

tions generally resulted in larger cells than those of control cultures. Indole-3-acetic acid caused quite variable results, apparently due to uptake kinetics by the alga.

106

NORRIS, JAMES N. National Museum of Natural History, Smithsonian Institution, Washington, D. C. - Introductory remarks on the Gulf of California, Mexico.

The general geographic features and a shorter historical review of marine botanical exploration in the Gulf of California will be presented.

107

NORRIS, JAMES N. National Museum of Natural History, Smithsonian Institution, Washington, D.C. - Distribution and Seasonal Variation of the Benthic Marine Algae in the Gulf of California.

The Gulf of California is largely influenced by its desert surroundings. The uniqueness of the Gulf is due, in part, to this continental rather than oceanic climate. The oceanographic features of this body of water will be discussed, including the tidal and climatic features affecting the geographic distribution and seasonal occurrence of the marine algae. In the northern Gulf, there is extreme tidal exposure during the semidiurnal low tide series. Tidal changes can expose up to 100 meters of intertidal substrate, and subject the algae to severe desiccation, strong light intensity, and usually low surf action. Extreme fluctuations in onshore water temperature occur between summer (30°-32°C) and winter (10°-11°C). These variations provide the Gulf with a distinctive seasonal alternation of the marine flora. Studies on species composition, distribution and seasonality of the benthic marine algae have revealed a rich flora with marked seasonal variation. Comparisons between the intertidal and subtidal marine floras on the Gulf coasts of Baja California and Sonora, and Las Islas de la Cintura (Midriff Islands) will be made. Consideration will be given to the tropical, subtropical and temperate elements of the flora, and floristic affinities of the Gulf to other regions.

108

LITTLER, MARK M. Department of Ecology and Evolutionary Biology, University of California, Irvine. - Structure and Productivity of Intertidal Macrophyte Communities.

Two macrophyte communities from opposite sides of the Gulf of California (Puerto Peñasco and Punto Bufeo) were found to be quite similar and these are compared with a very different community on the Pacific coast of Baja (Bahia Santa Rosalia) at about the same latitude. The dominant macrophytic communities in the Gulf were characterized by relatively higher primary production rates, shorter and simpler life histories, smaller

growth forms and, therefore, less three-dimensional spatial complexity. The differences in macrophyte communities reflect differences in stressful environmental variability, which is unusually extreme in the upper gulf, thereby favoring algal populations that are opportunistic colonizers of primary substrates in the upper Gulf of California.

109

KIEFER, DALE A., OSMOND HOLM-HANSEN and TOM BERMAN. Scripps Institute of Oceanography, LaJolla, CA, and Lake Kinneret Limnol. Institute, Tiberias, Israel. Phytoplankton and primary production in the Gulf of California.

The phytoplankton crops at 15 stations within the Gulf of California were sampled. Stations ranged from Wagner Basin in the north end to the mouth of Bahia de Banderas, 460 Km south of the Gulf. Measurements of the vertical distributions of temperature, chlorophyll, and solar irradiance in the upper water column were supplemented by measurements of primary production, biomass, adenosine triphosphate, dissolved oxygen and inorganic nutrient concentrations. In addition, phytoplankton species were enumerated in preserved samples. Attempts to relate the species composition to the biogeographic regions of the Gulf suggested by Round (1967) were unsuccessful. This was due in part to the limiting sampling program and to the large differences in the species composition for stations in proximity. The patterns in primary production and vertical distributions of phytoplankton within the Gulf appeared, however, to be related to hydrographic regions such as those suggested by Roden and Grover (1959). In addition to the north end, the central, and southern regimes, we feel that hydrography of the midriff region is unique and is of special importance to primary production in the Gulf. In a discussion of these 4 regimes we will consider the importance of both wind (upwelling) and tidal mixing of the water column to primary production.

110

NEUSHUL, MICHAEL. University of California, Santa Barbara. - Comparative and contrasting aspects of the Gulf marine floras.

A summary and overview of the preceding papers will be presented, with the objective of drawing attention to similar and dissimilar features in the floras of the Gulf of California and the Gulf of Mexico.

111

GERWICK, WILLIAM H. and NORMA J. LANG. University of California, Davis. - Structural, chemical and ecological studies on iridescence in *Iridaea* (Rhodophyta).

The phenomenon of iridescence is spectacularly displayed by a foliose red alga, *Iridaea*, common to intertidal habitats along the California coast. In the literature speculation on the cause of iridescence in