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# THE FISH PONDS IN THE PLAIN OF IALOMIȚA – DÂMBOVIȚA COUNTY

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## Abstract

Within the limits of the administrative area of Dâmboviţa County, the Plain of Ialomiţa comprises: the plain of Târgovişte - Ploieşti, the subsidence plain of Titu - Gherghiţa, and in the south of the county, parts of the Vlăsiei Plain and Găvanu Burdea Plain. In this area numerous anthropic lakes with different uses can be found, starting with those used to produce hydroelectric power or to high floods and ending with those used for pisciculture and leisure. The lakes used for pisciculture have a long history in the area of Dâmboviţa County, some of them being attested in documents since the 18th century, while others have been arranged mainly after 1950.

**Keywords***:* Dâmboviţa County, plain, anthropic lakes, uses.

## 1. Geographic features

The relief of Dâmboviţa County is developed in tiers, being made up of mountains, transitional units - the Subcarpathian Hills - and plains, the maximum altitude being of 2505m (Vârful Omu) and the minimum one, of just 128.9m in the low divagation plain (Poiana Commune). The boundary between the Subcarpathians and the Plain of Ialomiţa can be drawn approximately along the alignment of the localities Măneşti, near Dâmboviţa River, Doiceşti, near Ialomiţa River and Moreni, near Cricovul Dulce River (fig. 1). The largest part of the above-mentioned units is made up of plain (68 %) (fig. 2).

### *1.1. Relief*

The Plain of Ialomiţa, which is part of the Romanian Plain, is non-homogeneous in point of morphology, being slightly fragmented. The slope of the


**Figure 1. Geographic location of the Plain in Dâmboviţa County**

interfluves is gradual. It contains the following sub-units:

- *the piedmont plain* situated in the area between the Subcarpathians and the plain itself; it is high and begins with Pintenul Picior de Munte, accompanied by the terraces shaped up like a fan on the right side of Dâmboviţa, and continues with the Piedmont Plain of Târgovişte. Then follow Pintenul Măgurii or the Cricovului Dulce High Piedmont Plain, intensely fragmented and attacked by torrential erosion and gravitational processes.

The plain in the area of Dâmboviţa County, excepting Găvanu-Burdea Plain, which occupies the south-west of the county, must be considered (genetically) a direct continuation of the high piedmont plains from the north, being characterized by the parallelism of the valleys, which increases from east to west and from north to south, and also by the presence of numerous sectors with deepened meanders and riverside terraces for the larger valleys. The lithology is made up of loessoid deposits.

- *the divagation plain*, which is low and monotonous, well individualized, is a continuation of the piedmont plains, with valleys deepened in their own alluvial deposits, meandered riverbeds, deserted courses. Several sectors can be discerned: Potlogi-Titu-Bilciureşti, with water-bearing structures situated near the

surface, and even swampy areas with hydrophile vegetation.

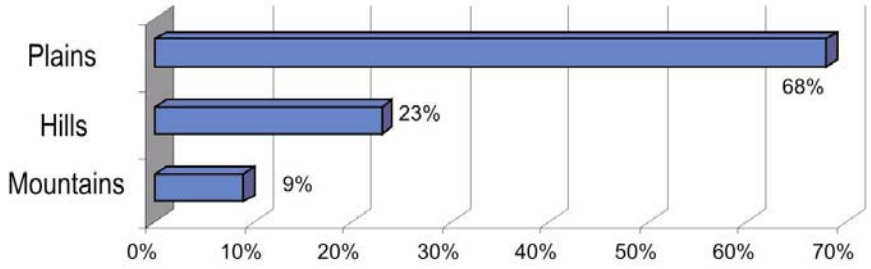


**Figure 2. Repartition of the main relief units in Dambovita County**

- *Vlăsiei Plain* covers a small area in the south-east of the county, and has a very flat relief, fragmented by deep valleys (Colentina), with altitudes of 65-100 m. Here can be found the famous forest known as "codrii Vlăsiei", a wood dating back a few centuries ago situated in a relatively low area.

## *1.2. Main climatic parameters*

*The air temperature* is an important climatic parameter, because it records a high degree of variability, determining as well the modification of the other climatic elements. This variability is reflected in the hydrological regime of the underground and surface waters, in the temperature and freezing of the water units. *The average annual temperature* ranges around the isotherms of 9-10$^0$ C, having however some small differentiations of 0.1-0.5$^0$ C.

*The annual quantity of precipitations* exceeds: 500 mm (Potlogi 511 mm), in the south-east 600 mm (Butimanu 621 mm), in the south-west 650 mm (Găeşti 658 mm), in the east 600 mm (Dărmăneşti 625 mm), and in the north-west 700 mm (Valea Lungă 746 mm).

## *1.3. The hydrographic network*

In the area under analysis there are three important rivers: ***Ialomiţa***, in the north-eastern half; ***Argeş***, in the south-western half and ***Dâmboviţa***, which unfolds between Argeş and Ialomiţa river. The hydrographic network belongs to these two hydrographic basins: Ialomiţa and Argeş (tab. 1).

**Table 1. The hydrographic network of the plain area of Dâmboviţa County**

| River | Length (km) | |
|---|---|---|
| | In the county | In the country |
| Argeş | 48 | 327 |
| Dâmboviţa | 90 | 237 |
| Ialomiţa | 132 | 400 |
| Cricov | 69 | 69 |
| Ilfov | 65 | 69 |
| Neajlov | 32 | 152 |
| Sabar | 52 | 144 |
| Slănic | 22 | 22 |
| Pâscov | 27 | 27 |
| Potop | 45 | 45 |

The average density of the hydrographic network is comprised between 0.3-0.4 km/km$^2$ in the plain area. The main sources that feed the hydrographic network are the surface ones, which bring in about 70-75% of the water, the rest coming from the underground.

## 2. Ponds and fish ponds

The first arrangements for pisciculture in the plain area of Dâmboviţa County are those built in Nucet.

***The Piscicultural Research Station from Nucet***. In historical documents, Nucet has been attributed the existence of a long fish pond, 13 km long and 800 m wide, providing fish for the Princely Court (Curtea Domnească) from Târgovişte. Today the locality is known for its Piscicultural Research Station (Staţiunea de Cercetări Piscicole – SCP). SCP Nucet is endowed with everything a modern fish-producing farm needs, which allowed it to become famous nationally and internationally. Its experimental center with about 80 fish ponds whose surfaces range between 0.5 and 5 hectares, summing up 110 ha, adapted for carrying out the complex technological experimentations of intensive fish breeding, technological demonstrations, genetic research and fish species improvement, and preserving lots of genitors from different culture species and a breeding lot of rare Romanian fish species.

The experimental center is supplied with water gravitationally from Ilfov River. There is enough water in this river, and it is also free from pollution sources. Through the arrangement conception and the structure of its compartments, it was ever since its creation (in the year 1941) and until now meant exclusively for research, being the only one of this kind in Romania and one of the few of this kind

in Europe.

The station produces and delivers annually about 200 millions larvae and 40 tons baby fish, of the following fish species: carp (*Cyprinius carpio*) - 3 breeds (Frăsinet, Ineu and Ropsa), crucian, pike, pike perch, sheat fish.

The station provides technical assistance in the domains of pisciculture, assisted and artificial fish reproduction, rational fish-related exploitation of the storage lakes, ecological rehabilitation of the aquatic ecosystems. The specialists of this station assure the assistance and the emergency interventions in the fish-breeding farms and feasibility studies for the creation or arrangement of fish exploitations.

Beginning with the 60's of the 20th century, some systematization works were carried out in the hydrotechnical domain, for different purposes, which ended in the 90's when such arrangements began to be used for different purposes (hydroelectric power, irrigation, water supply for households, pisciculture).

Our study concerns the analysis of the lakes developed along Ilfov River, Ialomiţa River and their tributaries, and does not include the hydrographic system of Dâmboviţa River.

Along ***Ilfov River*** a series of lakes have been arranged beginning with the 1970s, whose function was, until 2000, mainly to produce hydroelectric power, to alleviate high floods and to supply water, yet, after the above mentioned year, they changed their destination turning into fish-related arrangements (fig. 3, tab. 2).

**Table 2. Technical data concerning the lakes situated along Ilfov River**

| River | Storage | Year when it began to be used | Length of the crowning (m) | Altitude at the crowning (dMN) - m | Safety calculation 5% ($m^3/s$) | Safety check 1% ($m^3/s$) | Q maximum bottom empty ($m^3/s$) | Installed power (P.I.) - MW/h | Normal retention level (N.N.R.) volume - mil. $m^3$ |
|---|---|---|---|---|---|---|---|---|---|
| Ilfov | Bunget I | 1973 | 167 | 248 | 66 | 117 | 5.9 | 0.240 | 2.73 |
| | Bunget II | 1973 | 640 | 240,5 | 68 | 121 | 9.87 | 0.260 | 3.70 |
| | Brăteşti | 1974 | 840 | 230 | 68 | 121 | 6.12 | 0.145 | 2.28 |
| | Adunaţi | 1979 | 1.709 | 219 | 69 | 124 | 3.7 | 0.264 | 4.8 |
| | Ilfoveni | 1978 | 738 | 214 | 67 | 122 | 8.7 | 0.264 | 4.7 |

***The ponds of Comişani and Lazuri*** are situated in Comişani Commune and Lazuri Village (which is part of Comişani Commune). In Comişani, in the area of the old fish pond (closed down after 1990), there remained 3 lakes with surfaces ranging between 2 and 6 ha, with an average depth of 1.5m.

The lakes are fed by springs and also by deep drillings. There are 5 fish ponds in the area of Lazuri village, covering about 1.5-3 ha and having a depth around 2 m. The water in these fish ponds is supplied gravitationally from Ialomiţa River, and also

from very deep wells. The difference of altitude between the first and the last lake is of about 5 m. The fish ponds' only purpose is for pisciculture, being meant both for sport fishing and for industrial fishing.
Two of these lakes have started an agro-tourist program in the year 2007, the arrangements being created using SAPARD funds.

**Figure 3. Satellite image of the storages along Ilfov River and Nucet Station**

The ***Bărbuceanu fish ponds*** comprise a number of 3 lakes, situated in the area of Butimanu commune, Bărbuceanca village. They hold a volume of 0.030-0.120 million $m^3$ and have a dam height of 3-4 m, the average depth being of 2 m. Though they began to be used ever since the years 1964-1965, they remained relatively unexploited commercially, developing freely. Today they are being turned to good use by SC Piscicultorul DB, being destined for commercial and sport fishing.

***The Butimanu pond lakes*** are situated in the area of Butimanu Commune, being supplied with water from Ialomiţa River. They are 8, being supplied with water gravitationally, from one lake to the next. Their volume ranges between 0.001 and 0.620 million $m^3$ and their dam is 3-5 m heigh. Their average depth is 3 m and they

are meant for industrial and sport fishing.

During the period July-September 2005, a part of the fish ponds were affected by floods, as follows: the dam of fish pond 1 (a breach), fish pond no. 6 (a breach in the dam, 6-7 m wide and 2 m deep), fish pond no. 8 (two breaches, 5 m wide and 2 m deep). These fish ponds belong to SC Piscicultorul DB, the company granting the concession of these fish ponds for 49 years.

***Ciocăneşti and Crevedia fish ponds*** (a number of 10 ponds) are situated in the area of Crevedia Commune, being arranged as follows: Ciocăneşti 1 and 2, and Crevedia. They were created in 1950-1962, here being one of the largest fish breeding farm in Romania at the time. Today they belong to SC Piscicultorul DB and are used for industrial and sport fishing. Their volume ranges between 0.120-0.640 million $m^3$ and the height of their dam is 3-6 m, their average depth being 2.5-3 m.

In 2005, the flooding caused a 4m wide and 2m deep breach in the dam of the fish pond no. 7 triggering quite significant material losses, especially concerning the fish. The water is supplied from Colentina River, and also from Colentina-Baranga canal.

***Săbieşti fish ponds*** are a number of 2 ponds situated in the area of Colacu Commune, the main source that supplies them with water being Baranga rivulet. Săbieşti 1 fish pond and Săbieşti 2 fish pond hold respectively 0.300 million $m^3$ and 0.064 million $m^3$. The dam is respectively 5 and 3.5 m high. The water penetrates gravitationally from fish pond no. 1 into fish pond no. 2, the altitude difference being of about 10 m. They are used for sport and industrial fishing, being administered by the company Piscicultorul SA. They were included in the hydrographic circuit in 1972 (Săbieşti 2) and 1983 (Săbieşti 1), their average depth being of 3-4 m. Săbieşti 2 fish pond is now used to breed baby carps, and lately has become a refuge for migratory birds.

***Colacu fish ponds*** (3 ponds) follow after the fish ponds from Săbieşti, being fed from 2 sources, respectively Baranga rivulet and Colentina River. They are used mainly for pisciculture and secondarily for irrigation. Their water volume ranges between 0.143 and 0.300 million $m^3$, their dam is between 3.5 and 5 m high and their average depth is 1.5-2.5 m. They belong to the company Piscicultorul SA, being used for sport and industrial fishing. The years when they began to be used are 1965-1968, as in the case of most of the fish ponds of Dâmboviţa County, when, following a massive project, appeared most of the Romanian national ponds and fish ponds. The access to the three lakes is quite difficult, which allowed the development of a quite varied aquatic fauna, and also the creation of habitats favorable for water-loving birds (Tab.3.).

Except for the above-mentioned ponds, there are as well other ponds, with a low surface or appearing individually, which are not part of any series of fish ponds. We can mention here the ponds: Priseaca, Nicoleşti, Băleni, Corbii Mari, Aluniş, their main use being pisciculture, too.

**Table 3. Today's technical condition of the storages used for pisciculture, for leisure or of local interest**

| No. | Name of the storage | Administrator holder | Year when it began to be used | Volume (mil.m$^3$) | Height of the dam (m) |
|---|---|---|---|---|---|
| 1 | NH Brezoaiele | A.N. Apele Române | 1983 | 0.010 | 6.0 |
| 2 | Priseaca 5 | A.N. Apele Române | 1976 | 0.650 | 4.0 |
| 3 | Aluniş | CL Cornăţelu | | | |
| 4 | Bărbuceanu 1 | SC Piscicultorul DB | 1988 | 0.120 | 3.8 |
| 5 | Bărbuceanu 2 | SC Piscicultorul DB | 1965 | 0.030 | 3.0 |
| 6 | Bărbuceanu 3 | SC Piscicultorul DB | 1964 | 0.060 | 4.0 |
| 7 | Butimanu 1 | SC Piscicultorul DB | 1965 | 0.130 | 4.0 |
| 8 | Butimanu 2 | SC Piscicultorul DB | 1965 | 0.100 | 3.0 |
| 9 | Butimanu 3 | SC Piscicultorul DB | 1965 | 0.090 | 3.0 |
| 10 | Butimanu 4 | SC Piscicultorul DB | 1965 | 0.001 | 3.0 |
| 11 | Butimanu 5 | SC Piscicultorul DB | 1965 | 0.155 | 4.0 |
| 12 | Butimanu 6 | SC Piscicultorul DB | 1965 | 0.240 | 4.0 |
| 13 | Butimanu 7 | SC Piscicultorul DB | 1969 | 0.620 | 3.0 |
| 14 | Butimanu 8 | SC Piscicultorul DB | 1960 | 0.170 | 5.0 |
| 15 | Ciocăneşti 1 | SC Piscicultorul DB | 1950 | 0.550 | 4.0 |
| 16 | Ciocăneşti 2 | SC Piscicultorul DB | 1950 | 0.640 | 5.0 |
| 17 | Colacu 1 | Piscicultorul SA | 1968 | 0.155 | 4.0 |
| 18 | Colacu 2 | Piscicultorul SA | 1965 | 0.143 | 3.5 |
| 19 | Colacu 3 | Piscicultorul SA | 1965 | 0.300 | 5.0 |
| 20 | Crevedia 1 | SC Piscicultorul DB | 1962 | 0.150 | 3.0 |
| 21 | Crevedia 2 | SC Piscicultorul DB | 1962 | 0.150 | 4.0 |
| 22 | Crevedia 3 | SC Piscicultorul DB | 1950 | 0.200 | 3.0 |
| 23 | Crevedia 4 | SC Piscicultorul DB | 1950 | 0.420 | 3.0 |
| 24 | Crevedia 5 | SC Piscicultorul DB | 1950 | 0.420 | 3.0 |
| 25 | Crevedia 6 | SC Piscicultorul DB | 1950 | 0.050 | 3.0 |
| 26 | Crevedia 7 | SC Piscicultorul DB | 1950 | 0.280 | 6.0 |
| 27 | Crevedia 8 | SC Piscicultorul DB | 1950 | 0.120 | 4.0 |
| 28 | Priseaca 1 | CL Târgovişte | 1976 | 0.166 | 5.0 |
| 29 | Priseaca 2 | CL Târgovişte | 1980 | 0.080 | 3.0 |
| 30 | Săbieşti 1 | Piscicultorul SA | 1983 | 0.300 | 5.0 |
| 31 | Săbieşti 2 | Piscicultorul SA | 1972 | 0.064 | 3.5 |

## 3. Conclusions

As mentioned above, in the geographic area under analysis can be found numerous anthropic lakes arranged in the 1970s-1980s, initially created to produce hydroelectric power, to alleviate high floods, to supply water for irrigation, to supplement the flow of Dâmboviţa River during droughts and for pisciculture.

After 1990, these lakes' main function has become the one related to pisciculture, either meant for industry or for sport fishing.

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