

THE COASTAL LAGOON OF FUSARO (NAPLES, ITALY), SOME ECOLOGICAL ASPECTS AND FISHERY PRODUCTION

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Fusaro Lake, the ancient "Palus Acherusia" is a brackish lagoon located on the Tyrrhenian shore (20 km North of Naples). It was formed, most probably, following a secondary volcanic phenomenon belonging to the sulfataric type, which brought to a geological structure of a circular form, originally bigger than the present one, reduced to the present trapezoidal form by a great dune that now separates the lake from the sea and that surely can be considered of marine origin (LECCESE and SPEZIALE, 1967). The surface of this lake is about 969.120 m² (LECCESE and SPEZIALE, 1967) and it communicates with the sea by means of 3 mouths, that can be considered the key for the equilibrium of the entire lagoon, a typical characteristic of the coastal brackish lagoon (CARRADA, 1973). The maximum, minimum and mean depths are respectively 6 m, 1.10 m and 3.065 m. The extreme temperatures can reach 28-30° C at the maximum and values of a few degrees at the minimum, however the annual mean is 20-21° C (LECCESE and SPEZIALE, 1967). As to salinity it can be evidenced that extreme values have been reported (32.8% - 41.5%) but the average maximum and minimum salinities are 35.5% and 37.9% (MAGAZZU' and PANELLA, 1969). As to dissolved oxygen there is a considerable evidence of high winter and spring concentrations (CARRADA, 1973). However, although values are high in the bottom areas rich of phytobenthos, in the deepest waters concentrations below the level of saturation are observed for the greater part of the year (MAGAZZU' and PANELLA, 1969). In the spring-summer period the formation of a partially or totally deoxygenated thicker zone at the lake bottom could be observed (MAGAZZU' and PANELLA, 1969). The considerable presence of nutrients, mainly inorganic phosphates (MAGAZZU' and PANELLA, 1969) induces to agree wholly with MONTALENTI (1967) who indicated a great pollution in the lagoon and with LECCESE and SPEZIALE (1967) who denounced the irresponsible human activities that have brought the mentioned lagoon to the actual conditions. Notwithstanding this difficult situation the fishing of Cephalopods Molluscs and Teleosteans is still practiced successfully in Lake Fusaro, while that of bivalve Molluscs has been totally abandoned, regardless the existence of the well-known local tradition and the considerable scientific contributions relative to the ecology and management of this lagoon (RENZONI and SACCHI, 1961; SACCHI and RENZONI, 1962).

The fishery statistic data, gathered by the Centre Ittico Tarantino Campano, which manages the lake and entrusts to an external cooperative society its fishing exploitation, is analyzed in a preliminary manner. Data of 25 years, from 1968 to 1993, have been registered dividing the catches in: sea bass, gilt-head sea bream, red-mullet, base, annular sea bream, mullet, sel, cuttle-fish and octopus. The fishing gears used are fundamentally trammel-nets, winged fyke-nets and fishing-lines. In the month of December, special winged fyke-nets are used, placed in the central sea-communication channel. Regarding the sea bass (*Dicentrarchus labrax* L.) and the sea bream (*Sparus aurata* L.) it can be evidenced a contemporary maximum of capture in 1970, with 3701 kg. and 1309.2 kg. respectively. Red-mullet (*Mullus barbatus* L.) were captured only in 1975, for a total of 2.75 kg. Regarding base (*Diplodus sargus* L., *Diplodus vulgaris* (E. Geoffr.) and *Diplodus puntazzo* (Gm.)) it is evidenced the height of capture (461.8 kg.) in 1982, year in which a notable presence of sea bass (3171.1 kg.) and mullets (1052.35 kg.) were registered. The production of mullets (*Mugil cephalus* L., *Liza ramada* (Risso), *Liza aurata* (Risso), *Liza saliens* (Risso) and *Chelon labrosus* (Risso) reached a considerable level (15855.2 kg.) in 1969 while the sels (*Anguilla anguilla* L.) reached the production of 7562.95 kg. During the same year, 503 kg. of cuttle-fishes (*Sepia officinalis* L.) and octopusses (*Octopus vulgaris* Lamk.) were caught. Lastly, the presence of salem (*Sarpa salpa* L.) and shrimps (*Palaemon* and *Palaemonetes*) is evidenced for a total of 16 kg. It is evident from a first analysis that Fusaro fisheries are rich in commercially valued species, mainly sea bream

and sea bass representing about 20% of the total catch, as also observed in a general study on aquaculture in Campania (DALLA ROSA, 1984). In 1982, the marked production of sparoids leads us to hope in a total recovery of the lagoon, if there is a rapid intervention. The great presence of sparoids, as it is well-known, indicates a low trofic level. However, the most important production is that of mullets and eels that are present in great abundance mainly in the lagoon post-dystrophic period. In conclusion, it is out of any doubt that with correct management Lake Fusaro could be one of the most productive Tyrrhenian lagoons in terms of fishing industry.

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