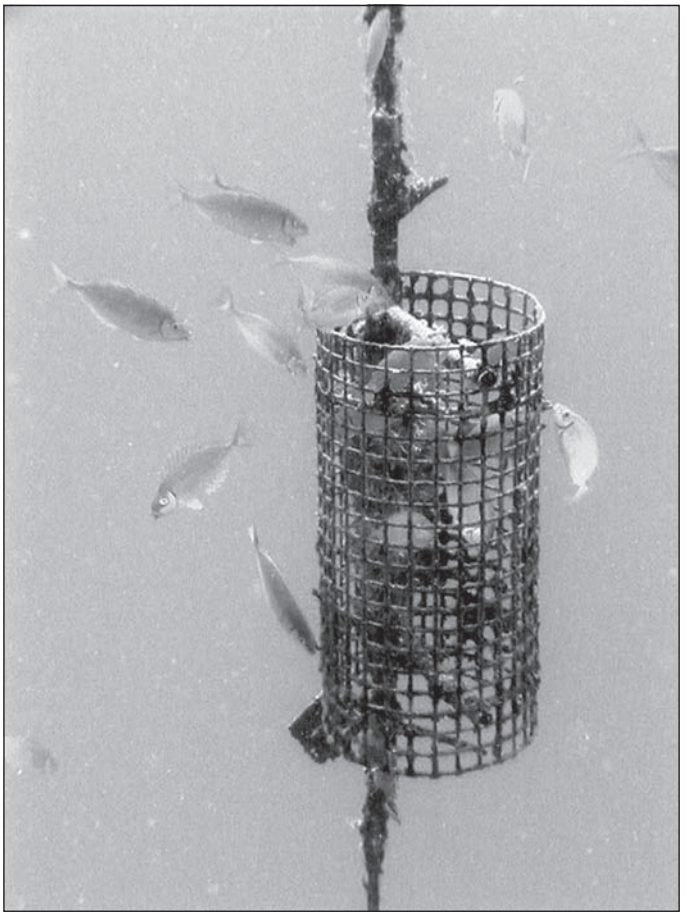

Fig. 7. Fish grazing on a bio-filter (Photo: S. Breitstein)

Fig. 8. Fish in a tube sponge on top of a bio-filter (Photo: S. Breitstein)

mercial fish farms on various marine habitats around the world.

Suggested reading:

"Crosshatch Artificial Reefs to Reduce Organic Enrichment by Commercial Net Cage Fish Farming in the Gulf of Eilat". CMS News Report No. 26, December 1999, pp. 14 -15)

Ehud Spanier

QUO VADIS ANATOLIA? THE COMPLEX TECTONIC REGIME OF CYPRUS ARC

The tectonic regime of Cyprus Arc is generally considered to be that of a collision zone between the northward moving African Plate and the southward moving Eurasia, a collision that is bound to close the eastern Mediterranean in the foreseeable geological future. The Arc is the location where the Tethyan lithospheric toe of Africa, in the easternmost Mediterranean, is being subducted northward under the Anatolian plate. Characteristic to this subduction process is the subsidence of the northern edge of Eratosthenes Seamount. A transect of 3 boreholes, that was drilled along the northern flank of the Seamount during ODP leg 160 in 1995, encountered evidence that the Seamount was affected by subaerial(?) erosion since the late Miocene, and that the most extensive erosion has affected the deepest part of the flank explored, which today is located at water depth of ca. 2500 m. This finding suggests that the presently deep part of the seamount had been near its summit in the late Miocene, and has subsided more than 3 km since then. It is reasonable to presume that the northwards subduction thrusted the northern flank of the seamount into its present structural configuration. Concurrently the Troodos Massif of southern Cyprus was uplifted by more than 4 km during that timespan. The converging motion of Africa towards Anatolia, the subsidence of Eratosthenes Seamount and the contemporaneous uplift of Troodos, should have led to the emplacement of Cyprus ophiolite on top of the continental lithosphere of Eratosthenes, therefore Cyprus Arc could have been considered a prime example of ongoing obduction of oceanic crust on top of a continental lithosphere.

However, numerous recently acquired GPS measurements show that Anatolia is not moving southwards to collide with Africa as expected, but it moves westwards, and the rate of displacement increases westwards and exceeds 30 mm/yr at the Aegean Basin, which is approximately 20 times faster than the rate of Africa-Anatolia collision. Consequently, the structural layout of the NE-trending eastern segment of Cyprus Arc, from Hecataeus Plateau to western Syria is transtensional. Earthquakes along Cyprus Arc and its surroundings show composite displacement patterns, most of the earthquakes show sinistral strike-slip offset, many are extensional, and compressional motions were encountered mainly along the central segment of Cyprus Arc. It is of interest to note that the region between southern Anatolia and Cyprus is characterized by predominantly extensional structural patterns, as indicated by a series of salt diapirs that were encountered in Cilicia Basin. Furthermore, during the early Pliocene, Mesaoria Plain in central Cyprus and Flor-

ence Rise were located in similar shallow marine depositional environment, but during the late Pliocene and the Quaternary Cyprus was uplifted while Florence Rise subsided to bathyal depths. These displacements suggest extensional tectonic regime off western Cyprus. Comparison of these and similar findings with the tectonic regime of the Tyrrhenian and Alboran Seas in the western Mediterranean, as well as the results of recent experiments in analog models, suggest that the prime tectonic process in the eastern Mediterranean is the Ionian subduction and its seawards roll-back. That migration of the Ionian Arc system presumably causes the extensional opening of the Aegean Sea since the middle Miocene and the westward motion of the Anatolian microplate. The ascent of Cyprus since the late Miocene is its structural response to westwards extension and the consequent structural detachment of Florence Rise and the uplift of Cyprus.

Yossi Mart and William Ryan

GEOMORPHOLOGICAL RESEARCH — ONGOING PROJECTS

Research being carried out in this field focuses on two main subjects: reconstruction of paleoenvironmental conditions along the northern coast of Israel; indications of paleo sea levels over the last thousand years. The first project presented below deals with environmental changes and their effect on human settlement along the northern Israeli coast, while the second and third projects deal with evidence relating to sea level changes along the Israeli coast.

The Paleogeography of the Taninim river mouth and the Kebara swamps in the Holocene

This research is part of the Ph.D. thesis being prepared by Ronit Cohen, supervised by Dorit Sivan of the Leon Recanati Institute for Maritime Studies (RIMS) and the Department of Maritime Civilizations, Moshe Inbar and Noam Greenbaum, both of the Department of Geography, all of the University of Haifa. Ahuva Almogi-Labin and Amnon Rosenfeld, both of the Geological Survey (GSI), Jerusalem, acted as scientific advisors.

The aim of this research is to reconstruct the environmental conditions of the southern Carmel coastal plain during a period of fundamental sea level and climatic change. These changes brought about sedimentary changes and landscape alterations, which influenced human settlement patterns. The area investigated extends from the Daliya River mouth in the north to the Taninim River mouth in the south, and from Mount Carmel in the east to the Hayonim Island

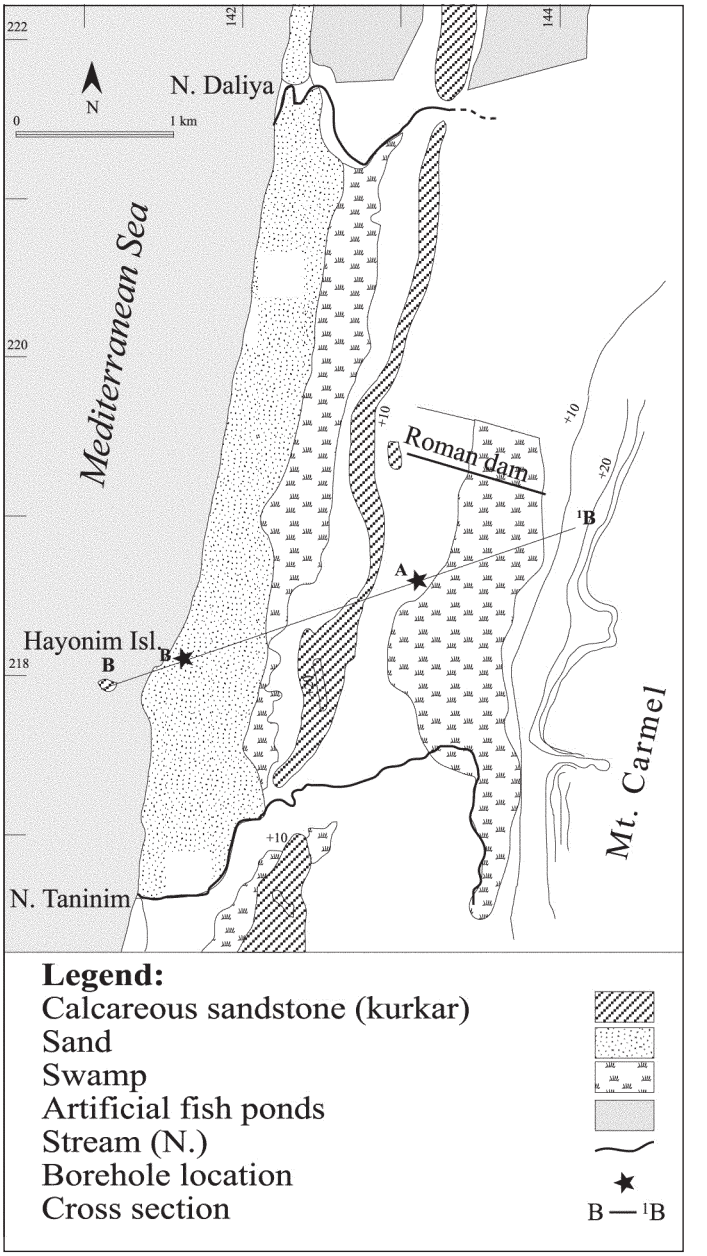

Fig. 1. Map of study area (Drawing: N. Yoselevich)

and the submerged ridge on the shallow shelf (Fig. 1).

Two core drillings were carried out, one on the coastline (core B), the second (core A) east of the *kurkar* ridge, at the center of the wetland area. The east borehole (A) was drilled down to 16 m; the west one (B), down to 12 m. Both cores present continuous sequences. The coastal drilling sequence consists of 7.5 m of sand, overlying 4.5 m of dark clay, which becomes brown at the bottom. To the east of the ridge, the 16 m sequence consists of clays from top to bottom, becoming red towards the bottom. It appears that the brown clay represents a paleosol, while the dark clay was deposited in a wetland environment.

The sedimentological analyses, which were performed at the Department of Radiography, Bnei Zion Medical Center,