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# 10 Summary

During the last millennia, the former marine embayment of the Latmian Gulf has been silted up by the progradation of the Büyük Menderes (Maeander-)delta. Long-term human impact (chapt. 3) together with an ecologically unstable natural environment in the Mediterranean (chapt. 2) has led to strong erosion in the hinterland and the resulting delta progradation and gradual infill of the embayment. The result of this is that ancient seaports such as Miletos, Myous and Priene have become landlocked and their harbours useless. This has led to the decline and final desertion of the settlements. Their history has therefore been closely connected with the evolution of the landscape in the region.

In this publication, landscape history was assessed through the geological and geoarchaeological evaluation of the archives "alluvial plain", "delta" and “residual lake” (chapt. 4). Altogether 115 sediment cores have been taken by means of a percussion-coring device. Sedimentological, petrological and palaeoecological examinations in the laboratory followed. The environment of deposition – i.e. littoral, marine, lagoonal, limnic or terrestrial – was ascertained by macro- and microfaunal analysis. The use of macrofloral investigations provided information about the vegetation history. The upscaling of selective results was done using geophysical measurements. Dating the cores with artifacts and the radiocarbon method led to the establishment of a chronostratigraphy. Having measured the position and altitude of the cored sites with differential GPS, the corings were then finally combined to stratigraphic cross sections. Supplemented by input from archaeology and historical sciences, a reconstruction of the palaeogeographic evolution of the study area in different time slices could then be achieved (chapt. 7).

Delta progradation initially occurred both in the central part and at the northern flank of the Latmian Gulf (chapt. 5.4-5.9). The area to the northwest of the former island of Hybanda started to become landlocked as early as 1500 BC (chapt. 5.5.1 & 5.6) and the Hellenistic Priene was reached in the 8th century BC (chapt. 5.5.2). In contrast, the myousian peninsula was located at the open sea until the Late Classical-Hellenistic period. This indicates an asymmetric delta growth, caused by a bifurcation of the Büyük Menderes River into a northern and southern branch. At least until the Hellenistic-Roman period, the northern branch was dominating the delta progradation. Having passed Priene, it turned south, reaching the area of Miletos most probably in the Roman Imperial era (chapt. 5.5.3, 5.5.4 & 5.5.5). As a conse-

quence, in the southern part of the Latmian Gulf the "Milesian Lake" became separated from the open sea. In Byzantine times, this lake was gradually infilled by the sedimentation of the new southern branch of the Meander and lost its connection to the open sea (chapt. 5.7). Today the still brackish Bafa Gölü is the last remnant of this former much bigger aquatic environment.

Besides the spacious results of the delta progradation in the entire plain, a close-meshed grid of corings in the vicinity of the ancient cities rendered additional information about their possible harbour sites. As for Priene, the eastern embayment had already changed into a slightly brackish to freshwater lake when the city was founded anew ca. 350 BC (chapt. 5.1). A connection to the open sea – probably via an anthropogenic canal or the Maeander itself – could not be deciphered. It was therefore not usable as a harbour. Most probably the Late Classical-Hellenistic harbour was located in the embayment west of the promontory. In spite of littoral conditions and peat growth at its margins as early as in the 8th century BC, in the central part waters remained deeper and the marine-lagoonal environment continued into the Roman Imperial era. Not before the 2nd century AD did a freshwater environment start to become established. Finally, both embayments were integrated into the delta plain due to the sedimentation of the Maeander and the torrential rivers running down from the Mykale mountains.

Potential archaic-classical harbour sites of Myous could be identified in several embayments of the myousian peninsula (chapt. 5.2). Especially the area around Myu 9, which was separated from the open sea by a submarine bar, is suitable for a harbour. The transition from marine to lagoonal facies occurred in Hellenistic times. Due to the delta progradation of the Maeander, the city gradually became separated from the open sea. Therefore, a rising groundwater table and increased ponding of the area led to the final desertion of the city. Beginning in the Roman era, a residual lake developed which to the east of the peninsula was quickly infilled by the sedimentation of the Maeander. On the opposite side in a sheltered position concerning the sedimentation it existed at least until the 17th/18th centuries AD.

At the foot of Kalabak Tepe in the southwestern part of the ancient city of Miletus, a shallow landing embayment of Archaic times could be assessed (chapt. 5.3). Due to enormous denudation of the hinterland it silted up until the Early Roman period. In contrast to this in some parts of the farther plain marine conditions prevailed at least until the Late Roman period. Starting in the Roman Imperial era, silting proceeded but only little by little. This is proven by the sedimentological findings as well as by the upgrading of the theatre in times of imperator Traian (98-117 AD) and the construction of the Nymphaeum and the baths of Faustina. Furthermore, the city was able to communicate with the open sea via brackish-limnic waters until the Byzantine period.

A post-glacial sea level curve for the Latmian Gulf was deduced from dated peat deposits from the northern and southern flanks of the Büyük Menderes-graben and littoral sediments near Miletus (chapt. 6). The curve is further based on the Holocene subsidence rate of 0.7 m/1000 a, postulated by FLEMMING (1992) for the southwestern part of Aegean Turkey. The curve modifies the results of KAYAN (1995) for the area of the ancient Troy. A first maximum in the present niveau was reached between 3000 and 2000 BC. Subsequently, a slight regression of 1 m took place, which after 1000 BC was followed by a continuous sea level rise until recent times. The results altogether indicate a similar subsidence history of both the northern and southern flank of the Maeander-graben during the last millennia, irrespective of local tectonic events at different sites of the investigation area.

Evidence of terrestrial drillings was confirmed and specified by sedimentological and microfaunal analysis of two sediment cores out of Lake Bafa (chapt. 8). Full marine conditions prevailed until the Hellenistic period. Owing to the delta progradation of the northern branch of the Maeander and the development of the "Milesian Lake", the milieu subsequently became stagnate and gradually turned brackish. A freshwater impulse could be deciphered in the first half of the 2nd millennium AD, when recent lake Bafa was created by the progradation of the Büyük Menderes delta in the southern part of the plain.

Palynological investigations prove open deciduous oak-tree forests as the climax vegetation around Lake Bafa (chapt. 8.1.2). When human impact increased in the so called "Beyşehir Occupation Phase" in the late 2nd millennium BC, degradation to the secondary formations of macchia and phrygana took place. Whilst grain-growing seems to have been important only during Antiquity, strong evidence of pasturing and the cultivation of fruit (mostly olive) trees could be found until recent times (chapt. 8.2.2).

The terrestrial corings as well as the sediment cores out of lake Bafa reveal the highest values of sedimentation and the most important morphodynamic and palaeogeographic changes in Roman times (chapt. 7.3 & 8.3). They are attributed to increased soil erosion in the hinterland of the Latmian Gulf due to the anthropogenic influence (destruction of natural vegetation, ecologically inadequate land use). Sedimentation rates did not decrease until the loss of importance and population of the region in post-antiquity. Hence, the results of this study are in line with other investigations assigning man as the decisive agent for the shaping of the Mediterranean landscape since Antiquity.The friable natural predeposition of the Mediterranean ecosystem was a major reason, why anthropogene interference was able to have such far-reaching effects.