

WATER RESOURCES: ENHANCEMENT OF BUNNI STOCK

**PLANNING FOR HATCHERY CONSTRUCTION AND PROPAGATION OF
BUNNI (*Barbus sharpeyi* Günther, 1874)**

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ABSTRACT

Bunni, (*Barbus sharpeyi*) is one of the important fish species in the Marsh and Tigris-Euphrates Basin. Their populations declined dramatically in the marshes because of the drying crime. After three seasons of working in propagation of Bunni, good data were obtained to plan the hatchery of this species, and all the propagation process for *B. sharpeyi* production. In this article, the basic biological data for artificial propagation protocol have been thoroughly determined. All hatchery operation steps for the induced spawning of *B. sharpeyi* have been shown as a function of time. We found that we can produce three batches of larvae every 17 days. It was found that 9 days were needed to complete the production of one batch of larvae, with 4 days time lag between each two batches. During each spawning season, we can produce six batches from each set of production equipment. For planning of hatchery equipment, it was found that from 30 kg of female *B. sharpeyi* we can produce 0.61 million first feeding fry. For this production, we need 15 hatching jars and 8 larval rearing tanks. In this article, we present all the important parameters needed to calculate the precise number of fingerlings that could be produced from a certain number of brooders and a particular hatchery design.

POND CULTURE OF LARVAE OF *Barbus sharpeyi* Günther, 1874 AND *Cyprinus carpio* Linnaeus, 1758

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ABSTRACT

Some biological aspects of the larvae of *Barbus sharpeyi* and *Cyprinus carpio* in the pond culture at Marine Science Centre, Basrah University, were studied. The length-weight relationship was found to be $W = 0.0111 L^{2.952}$ for *Barbus sharpeyi* and $W = 0.0111 L^{2.9662}$ for *Cyprinus carpio*. The highest relative growth for *B. sharpeyi* was equal to 4890 and for *C. carpio* was equal to 8275. The highest specific growths obtained were 14.7 and 14.4 for *B. sharpeyi* and common carp, respectively. After 42 days, *C. carpio* larvae attained a maximum weight of 3930 mg and a maximum length of 63 mm, while *B. sharpeyi* larvae attained a maximum weight of 1470 mg and a maximum length of 53 mm.

**THE FIRST GROWTH FOR THE LARVAE OF BUNNI (*Barbus sharpeyi*
Günther) UNDER LABORATORY CONDITIONS**

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ABSTRACT

Larvae of Bunni (*Barbus sharpeyi*) were reared under laboratory conditions using a semi-closed system. Total length and wet weight of larvae were measured weekly. Larvae were fed on live food in the first week, and then were fed on artificial food. The results showed that larvae attained a total length of 14.2 mm, a wet weight of 16.4 mg and relative growth of 368.75%.

INDOOR REARING OF *Barbus sharpeyi* Günther, 1874 LARVAE USING LIVE AND ARTIFICIAL FOOD

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ABSTRACT

Indoor rearing of newly hatched Bunni larvae *Barbus sharpeyi* was carried out at the Marine Science Centre in April 2005. Larvae were reared under controlled conditions. These larvae fed on two food types, live food: the rotifer *Brachionus calyciflorus* Pallas, the brine shrimp *Artemia* sp. Leach, the cladoceran *Moina affinis* (Birge) and the artificial food NRD. The results indicated that larvae fed on live food during 28 days showed high growth rate and survival rate of fish larvae in comparison with those fed on artificial food. The averages of length and weight of fish larvae fed on *B. calyciflorus* were 41.9 mm/larva and 113.5 mg/larva, respectively. Whereas the averages of length and weight of larvae fed on *Artemia* sp. were 37.7mm/larva and 110.2 mg/larva, respectively, and those fed on *M. affinis* were 33.5 mm/larva and 94.6 mg/larva, respectively. The average length and weight that resulted from the artificial food NRD, were 28.4 mm/larva and 83.6 mg/larva, respectively. The highest survival rate was obtained for larvae fed on rotifers (82.5%) whereas survival rates for those fed on *Artemia* sp., *M. affinis* and NRD were 75.9%, 74.6% and 62.4 %, respectively.

MORPHOMETRIC CHARACTERS, AGE, AND GROWTH OF *Barbus sharpeyi* Günther, 1874 AND *Barbus luteus* (Heckel, 1843) IN AL-SUWAIB MARSH, SOUTHERN IRAQ

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ABSTRACT

Age and growth of two cyprinid species, *Barbus sharpeyi* Günther, 1874 and *B. luteus* (Heckel, 1843) from Suwaib marsh, south of the Huwaiza marshes, were studied for the period from December 2004 to November 2005. Twenty-one morphometric and seven meristic characters for each species considered in the study were described. The morphometric characters were calculated as numerical ratio to standard and head lengths. Scales, vertebrae and fin spines were used to estimate age of both species. The annuli on scales formed during December. The age composition of the two species ranged from 1 to 7.

FOOD HABITS OF BUNNI LARVAE (*Barbus sharpeyi* Günther, 1874)

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ABSTRACT

Food habits of Bunni larvae, *Barbus sharpeyi*, were studied after 7 days of hatching to investigate natural food preferred and feeding regime of *B. sharpeyi* from this stage until the fingerling stage. The study duration was extended from March to October 2006. Points and numerical methods were employed. The environmental parameters of ponds used showed that all parameters were suitable for culture of *B. sharpeyi*. The results showed a significant shift in food habits according to age. In the first weeks only plant remains and green algae (*Oscillatoria* sp. Vaucher ex Gomont, *Spirogyra* sp. Link, and *Cladophora* sp. Kützing) occurred with a percent of 23%, protozoa (*Euglena* sp. Ehrenberg and *Volvox* sp. L.) 49.3%, with artificial food (9.9%) and unidentified materials (9.4%). During the fifth week, food items showed an increase in phytoplankton (*Nitzschia* sp. Hassall, *Gymnodinium* sp. Stein, *Navicula* sp. Bory de St. Vincent, *Fragilaria* sp. Lyngbye, *Diatoma* sp. Bory de St. Vincent, *Cladophora* sp., and *Cyclotella* sp. Kützing); zooplankton (Rotifera (including *Keratella* sp. Bory de St. Vincent, *Brachionus* sp. Pallas, and *Trichotria* sp. Bory de St. Vincent) and Copepoda; both Rotifera and Copepoda comprised 12.7%), and crustaceans (*Moina* sp. Baird and *Acartia* sp.) and shrimp larvae (*Metapenaeus* sp. Wood-Mason), 13.4%. All these items appeared during the last week of April, and increased during the last two weeks of the fifth rearing month (May) to reach 35%. During the last weeks of the study period, aquatic remains, filamentous algae and *alfa alfa* remains were increased as a result of daily supplementation by the farmer.