

## FOUR LAKES FROM A MERCATOR'S MAP OF CROATIAN REGIONS AND CAUSES OF THEIR EXTINCTION

KREŠIMIR KUŽIĆ  
CA Supreme Command - Zagreb  
*Glavni stožer HV – Zagreb*

UDC: 911:93  
Original scientific paper  
*Izvorni znanstveni članak*

Primljeno: 2001-05-21  
Received:

The author proves the existence of four lakes on a Mercator's map from AD 1593. In the first part he explains the genesis of the map. The causes why the lakes disappeared and when it happened were adduced in the second part of the paper.

**Key words:** Croatia, map-drawer, G. Mercator, M. Kolunić-Rota, Knin, Sinj, Krka, Cetina, lake, swamp, Little Ice Age, precipitation, deforestation, erosion, infilling, drainage

Autor dokazuje postojanje četiriju jezera na Merkatorovom zemljovidu iz 1593. god. U prvom dijelu objašnjava nastanak zemljovida. Razloge zbog kojih su jezera nestala i kad se to dogodilo, autor navodi u drugom dijelu rada.

**Ključne riječi:** Hrvatska, kartograf, G. Mercator, M. Kolunić-Rota, Knin, Sinj, Krka, Cetina, jezero, močvara, Malo ledeno doba, padaline, nestanak šuma, erozija, zasipavanje, otjecanje

### Map-drawers I

Till the period of Renaissance the Croatian regions had been represented in a number of cartographic works – from al-Idrīsī's map to the Catalan portolanos (MARKOVIĆ, 1993; KOZLIČIĆ, 1995). Then the Renaissance brought into vogue works of antique geographers. So, the most of map-drawers had been concerned with elaborations of the Ptolemy's "Cosmography" and "Geography" respectively. Other map-drawers, motivated by discoveries on the one hand, and by the Turkish conquests on the other hand, had concentrated themselves upon the situation in reality. It manifested itself that a surface image exactness was in symmetry with their knowledge of a concerned area (BREUSING, 1883; BROWN, 1950). It is understandable that they didn't need have seen these territories with their own eyes necessarily. Usually the knowledge supplements and improvements about the Earth's surface had been collected from seagoing men or continental voyagers – soldiers or merchants. Owing to such sources and much more to circulation of maps the geo-facts were entered / registered on the global and local level as well (BROWN, 1950). A map of Croatian regions from AD 1593 gives evidence of such a valuable concurrence of events (HDAZg, 32 A.II.3).

The map was drawn by famous cartographer Gerhard Kremer (1512-1594), who was born in Flander. He himself latinized his own name in accordance with then ruling views and fashion, so that he is much more known as *Gerardus Mercator*. The greater part of his works was created in Duisburg, in Germany (BROWN, 1950), therefore all of possible errors should be excusable and understandable. It is a matter of fact, that he had never been in Croatia. For this reason it remained as a far strange country for him, and with its geographical facts he was acquainted intermediately – by the works of other cartographers.

Question arises, who were primary map-drawers of those regions? Knowing the Mediterranean cartographer circle, there is no doubt, that one among them was Martin Kolunić-Rota (1532-1583)<sup>1</sup>, Croat from the city of Šibenik. He was an engraver retained by the Vienna court, whose maps were used by much more known Venetian Francesco Camocio, the author of the famous portolano "Isole famose" from AD 1573 (MARKOVIĆ, 1993; SLUKAN, 1998). So, in the Kolunić's<sup>2</sup> survey of the Šibenik district from the time of the Cyprus War (1570-1573) (HDAZg, D.XIV.40.), a detailed depiction is noticeable in the nearest surroundings of Šibenik and other coast places as well, but this minuteness falls off towards the upper map margin. In some measure it repeats the story equal to the Mercator's one. In other words, it is hard to believe, that Kolunić himself had an opportunity to reconnoitre farther hinterland and to note toponym locations within Ottoman frontier. It is well known that Ottoman government never allowed anybody to gather geographical informations, because it was considered to be an espionage, menacing with the penalty of impalement. For that reason, the geo data from the territory under Ottoman control (Klis sanjak, Krka sanjak) were obtained from Ottoman citizens who came running some business in Šibenik, or, what was possible too, from the citizens of Šibenik, who were going, as merchants or emissaries, to the regions ruled by Osmanlis. To corroborate this thesis there is an example from 1574, when a Šibenik deputation went to Bosnia applying for admittance to the pasha. On that occasion they gathered plenty of information about territory that was travelled through (RAČKI, 1882).

So, taking over the data either from Kolunić's map directly, or from Camocio's one (what is out of relevance), Mercator inherited all exactnesses and unexactnesses. Now, studying above-mentioned Mercator's map of Croatian regions, it could be found a row of details which don't correspond with present situation, i. e. with the river, mountain and lake positions in this area. However, it is noticeable that the images of the Zrmanja, the Krka and the Cetina rivers are the closest to reality, indicating too that the author of Mercator's specimen was a person from that region – Martin Kolunić-Rota.

## Lakes

Among all unaccordances with the present situation, four lakes in the basins of the river Krka and the river Cetina are deserving the greatest attention. With regard to neighbouring toponyms and to their places within two river basins it is easy to determine

<sup>1</sup> J. G. Wilkinson have knowledge of him. See: Gardner Wilkinson, J. (1848): *Dalmatia and Montenegro with a Journey to Mostar in Herzegovina*, vol. 1., London, 100,101.

<sup>2</sup> There are differences about the map authorship. See: Kozličić, 1995., 122-125; Slukan, 1998., 150.

their position. Viewing from the northwest to the southeast the first lake is situated below the fortress and the town of Knin. The second lake is located in the spring part of the river Cetina, the third one lies below the fortress and the town of Sinj, while the fourth one is separated and has no visible water connection with any river. Nevertheless, it is manifest that it belongs to the river Cetina basin. Further, it was drawn as if it was situated near by the left bank of the river Cetina, on the southwest foot of mountain Dinara.

In the case of the first lake, toponyms on the map speak incontrovertibly on behalf of Knin. *Tina* is a fortress and the town of Knin, *Capitulo* is hillock Kapitul, *Hoton* is the village Oton, *Stermichi* is the village Strmica, and *Butisin fl.* is the river Butišnica. Considering geological and hydrographical characteristics of Knin surroundings, it is obvious that the town is situated in a depression overtopped by the Dinara massif (1831 m) from the east side (FRIGANOVIĆ, 1961). The main water stream is the river Krka, which springs on the east side of the depression. Having received three smaller tributaries, it flows out through the deep cut gorge in the southwest direction (FRIGANOVIĆ, 1961). The bottom of the depression – better said – the karst polje of Knin, consists of Permian-Triassic gypsum layers and lower Triassic slates overlaid with Neogenic clay and Pleistocene alluvium (FRIGANOVIĆ, 1961). It could be seen, after all, that prerequisite conditions to a lake existence were propitious. Typologically considered, the lake was a tectono-karstic one (HUTCHINSON, 1957; NEJAŠMIĆ, 1998). Let's call it further as "Lake of Knin", for the sake of distinction.

Judging by the Mercator's map, the three others were situated in the upper stream basin of the Cetina river. Its source is on the north edge of the Cetina polje, afterwards it flows through poljes of Koljani, Ribarić, Hrvace and Sinj polje, as well. On the edge of the last one it enters the gorge cut in the calcareous stones. River Cetina receives one greater tributary from the left side and one smaller affluent from the right. Besides, there is a row of immediate sources down the left river bank (MAGDALENIĆ, 1971). From the northeast the whole area is dominated by mountains Dinara (1913 m) and Kamešnica (1856 m), while mountain Svilaja (1508 m) stretches on the southwest side. The substratum of the poljes was formed by the Neogenic clayish-marly sediments, what was favourable to the establishing of lake basins (MAGDALENIĆ, 1971). It is undoubted, that the second lake was situated in Cetina polje. It was a spring tectono-karstic lake (HUTCHINSON, 1957; NEJAŠMIĆ, 1998). We shall call it "Lake of Cetina".

The third one laid below the fortress and the town of Sinj (on the map it is written: *Sfinga*), indeed, not to the northeast side – as it was drawn by Mercator – but to the east of the town. There is another mistake – the stream, which flows through the lake, is not a tributary of the Cetina, but the river Cetina itself. Consequently, the lake was situated in the broadest part of Sinj polje, between Sinj and the Kamešnica mountain slopes, and was classed as the combined tectono-karstic and flood plain lake (HUTCHINSON, 1957). This one will be called "Lake of Sinj".

In order to locate the fourth lake, the surrounding toponyms in the Mercator's map have been used. *Clina* is on the right bank of the Cetina river, to the northwest of the lake. To the west and south of the lake we see *Cescouo traietto* and *Malcouo traietto*. Finally, *Morchi* lies on the east bank of the lake. Thus, *Clina* is the present village Koljane, *Malcouo traietto* is a ford beside the village Maljkovo. It is obvious, that *Cescouo traietto* is another ford in the river Cetina too, but now it does not exist under this name. Fortunately, "Košnice" ford was mentioned in an Ottoman cadastre-book and it was situated near the then and now village Bitelić (SPAHO, 1985). Aforesaid *Morchi*, from

the entire map context, could be identified as "Margude" from the cadastre-book (SPAHO, 1985), that is Mrgude meadows near the village Čitluk (FORTIS, 1984). Since *Morchi*, i. e. Mrgude is on the right side of the river Cetina, it is evident that the cartographer made a mistake having drawn the lake on the left, instead on the right side – to the southeast of the mentioned river fords. Just like the previous lakes, this one was a tectono-karstic lake, too (HUTCHINSON, 1957). Let's name it as "Lake of Krinj".

There are not any of these lakes in this area today, so a logical question strikes us – what happened to them?.

### Little Ice Age

The Little Ice Age, the term introduced seventy years ago, was a period of worldwide lower temperatures lasting from about AD 1500 to about AD 1850 (GROVE, 1988). In Europe consequences depended not only upon a geographical latitude, but upon a height above sea-level (GROVE, 1988). As a main getting effect of cold, this period was characterized by increased precipitation amount – snowfall and rainfall.

It is a matter of fact that historical sources in Adriatic cities, analogous to the North European ones, are quite sufficient to illustrate diluvial rains and biting snows in the surroundings. Well, Venetian Marino Sanudo takes note of the cold in January 1517, and pouring rains in February 1518 in Venice and its surroundings (SANUDO, 1865). A chronicler from Udine bears witness of the climate, too. He mentions severe cold: during January and February 1541 (*Diarii udinesi*, 1884), and continual rain: from June till August 1538 and 1540 as well (*Diarii udinesi*, 1884).

For Croatian regions, too, annalists left us many notes about weather anomalies during the Little Ice Age, so that we can get a clear image of the change proportions<sup>3</sup>. To mention some of them, let's begin with Sanudo's note of a downpour during October and November 1500, just in the Knin area (SANUDO, 1859). Among snowy tempests those ones from January and February 1549 (KUKULJEVIĆ SAKCINSKI, 1857), March 1550, the period from January till April 1551, March 1556, April 1559 were especially memorized (KUKULJEVIĆ SAKCINSKI, 1857). Besides this snow the torrential rain were noted on March (*Annales ...*, 1883), June and August 1549, August and September 1551 again (KUKULJEVIĆ SAKCINSKI, 1857). For instance, present-day brackish Vrana lake (between Zadar and Šibenik) was mentioned as a fresh-water one in 1630. It could be an effect of the fall quantity (FORTIS, 1984). Further, above-mentioned deputation of Šibenik registered the existence of another lake, which disappeared subsequently, too (RAČKI, 1882). Moreover, the precipitation of such a large quantity used to create temporary lakes in the areas without surface streams (FORTIS, 1984). This is an excerpt from the notes of the Little Ice Age meteorological phenomena only. Although it is impossible to make an exact comparison with the precipitation in that time, let's see the present annual averages of Knin and Sinj. For the period 1961-1990 we know Knin had an average precipitation

<sup>3</sup> About this, see: Penzar, I., Penzar, B. (1997): *Weather and climate notes on the Adriatic up to the middle of the 19<sup>th</sup> century*, *Geofizika*, vol. 14., Zagreb; Kužić, K. (1999): *Zabilježbe o "malom ledenom dobu" i njegovim posljedicama u hrvatskim krajevima* (Notes on the "little Ice Age" and its consequences for the Croatian lands), *Povijesni prilozi Hrvatskog instituta za povijest* 18, Zagreb.

amount of 1074 mm water column as well as 5,1 snowing days. In Sinj it was registered 1206 mm and 6,6 days (ŠEGOTA, FILIPČIĆ, 1996).

The following effect of the Little Ice Age precipitation was an intensified erosion which resulted in filling up the lakes in the end. As it is known, the Little Ice Age lasted till the middle of the 19<sup>th</sup> century, and there have been searching after information how long the lakes existed. Indeed, precipitation bears half a responsibility for eroding. For the other half the man is to be blamed. Many documents since 16<sup>th</sup> century testify undeniably about his share in the erosion effect intensification. Just in that time Ottoman Empire had reached culmination in its conquests. Fortresses Knin and Sinj withstood them for about sixty years, and it was more than enough for Osmanlis to apply their usual methods of breaking resistance in the fortresses' surroundings. Economic basis was systematically destroyed by culture plants ravage (ČELEBIĆ, 1979) and forests' burning as well (MCNEILL, 1992). The military and political motives were substituted by economic reasons, originated from an extensive cattle-breeding during Venetian rule in the 18<sup>th</sup> century. In order to enlarge pasture-grounds, the new-settled population was used to setting fire to forest remains (FORTIS, 1984; FRIGANOVIĆ, 1971). Taking it together, all of prerequisite conditions for erosion process were fulfilled.

### Lake of Knin

According to the report of Venetian *provvedditore* Marino Michieli from AD 1685, it is known, that the lake below the fortress of Knin was still existing in this time. It extended eastward, and the river Krka was flowing through it. Besides this greater lake, there were several smaller lakes in the area of 5 miles long and 3 miles broad (DESNICA, 1951). Less than a hundred years later, scholar Alberto Fortis made a note of the swampy lake near Knin (FORTIS, 1984). In the fifth decade of the 19<sup>th</sup> century, when English writer of travels A. A. Paton visited Knin, he did not mention the lake (PATON, 1849). Finally, there is information that already in AD 1856 the lake depth of 40 feet (FRIGANOVIĆ, 1961) was beared in mind.

It is evident that the lake covered the distance from maturity to extinction of two hundred and fifty years. The structure of infilling sediments, besides the forest soil, was formed mostly of travertine barriers stuff from the bed of brook Krčić. As early as Fortis observed that Krčić brook was carrying huge amounts of travertine stuff (FORTIS, 1984). To the present time only slight traces of great barriers have been left. To illustrate, one travertine fence was 300 m long and 15 m high (FRIGANOVIĆ, 1961). Likewise, in another tributary of the Krka near Knin – the river Butišnica, Fortis noticed a large mass of alluvium produced by the erosive work of spates (FORTIS, 1984). All that material from the Krčić bed was finally deposited into the river Krka, which infilled the lake with it. The recent researches have certified these Fortis' notes (FRIGANOVIĆ, 1961). Moreover, Fortis was the first who had pointed at urgent need for lowering of the travertine barriers in the river Krka bed, in order to make the lake drainage easier (FORTIS, 1984). Not long after it, it was actuated. At the end of the 18<sup>th</sup> century a systematic drainage of the marsh, relict of the lake of Knin, began. The work was continued by the French and was mostly finished during the Austrian rule. At long last the barriers downstream of Knin were blasted – in order to quicken the water flow off. In such a way, encroaching on the nature directly, the man dealt *coup de grâce* to the lake (FRIGANOVIĆ, 1961).

### Lake of Cetina

The oldest information about the first lake in the row of three one on the river Cetina is quite late. The lake next to the sources of the river was an intermittent one in the second half of the 18<sup>th</sup> century. In summer-time, that is rainless period, only small marshes and backwaters would remain (FORTIS, 1984).

### Lake of Sinj

A valuable note about this lake is to be found in the Ottoman cadastre-book of the Sinj district from 1604. In the document it was mentioned as *Veliko jezero* (i. e. English - Great Lake) (SPAHO, 1985). During fights around Sinj in AD 1687 an overflow, i. e. lake periodicity was mentioned (DESNICA, 1951). A hundred and sixty years afterwards, Wilkinson travelled through the Sinj countryside, while abovesaid Paton visited it shortly after him. It occurred opportunely, Wilkinson was there during dry period, while Paton's stay occurred in rainy season. When we compare their textes the periodicity of Sinj's lake is more than evident. Wilkinson does not mention the lake at all, but catches sight of ... *small torrent bed, dry in summer and boasting very little water in winter...* (WILKINSON, 1848). To the contrary, Paton emphasises that he ... *saw a blue lake, of oval shape, filling up a considerable part of the valley below me, formed by the river, which here spread out so as to form a lake ..., soon after, ... Sign ... was at the upper part of the lake ..., and once again, ... the ground on which Sign is built rises gradually from the edge of the lake formed by the Cetigne ...* (PATON, 1848) (*Cetigne* is the river Cetina.)

When the southwest slope of Dinara mountain, because of human's regardlessness, was rapidly deforested, the precipitation of the Little Ice Age weared down the unprotected soil into the river Cetina. Due to such incidents, the lake of Cetina was first filled with sediments in the 18<sup>th</sup> century, while the lake of Sinj came to its end recently.<sup>4</sup> Namely, its swamp was drained early in 20<sup>th</sup> century, when an amelioration of the river course was carried out.

### Lake of Krinj

Finally, the first written record of this lake appears in the same Ottoman cadastre-book from AD 1604. It was mentioned there as *Vesarlik* (Turkish - vizier's property), while hundred and sixty years later in a travelogue an account of two small lakes of Krinj was given (SPAHO, 1985; FORTIS, 1984), which should be considered as an advanced stage of its extinction. However, this lake, truth to say, transformed into a twin-bog (FORTIS, 1984), outlived the Little Ice Age. The explanation why it was not filled is easy to be understood. First, this lake has not been influenced by the river Cetina, and second, a brook which discharges into, has a smaller drainage basin, and proportionally a lesser alluvium quantity. Well, the only lake of four ones from AD 1593, exists as a relict - in fact, as a swamp.

---

<sup>4</sup> About erosion see: Grove, 1988., 380-389.

As a curiosity concerning the subject matter, it has to be said that the man, having built a dam on the river Cetina, formed a new artificial lake in the fifties.



Fig. 1 Four lakes in the Mercator's map of Croatian regions from AD 1593  
Sl. 1. Četiri jezera na Mercatorovoj karti hrvatskih regija iz 1593.

## Map-drawers II

Before drawing a conclusion, let's look at a few maps of the same area, but from different periods. The first map, almost contemporary one is the Barents' "Tabvla Sinvs Venetici" from AD 1595. On this chart only one lake – our "lake of Sinj" appears. What could be cause of it? Since we know that Willem Barents (1550-1597) was a sea explorer, there is every reason to believe that he had no interest in interior waters. Yet, this chart was drawn for the purpose of sea navigation (KOZLIČIĆ, 1999).

It is surprising that a native scholar – historian and map-drawer Ivan Lučić (1604-1679) depicted only one lake, too – this time "lake of Knin". This map "Illyricvm hodiernvm" is a supplement of his masterwork "De Regno Dalmatiae et Croatiae" from AD 1668. While Barents was made to draw by commercial reasons, Lučić was inspired by political ones. He was dreaming of expulsion of Ottomans. Therefore the map was dedicated to count Petar Zrinski, famous war commander in Croatia (MARKOVIĆ, 1993;

KOZLIČIĆ, 1995). For this reason it would be expected of him to have entered with more minutiae geo facts. Most probably the cause lies in the cruel Candia War (1645-1669) – with its restriction in gathering information. Knowing Lučić's scrupulous soundness, there is no wonder he did not dare to draw unseen things (KURELAC, 1969).

Lastly, Giacomo Cantelli da Vignola (1643-1695) made the map entitled "Dalmatia descritta" (HDAZg, A.II.23). He was among the most famous Italian cartographers from the late 17<sup>th</sup> century. This doesn't prevent us from saying that his map is a mere baroque copy of Mercator's map – decorated and antiquated. At the first sight it is evident that all forms – rivers, mountains, even islands - were copied by Cantelli. Moreover, the incorrectly engraved toponyms are identical with the Mercator's ones. Consequently, although all the lakes have been represented, Cantelli's work cannot be considered as a real depiction and a reliable source of geo facts of his time.



Fig. 2 Cantelli's map of Croatian regions from AD 1689

*Sl. 2. Cantellijeva karta hrvatskih regija iz 1689.*

## Conclusion

The problem of the four lakes drawn in the Mercator's map of the Croatian regions from AD 1593 is fully solved. Their life history ended in the recent historical time. Factors that affected extinction were climatological phenomena of Little Ice Age



and peculiarity of carstic geology as well. The third originator was the man, finally, he was a merciless executor of the lake relicts. He is also responsible for drainage of lakes, besides the natural infilling by sediments. It is hard to say what was more baleful – war ravaging or relentless cattle-breeding. Indeed, trustworthiness of chart makers of the sixteenth century is the most important thing that was substantiated by this work. It has been found that the cartography of that period, although suffering from inaccuracy, brought valuable information. Under existing conditions and, in consideration of information indirectness, every single map is a real miracle of the human achievement. The information tree whose anonymous emissary from Šibenik was the root, and Mercator's map was a leaf, has still yielding.

## LITERATURE

- BREUSING, A. (1883): *Leitfaden durch das Wiegenalter der Kartographie bis zum Jahre 1600 mit besonderer Berücksichtigung Deutschlands*, Mahlau & Waldschmidt, Frankfurt/M.
- BROWN, L. A. (1950): *The Story of Maps*, Little, Brown and Company, Boston.
- ČELEBİ, E. (1979): *Putopis*, Sarajevo, (title of the original: Evliya Çelebi, *Seyahatnamesi*, Istanbul 1314/1896-1318/1900).
- FORTIS, A. (1984): *Put po Dalmaciji* (title of the original: *Viaggio in Dalmazia dell' abate Alberto Fortis*, Venezia 1774), Globus, Zagreb.
- FRIGANOVIĆ, M. (1961): *Polja gornje Krke* (Les poljes de la Krka Superiere), Radovi Geografskog instituta Sveučilišta u Zagrebu, vol. 3, Zagreb.
- GROVE, J. M. (1988): *The Little Ice Age*, Methuen, London – New York.
- HUTCHINSON, G. E. (1957): *A Treatise on Limnology*, vol. 1, Geography, Physics, and Chemistry, New York – London.
- KOZLIČIĆ, M. (1995): *Kartografski spomenici hrvatskoga Jadrana, Izbor karata, planova i veduta do kraja 17. stoljeća*, AGM, Zagreb.
- KOZLIČIĆ, M. (1999): "Tabvla Sinvs Venetici" von W. Barents und ihre geschichtliche und geographische Bedeutung, *Geoadria*, vol. 4, Zadar.
- KURELAC, M. (1969): "Illyricum hodiernum" Ivana Lučića i ban Petar Zrinski, *Zbornik Historijskog instituta JAZU*, vol. 6, Zagreb.
- KUŽIĆ, K. (1999): *Zabilježbe o "malom ledenom dobu" i njegovim posljedicama u hrvatskim krajevima* (Notes on the "little Ice Age" and its consequences for the Croatian lands), *Povijesni prilozi Hrvatskog instituta za povijest* 18, Zagreb.
- MAGDALENIĆ, A. (1971): *Hidrogeologija sliva Cetine* (The hidrogeology of the river Cetina drainage basin), *Krš Jugoslavije* 7/4, Zagreb.
- MARKOVIĆ, M. (1993): *Descriptio Croatiae, Hrvatske zemlje na geografskim kartama od najstarijih vremena do pojave prvih topografskih karata*, Naprijed, Zagreb.
- McNEILL, J. R. (1992): *The Mountains of the Mediterranean World*, Cambridge University Press, Cambridge – New York – Oakley.
- NEJAŠMIĆ, I. (1998): *Osnove opće geografije*, Educa, Zagreb.
- PATON, A. A. (1849): *Highlands and Islands of the Adriatic*, vol. 2., Chapman and Hall, London.
- PENZAR, I., PENZAR, B. (1997): *Weather and climate notes on the Adriatic up to the middle of the 19<sup>th</sup> century*, *Geofizika*, vol. 14., Zagreb.
- RAČKI, F. (1882): *Prilozi za geografsko-statistički opis bosanskoga pašaluka*, *Starine JAZU* 14, Zagreb.
- SLUKAN, M. (1998): *Kartografska zbirka Hrvatskoga državnoga arhiva i njena vrijednost kao izvora za istraživanje*, *Arhivski vjesnik* 41, Zagreb.
- SPAHO, F. Dž. (1985): *Jedan turski popis Sinja i Vrlike iz 1604. godine / A Turkish register of Sinj and Vrlika from 1604*, *Acta historico-oeconomica Iugoslaviae*, vol. 12/1, Zagreb.

ŠEGOTA, T., FILIPČIĆ, A. (1996): *Klimatologija za geografe*, Zagreb.  
 WILKINSON, J. G. (1848): *Dalmatia and Montenegro with a Journey to Mostar in Herzegovina*, vol. 1., John Murray, London.

## SOURCES

Annales Ragusini anonymi, Monumenta spectantia historiam Slavorum meridionalium, vol 14., Zagreb 1883.  
 DESNICA, B. (1951): Istorija kotarskih uskoka 1684-1749, sv. 2, Zbornik za istoriju, jezik i književnost srpskog naroda, treće odeljenje – knjiga XIII, SAN, Beograd.  
 Diarii udinesi, Monumenti storici pubblicati dalla r. deputazione veneta di storia patria, vol. XI., serie III, Cronache e diarii, vol. II., Venezia, 1884.  
 Hrvatski državni arhiv Zagreb (HDAZg), Kartografska zbirka, A.II.23  
 Hrvatski državni arhiv Zagreb, Kartografska zbirka, 32 A.II.3 – Sclavonia, Croatia, Bosnia cvm Dalmatiae parte  
 Hrvatski državni arhiv Zagreb, Kartografska zbirka, D.XIV.40. – Sebenico e i contado citta nella Dalmatia confinate con Zarra d<sup>li</sup> Ill<sup>mi</sup> s<sup>ni</sup> Ven<sup>ni</sup> al pñte da Turchi molestado : 1571 :-  
 KUKULJEVIĆ, I. S. (1857): Kratki ljetopisi hrvatski, Ljetopisi Šimuna Glavića, Ljetopis nepoznatoga, Arkiv za povjestnicu jugoslavensku, knjiga IV., Zagreb.  
 SANUDO, M. (1859): Diarj, Arkiv za povjestnicu jugoslavensku 5, Zagreb 1859.  
 SANUDO, M. (1865): Diarj, Arkiv za povjestnicu jugoslavensku 8, Zagreb - Mletci 1865.

## SAŽETAK

### **Krešimir Kužić: Četiri jezera s Merkatorovog zemljovida hrvatskih krajeva i razlog njihovog nestanka**

Do razdoblja renesanse hrvatski su krajevi bili prikazani na brojnim kartografskim radovima. Nakon toga u modu je ušla antička kartografija. Međutim, novi impuls za geografiju bila su prekomorska otkrića i turska osvajanja. Zahvaljujući istraživačima, putnicima i trgovcima dolazilo se do novih suvremenih saznanja o zemljinoj površini. Jedna Merkatorova karta hrvatskih krajeva iz 1593. god. najbolji je primjer za to. Kartu je Merkator napravio prema predlošku Martina Kolunića-Rote, sudeći prema preciznim detaljima oko Šibenika. Ono što je na Merkatorovom zemljovidu intrigantno, to su četiri jezera – jedno na Krki, te tri na Cetini. Prvo jezero se nalazilo podno grada Knina, što se vidi iz okolnih toponima; drugo na izvorišnom dijelu rijeke Cetine, a treće podno grada Sinja. Četvrto je bilo teže locirati, jer ga je kartograf pogrešno ucrtao na lijevoj obali Cetine. Ono se u stvarnosti nalazilo u blizini desne obale, što je također vidljivo usporedimo li toponime iz njegove okolice. Kako jezera više nema, nameće se pitanje što je razlog njihovog nestanka. Poznato je da je od 1500 do 1850 u Europi vladalo tzv. Malo ledeno doba. Dok je klima na sjeveru i u visokim gorjima obilovala snijegom, na Mediteranu se ono odražavalo u povećanoj količini kiše. To nam potvrđuju zapisi kroničara iz onog doba. Dakle povećani intenzitet padavina ubrzao je proces erozije koja je u konačnici dovela do zatrpavanja jezera. Važno je napomenuti da je čovjek svojim ratnim i gospodarskim nesmotrenim potezima uvelike pridonio eroziji ogolivši planinske padine. Iz niza zapisa daje se rekonstruirati taj proces. Zahvaljujući vojnim izvidnicima, katastarskim zapisima, te putopiscima može se pratiti povijest nestanka svakog od ova četiri jezera.

Naposljetku, dokazuje se da su stari kartografi, unatoč sporosti dotoka informacija i nemogućnošću njihove provjere, ipak sačuvali vjerodostojne i vrijedne opise krajeva na svojim zemljovidima, što je vidljivo iz ovog rada.

*SOMMAIRE***Krešimir Kužić: Quatre lacs qui figurent sur la carte géographique des régions croates de Mercator et les causes de leur disparition.**

Jusqu' à l'époque de la Renaissance les régions croates ont été présentées sur de nombreuses oeuvres cartographiques. Puis on a suivi la cartographie antique. Cependant, les découvertes d'outre-mer et la domination turque étaient une nouvelle impulsion pour les géographes. Grâce aux chercheurs, aux voyageurs et aux marchands on obtenait de nouvelles connaissances de la surface de la Terre. Une carte de Mercator, représentant les régions croates et qui date de 1593, en est le meilleur exemple. Mercator l'a faite d'après le modèle de Martin Kolunić-Rota à en juger d' après les détails précis autour de Šibenik. Ce qui intrigue sur la carte géographique de Mercator se sont les quatre lacs; l'un sur le fleuve Krka, et les trois autres sur le fleuve Cetina. Le premier lac se trouvait au pied de la ville de Knin, ce qui est visible des toponymes environnants. Le deuxième lac était près de la source du fleuve Cetina et le troisième au pied de la ville de Sinj. Il était plus difficile trouver la place du quatrième, parce que le cartographe l'a tracé faussement sur la rive gauche de Cetina. En réalité il se trouvait près de la rive droite, ce qu'on peut bien voir si l'on compare les toponymes de ses alentours. Les lacs n'existent plus et on se demande quelle est la cause de leur disparition. Il est connu que de 1500 jusqu'à 1850 dominait le Petit Age Glacial. Pendant que le climat du nord et dans les hautes montagnes abondait en neige, sur la Méditerranée cela se répercutait dans la quantité augmentée de la pluie. C'est ce que les chroniqueurs de ce temps-là nous attestent. Ainsi donc l'intensité augmentée des précipitations atmosphériques a accéléré le processus d'érosion qui a fini par remplir les lacs. Il est important de mentionner que c'est l'homme qui a contribué considérablement à l'érosion en déboisant les pentes de la montagne par ses irréfléchis traits guerriers et économiques. Une série d'enregistrements rend possible la reconstruction de ce processus. C'est grâce aux patrouilles militaires, aux inscriptions cadastrales et aux auteurs de récits de voyages que l'on peut suivre l'histoire de la disparition de ces quatre lacs.

A la fin on prouve que les anciens cartographes, malgré un afflux des informations lent et l'impossibilité de les vérifier, ont gardé sur leur cartes de précieuses descriptions des régions, dignes de foi.