

### INVESTIGATION POPULATION PARAMETERS of FRESHWATER MUSSELS and ECONOMIC EVALUATION POSIBILITY in LAKE ÇILDİR

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In this project, population structure, growth, meat yield, condition index, reproduction time, biochemical composition of somatic tissues, heavy metal, larval (glochidium) development, relationship between larvae and host fish and economical value of swan mussel *Anodonta cygnea* Linnaeus, 1758 were studied in lake Çıldır located in the north-east of Turkey (41°00N'-43°12E') between April 2001 and April 2003.

Freshwater mussel identified as *Anodonta cygnea*, Linnaeus 1758 in North of Caroline State Museum was first record for Lake Çıldır (basin).

Total 1227 specimens of *A. cygnea* were collected from the lake by the scuba divers from May 2001 to October 2001 and at the same time environmental parameters like temperature, electrical conductivity, pH, oxygen and chlorophyll-a were measured.

*A. cygnea* samples varied in size from 45 to 145 mm total length and mean shell length and live weight were 104.2±0.52 mm and 94.8±1.42 g respectively and the relationship between them as estimated as  $W=0,0001*L^{2,88}$  (r=0.96).

The highest meat yield was determined as 30.7% of wet weight for length group 75-85 mm. From the view point of dry meat it becomes 3%. For the smallest length group (45-55 mm), average eatable meat weight was 0.52 g, while it was 11.21 g for the biggest group (135-145 mm). The relationship between dry meat weight (DMW) and length was  $DMW=0.000003*L^{2,99}$  (r=0.95).

Condition index values exhibited clear monthly variations: reaching maximum value in July  $C_1=16.28±1.56$ , minimum value in October  $C_1=13.92±0.55$ .

Biochemical composition values (dry meat, water, ash, crude protein and crude lipid) of tissue showed monthly variations. Mean crude protein and lipid contents of *A. cygnea* were 41.66% and 6.39% respectively.

In this study, heavy metal (Cu, Cd, Pb, Zn, As) levels in meat of freshwater mussel soft parts were acceptable levels.

Reproductive time was controlled from May 2001 to July 2002. Duration of the gravity continued from the end of the July to next year June. Average larvae number and weight of mussels (n=34) with mean total length of 99.3±0.23 mm were found as 114999±955 and 4.79±0.029 g, respectively. Also the relationship between these parameters was  $N=43.696*L^{1,68}$  (r=0.42).

At the end of the study larvae (glochidium) of *A. cygnea* was observed as a host fish on *Cyprinus carpio* and *Barbus plebejus lacerta*. Other fishes couldn't be investigated.

Bivalves of the family Unionidae are major component of the freshwater benthos. They are considered to be an important organism among the most characteristic and wide spread of the riverine biota. Because mussels take place at the bottom of freshwater food chain they are often the major primary consumers in many aquatic habitats. Mussels are filter-feeders and they siphon nutrients from the water column. It is thought that these filtering activities contribute to maintaining clean, well-functioning river and stream ecosystems.

Freshwater mussels provide significant ecological benefits not only to Lake Çıldır also to many areas in the world. Native Americans recognized the valve of freshwater mussel as a food source and also good material for the construction of tools, utensils and pottery for jewelry as currency and for trading. In the Tennessee Valley the shell of ten species are used in the button industry and exported to Japan for cultured Pearl industry. In Romania, the shells of freshwater bivalves, nominally those of the genus *Unio*, are used as fodder in poultry farming. In Turkey, the shells of freshwater bivalves are used as the nacre for furniture in Gaziantep. But this species is not used for nacre because of thin shell. Furthermore swan mussels are often used for fish food. *A. cygnea* is not important commercial and usually is used for scientific investigation.

Finally, management of freshwater mussel stock is not suggested with out assessment of their stocks.

Haber



