A FRESHWATER GILL NET FISHERIES POLICY FOR THE NORTHERN CAPE

by

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APPENDICES
1. INTRODUCTION

The Northern Cape, the largest of the nine South African provinces, covers an area of c. 369 000 km². The region has a low rainfall, varying between >400 mm a⁻¹ in the east to <100 mm a⁻¹ in the west (Tyson 1987), and high evaporation rates (Alexander 1985; Bruton & Van As 1986). As a result of this, there are few perennial rivers (including only the Orange-Vaal system and part of the Doring River system) and wetlands in the Northern Cape (Meintjes, Seaman & Kok 1994).

The Doring River and its tributaries are highly seasonal; flowing strongly in winter and becoming nothing but a series of deep pools in summer (Louw, Buckle, Van der Walt & Durrheim 1985). This river system provides habitat for a number of rare and endangered fish species, amongst others the Clanwilliam yellowfish, *Barbus capensis*. The Doring River is thus of immense conservation importance (Impson 1995, 1997); the establishment of a gill net fishery in this system is highly undesirable.

The Orange River, the largest river in southern Africa, south of the Zambezi, forms a linear oasis in the arid Northern Cape. The river is highly turbid for most of the year and is marked by a paucity of fish species (Scott & Hamman 1984; Skelton 1986; Benade 1993). The Orange River’s water flow under natural conditions was highly unpredictable as can be derived from the various floods as well as severe drought periods (low flows) over the years (Benade 1993). As such numerous impoundments were constructed, primarily, for the supply of water for agricultural, industrial and domestic purposes, the generation of hydro-electric power and extensive inter-basin transfer schemes (Tomasson 1983).
These man-made wetlands support significant stocks of both indigenous and alien fish species (Allanson & Jackson 1983; Tomasson 1983; Tomasson, Cambray & Jackson 1984; Abrahams 1999). These fish stocks have great value for recreation (Abrahams 1999) and as an alternative and cheap protein source for local communities (Allanson & Jackson 1983; Britz & Hecht 1997). The utilization of the fish resources of these impoundments might also accrue economic benefits for subsistence and small-scale commercial harvesters (Allanson & Jackson 1983; Britz & Hecht 1997).

Northern Cape Nature Conservation Service (NCNCS) is the custodian of the Northern Cape’s freshwater fish resources. The development of a Freshwater Gill Net Fisheries Policy is seen as an important first step in ensuring that these resources are utilised in a sustainable manner, thus maintaining and protecting the integrity of aquatic ecosystems. The recommendations made in this document are also intended as guidelines for decision-makers that are specifically involved in the review of gill net license applications.

2. **AIMS**

The aims of this policy are to set guidelines that will ensure:

- The effective regulation and control of the freshwater gill net fishery in the Northern Cape
- The sustainability of the gill net fishery.
- The protection of the Northern Cape’s freshwater fish diversity.
- The adoption of management approaches to deal with the circumstances particular to and in consideration of, the diverse nature of the different aquatic ecosystems.
Regional co-operation on freshwater and related matters between neighbouring countries and provinces that share our rivers and impoundments.

The optimisation of possible social and economic benefits of natural resources to the people of the Northern Cape.

The utilisation of the best available knowledge and multidisciplinary research (including the views of all interested and affected parties i.e. anglers, potential harvesters and other government departments) to ensure sustainable utilisation.

That the requirements of the Nature and Environmental Conservation Ordinance (No. 19 of 1974), the New Water Act (Act 36 of 1998), the Environmental Conservation Act (Act 73 of 1989) and the Inland Waters (Navigation) Regulations (Discussion document 1997) are applied.

3. POLICY STATEMENT
Gill net fisheries activities will only be allowed at selected impoundments in the Province viz. Vaalharts Weir, Vanderkloof Dam and Spitskop Dam and will be strictly controlled by a license system. Strategies will be geared towards the sustainable utilisation of the fish resources whilst at the same time providing for the protection of fish species diversity and aquatic habitats. Research and monitoring of the freshwater fisheries will be ongoing and amendments to this policy will be made, as new information about the fish populations of aquatic ecosystems becomes available.

4. LEGAL INSTRUMENTS TO BE EMPLOYED
The NCNCS Freshwater Gill Net Fisheries Policy is in accordance with the guidelines as spelt out in the Nature and Environmental Conservation Ordinance (No. 19 of 1974). Other Acts and regulations dealing with matters relating to the conservation and protection of the aquatic
environment and which a holder of a gill net license must also take cognisance of, include
the following:
- The Inland Waters (Navigation) Regulations (Discussion document 1997).

5. POLICY IMPLEMENTATION
Gill net licenses will only be issued within the framework of the policy statements
and are subject to the following procedures.

5.1. GENERAL ADMINISTRATIVE PROCEDURES

5.1.1. All applications for subsistence and commercial gill net licenses
must be channelled to the NCNCS Head Office.

5.1.2. Application for a license (i.e. applications for the re-allocation of
licenses as well as new applications) must be made on the relevant application form
obtainable from the NCNCS, Private Bag X6102, Kimberley, 8300 on/or before 31
October prior to the year for which the application is made.

5.1.3. All applications must be accompanied by a certified copy of the identity document of
the applicant and all other documentation as stipulated in the prescribed
questionnaire (Appendix I).

5.1.4. Completed application forms must be submitted to the Director:
NCNCS at the abovementioned address. Applications by fax will also be accepted
(see Appendix I).

5.1.5. Where applications are submitted via fax the original application forms should be
submitted at a later stage (preferably within a period not exceeding two weeks after
the fax application has been submitted).

5.1.6. Untimely applications i.e. applications not submitted on/or before 31
October prior to the year for which an application is made will be placed on record and will only be considered during the following year.

5.1.7. Incomplete applications will be referred back for resubmission according to the directives contained in this policy.

5.1.8. A nature conservation officer will evaluate the application and, if required, request additional information.

5.1.9. If necessary, an inspection of logistical resources (boats, processing facilities, nets, refrigeration facilities, etc.) will be conducted by NCNCS (District Services, Kimberley).

5.1.10. A license will only be issued once the Director, or a delegated official, is satisfied that:

- the issuing of a license is in agreement with this policy
- all legal requirements have been met
- all additional license conditions are stipulated.

5.1.11. After issuing a license the NCNCS Head Office must ensure that all permit conditions are complied with.

5.2. QUALIFYING CRITERIA

5.2.1. In order to qualify for a gill net license, applicants must:

- Reside permanently within the borders of the Northern Cape.
- Show their fishing capacity i.e. be in possession of a productive asset such as a boat, processing and cooling facilities or be able to prove that they are capable of acquiring it within a reasonable period (not exceeding a period of three months).
- Provide proof of rights of access to the banks of the water body.

5.2.2. In cases where an applicant re-applies for a license (i.e. renew his license) the following additional qualifying criteria will be considered by NCNCS:

- The degree to which a person was able to utilise the fish resources at his disposal optimally and efficiently
• The extent to which the applicant could provide employment.
• Steps to ensure that his/her employees enhance the image of the gill net fishing industry on account of their actions and conduct during fishing operations.
• The extent to which the license holder is willing to co-operate with the NCNCS and his colleagues in the industry, as displayed by, amongst others
  - the compliance with regulatory and any other requirements and conditions stipulated by NCNCS.
  - promptness with respect to the submission of catch data and speedy reaction to departmental enquiries.
  - the compliance with health regulations.
• The extent to which the license holder avoids or combats the negative environmental impacts of his operation and promotes environmental improvement as is evident from
  - steps to combat water and soil pollution
  - steps to prevent the dumping of undesirable materials, including oil, plastic packaging material, net material and fish offal.
  - efforts to make the general appearance of processing facilities aesthetically acceptable.

5.3. LICENSING
A license system will be adopted primarily to allow NCNCS to (i) impose a maximum harvesting limit on a venture (ii) ensure that uncontrolled expansion is limited (iii) ensure the acceptance and commitment of the applicant to manage the venture within the guidelines and (iii) ensure that an ongoing record is kept of all ventures.

5.3.1. The legal nature of the gill net license is as follows:
• The license is renewable annually
• The license is not transferable, inheritable or divisible.
• The license is subject to input controls, such as gear restrictions, which will be based on the results of scientific research and other evidence gauged against sustainability.
• The license will prescribe conditions which allow NCNCS to monitor and control the activities of the holder effectively.
• The license will allow NCNCS to amend the conditions associated with the license in any manner considered beneficial to the holders of such licenses, to the health of the resource or to both.
• The license is subject to the applicants' acceptance to abide by the license conditions.
• The contravention or non-compliance of any of the conditions stipulated by the license will result in cancellation/withdrawal of the license and refusal of any future allocations.

5.3.2. The administrative and monitoring functions are subject to certain financial implications and license holders will, therefore, have to pay for the privilege to harvest the resources.

License fees will be charged per 50 metre gill net or long line length at an amount determined by the Director NCNCS. In addition to these license fees, prospective gill net fishers are advised that rights will be sold through public tender to which they will be invited to submit bids. Tenders will be approved for a period of two years with the option of renewing it for another two years. All tenderers must, in addition to having the capacity to harvest the resource for which they are tendering, meet the criteria stipulated in sections 5.1. and 5.2. NCNCS will not necessarily accept the highest bid, but will take account of factors that will ensure sustainability and equitable access to the resource.
5.4. **ENSURING THE SUSTAINABILITY OF THE RESOURCE**

Freshwater gill net fisheries is a small sector and expansion of the sector’s total activity is limited by the natural productive capacity of the freshwater fish resources, and the necessity to limit and control the total harvesting pressure according to what the resources can sustain on a long-term basis. NCNCS will therefore implement the following measures to ensure the sustainability of the fish resources and its immediate aquatic habitats:

5.4.1. No gill net harvesting will be allowed in aquatic systems that NCNCS regard as ecologically sensitive, having high conservation priority, being of economic importance\(^1\) and those for which little or no fisheries information is available. These include:

- The Orange River Mouth and all other estuaries along the Northern Cape coast.
- All vleis and pans both permanent and endorheic. An exception will be made during high rainfall years, when endorheic pans fill up. Under these conditions, pans, especially the larger ones, are often stocked with fish for angling or biological control purposes. These pans will be considered for harvesting when they dry up to prevent massive fish mortalities. Licenses for harvesting such resources will be allocated on an *ad hoc* basis.
- The Doring River and its tributaries in the southwestern parts of the Province, an area which is of great conservation importance. Large sections of this river system are still relatively pristine and are inhabited by numerous Red Data Book species.
- All dams for which the fisheries potential has not yet been determined. The development of gill net fisheries in these dams (e.g. Boegoeberg Dam, Douglas Weir, etc.) should be considered subject to the precautionary principle. This should

\(^1\) Aquatic systems of economic importance refer to those systems where commercial river rafting operations take place.
involve initial experimental operations, and appropriate research, monitoring and trial periods of fishing.

- All riverine sections of the Orange River System (ORS) within the Northern Cape mainly because:
  - consensus has been reached between the Ministry of Fisheries and Marine Resources (Namibia) and NCNCS that exploitation of fish resources in those parts of the lower Orange River shared by the two countries, will be restricted to angling.
  - the lower Orange River is inhabited by numerous endemic species, some of which are Red Data Book listed, whilst it also contains geographically isolated (and possibly unique) populations of indigenous species. The fishing gear (i.e. gill nets) whilst being size selective are not species selective so that rare and endangered fish species will be caught together with commercial species.
  - no section of the ORS has ever been studied for its fisheries potential.
  - gill net harvesting will be in conflict with the river rafting industry; these ventures attract many tourists and earn valuable income for the Province.
  - expansion of the gill net fishery to the riverine sections of the ORS will almost certainly lead to uncontrolled activity (the essence of success in management is to have a well regulated fishery).

5.4.2. In view of the factors listed above, in particular the protection of rare and endangered species in the ORS, gill net harvesting will initially be limited to the three man-made wetlands viz. Vanderkloof Dam, Vaalharts Weir and Spitskop Dam. Until such time that the inputs of the conservation authorities of the North West Province (both Vaalharts Weir and Spitskop Dam are shared with North West
Province) is obtained, harvesting should be limited to those parts of the dam falling within the Northern Cape.

5.4.3. In order to reap an optimum, long-term sustainable harvest, limiting entry is imperative. Limiting entry will also avoid excessive proliferation of the industry, thereby allowing NCNCS to effectively regulate and control the industry. Specific conditions as to the number of harvesters, tonnage available, etc. for the three impoundments are given in Table 1. The measures reflected in Table 1, were decided upon on the basis of the fisheries research undertaken by Abrahams (1999)\(^2\) and that conducted by Allanson & Jackson (1983). These measures are directed at ensuring that (1) fishing pressure is within limits of what the resource can sustain, and (2) the income generated per harvester is such to offset high input costs such as boats, safety equipment, fishing equipment and refrigeration facilities. The total allowable catch and associated measures will be periodically amended when applications for new licenses or the renewal of existing licenses are considered.

**Table 1.** Summary of restrictions for resource use at Spitskop Dam, Vaalharts Weir and Vanderkloof Dam.

<table>
<thead>
<tr>
<th>Impoundment</th>
<th>Number of harvesters</th>
<th>Total allowable catch</th>
<th>Total net length</th>
<th>Number of longlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaalharts Weir</td>
<td>2</td>
<td>24t</td>
<td>300m</td>
<td>2</td>
</tr>
<tr>
<td>Spitskop Dam</td>
<td>2</td>
<td>33t</td>
<td>150m</td>
<td>2</td>
</tr>
<tr>
<td>Vanderkloof Dam</td>
<td>4</td>
<td>150t</td>
<td>1000m</td>
<td>8</td>
</tr>
</tbody>
</table>

5.4.4. No gill net harvesting will be allowed on public holidays and over weekends when recreational and sport fisheries also operate at

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\(^2\) This is an unpublished report and is available on request from NCNCS Head Office.
peak levels. During these periods all gear must be removed from the water.

5.4.5. The majority of fish species known from the impoundments envisaged for gill net harvesting are of riverine origin and spawn during the summer months. This spawning period coincide with the summer holidays when angler activity is at its peak. A closed season for gill net harvesting will therefore be enforced, from 1 November to 31 January.

5.4.6. The use of poison, anaesthetics, electric shockers, explosives, spear guns and bow and arrow to capture fish are illegal and will not be allowed.

5.4.7. Fishing effort will be limited through gear restrictions and include the following:

- Only angling gear as prescribed by the Nature and Environmental Conservation Ordinance (No. 19 of 1974). 'Only gill nets and long lines meeting the specifications set out below, are permissible.

- The total gill net- and longline lengths allocated to license holders should be made up of individual nets or longlines not exceeding 50m.
- Only gill nets of minimum stretched mesh size of 100 mm and maximum mesh size 145 mm will be allowed.
- Longlines consisting of a rope of maximum 50 metres to which a maximum of 25 hooks are attached not closer than 1m and deeper than 1m from the top rope, will be allowed.
- All nets and long lines must be marked with buoys at intervals of approximately 25 metres and buoys must be clearly visible.
- All fish caught should be removed from gill nets and longlines at least every 18 hours.
• Gill nets and longlines must be set parallel to the shoreline and in such way that it does not block the safe passage of boat anglers, non-consumptive users or other gill net harvesters.

• All species listed as endangered in the Nature Conservation Ordinance (No. 19 of 1974) and all those Red Data Book listed should where possible be released unharmed when caught by means of angling gear. These include the rock catfish, *Austroglanis sclateri* and the largemouth yellowfish, *Barbus kimberleyensis*, below 300mm total length.

5.4.8. Man-made impoundments are foci for various resource users and potential for conflict therefore exists. Furthermore, the reproductive biology of the fish species inhabiting the dams also necessitates protective measures. NCNCS in co-operation with DWAF, in order to limit conflict between resource users and safeguard the biological component of these dams, have zoned the water surface of dams designated suitable for gill net harvesting. Zonation maps of all three dams, as well as conditions of entry, are attached as Appendix II. Zonation maps will be published in the Government Gazette and will be amended from time to time.

5.5. **MEASURES TO MINIMIZE ENVIRONMENTAL IMPACT**

Gill net harvesters should ensure that their activities are conducted in a manner that eliminates and minimizes, to the greatest extent possible, any adverse impacts on both the aquatic ecosystems and the biota from which the gill net fisheries derive. The following aspects should be considered:

• Gill net license holders should ensure that all activities undertaken are in accordance with the relevant legislation listed in Section 4. So, for example, license holders should ensure that the necessary procedures are followed for any activity requiring an environmental impact
• assessment (EIA) in terms of the Environment Conservation Act (Act 73 of 1989).
• Access to the dam water surface (for launching boats) should as far as possible be gained via existing access points and where these have to be constructed, it should be done in a manner which causes least disturbance possible to riparian vegetation.
• Vegetation, including trees, shall not be damaged or felled.
• All support operations (e.g. fuel storage, fish processing, etc.) should be conducted outside the riparian zone. Where these activities might potentially cause pollution and environmental degradation, the license holder should ensure that the relevant contingency plans are in place.
• All facilities (i.e. overnight accommodation, toilets, etc.) should preferably be of temporary nature and shall be sited in consultation with the landowner/tenant.
• Any effluents containing oil, grease or other industrial substances must be collected and stored in a suitable receptacle and removed from the site for appropriate disposal at a facility for this purpose.
• Processed and freshly caught fish should be kept in cooling facilities on site or where these facilities are lacking, fish products should be removed from the site as soon as possible.
• Where sanitation facilities are lacking, facilities approved by the Department of Water Affairs & Forestry (DWAF) should be used and sited such that they do not cause water or other pollution.
• Dams provide foraging, roosting and breeding areas for various waterbirds and gill net harvesters should operate in such a manner causing the least disturbance possible to birds. No bird nests found on the site may be disturbed, removed or destroyed.
• License holders should inform and educate employees about environmental risks associated with their work and the manner in
which their work must be performed to avoid pollution and environmental degradation.

- License holders should inform NCNCS in writing of their intentions to terminate fishing operations; license holders will be held responsible for any remedial or rehabilitation work required upon termination of fishing operations.

5.6. ROLE AND FOCUS OF RESEARCH

5.6.1. Research forms the foundation of conservation management decisions, in other words, the successful management of the gill net fishery will depend largely on the information that result from relevant research projects. Researchers should therefore be encouraged to engage in research projects on the following aspects:

- The long-term sustainable utilisation of fish resources i.e. collecting and analysing information of fishing effort and catches. The collection of this data will ultimately provide a motivation to expand or abolish gill net fisheries.
- The catch and effort of the recreational and sport fishing sector
- The problems experienced by gill net harvesters and recreational users and identification of areas for development
- The development of alternative and sustainable fishing methods.
- The identification of new fish stocks.

5.6.2. Research can play an important educational role in the fishing sector i.e. researchers consulting with, sharing and passing on information to gill net harvesters, recreational users and other role players.

5.6.3. An acute shortage of fisheries expertise exists within the Northern Cape Province at present and NCNCS should, therefore, encourage research efforts that will aid capacity building.
5.7. **MONITORING**

Monitoring of the freshwater gill net fishery (primarily the responsibility of NCNCS) will be required to detect changes in fish stocks and aquatic habitats and evaluate the successes and failures of the policy to achieve the aims spelt out in Section 2. Limited human, technical and financial resources could hamper effective monitoring and monitoring will, therefore, be the dual responsibility of NCNCS and resource users (resource users will operate according to NCNCS requirements). The following monitoring action will be required:

5.7.1. Submission of monthly catch returns (preferably within two weeks of the end of each month on the appropriate catch data sheet (Appendix III). Submission of catch data is compulsory and failure to do so will result in **cancellation of the gill net license**. Analysis of returns will ensure that changes in fishing effort or catch per unit effort (CPUE) and catch composition can be evaluated. An improved CPUE time series will ensure that more realistic estimates of sustainable yields could be achieved.

5.7.2. The *ad hoc* inspection of infrastructure and equipment utilized during gill net operations. This task will be performed by District Services (Kimberley Region) in conjunction with Scientific Services.

5.7.3. The *ad hoc* evaluation of the environmental impacts that might arise from gill net fisheries activities.

5.8. **BOATING AND SAFETY REGULATIONS**

All persons operating boats during gill net fishery operations should acquaint themselves with the regulations and safety requirements as set out in the Inland Waters (Navigation) Regulations (Discussion document, 1997).
REFERENCES


**INTERESTED PARTIES CONSULTED**

During compilation of the policy, comments on certain aspects of the gill net fishery were invited from the following organisations:

Department of Water Affairs and Forestry (Northern Cape Region) (Messrs. N. Knoetze, J. Momberg, K. Potgieter, F. Coetzee & G. Delport)

Eko-Impak Environmental Consultants (Mr. C. Benade)

Griqualand West Angling Section (Messrs. J. Laubscher & R. Warren)

Ministry of Fisheries and Marine Resources (Namibia)

North West Nature Conservation
DATE OF ACCEPTANCE OF THE POLICY

... ... ... ... ... ... ... ... ... ... ...

DIRECTOR'S SIGNATURE

... ... ... ... ... ... ... ... ... ... ...

J.H. Koen
Acting Director
Northern Cape Nature Conservation Service
Provincial Government of the Northern Cape
Appendix I. The questionnaire which should be filled out together with the relevant application form when applying for a freshwater gill net license.

APPLICATION FOR A FRESHWATER GILL NET LICENSE

This questionnaire is to be used together with the relevant application form to apply for a freshwater gill net license and is to be submitted to the Director of the Northern Cape Nature Conservation Service at the address indicated together with any additional information required in support of the application.

A gill net license is issued subject to conditions- including those set out in the Gill Net Fishery Policy 2000- and those specified by the Director who may change or cancel a condition by notice in writing. The freshwater gill net fishery in the Northern Cape is a relatively new sector and policy in this regard will be under constant review. Applicants should therefore always ensure that the latest information is obtained from NCNCS on current licensing policy.

INSTRUCTIONS FOR COMPLETING THIS APPLICATION Please use block letters
Only complete Sections A, B and C.

SECTION A
1. Full name of applicant(s):...........................................................................................................
2. Business Address:.................................................................
   (The business address must be a place, not a post office box number)
   Tel.: (...... ...)............... Facsimile No.: (...... ...)...............
   Postal Address .................................................................................
   ........................................................................................................

Northern Cape Nature Conservation Service
224 Du Toitspan Road/ Private Bag X61 02 Kimberley
8300
Tel.: (053) 8322143
Facsimile: (053) 8313530
SECTION B

1. Description of location of premises or place from where harvesting and processing operations are to be conducted:

2. Please include a detailed scale plan showing existing or proposed processing sites and overnight facilities.

3. Registered proprietor (s) of premises or place.

4. Nature of applicants' tenure or access arrangements (submit copy of relevant documents eg. "Deed of lease").

5. Written approvals from local government authorities, e.g. DWAF, Department of Health Welfare and Environmental Affairs may be required to support your application. You may therefore need to submit a copy of your application to those organisations to ensure it meets their requirements. Applications will not be accepted by the NCNCS unless they are accompanied by these relevant approvals and/or clear reference has been made to the steps taken in this regard.

6. A skipper license is required in order to operate boats on inland waters under the proposed Inland Water (Navigation) Regulations. Please submit copy of skipper license/ indicate steps taken in this regard.
SECTION C
Kindly supply details of the following:

1. Boat(s) at your disposal or which you intend acquiring

2. Boat safety equipment at your disposal or which you intend acquiring

3. Processing facilities at your disposal or which you intend to build

4. Refrigeration facilities at your disposal or which you intend acquiring

5. The mass of fish required and its proposed utilisation

6. Proposed disposal of waste material

7. Any other information you consider relevant to the application
APPLICANT’S DECLARATION
I/We declare that the statements made in this application and any attachments submitted with this application, are true and correct.
Signature:..........................................................   Date:..........................
Signature:..........................................................   Date:..........................

SECTION D
Verification of documentation (to be completed by Administration Clerk: Permits):
1. Scale plan attached
2. Skippers license attached
3. Approvals obtained
   Department of Water Affairs & Forestry
   Environmental Affairs (Northern Cape)
   Registered proprietor(s) of premises or place

Officer - Permit Section (Print Name):..........................................................
Signature:.................................                           Date:.................................

SECTION E
Site inspection report (to be completed by Nature Conservator):
Site layout:
Waste disposal:... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .......
... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .......
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Prevention of erosion:... ... ...... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ...
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... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ......

Prevention of other environmental impacts: .................... ... ... ... ... ... ... ... ... ... ………
... ... ... ... ... ... ... ... ... ... ... ... .. ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .........
... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .......... ... ... ... ... ... ... ... ... ... ......

Logistics:
Vessels:... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ...
... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ......
... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ......

Safety equipment: ............................................................…......................... ....................
... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .........

Refrigeration facilities:...........................................................................................................
Fishing equipment: ...

Recommendations: ...

Nature Conservator (Print Name): ...
Signature: ... Date: ...

Recommendations: ...

Scientific Services Division (Print Name): ...
Signature: ... Date: ...

Approved Not approved
Signature: 
Director (NCNCS): ... Date: 

FINAL DECISION
Approved Not approved Comments 

Mr. Thabo Makweya
MEC: AGRICULTURE, LAND REFORM, ENVIRONMENT AND CONSERVATION
Appendix II: Zonation of Spitskop Dam, Vaalharts Weir and Vanderkloof Dam for resource use.

The three largest perennial wetlands in the semi-arid Northern Cape, for which fisheries potential has been determined and where gill net harvesting will be allowed are Spitskop Dam, Vaalharts Weir and Vanderkloof Dam (Allanson & Jackson 1983; Tomasson 1983; Abrahams 1999). The various interest groups utilising these dams, include amongst others Northern Cape Nature Conservation Service (NCNCS), the Department of Water Affairs and Forestry (DWAF), sport and recreational anglers, gill net harvesters and other non-consumptive users (boating, skiing, etc.). The uncoordinated manner in which various activities were practiced on these dams, often led to user conflict in the past. It was particularly the allocation of gill net licenses during the late 1980s and early 1990s, which led to conflict between anglers and gill net harvesters. Gill nets are highly efficient in capturing fish and in general the organized angling fraternity were quite skeptical about the allocation of gill net licenses, their main concern being the depletion of important angling fish species by gill net harvesters (Abrahams 1999). In order to ensure proper management of these impoundments (in particular its fish resources) and minimize conflict between resource users in future, these dams were zoned.

The zonation of the three dams (i.e. those earmarked for gill net harvesting) was done jointly between the two authorities responsible for the management of these dams i.e. NCNCS and DWAF. Each zone has a set of management strategies intended to achieve a principal objective or combination of objectives. For example, in some cases conservation may be emphasized, while in others recreation objectives and nature conservation may be combined. In practice the respective areas will be demarcated by means of a combination of beacons (land based) and a series of buoys; this will be the joint responsibility of DWAF and NCNCS.

The zonation of the three impoundments was done in consideration of the following aspects:

- all the indigenous species recorded in these impoundments breed in inflowing rivers and flooded marginal areas after good rains especially in summer; they are therefore extremely vulnerable to overfishing through exploitation on the breeding grounds.
- the marginal areas are important for providing safe nursery sites for fish fry during their early stages of development.
- certain areas of these dams are of conservation importance, especially as waterbird habitat (i.e. feeding, roosting and nest sites).
- processing of fish is associated with environmental impacts (e.g. odours from fish offall) which might detract from these impoundments as angling, boating and bird-watching destinations.
• gill net harvesting and associated boating might pose certain hazards to the safe practice of angling.
• the NCNCS and DWAF have to perform routine inspections, monitoring and control programmes.

Brief overview and zonation of the three impoundments

**Spitskop Dam**
Spitskop Dam lies on the Harts River and covers an area of c. 2495 ha. The fish fauna of Spitskop Dam comprises of large indigenous cyprinids and is dominated by the moggel, *Labeo umbratus*, which often contribute as much as 77% in terms of mass to gill net catches (Abrahams 1999). The wetland is also of significant importance to waterbirds with between 10 000 and 18 000 individuals of c. 60 species being counted at times. The dam qualifies as a Ramsar site, but currently has no formal protected status (Barnes & Anderson 1998).

**Zonation for resource use (Figure 1)**

**Area 1**
Demarcated for purposes of recreational angling by the general public. No other water-based activities such as boating are allowed.

**Area 2**
This represents the only area allocated for gill net harvesting and associated boating activities. A land-based area adjacent to Area 2 will be set aside for the processing of fish and erection of overnight facilities. Entrance to this gill netting area would be via an existing gate on the southern shores of the impoundment.

**Area 3**
Demarcated for recreational and sport fishing by the DWAF Angling Club.

**Area 4**
Demarcated for use by the Griqualand West Angling Section primarily for sport fishing.

**Area 5**
This area includes the inflow of the Harts River and is set aside for conservation purposes as it serve as fish breeding grounds and nursery areas for juvenile fish. It also provides sizeable areas for utilisation by various waterbird species as breeding, roosting and feeding sites.

**Vaalharts Weir**
Vaalharts Weir is a c. 30km long "impoundment" on the lower Vaal River; only 2119ha of which can be regarded as true impoundment (K. Potgieter pers. comm. 1999). The weir was constructed in the early 1930s primarily to supply water for agricultural purposes. Today this wetland is characterised by excessive aquatic plant growth; the result of pollution from agricultural pesticides and
fertilizers. Although Vaal harts Weir, as is the case for Spitskop Dam, is polluted and in danger of biological collapse (C. Benade pers. comm. 1999), the fish resources of these wetlands could serve as a vital source of income for subsistence and small scale gill net enterprises.

Zonation for resource use (Figure 2)

**Area 1**
Wannebaai is one of the few "vleis" found anywhere in the Northern Cape. It supports a large number of waterbirds (some of which are rare), fish and plant life. This is a non-statutory conservation area (a Natural Heritage Site) and entry is strictly controlled.

**Area 2**
This area is set aside for exclusive use by shore anglers and no other consumptive and non-consumptive utilization is allowed.

**Area 3, 4 & 5**
These areas were allocated for gill net harvesting and associated boat activity. The jetty and slipway located within Area 2 is often used by DWAF personnel during routine inspections and aquatic plant control operations and is the only area from which shore anglers can fish. Gill net harvesters will, therefore, have to enter areas proposed for gill net fishing via private farmland. The onus is on individual harvesters to get permission from such landowners. Shore angling and use of canoes and boats by riparian owners and their immediate family will also be accommodated.

**Vanderkloof Dam**
Vanderkloof Dam is located on the mainstream Orange River and has a surface area of 138 km². The shoreline is well developed, the lake has a mean depth of 23m, with steep, rocky shores and limited shallow littoral areas (Tomasson et al. 1984). Vanderkloof Dam is renowned as an important destination for anglers and boaters in the semi-arid Northern Cape (Muller 1998). The large stocks of indigenous fish present, research have shown that between 150 and 250 tons of fish could be harvested annually from this impoundment (Allanson & Jackson 1983), providing great opportunities for small-scale commercial and subsistence fishing operators.

Zonation for resource use (Figure 3)

**Area 1**
This area has been zoned as a multi-purpose recreational area, in which the use of motorboats, sailboats and sailboards are permitted as well as activities such as waterskiing, rowing, diving, swimming and angling. No gill netting is allowed.

**Area 2**
Area 3
An area designated for gill netting as well as boating

Area 4
Only boating and angling are allowed.

Area 5
5a: Only boating (including canoeing) and angling are allowed. The spectacular Waenhuiskrans waterfall and tufa deposits (a popular site amongst local residents) are included in this area, whilst the proposed canoe route for Doornkloof Nature Reserve will also fall in this area (Venter pers. comm. 2000).

5b: No boating and gill netting.

Vanderkloof Dam has a steep shoreline, and entry to the dam water surface (i.e. by gill net harvesters) can only be gained via Crollia Bay. More information with regards to the procedures applicable (i.e. launching times, reporting catches, etc.) for the day-to-day management of gill net fisheries activities at Vanderkloof Dam can be obtained from the Reserve Manager: Rolfontein Nature Reserve (Tel. (053) 6640170).

References


**Appendix III.** Data sheet for recording monthly catch data

<table>
<thead>
<tr>
<th>Name of harvester</th>
<th>Licence Number</th>
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<tr>
<td>Naam van ontginner</td>
<td>Lisensie Nommer</td>
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<thead>
<tr>
<th>Locality</th>
<th>Lokaliteit</th>
<th>Month</th>
<th>Maand</th>
<th>No. of days netted</th>
<th>Aantal dae genet</th>
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<th>Aantal ure genet</th>
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<th>Maasgrootte</th>
<th>Species</th>
<th>Spesie</th>
<th>No. Aantal</th>
<th>Mass in kilogram</th>
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**COMMENTS/OPMERKINGS:**

**NOTE:** COMPLETE CARD EVEN IF NO FISH IS CAUGHT  
L.W. VOLTOOI KAART SELFS AL WORD NIKS GEVANG NIE