

Developing environmental guidelines for freshwater aquacultural operations: A case study

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Summary

This paper reviews the progress towards the development of environmental guidelines for freshwater aquacultural concerns in the Western Cape. The guidelines are the product of over two years of collaborative work by a wide spectrum of individuals and organisations, both government and non-government, towards a common goal - efficient production of farmed aquatic species with minimal impact on freshwater aquatic ecosystems in the Western Cape. Particular attention is given to procedures which facilitated co-operation between the interested and affected parties. Our experience is documented in detail in order to provide other groups embarking on similar exercises with some assistance and direction. In accordance with this aim a number of recommendations, based on our experience, are provided.

Introduction

"Conflict of interest is a phenomenon that varies depending on the eye of the beholder. Many individuals feel that they can be very objective in areas of their expertise, regardless of affiliations, financial interest, intellectual passions, and so forth. Their opponents usually regard such claims with scepticism." (Koshland, 1992).

In September 1993, the Department of Agriculture in the Western Cape announced their *Guidelines for Freshwater Aquaculture in the Western Cape* (Table 1). These are management and water quality guidelines aimed at serving the freshwater aquacultural industry, facilitating procedures for new entrants to the industry and minimising its impact on the natural environment, particularly the aquatic environment. The guidelines are the product of over two years of collaborative work by a wide spectrum of individuals and organisations, both government and non-government, towards a common goal - efficient production of farmed aquatic species with minimal impact on freshwater aquatic ecosystems in the Western Cape.

The organisations involved in producing the guidelines included:

- " Department of Agriculture, the lead agency for freshwater aquaculture
- Department of Water Affairs and Forestry (DWA), responsible for maintaining the water quality in the rivers
- Cape Nature Conservation (CNC), responsible for protection of the natural environment
- Trout Producers Association (Cape)
- Aquaculture Research Programme, Genetics Department, University of Stellenbosch
- Freshwater Research Unit, Department of Zoology, University of Cape Town (UCT), involved in investigating the effects of trout-farm effluent on the downstream rivers

- Division of Agricultural Engineering, Department of Agriculture, Pretoria.

This paper documents the progress towards formulating these guidelines. It is hoped that by describing that process, the pitfalls encountered and the solutions employed, we will provide other groups embarking on similar exercises with some assistance and direction.

At present, freshwater aquaculture in South Africa is dominated by the culture of rainbow trout, *Oncorhynchus mykiss*, which is produced in land-based or cage-culture production units. Although the final guidelines are applicable to all commercial freshwater aquacultural ventures, trout farms, in particular land-based trout farms, were the primary focus during their formation. Consequently, the bias towards trout farming, as opposed to other forms of freshwater aquaculture, is reflected in this paper.

Definitions

Aquaculture may be defined as the cultivation and harvest of aquatic organisms for commercial utilisation (Safriel and Bruton, 1984).

Water pollution has been defined by the World Health Organisation as "the impairment of the suitability of water for some considered purpose" (International Standards Organisation, 1980) and, for the purpose of this paper, the term *pollutant* is taken to mean "any entity whose addition to an aquatic ecosystem by humans or their activities actually or potentially changes the characteristics of the system such that the natural biota of that system are adversely affected" (from Hart and Allanson, 1984)

Finally, **guidelines** are standard principles by which to determine policies or actions (*Collins Concise English Dictionary*, 1978).

Background

Trout farming in the Western Cape

Commercial trout farming began in the Western Cape in the early 1980s and by 1990 the region was producing some 550 t, almost

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