The primary production of the Salt Lake of Mesolongi, Greece

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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

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

Fisheries of Lake Quarun, Egypt

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Lake Quarun is a desert lake located 180 km. west of Cairo. The isolation of the lake in the western desert resulted to various salinity levels from about fresh water (drainage water) to about 32 ppt in the open lake.

The sharp decrease of the annual catches was expected as a result of several influences; among which the uncontrolled transplantation of marine fish fry into the lake seems to be the most important. A total catch of about 3000 tons landed in 1971 dropped to about 500 tons during the last years.

Material and method

Monthly collections of water samples, fish eggs and larvae, data on fish catch and used gear were obtained for the period from June 1990 to September 1991.

Results and conclusion

During the period of sampling, salinity of lake water varied form 2.1 ppt near the openings of the drains to about 32 ppt in the open lake. The unusual increase in water salinity was due to the high level of evaporation which affected severely populations of different tilapias. The catch analysis revealed that *Tilapia zillii* was numerically dominant, making up the 1.4% of the catches. *Oreochromis aureus* amounted to 4.5% and the rest of 1.5% was shared between *Oreochromis niloticus* and *Sarotherodon galilaeus*.

Solea vulgaris caught by trammel net (operated on the lake bottom) constituted about 10% of the total annual catch of the lake amounting to 135 tons in 1989. The recorded catch was about six times higher in 1966 (863 tons).

Catches with trammel net, frequently used in the lake, included species such as anchovy (*Engraulis* sp.) with average length from 7 to 10 cm. and gobies (*Gobius niger*) with average length from 10 to 13 cm.

The seasonal study of fish eggs and larvae confirmed the successful completion of spawning of adult anchovies in the lake. Larvae of about 1.3 cm. total length appeared in the hauled samples. Neither larvae nor eggs of grey mullets were identified and hence the observations of WIMPNEY (1936) and EL-ZARKA (1963), according to which *Mugil capito* and *Mugil saliens* spawn in the lake were not confirmed (*Mugil* spp. are annually transplanted into the lake).

Fisheries of lake Quarun would be developed if the illigal fishing and uncontrolled transplantation of marine fishes was eliminated.

Other marine fishes such as the cartilagenous skate (*Rhinobatus* sp.), sea bass (*Morone labrax*) and sea bream (*Chrysopherus aurata*) which are hap-hazard transplanted with the fry of grey mullets, appeared as adult fish in the lake.

Other factors, such as shrimp fisheries and water salinity are considered to base a sound policy for the future development and management of the lake.