- develop new fish and wildlife management tools (e.g., genetic stock identification in commercially important fish species);
- provide integrated and synthesized information on the status, trends and health of fisheries and other marine resources, including water quality and contaminants in fish and wildlife consumed by people (e.g., produce annual "state of the gulf" report, with periodic updates as new information becomes available);
- support the identification and protection of important marine habitats (e.g., assist with siting of marine industrial and mariculture facilities; establish protected reserves); and,
- foster efficiency through interagency coordination and scientific leadership and the leveraging of GEM funds to guide uses of funds from other sources (e.g., the NOAA/NSF GLOBEC program on climate change and the oceans).

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Photoadaptation and temperature dependency of primary productivity in the Black Sea

The Black Sea exhibits large seasonal temperature variations in its surface waters. The persistency of the cold intermediate layer and warming surface waters lead to a steep temperature gradient at the upper parts of the euphotic zone (EZ) in summer. Consequently, phytoplankton in the upper layer are *trapped* close to surface where light is abundant, and can develop adequate photoadaptational characteristics. Moreover, enzymatic reactions are faster and photoinhibition is less effective in warm surface waters, which leads to high photosynthetic performance, thus high primary productivity per unit chl-a. Indeed, apart from two major phytoplankton blooms occurring in early spring and autumn in Black Sea, additional summer blooms have frequently been reported. For 1997-1998 period, surface temperatures varied between 24°C (July'97) and 9°C (March'98). P-I curves are drawn by using ^{14}C method for the upper and lower layers of the EZ, and highest Pmax values were always detected at the upper layer (75-60 % light depth) when surface temperatures were high (> 20°C). Highest Pmax in the upper layer was estimated as 30 $mgCmgChl\text{-}a^{-1}h^{-1}$ in July'97 (surface T=24°C) and the lowest value was 4.1 $mgCmgChl\text{-}a^{-1}h^{-1}$ in April'98 (surface T=10°C). The gap between curves drawn from upper and lower layers increased by surface temperature. They nearly matched at 9°C (March'98), but were pronouncedly different in shape and magnitudes at temperatures exceeding 20°C. Photoinhibition was pronounced at irradiances around 300-400$\mu E.m^{-1}.s^{-1}$ at lower temperatures, but was not detected at such irradiances in July'97 and September'98 where surface temperatures were 24°C and 20°C, respectively. Bulk of the primary production was accomplished at the upper few meters of the EZ.

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