

Contribution to the biology and geographical distribution of Aegagropila sauteri (Nees) Kütz.

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К биологии и географическому распространению Aegagropila sauteri (Nees) Kütz.  
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Aegagropila sauteri is a peculiar green algae, the branched thalli of which, according to the amount of growth, forms velvety spheres of a diameter of 3-4, sometimes to 5-6 cm. and bigger. Investigators attribute it to a special genus of green algae.

We first found A. sauteri in South Altai in the mountain lake Markha-Kul' in August 1964. Before then this alga was not known for Altai and other southern regions of the Asiatic part of the U.S.S.R.

The lake Markha-Kul' lies in the spurs of the Kurchumskii mountain range at a height of 1485 metres above sea level. Its total area is 750-780 km<sup>2</sup>, its length is 40 km. and breadth 19-20 km., its depth reaches to 30 m. It is a cold, freshwater lake. The mineral content of the water fluctuates within the limits of 80-120 to 222-350 mg. per litre. Oxygen saturation is 58.5-103.9%, pH 6.8-7.2. The colour of the water is from light to dark blue. Transparency is rather high and in the central area reaches 6 m. The maximum temperature of the water was noted in July (19-21°C).

The margin is almost plain, only on the north-west and south Sides of the lake are situated small bays and gulfs. The ground here is hard-clayey, sometimes sandy. Only in a narrow littoral belt, 5-10 m. broad, is laid down loose mud, rich in plant remains. Beyond the zone of littoral plants, from the edge of the water to a depth of 0.3-0.5 m. the ground is completely covered by an accumulation of A. sauteri. Small compact spheres (to 1-2 cm. in diameter) float even on the surface of the water but in a depth of 0.5-0.8 m., especially near to the margin, in a mass are met with somewhat large (to 6 cm. in diameter) loose spheres. With the most slight turbulence of the water they roll along the bottom: a large quantity of them are thrown by the surf to the shore. On the flat shore the strength of the surf differentiates the accumulation according to dimensions; the largest spheres pile up on the upper margin of the cast-up material, small ones in the lower region nearer the water. With an increase of depth the amount of A. sauteri declines; already at a depth of 1-2.5 m. only solitary specimens (however even here sometimes 30-40 specimens per sq. metre are counted) are encountered but deeper than 4 m. it disappears completely. A. sauteri is characteristic of regular, smooth clayey ground, covered by a thin sandy layer. Turbulence here reaches to the bottom and even in times of slight winds A. sauteri rolls on the bottom incessantly, that, apparently, stimulates the strengthening of the branching of the thalli and their transformation into velvety firm spheres. The wide distribution of A. sauteri on the lee shores once more attests to the high adaptation of the alga to the conditions of water bodies with strong turbulence and a smooth sandy bottom.

During observations on the growth and multiplication of A. sauteri in laboratory conditions and in nature (lake Markha-Kul') the development of spores was not noted. The alga developed only by vegetative means. During this the big spheres fell apart into small cottonwool-like little lumps, transforming themselves later on into muff-shaped velvety spheres. In the

absence of water movement the development of the spheres is somewhat slow. They become fluffy, flat, however with the least movement of the water they begin to round off and take on the condensed globose form. Consequently movement of the water does not appear to be the cause of the development of the globose forms of A. sauteri but it stimulates this process. The length of the separate vegetative cells reaches 250-260  $\mu$  (sometimes 300  $\mu$ ), the width 20-38  $\mu$ .

Thalli of A. sauteri have great importance in the enrichment of water bodies with biogenous elements.

Thrown on to the shore the spheres of the alga form accumulations and, gradually decomposing, transform themselves into loose organic mud, which is washed away by the lake water in times of strong turbulence. It can with success be used in the form of fertiliser for cultivated seedlings and fishery water bodies.

Laboratory experiments showed the possibility of cultivating A. sauteri at a temperature of 17-20°C. in basins with ordinary tap water. The alga grows and develops continuously forming by this small globose thalli.

With turbulence of the water the formation of green velvety spheres from its branched thalli comes quite quickly.

### **Notice**

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