

# 18 THE GREEK WETLANDS

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## INTRODUCTION

This paper is not a theoretical one but rather the result of personal observations in Greece for forty years and an attempt to summarise and classify these observations. This typology has been built from a dynamic point of view. The period taken into account is the 20<sup>th</sup> century.

During this period, the landscapes of the plains in particular were considerably modified. These plains used to be covered by extensive marshes and were originally used as pastures. They were progressively transformed into agricultural well-drained and irrigated fields. During the Venizelos land reform, in the twenties, a great number of new villages were built there for the refugees from Anatolia and Eastern Thrace.

At the same time, a lot of mountain slopes that were used both for agriculture and cattle breeding, were abandoned. This desertion of remote lands was progressive. Olive tree plantations located on slopes that could not be reached through modern roads gradually came back to wilderness.

This opposition between plains and mountains is closely related to the opposition between agricultural progress and agricultural decline.

Besides, there are two other changes, the first one generated by the proximity of town and the second one by the proximity of seaside. The suburbanisation process produces landscapes in which scattered houses gradually fill the rural landscape. The development of tourism leads to similar consequences especially in the islands and on the mainland's seashores. Moreover, in certain specific regions, policies dealing with the protection of traditional architecture have led to the enactment of regulations concerning the shapes of the roofs, which must be covered with so called Byzantine tiles or stones, of the balconies which must be made of wood, and so on. Pilion gives us a good example of the results of such policies, which lead to specific new landscapes, even if they are supposed to keep traditions.

## THE CASE OF THE PLAIN AND THE BASINS

I wish to concentrate upon the plains and basins, and in this limited field, upon the former wetlands (marshes and lakes). The disappearance of the *hygrotopoi* (wetlands) is a major feature of the evolution of the Greek landscapes during the twentieth century.

Such a disappearance is tightly related to the major events of Modern Greek history and mainly to the exchange of populations (Greeks, Bulgarians and Turks) in the twenties.

One and a half million Christian Greeks from Turkey were exchanged for half a million Moslems, mainly Turks from Greece. As a consequence of the unequal balance of this population exchange, Greek authorities were obliged to settle a lot of countrymen and to increase the surface of cultivated land by drying marshes and lakes.

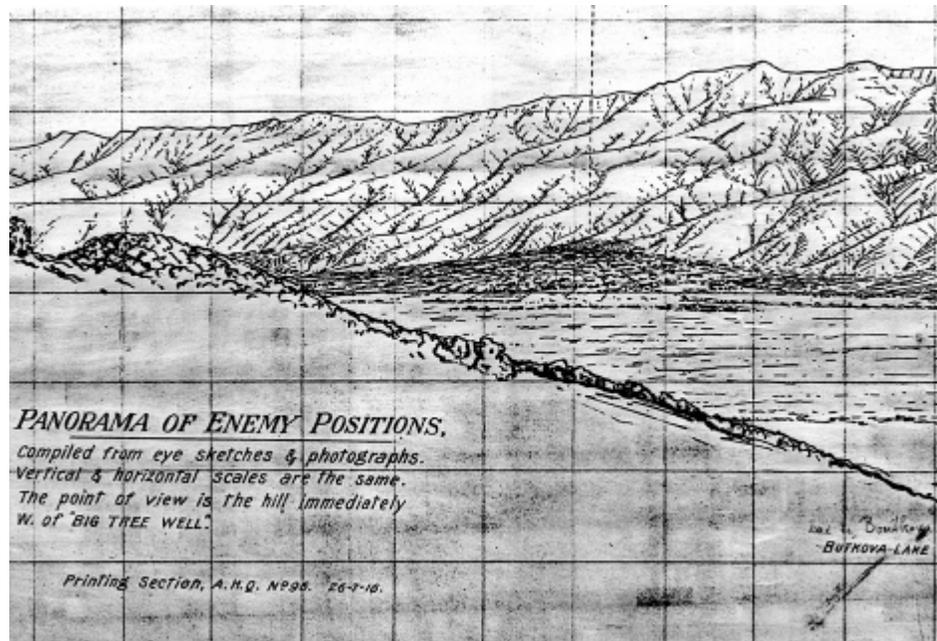
The disappearance of the wetlands is also related to the general intensification of agriculture which affected the whole Mediterranean Basin during this century.

### **THE GREEK PLAINS AND BASINS AT THE BEGINNING OF THE 20<sup>TH</sup> CENTURY**

At the beginning of the 20<sup>th</sup> century, the plains inside the current national borders of Greece were very often flooded and marshy. Many rivers reached the sea through narrow gorges that cut coastal ranges. During the rain season, draining off waters is difficult: rains feed lakes and their surface is temporarily larger. There are numerous examples of this situation such as the Pinios River in Thessaly and the Strymon River in Macedonia. Under these conditions, the main part of the plain is not cultivated but only devoted to nomadic herds.

Besides, there is a great number of karstic plains and basins, with subterranean drainage and sink-holes or swallets.

Some drawings, made for military purposes to help artillery gunners during the First World War, give a good and precise picture of these elements of the landscape. The sketches made by the British Army of the frontline in Macedonia, entitled “panorama of enemy positions”, show the Butkovo Lake, the villages located on the alluvial fans and behind, the heights of Belasica Planina, on the Bulgarian border. It appears clearly from these drawings that cultivated fields are limited to the alluvial cones.



**Figure 1:** Sketch of the Strymon valley (Greek Macedonia) in 1916. On the right, the end of the Butkova Lake. The plain is abandoned and the cultivated lands are located only on the alluvial cones (source: Service historique de l'armée de terre. Vieux Fort de Vincennes. Vincennes, France).

During that period, this swampy countryside did show an important seasonal mobility: the areas of lakes are flooded wider in winter and tend to shrink during the Summer season. They may be totally drained in case of drought.

Of course the surfaces devoted to cattle breeding changed in the opposite way. Maize was usually the main crop. It was sown after the rain, exactly like in the tropical countries.

For different reasons (risk of flood, malaria) the settlements do not exist in the plain and the villages are located on the alluvial fans. The huts of the nomads are located out of the villages, on the foot of the slopes.

## LAND IMPROVEMENT PROJECTS

Land improvement projects regarding flood protection, swamp reclamation, drainage and sewerage were approved without any reserve by the population except by some groups of lake fishermen (for instance in Karla, in Thessaly). Radical measures for increasing cultivated areas and soil productivity were accepted as a necessity in particular considering the flow of refugees we mentioned earlier.

The spatial distribution of malaria was linked with the location of lakes and marshes. Therefore, the elimination of wetlands was considered to have positive effects from a disease control perspective. The most interesting study on this subject is the work of the

French geographer Jacques Ancel (1930), who had his first contact with Macedonia when he was an officer of *l'Armée d'Orient*, in 1916.

Lake and marshes were considered to be lands of disease and death. Their elimination was part of Public Health policies.

The surface of these *hygrotopoi* was very wide. In the plain of Serres (Eastern Macedonia) for example, which lies on 118000 ha, 29000 were covered with marshes in 1928, 17500 were so saturated with water that they were not fit for agriculture and 23000 were subject to seasonal floods. Only 37% of the plain was water free.

Actually, the first land improvement projects were implemented in the 19<sup>th</sup> century. Among these first projects, we can mention the flood protection works of the Acheloos River (1856), some drainage works in the Peloponnesus and, also in 1856, the start of the reclamation works of the Copaïs Lake in Beotia. However, these works were not systematic. They were limited in number and scale, and did not form part of a general planning strategy.

The systematic implementation of a land improvement policy on a nation-wide scale started after 1922, *i.e.*, after the *Megali Catastroph*i, the defeat of the Greek army in Anatolia, and the inflow of refugees.

The efforts of Greek authorities towards land improvement can be divided in four phases.

During the first phase (1925-1940) the projects were almost exclusively aimed at ensuring flood protection and at draining. Irrigation was secondary.

During the second phase (1948-1960), which takes place after the Second World War and the civil war, efforts were focused on the restoration and maintenance of pre-war projects. The performance of major integrated projects began during this phase, chiefly for irrigation.

The third phase began in 1960 and lasted until 1995. During this phase, the major projects were finalised. The result was a remarkable expansion of irrigated areas. The percentage of irrigated land out of the cultivated land increased from 5% in 1950 to 40% at the end of the century.

We can say that the present shape of the plain landscapes is mainly due to this phase. The projects transformed the countryside, because the irrigated and drained lands became organised in a geometric way, the basis of the frame being the deep ditches for drainage.

After 1959, land consolidation (*anadasm*os) became compulsory for all land properties within the territory of government reclamation projects. The landscapes became very regular and geometrical, with a pattern of straight lines and right angles (limits of fields, ditches, roads).

## **TOWARDS A REHABILITATION OF THE HYGROTOPOI**

The last phase of the process began in the mid nineties and is still running in 2004. We can consider that the large projects of wetland draining are now declining, firstly because the most important lakes and marshes have already been drained; secondly because the development of irrigation and drainage created ecological problems. Although the main purpose of drainage was to conquer new arable lands, it was also to irrigate them. Because of the development of pumping subsurface waters, the water level has become gradually lower, and the flow of the springs weaker. Besides, the land conquered through drainage was sometimes of poor quality. It then became necessary to find new ways to feed irrigation networks, such as to divert the water of an hydro-geographical basin into another.

These works, such as Tavropos diversion in Thessaly (used both for irrigation and to produce electrical power), were accepted without political reactions until the mid-eighties. Until then, these works were considered the expression of progress, both technological and economic. However, the negative consequences of drainage and intensive irrigation mentioned earlier soon raised concern in the public opinion. Several demonstrations took place in the eighties and nineties concerning, for example, a project for the Kalamas River in Epirus, or against the diversion of a third of the waters of the Acheloos River pouring into the Adriatic Sea, towards the Thessalian plain. It seemed to many people illogical to, first, dry a lake and then to bring water from another river system to irrigate it. A new kind of solidarity arose among the dwellers of the same hydrological basin.

After 1981, with the integration of Greece in the European Union (EU), all land reclamation projects were subsidised by the EU. However, the EU agricultural policy began to change and the European Commission soon refused to subsidise any project that would lead to an increase of agricultural production. Moreover, the disappearance of the lakes and marshes led to elimination of some animal and vegetal species: it was considered to be damaging to biodiversity. For all these reasons, the movement towards rehabilitation of wetlands was launched.

## **THE EXAMPLE OF KARLA LAKE**



**Figure 2:** Karla Lake (Thessaly) after the drainage works in 1959 (photo: Takis Tloupas).

Karla Lake in Eastern Thessaly gives us a good example of this evolution and of the current phase mentioned above. Karla Lake exists in Antiquity. It is mentioned by Herodotes. It was then named Voiviis, and it used to cover about 25000 ha. It is fed by the rains of its basin, as well as by some important springs that fill an adjacent lake

named Nessonis. In winter, water also flows from a diffidence of the Pinios River. In the town of Larissa, the Pinios river flows at 65 meters above sea level and the Karla Lake is at 49 meters above sea level. The oriental side of the Karla Lake is surrounded by the Mavrovouni calcareous range and the lake water flows through a subterranean network.

Until the end of the 19<sup>th</sup> century, the surface of the lake used to vary from one year to another. The French geographer Jules Sion wrote in 1934 that “the lake was completely dried up in 1881, but covered 18000 ha in 1920-21, because of the floods from the Pinios River”.

There are therefore very extensive marshes in the North West. The military map of 1909 shows this clearly. The lake gives plenty of fish, and one village, Kanalia, is a village of fishermen. These fish were very much appreciated in Larissa, between 1941 and 1945, as they fed the population that suffered from starvation during wartime.

Despite this economic value, many voices were raised as soon as in 1881, when Thessaly became Greek again, asking to dry up the lake because of flooding, of malaria and because of the lack of cultivable land. Drainage works began, as can be seen on the 1909 map, with the digging of a central collector. The Italian engineer Nobile made the first serious study concerning drainage in 1913. Nobile concluded that drying up was the best solution. Important works began in 1921: dykes and ditches. Finally, a tunnel was dug in 1961-62: 11 km long with a capacity of 8.5 cubic meters per sec. towards the Pagasitic Gulf, near the town of Volos. The conquered land belonged mostly to the Greek State. But some people produced documents from the Turkish period and argued that part of the land was theirs. Most of the land was rented by the State to the farmers for a symbolic amount of money. However, despite the drainage works, the lake still reappeared in winter whenever there were heavy rains. The new lands were often of poor quality.



**Figure 3:** During 1965 winter, despite the drainage works, the central part of Karla is flooded (photo: Michel Sivignon).

Besides, in order to irrigate the fields, it was necessary to pump water at a gradually increasing depth so people wondered about the benefits of these works. Moreover, the waters flowing to the sea were polluted both by chemical fertilisers and by the sewage of some factories in Larissa (paper and sugar beet factory). In Volos, there were demonstrations against the tunnel.

After a complementary study, the authorities decided to construct several small tanks (800 ha) in 1989. The last episode is the construction of huge dykes around a new lake of 3500 ha. A new landscape is appearing. Surprisingly, it is difficult to understand the reasons for the new work. Nobody speaks very clearly about it. Nobody mentions important agricultural use for irrigation. Protection of nature, fauna and flora is usually the main justification given for the works. It is explained that migratory birds are coming back again. People are also speaking of tourism.

As a matter of fact, EU subsidies are limited to ecology and tourism projects. But nobody can prevent agronomists or urban authorities from thinking that such water could be used, in the future, either for irrigation or to supply the neighbouring towns.

In any case, the result of these projects is a totally artificial landscape.

## CONCLUSION

Is the Karla Lake an isolated case in Greece? It appears that the factors which determined the evolution of the Karla Lake are, in fact, not local ones. In Macedonia,

the Kerkini Lake, in the plain of Serres, was incorporated into a national park. The delta of Nestos, in Macedonia and Thrace, and the delta of Evros, on the Turkish border, are protected. Greece signed the EU agreement for Natura 2000.

I would like to conclude in a more poetic tone with some words about the Greek rural landscapes by night. The nights have changed more than the days, in the last forty last years. Even the wetlands transformed into irrigated areas have a new night landscape today. The irrigation networks working through an organised system of electric pumps, located in small concrete buildings, have flash lights showing that they are operating in good conditions. So the farmer can count his pumps at night, instead of counting his sheep, as his father use to do in the old times.

## **REFERENCES**

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