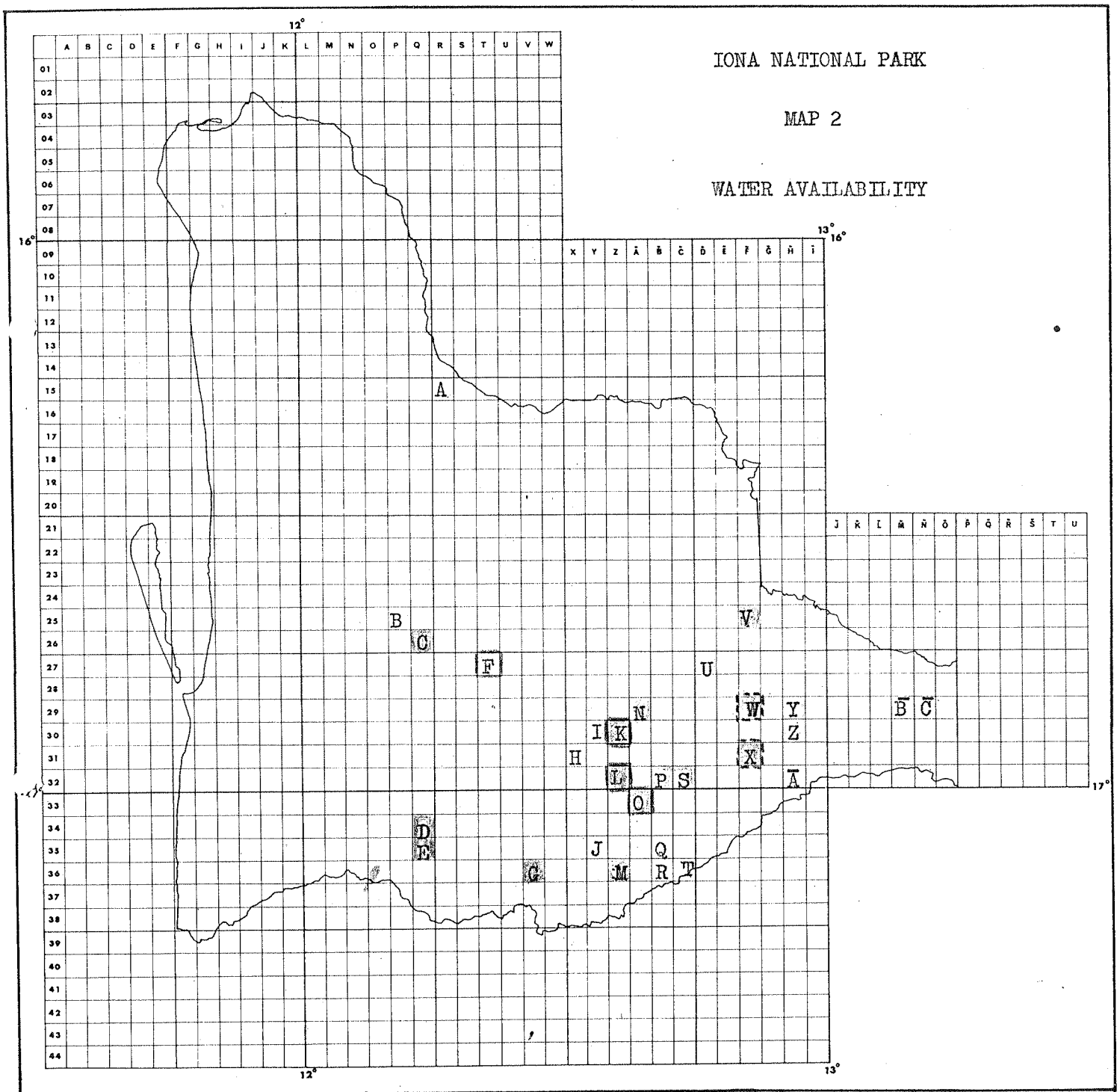
IONA NATIONAL PARK

MAP 1

ADMINISTRATION PLAN

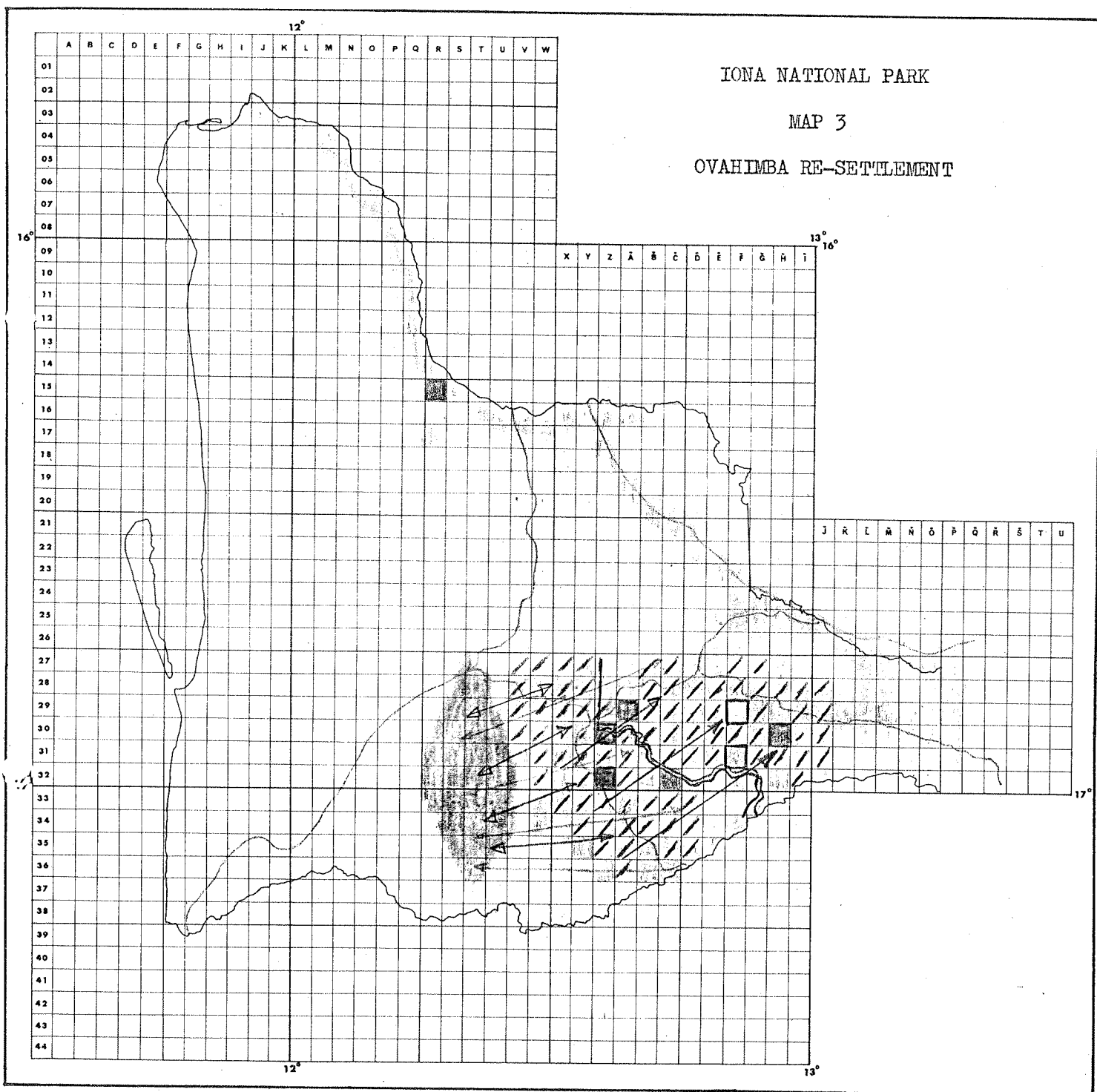
— LEGEND —

- Administrative Centre
- Ranger Outposts
- Game Guard Outposts
- ~ Public Roads
- ~ Park Roads



— LEGEND —

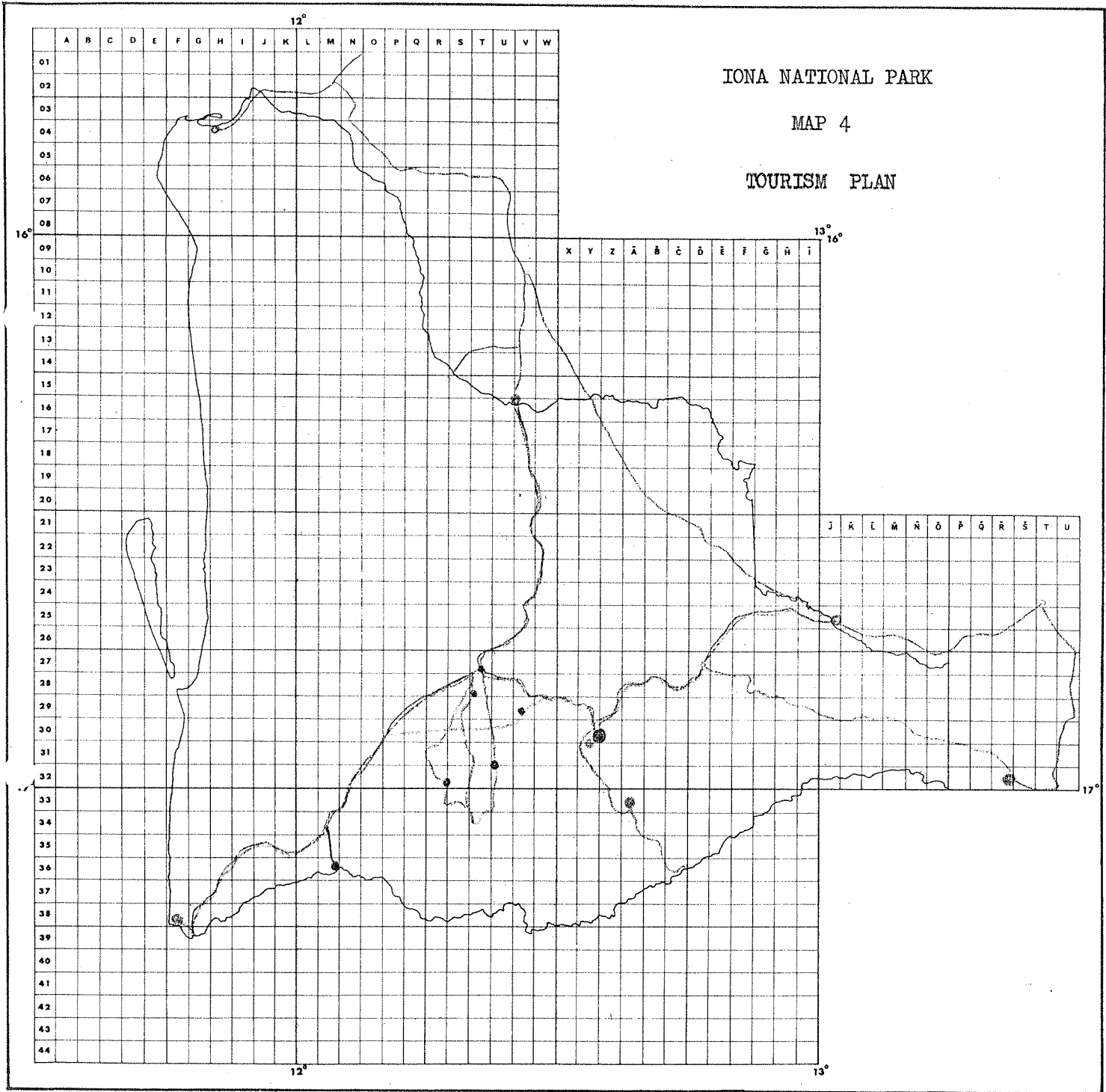
	FRESH > 100 L/hr	A	MUENDE	J	TCHICONGO 1	T	PALMEIRAS
	FRESH < 100 L/hr	B	TACORIOMUENDE 2	K	IONA	U	BIQUICEMO
	BRACK > 100 L/hr	C	TACORIOMUENDE 1	L	CAMBENO	V	CUTUPAUE
	BRACK < 100 L/hr	D	BERORUE 1	M	TCHICONGO 2	W	ONDIAMUNGUNDO
	SALT < 100 L/hr	E	BERORUE 2	N	MUPACA	X	MUHOLO
	STABILIZED FLOW	F	ESPINHEIRA FURO	O	DONDIO	Y	TCHIEQUE 1
	TO BE STABILIZED	G	GUAMUCARE	P	VORENHÖSSI	Z	TCHIEQUE 2
		H	HUMBI	Q	CAIOMBO	A	TCHOTOTALA
		I	TCHINENGUE	R	BICULUE	B	UADIVA 1
				S	SULUA	C	UADIVA 2



IONA NATIONAL PARK
 MAP 3
 OVAHIMBA RE-SETTLEMENT

— LEGEND —

- Springs permanently occupied by Ovahimba
- Springs seasonally occupied by Ovahimba
- Springs to be stabilized
- Eastern escarpment of Tchamalinde
- Proposed western limit of Ovahimba grazing areas
- Areas permanently or seasonally grazed by Ovahimba
- Main game concentration area
- Critical drought reserves
- Dry season dispersal patterns
- Recommended re-settlement area
- Oryx
- Zebra



IONA NATIONAL PARK
MAP 4
TOURISM PLAN

— LEGEND —

- Rest Camp
- Camp Sites
- Picnic Sites
- Public and Park Administration Roads
- - - Routes open to Tourists