



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



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بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات
لم ترد بالأصل



Alexandria University
Faculty of Agric. (Saba-Bacha)

**EFFECT OF DIETARY ENERGY LEVEL ON GROWTH
AND SURVIVAL OF FISH LARVAE**

BY

RAGAA ABD ALLAH AHMED ABD ALLAH

**A thesis submitted in partial fulfillment of the requirements
governing the award of the degree of**

**MASTER OF AGRICULTURAL SCIENCES
(FISH PRODUCTION)**

Department of Animal and Fish Production

From

Alexandria University

2001

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INTRODUCTION

Fish are one of the most important sources of animal protein for humans, and many fishes are used as food. Subsidiary uses of fish and fish products include the manufacture of nitrogenous fertilizers from fish and fish scraps, the extraction of fish-liver oils as the sources of vitamin D, and the manufacture of pet food. Fish scales are sometimes used in making artificial pearls. Isinglass, a form of gelatin, is prepared from the swim bladders of certain species, and glue can be made from fish offal (Encarta (R) 1999).

Mullet, common name for about 95 species of small, spiny-finned fishes rarely exceeding 60 cm (24 in) in length. Mullet are found in coastal marine and brackish water in all tropical and temperate seas. A few species, such as the mountain mullet, enter fresh water and may be the dominant fish in tropical streams. Mullet live near the shore, often around islands, feeding on minute organisms filtered from the water through their sieve-like gill rakers. All known species are edible. The striped mullet occurs along the pacific coast of North America and around coasts of the Atlantic Ocean. The thick-lipped Grey mullet is common along European coasts and is distinguished by a broad upper lip. The name "mullet" has sometimes been applied to members of an unrelated family more properly known as goatfishes (Encarta (R) 1999).

Grey mullet (family *Mugilidae*) and the milkfish (family *Chanidae*) have been the mainstay of finfish culture in coastal and estuarine impoundments for centuries. In the vallis of the Mediterranean lagoons

(especially in Italy), in the so-called coastal "harbour culture" in Northern China, in the bheris of the gangetic estuaries in the Indian sub-continent, in the tambaks of gava (Indonesia) and in the coastal fish ponds of Hawaii the Grey mullets formed an important group of cultured species. Like many other widely distributed aquaculture species, mullet are relished by consumers in some areas, but considered of poor eating quality in others. This is clearly exemplified in the Mediterranean region, when fresh Grey mullet is considered a delicacy in the countries bordering the eastern Mediterranean up to Italy, whereas in countries of the western region there is hardly any market for them (Pillay, 1990). Though considered a high-quality fish in some South America countries like Barazil, they have very little acceptance in North America, except in the southern states and in Hawaii.

Although the Grey mullet and the milkfish belong to different families, most of them are herbivorous and detritus feeders. In spite of some advances made in induced breeding, culture of these species is still based on wild fry and fingerlings. The main species of aquacultural interest are euryhaline and can be reared both in brackish and salt-water environments. They can easily be acclimatized for culture in fresh water (Pillay, 1990).

Though the popular name "mulletts" generally refers to the species of the family *Mugilidae*, the name Grey mullet is used to distinguish them from red mullets of the family *Mullidae*. The taxonomic classification of the Grey mullets has been rather confusing. And the many revisions of the family have not made it any easier for aquaculturists to identify the

various species. Jhingran and Gopalakrishnan (1974) have listed 13 valid species belonging to the genus *Mugil* and one species of the genus *Rhinomugil* which have been used in aquaculture. Though some authors have used the generic name *Liza*, based on the extent of development of the adipose eyelids, others consider this classification invalid as this characteristic is not of diagnostic value (Pillay, 1962). The other considered valid; namely *Cernimugil* is represented by the species *Rhinomugil Corsula*, which is of some importance in Indian fish culture. So in the following account of Grey mullet culture the candidate species will be treated as belonging to the two genera, *Mugil* and *crenimugil*.

The most widely distributed and well-known species of Grey mullet is *Mugil cephalus*, sometimes referred to as the striped mullet (Pillay, 1990). Because of the fast growth rate and the comparatively large size of the adults, this has been the species of choice in all areas. But fry and fingerlings of *M. cephalus* are not as abundantly available as of the other species. So in countries bordering the Mediterranean, *M. capito*, *M. auratus*, *M. saliens*, and *M. chelo* are also utilized in extensive or intensive farming. Other species used in the Indo-Pacific region are *M. parsia* (= *dussumieri*), *M. tade*, *M. macrolepis*, *M. soiuy* and *R. corsula*. He also found that additional species of importance in South America are *M. curema* and *M. brasiliensis*. Experimental work in West Africa has also included the species *M. falcipinnis* and *M. grandisquamis*.

Mullet growth like most fish species depends to large extent on supplementary food, and the cost of feed constitutes the principal part of the total production costs. Furthermore, feeding rate for mullet is still

based on the feeding rate of other species rather than on mullet data (El-Dahhar, 2000). He also stated that determination of feeding rate with respect to the nutritional requirements, dietary composition and the effect of environmental condition may help in saving feed or promoting fish growth. And thus increase the income of the fish farmers. For establishing feeding level of a fish species, some major factors should taken into consideration e.g. maintenance requirements, growth requirements and feed utilization for all purpose (Hepher, *et al.*, 1983). Presently this work was conducted to study the effect of dietary energy levels on growth and survival of striped mullet (*Mugil cephalus*) larvae using three directions (feeding rates, dietary energy levels and energy sources).

REVIEW OF LITERATURE