

The annual variations of the zooplankton standing stock in the Saronikos gulf, Aegean Sea. Quantitative results during 1972-74.

by

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Summary

The variations of the zooplankton standing stock have been studied during 11 cruises from December 1972 till June 1974 in the Saronikos gulf. The urban wastes of the city of Athens, if this is the source of nutrient supply only, doubles the zooplankton biomass values in the inner region of the Saronikos proper, at the north-east area of the Saronikos gulf.

Résumé

Cette étude, basée sur l'examen d'échantillons collectés durant 11 campagnes, de décembre 1972 à juin 1974, couvrant chaque fois 38 stations dans le golfe de Saronique, se rapporte aux variations quantitatives du zooplancton. Plusieurs données ont pu être dégagées : Les eaux usées domestiques multiplient la biomasse par 2, à l'intérieur de la partie nord-est du golfe Saronique. L'île d'Égine est le centre de circulation de masses d'eau qui provoquent une eutrophication dans les deux parties opposées nord de l'île. La baie d'Elefsis est sujette, elle aussi, à un phénomène d'eutrophication dépendant du mouvement de la circulation des rejets domestiques.

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The variations of the zooplankton standing stock have been studied from samples collected during 11 cruises, from December 1972 till June 1974, at about 38 stations each time spread all over the Saronikos gulf.

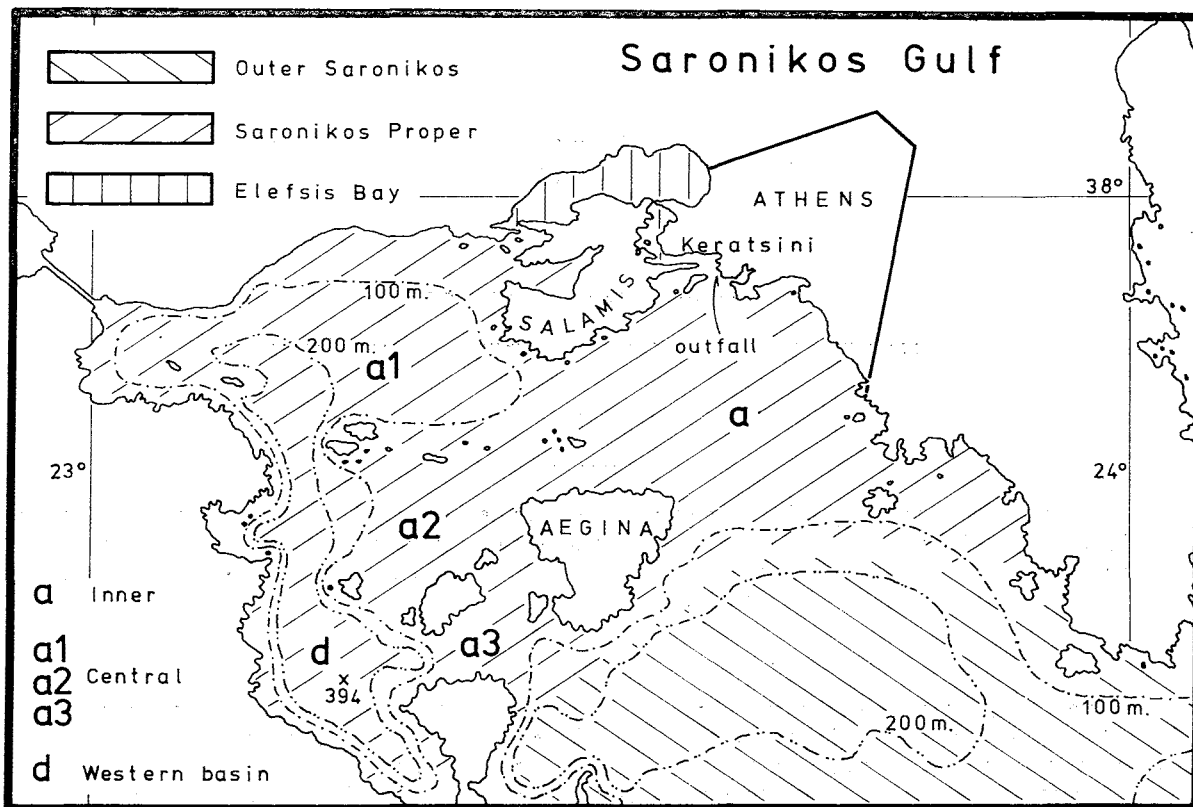
Sampling has been carried out by vertical hauling from the bottom to the surface, with a WP-2 nylon net, mesh size 0.24 mm and the biomass has been calculated in mg/m³ of dry weight.

Preliminary results obtained from data of the three first cruises have been reported [YANNOPOULOS *et al.* 1973]. Previous data have also been given [YANNOPOULOS *et al.* 1973] from occasional observations which provided the first information on the zooplankton biomass values in the Saronikos gulf.

According to our preliminary results from the three first cruises, based on zooplankton dry weights, we divided the investigated area into three major sectors; the outer Saronikos gulf, the Saronikos proper with central and inner regions and the Elefsis bay.

The outer Saronikos has water quality similar to the one of the Aegean Sea, with mean values of zooplankton dry weights varying from a max. of 4.5 mg/m³ to a min. of 2.8 mg/m³. In the eastern part of the outer Saronikos isolated water masses with quality of the inner Saronikos have been observed "floating" in the upper layer of the first 50 to 80 meters. These patches present higher concentrations of nutrients from the surroundings and can easily be detected from the chlorophyll analysis. Zooplankton biomass values are also higher but not so different because of the short period between the enrichment and the displacement of the patch.

Rapp. Comm. int. Mer Médit., 23, 9, pp. 107-108, 1 fig. (1976).



The Saronikos proper can be divided into two regions; the central which occupies the area between Salamis and Aegina islands, the north-west and south-west Saronikos gulf, and the inner, that is, the north-east area of the Saronikos gulf which is directly influenced by the urban wastes. The mean zooplankton dry weights from the Saronikos proper varies from a max. of 9.1 mg/m^3 to a min. of 2.1 mg/m^3 .

The Elefsis bay appears very eutrophicated with max. zooplankton biomass value 37.7 mg/m^3 and min. 27.5 mg/m^3 .

The following conclusions can be drawn.

1. The urban wastes of the city of Athens double the zooplankton biomass in the inner region of the Saronikos proper.
2. Aegina island seems to be the centre of a clockwise or counter-clockwise movement of the water masses. In the first case we have displacement of enriched water masses along the east coastal waters of Saronikos gulf. In the second case, patches move along the south coast of Salamis island.
3. Eutrophication observed at the two north edges of Aegina are due to the water circulation around the island.
4. The urban wastes are responsible for the eutrophication of the Elefsis bay; they often enter the bay when circulation pressures direct water masses of the inner region towards the east channel. The industrial contribution to its eutrophication seems to be less important but not yet estimated.

References

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