The primary production of the Salt Lake of Mesolongi, Greece

Nicos A. HADJISTEPHANOU

Fisheries Department, Ministry of Agriculture and Natural Resources, NICOSIA (Cyprus)

Introduction

The water of the salt lake of Mesolongi, which is a salt-works entreprise, is under special management: It is being pumped and moved in the various parts of the salt-works, where it is retained in evaporation ponds for time intervals which differ from one to the other. The time intervals are long enough to create different parameters (temperature, salinity, pH, etc.) from one pond to the other. The purpose of this study was to measure the primary production of the various parts of the Salt Lake of Mesolongi.

Material and methods

The primary production of the Salt Lake was determined by measuring the photosynthesis by the "light and dark bottle" method. Estimates were made in two selected dates, one in the middle of the Spring and the other in the middle of the Autumn.

The experimental procedure as it is described by STRICKLAND and PARSONS (1972) was followed. For the required determinations 16 stations were selected, covering all the area of the salt-works. The incident and absorbed by the water energy was calculated from the meteorological data for the solar radiation of the area of Mesolongi.

Results and discussion

The results of the gross and net photosynthesis, as well as respiration were calculated in mg C/m^3 per hr and they are given on the table.

From the results it is concluded that the different parts of the lake function like different ecosystems, although they are not completely isolated and separated. As a general classification, these "systems" can be grouped into three broader groups.

The first group includes the very last parts of the salt works, i.e. the evaporation ponds before the crystallizers. It is the most infertile area of the lake. The second group includes the evaporation ponds at the beginning of the salt-works. GP is small in April and satisfactory in October. The third group are the evaporation ponds in the middle of the lake. The highest production occurs in these ponds and the most productive station is included in this area.

It must be noted that all the stations have shown gross primary production. Furthermore, in all the stations respiration was detected. It is therefore obvious that the primary producers are found all over the salt lake. As it can be seen from the results, the energy lost in respiration by the autotrophs varies in the various ecosystems.

Table : The Primary Production of the Mesolongi salt lake

Station	April			October		
	GP	NP	R	GP	NP	R
1	0.0	0.0	0.0	-	-	-
2	188.7	40.4	146.8	-	-	-
3	165.4	57.4	106.6	308.3	8.3	297.0
4	100.5	100.5	0.0	39.9	8.5	25.1
5	352.2	119.9	299.9			
6	298.6	124.4	172.5	114.6	64.2	49.9
7	243.1	125.8	116.2	0.0	0.0	0.0
8	355.7	0.0	352.1	127.7	88.4	38.9
9	367.9	223.2	143.2	483.2	226.2	254.5
10	210.8	110.0	99.8	47.4	23.7	23.5
11	110.0	82.5	27.2	103.1	88.4	14.6
12	41.2	0.0	40.8	20.4	10.2	10.1
13	88.9	22.2	66.0	323.8	195.3	127.2
14	70.2	25.4	44.4	215.9	154.2	61.1
15	78.9	60.4	18.3	104.8	41.9	62.2
16	153.2	78.6	73.9	117.5	53.4	63.4

Results in mg C/m^3 per hr.

On the basis of ODUM's (1963) classification and considering the whole area as one ecosystem, the salt lake of Mesolongi is classified in the autotrophic ecosystems. Moreover, if the various groups of the evaporation ponds as described earlier are examined separately, it is noted again that each separate group forms an autotrophic ecosystem.

The measurement of the gross production in relation to the total incident radiation enables the classification of the corresponding to station 9 pond among the fertile ecosystems. The other stations show a satisfactory gross production.

It is generally concluded that the Mesolongi salt lake is a productive area.

REFERENCES

ODUM E.P., 1963.- *Ecology*. Holt, Rinehart and Winslon. New York.

STRICKLAND J.D.H and T.R. PARSONS, 1972.- A practical Handbook of Seawater Analysis. *Fish. Res. Board of Canada Bull.* 167. Ottawa.