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PROGRAM AND ABSTRACTS

Departamento de Biologia, Universidade dos Açores
Sociedade “Afonso Chaves”
IMPLEMENTATION OF A NEW FEED PELLETS FOR INCREASING GROWTH AND SURVIVAL IN THE FRESHWATER SHRIMP MACROBRACHIUM ROSENBERGII

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An experimental diet (elaborated with fish leftovers, and soya, corn and wheat flour) was fed to postlarvae of Macrobrachium rosenbergii (De Man) for three months in the Center of Postlarvae Production "El Real", Catemaco, Ver., Mexico. Growth and survival of the prawns were compared with those of organisms fed with commercial feed pellets. Results show 89% survival and accumulative growth of 26 mm (181.82%, corresponding to 0.31 mm of week growth rate) for organisms fed the experimental diet. In comparison, organisms fed the commercial feed pellets showed 80% survival and an accumulative growth of 16.90 mm (106.96%, corresponding to 0.19 mm week growth rate). The experimental feed pellets can be preserved in dry conditions for periods as longer than one year and represent a cheap product for use in any country.

WASTEWATER TREATMENT PLANT OF PONTA DELGADA (SÃO MIGUEL, AZORES), IMPLEMENTATION OF A MANAGEMENT PROGRAM


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Wastewater treatment started in Ponta Delgada in 1998, when the first facility started to treat a small volume of the municipal sewage. A monitoring program was initiated in March 1999 to study the effects of the effluent discharge. The current state of the research, and the main aspects of the program are presented: 1) the establishment of a local laboratory to monitor in situ the water quality and environmental data; 2) the methodology under development to assess present and future environmental impact, namely, regarding water quality parameters, macrofauna ecological surveys and meiofauna sampling. The objectives and results of a long-term study on these aspects are discussed, as well as future studies and complementary perspectives needed to be incorporated in such a monitoring design.
INTRODUCTION

Wastewater treatment plant at Ponta Delgada was initiated in 1998, when the first facility (Fig. 1) started to laborate on a small volume of the municipal sewage. Figure 3 represents the schematic diagram of the plant. A monitoring program was in place in March 1998 to study the effects of the effluent discharge (Fig. 3). This program is guided by the practical need to ascertain the water quality for recreation purposes, but also by the scientific value of documenting the possible biological effects of increasing the nutrient levels in otherwise oligotrophic ocean waters.

![Diagram of Ponta Delgada Wastewater Plant](image)

WATER QUALITY

Wastewater and receptor water in the vicinity of the outlet need to be characterized in terms of their physical and chemical composition, as well as of their microbiological quality.

The first priority was to establish a laboratory to enable, in a near future, the routine performance of the standard water analysis procedures required by law. For determining the basic physical parameters, such as colour, transparency, salinity, temperature and conductivity already exists. The co-ordination analysis, and those required for the elaboration of chemical techniques, have however to be assessed in a way that the small budget allocated to this program. Nevertheless, some preliminary measurements have been made and are presented in Table 1. Chemical parameters were determined using colorimetric methods and reagents supplied by Lambda (water chemical analysis kit). For the determination of copper, zinc, and manganese, a flame atomic absorption spectrophotometer was used.

Our results show that, despite the source of micronutrients of fotal origin represented by the effluent discharges, the microbiological water quality at the surface is very good. However, the effects of current on the effluent plume in the water column has to be taken into account before more firm conclusions can be reached regarding the recreational value of the seawater in the area.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Treated plant</th>
<th>Effluent discharge</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>2.9</td>
<td>20.8</td>
<td>29.5</td>
</tr>
<tr>
<td>Temperature</td>
<td>12.5</td>
<td>15.0</td>
<td>16.0</td>
</tr>
<tr>
<td>pH</td>
<td>7.5</td>
<td>7.2</td>
<td>7.5</td>
</tr>
<tr>
<td>Copper</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Zinc</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>4.2</td>
<td>4.1</td>
<td>4.3</td>
</tr>
</tbody>
</table>

Microflora

Metabolic communities have been widely used in programs monitoring pollution effects (e.g., Warwick et al., 1985, Sommerville et al., 1996). Including those derived from organics and inorganic compounds by wastewater sewage outlets (Batton, 1976; Balas, 1985; Critchfield, 1976).

Microflora was sampled in the vicinity of the outfall using 6 cm diameter cores to a depth of 10 cm, handled by a SCUBA diver (Fig. 4). The cores samples were stored and the fraction between 0.06 and 0.5 mm was preserved in 1.5% neutralized formalin. Organisms were removed from the 0.5 mm sieve by a mixture with a solution of 4% NaCl solution with sea water. The solution with the extracted sample was filtered and left to stay for a period of 15 min. After the supernatant was removed and stored in a new container with 1% neutralized formalin. Procedures followed the methodology advised by Haigwood and Gray (1975). Major taxa were identified under a compound microscope.

The dominant taxa so far seem to be Ochrotrichia. Other present taxa include Coelospha, Heterocapsa and Polycotyle (Fig. 5). Identification of the samples is still in progress and more detailed results are expected in a near future.

![Microflora](image)

REFERENCES