

## **M.SC.**

### **SEMESTER 2**

#### **CC 5**

#### **TOPIC: FUNDAMENTAL AND REALIZED NICHE**

Since species are formed in course of evolutionary process, their ecological niches are formed in the evolutionary process, too. Species exist in a state of evolutionary stasis during hundreds of thousands and millions years. Stasis is sustained mainly by counterbalance of vectors of directional selection. Niche can be viewed as a multidimensional structure. Multitude of environmental factors acts upon every population, which cause elimination and, by that, selection for adaptation to each eliminating factor. Different directions of these vectors of selection lead to their counteractions; selection in one direction is interfered by selection in an opposite direction. The counterbalance of vectors of selection interferes with progressive evolution thus supporting stasis. During species existence in a stasis condition it endures a whole set of various deterioration of environment. Such deteriorations lead to imbalance of selective processes. Unbalanced vectors of selection form adaptations to extreme conditions of existence. Such adaptations are superfluous as for usual conditions; but they define fitness borders and, by that, borders of a fundamental niche. Realized niche, as well as fundamental one, is a multidimensional structure. Each population occupies a subniche of the specific realized niche. Thus, it occupies habitats where conditions are as close to an ecological optimum as can be admitted by the conditions in the given part of the areal. The sum of all subniches of populations--the specific realized niche--coincides with a part of fundamental niche because only the part of adaptive possibilities of a species sufficient for existence in the given environment is used. Interspecific competition, even when it is capable to restrict consumption of limiting resources, is not the reason of the realized niche limitation. Restriction of one or two of niche parameters does not influence all others parameters of its multidimensional space.

\*\*\*\*\*