



University of Zabol
Graduate school
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**The Thesis Submitted for the Degree of Ph.D.
(In the Agroecology)**

Title:

**Evaluation of the Ecological Condition of Eastern Region of
Coastal Urmia lake, Included Vegetation and Ecosystem
Sustainability**

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Abstract

This study was conducted in a region located in Khasello-Teimorlou, Gogan, Azarshahr, in the East Azarbaijan province. The reference areas were identified for sampling in order to introduce the flora of the area at the edge of Lake Urmia, with regard to the vegetation of the area excluded by the Ministry of Natural Resources of the province of East Azarbaijan and the control area. The sampling area was determined by the systematic method, the slope and the segmentation according to the soil salinity factor. Finally, seven plant communities were identified by the assessment of plant communities. The largest plant community belongs to *Halocnemum strobilaceum*, *Salicornia europaea*, *Salsola crassa* and *Agropyron Repens*. In the study of the region's taxonomy, it was found that camephytes with 55% and hemicryptophytes with 30% had the greatest abundance of biomass. The trophytes represented 11% and the phanerophytes 4% of the region's vegetation. The fourteen-year-old different agronomic groups cultivated area in the Azarshahr has shown that about 63 percent of the cultivated area is in cereals. Subsequently, vegetables, fodder, legumes, cucurbits and industrial crops respectively represented 20.8%, 7.9%, 5.5%, 1.6% and 0.6% of the area. The assessment of the sustainability of agroecosystems in this region during the period 2004-2017 showed that the level of sustainability decreased at the start of the period (2004-2006) and, after a temporary increase during the period 2006 -2013, continued to decrease. Therefore, stability conditions have decreased due to drought and soil salinity and reduced plant diversity in the region, as well as increased production costs and increased use of fertilizers and chemical pesticides.

Keywords: Azarshahr, Vegetation type, Ecosystem sustainability, Vegetation cover