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THE STUDY OF SHANNON-WEAVER (H) INDEX OF ALGAE IN AL-DALMAJ MARSH, IRAQ

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ABSTRACT

The qualitative and quantitative composition of epiphytic algae from *Phragmites australis* and *Typha* sp in the Al-Dalmaj Marsh was calculated for a year (2018-2019), then the diversity index was calculated, namely the Shannon Weaver Index. High values are noted in all seasons. We can say that the water is not polluted, stable and does not suffer from any environmental pressures.

KEY WORDS: Shanon- weaver index, Algea, AL-Dalmaj

INTRODUCTION

The Shannon index refers to a function of the number of all species in a society. It can be said that it expresses the state of the water body and it is one of the most used index in studies. Its value ranges from (0-5) if the value of the index is More than (3) ,the water body is stable and free of contamination, but if (1-3) the water body indicates average pollution, and if the index is less than (1) index of contamination of the water body, it is severe (Turkmen and Kazanci, 2010; Badsi *et al*., 2010). Shannon and Weaver index values scored less than (2), which indicates a weak internal structure.

MATERIALS AND RESEARCH METHODS

After calculating the qualitative and quantitative composition of the algae adherent to canes, sedge and clay, the index is calculated according to the following:

The Shannon Weaver Index

This index is used to clarify the relationship between the number of species, the number of individuals, their spread and availability. The value of the degree of the Shannon Weaver Index D is calculated from the equation developed by Margalef, (1969) illustrated in (Stilling, 1999; Porto-Neto, 2003) as follows: -

D = (S-1) / lna N
D is a index to richness
S: number of species in the sample
N = the total number of individuals in the sample

RESULTS AND DISCUSSION

The Shannon Weaver Index

The lowest value recorded for the Shannon Weaver Index in epiphytic for *P. australis* was (2.63) bit / ind. in the fourth station in the winter season, and the highest value was (4.38) bit /ind. in the first station in the spring and summer seasons at an annual rate of (4.04) Bit/ind. Figure (1). As for the lowest value of the Shannon Weaver guide for epiphytic *Typha* sp. was (3.8) bits /ind. in the fifth station in the winter season, and the highest value was (4.24) bits /ind. in the first station in the summer at an annual rate of (4.03) bits / ind. Figure 2. The lowest value of the Shannon Weaver forepipelic was (1.88) bits /ind. in the fifth station in the winter season and the highest value was (4.47) bits /ind. in the second station in the spring at an annual rate of (4.11) bit/ind. Figure (3).

From the current study, we note that the largest values of the Shannon - Weaver index were in the

spring and summer of all the studied algae. It ranged more than 4, which indicates that the system is stable and not polluted, then the autumn season. The reason for this is the increase in the water level. Epiphytic algae for *p.australis* reached (3.71) bits/ ind. which indicates that it is not polluted. As for the study stations, it recorded more than 3 bits / ind. which indicates a high diversity and the water is clean. As for epipelic algae the lowest values were recorded in winter (1.88) bits / ind. in the fifth station It is due to inadequate environmental conditions such as low temperatures, lack of oxygen, and nutrients, increased pollutants, and abundance of phagocytes. (Naz *et al.,* 2013), but at a rate of (3.33) bits /ind. in this season and this indicates the presence of average environmental pressure. But all annual rates and stations were recorded more than (3) That is the water is clean and the diversity is high, and it is related to the richness of species in general, higher productivity and a larger food chain. This results in a more stable community and less fluctuation, and community with higher diversity are evidence of less pollution (Jyothi *et al.,* 2016; Malike and Bharti, 2012). This

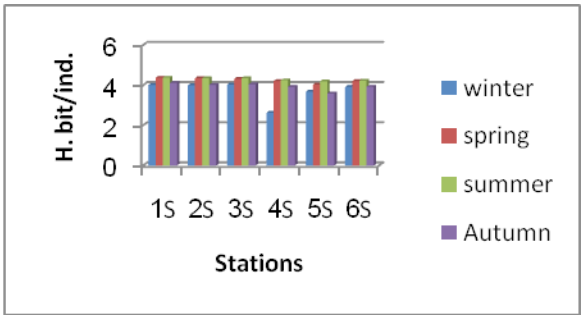

Fig. 1. Seasonal changes of Shannon and Winner index for epiphytic (bit / ind.) of *P. australis* in the study stations

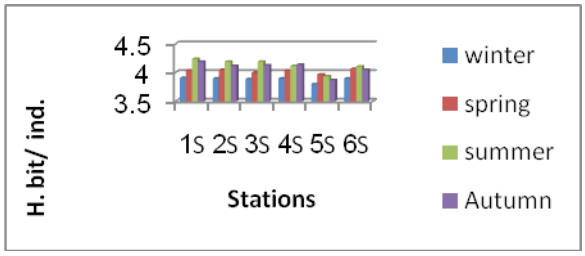

Fig. 2. Seasonal changes of Shannon and Winner index for epiphytic (bit / ind.) of *Typha* sp. in the study stations

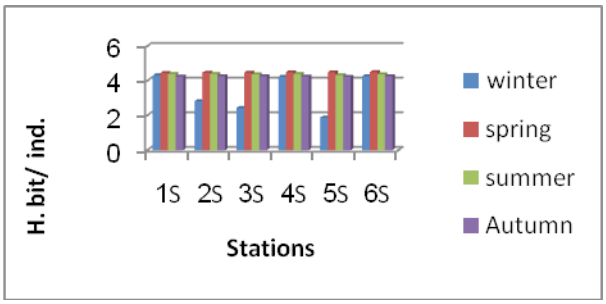

Fig. 3. Seasonal changes of Shannon and Winner index for epipelic (bit / ind.) in the study stations

results agree with results of (Salman and Nassar, 2012).

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