

# Proposal of socio-economic model of development of small, periodically inhabited and uninhabited Croatian islands

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## Abstract

Croatia is a country with more than a thousand islands, a small number of which are inhabited and provides for a good livelihood throughout the year. Some of the islands are occasionally inhabited, while others are uninhabited and have no or poor traffic links.

The authors of this paper analyse the survey “Small, occasionally inhabited and uninhabited island and islets” (2007) carried out by the Hydrographic Institute of Croatia. The authors examine opportunities for the balanced revival of the islands, taking into consideration the fact that there will always be differences in their prospects and their level of development. Evidently, islands closer to the mainland have an advantage over the more distant islands, and the occasionally inhabited islands have an advantage over the uninhabited ones. The prospects of remote islands are inversely proportional to their distance from the mainland, unless an island possesses some special advantages or enjoys a special status. By grouping islands according to their population density, it is evident how much they differ by their characteristics. That is why the development of each island should be considered individually, and potential development scenarios should be constructed separately. The basic guidelines are enabling and constraining factors of development, including market conditions and requirements, the force of their mutual influence, as well as the potential development of activities within an Adriatic-based orientation. The authors propose measures for the revitalization of occasionally inhabited and uninhabited islands. They highlight opportunities for further development, based especially on developing forms of special-interest tourism, through a global approach to



development, and they suggest an inductive approach from the point of view of microeconomics and the household economy model.

*Key words: small islands, development models, special-interest tourism, Croatia.*

## 1 Introduction

Islands are resources of exceptional value to Croatia. Up to date, little has been done to tap into their potential: their authenticity has been poorly protected and their development poorly fostered or even hindered. Sustainable development – the harmonious union of people and nature that ensures natural resources are used only to limits that are neither threatening nor cause depletion – is particularly suitable for islands. Accordingly, islands require the highest level of environmental protection. To ensure this, only activities that do not conflict with these guidelines should be especially encouraged. The purpose of this paper is to put forward measures for revitalizing islands. The paper aims to identify opportunities for furthering island development through special-interest forms of tourism, in particular, by implementing a household economy model.

## 2 Problem definition

The number of people living on Croatia's islands is steadily decreasing. In particular, island communities lack young people and professionals. Other aggravating factors include the limitations and lack of infrastructure, poor links with the mainland, problems in schooling, poor health care, a lack of cultural events, etc. The primary determinant of island development in Croatia should encompass efforts to maintain island life and encourage demographic growth and economic advancement, while ensuring the conservation of natural assets [1].

### 2.1 Present state and features of Croatian islands

The population has a dual economic function [2]. On the one hand, it is a primary factor of the economy as it ensures the supply of labour. On the other, it is the purpose of any economic activity, which consists of the consumption function and the function of living standards growth, a major indicator of the effectiveness of economic activities.

The recent social and economic history of the Croatian islands [3] can best be depicted by changes in population numbers. From 1857, when the first official census was conducted in the territory of Croatia, up to the present, the highest island population and greatest island activities were recorded in 1921. This was followed by a decline in population and activities, until 1981, towards the end of the century of global population explosion, when the number of islanders was less than it had been in the late nineteenth century. There are no substantial urban agglomerations on the Croatian islands, nor any towns with more than ten thousand inhabitants. The Croatian islands have always been less populated than any of the other island groups in the Mediterranean, although many criteria (the vicinity of the mainland to island centres, human habitation dating back



thousands of years, the size of the Adriatic Sea and its importance for transportation) generally indicate the possibility of greater population density and larger agglomerations.

According to the statistical data the total number of population in inhabited islands in Croatia is 122 418 inhabitants (Table 1).

Table 1: Population numbers of inhabited islands (according to the 2001 Population Census).

<b>Island</b>	<b>Population</b>	<b>Island</b>	<b>Population</b>
Krk	17 860	Vrgada	242
Korčula	16 182	Krapanj	237
Brač	14 031	Molat	207
Hvar	11 103	Ist	202
Rab	9 480	Susak	188
Pag	8 398	Koločep	174
Lošinj	7 771	Drvenik veliki	168
Ugljan	6 164	Olib	147
Čiovo	5 387	Kaprije	143
Murter	5 060	Žirje	124
Vis	3 617	Ilovik	104
Cres	3 184	Rava	98
Pašman	2 711	Unije	90
Dugi otok	1 772	Premuda	58
Vir	1 608	Drvenik mali	54
Šolta	1 479	Sestrunj	48
Mljet	1 111	Zverinac	48
Lastovo	835	Rivanj	22
Iž	557	Biševo	19
Prvić	453	Ošljak	18
Šipan	436	Vele Srakane	8
Zlarin	276	Kornati	7
Lopud	269	Male Srakane	2
Silba	265	Sveti Andrija	1



The set of data and averages generally used in determining the level of development of a given region (population numbers and patterns, population density, economically active population, economic and non-economic structures, etc.) have a different meaning when applied to the islands. When the 47 permanently inhabited islands are ranked from least developed to most developed, the group to which incentives should be offered includes as many as 30 islands, most of which are small islands. Starting with the least developed, this group includes the following islands: Biševo, Škarda, Drvenik mali, Zverinac, Premuda, Vele Srakane, Rivanj, Rava, Drvenik veli, Lastovo, Šipan, Koločep, Ist, Olib, Molat, Lopud, Sestrunj, Žirje, Ilovik, Susak, Ošljak, Kaprije, Unije, Mljet, Silba, Vrgada, Iž, Vis, Zlarin and Prvić (the Šibenik island). Somewhat more developed are the islands Krapanj, Šolta, Dugi Otok and the Pelješač peninsula. The next group consists of islands that cannot be considered as being underdeveloped with regard to the usual indicators. Listed from less developed to most developed, these are the islands Korčula, Hvar, Pašman, Vir, Murter, Čiovo, Brač, Cres, Ugljan, Rab, Lošinj, Pag and Krk. The Brijuni Islands, while belonging to this group, lack a permanent population and, therefore, are not subject to the usual measures of the development policy.

When the underdeveloped/developed classification is applied to the individual areas of the larger islands, the pattern of developmental neglect worsens. Namely, even the most developed islands have backward regions that are in as much need of assistance as underdeveloped small islands. Croatia also has a dozen uninhabited islands. Once thriving communities, these islands have no permanent inhabitants and no economy. Natural resources either lie idle or are being devastated by the illicit construction of holiday homes. The houses that do exist are left in disrepair and go to ruin. The islands in this group are Male Srakane, Prvić (the Kvarner Bay Island), Goli, Sv. Grgur, Babac, Sv. Andrija, Jakljan, Kornati, Žut and Sit with neighbouring islands.

## 2.2 Natural factors of island development

Due to island temperatures and insolation, crops mature earlier and the vegetation period is longer resulting in up to three harvests of certain crops each year [4]. The islands' climate also makes them appealing to tourists, as well as to those who wish to make their livelihood or spend their senior years there.

Geographical position is another comparative advantage of Croatia's islands. They are located in the centre of Europe close enough to outbound tourist markets and to markets for the islands' agricultural produce. It should be noted that the vicinity of the mainland does not necessarily make an island's position more favourable. With the development of trade and traffic and with the spatial distribution of labour in general, the sea is increasingly becoming a primary island resource in terms of traffic and production alike.

Island landscapes and the indentedness of island coastlines further enhance climate-based tourist appeal. The indentedness of island coastlines also provides better opportunities (better than on the Croatian mainland and better than on other Mediterranean islands) for building ports at relatively low costs and for developing aquaculture. The cleanliness of the island environment, which has

only in a few places been disrupted by contamination but nowhere by pollution, is regarded as one of the islands' strengths. With a clean environment becoming an increasingly important part of any tourism offering, the islands have the upper hand over existing and potential mainland destinations. This is perhaps the only positive consequence of abandoned agricultural activities. Once cultivated but now neglected agricultural areas have mostly been spared the use of artificial fertilisers and chemical agents for plant protection, making them suitable for the development of organic farming and the production of 'wholesome agricultural products'.

### 2.3 Constraining factors of development

Obviously, the greatest constraining factors are the lack of economically active islanders and the lack of people of childbearing age on small islands. Previous attempts at opening industrial plants and relocating workers from the mainland to the islands have shown that adjusting to island life can be difficult, takes a long time and is not always successful. In addition, island communities are slow and restrained in accepting new members. The main natural constraining factor of development is the permeability of island soil, because of which the islands have no permanent surface water courses despite sufficient rainfall. That is also the main reason why island water-supply strategies usually resort to bringing water in from the mainland.

Another natural constraining factor is the rockiness of the terrain, resulting in few areas that can be used in agricultural purposes and not many more areas suitable for the low-cost construction of road infrastructure. Lacking port and road infrastructures on the islands is also a constraining factor affecting traffic links, as well as the economy and daily life of islands, in general. Inadequate elementary education on small islands is seen as an insurmountable short-term constraint. If an island lacks a school or minimal educational facilities, islanders and newcomers that have started families are in jeopardy as soon as their children reach school age. At present, the lack of waste water treatment infrastructure and the complete absence of solid waste disposal infrastructure are not seen as vital constraining factors. Ranked at the top of institutional constraining factors are chaos in the cadastral books and dubious ownership of agricultural and building land, and of buildings. Institutional constraint is also seen in protracted procedures for obtaining licences, procedures that drive off investors in sustainable development which the islands desperately need.

## 3 Overview of previous studies

Numerous authors have published their studies concerning the situation on the Croatian islands, and for years they have called attention to the need of bringing about changes in island development.

The first systematic research of the length and indentedness of the Adriatic Sea, within the administrative and political boundaries of the then Austria-Hungary, was undertaken in the early twentieth century by Sobietzky in



1911 [5]. Over time, Croatian geographers also become involved in research. *Razvedenost istarskih i dalmatinskih otoka (Indentedness of Istrian and Dalmatian Islands)* was published in 1913 by Šenoa [5]. Rubić (1925) published a thorough overview of the length of the coastline and number of islands and ports in the Kingdom of Serbs, Croats and Slovenes [5]. In 1953, author went on to publish a professional and scientific monograph entitled *Naši otoci na Jadranu (Our Islands in the Adriatic)*, which saw five editions. The most comprehensive overview of the indentedness of the Croatian mainland and islands was published in the edition *Razvedenost obale i otoka Jugoslavije (Indentedness of the Yugoslav Coast and Islands)* by Irić at 1955 [5]. Kos (1970) explored the legal and economic aspect of a municipality-based division of the eastern Adriatic coast and presented a tourist map, the part of the Adriatic belonging to Albania not included [5]. Having studied Mljet, Stražičić (1970) established that the length of the island's coastline actually amounts to 131 km [5], rather than 86.5 km. Stražičić (1987) presented a new regionalisation of the Adriatic archipelago and gave a more specified classification of the number of islands (60), islets (653) and reefs (438), [5]. Kelletat (1989), as reported by Ridanović (5), gives a different, considerably broader and more meaningful definition of the term *coast* in *Fizička geografija mora i obala (Physical Geography of the Sea and Coast)*.

The number of islands, islets, reefs and other features of coastal indentedness in the eastern part of the Adriatic Sea, excluding Albania (Sazan) and Greece (Corfu), differs considerably from author to author. Vital in explaining these differences are three books: *Naši otoci na Jadranu (Our Islands in the Adriatic)* by Rubić at 1952, *Razvedenost obale i otoka Jugoslavije (Indentedness of the Yugoslav Coast and Islands)* by Irić at 1955, and *Prilog poznavanju ukupnog broja hrvatskih jadranskih otoka i broja naseljenih otoka među njima (Towards a Better Understanding of the Total Number of Croatian Islands and the Number of Inhabited Islands Among Them)* by Stražičić at 1997 [5]. Rubić (1952) reported 69 islands, 558 islets, and 413 rocks and reefs, making a total of 1,040 islands, islets, rocks and reefs. In his work, Irić (1955) published new data: 66 inhabited islands and islets, 659 islands and islets with no inhabitants, 426 rocks (above sea level) and 82 reefs (at sea level), making a total of 1,233. In the Croatian part of the Adriatic, Stražičić (1997) counted 717 islands and islets, 357 rocks and 77 reefs, giving a total of 1,151 'islands'. The most recent data have been published in *Categorization and Number of Islands in the Republic of Croatia* [6], the result of the teamwork of members of the Hydrographic Institute of the Republic of Croatia in Split. According to the definitions of the International Hydrographic Organization (IHO) of Monaco, 1994, there are 1,246 'islands' in the Croatian Adriatic: 79 are large islands with a surface area greater than 1 km<sup>2</sup>, 66 of which are inhabited; 525 are islets with a surface area ranging 0.01–1 km<sup>2</sup>; and 642 are reefs and rocks with a surface area less than 0.01 km<sup>2</sup> [7].



## 4 Research methodology

Alongside various programmes (National Programme for Island Development), and acts and decrees regulating this sensitive issue, research was also carried out by the Croatian Hydrographic Institute of Split in 2007 [3] for the purpose of developing and adopting the National Programme for the protection and usage of small, occasionally inhabited and uninhabited islands with surrounding sea areas. One of the aims of this research, in accordance with the Islands Act [8], and its amendments [9], was to determine the total number of small, occasionally inhabited and uninhabited islands and islets (MPNNOo - *mali, povremeno nastanjeni i nenastanjeni otoci i otočići*) to ensure their protection against inappropriate and planless management. Its special aims were to ensure protection against the inappropriate selling of real estate, as well as to carry out spatial evaluations, update data in spatial plans, determine the boundaries of the maritime domain, and provide protection to natural-resource usage and to cultural and historical heritage, while safeguarding the existing biological diversity and uniqueness of each island.

It is important to note that an identical methodology was applied in compiling databases for each and every MPNNOo, regardless of its size, location and perceived importance [10]. Many MPNNOos were analysed in detail for the first time. Up till now, a great number of MPNNOos had no databases of systematically processed data. The only data available concerned their locations on navigational and other maps (if they were of a larger scale), and the knowledge local residents possessed of their existence.

## 5 Results and discussion

The MPNNOo category in the Adriatic refers to a diverse cluster of almost 700 islands and islets (precisely 688), administratively divided into seven coastal counties, their 23 towns and 42 municipalities. Data from a spatial analysis of MPNNOos indicate that they cover about 192 km<sup>2</sup> or just 5.9% of the total area of all the 1,244 islands, islets and cliffs on the Adriatic (together all MPNNOos have an area half the size of the island of Brač), while the total length of MPNNOo coastlines measures 1,204 km or about 27% of the total length of all Croatian islands. According to their definition, MPNNOos do not have permanent residents. The statistical average for this category is an above-sea-level land mass having an area of 28 ha and a coastline of 1.7 km. There are, however, very large differences among MPNNOos with regard to size (1:4,000) and numerous other features.

The real and essential contribution of MPNNOos is that they account for 27% of the total island coastline (a coastline being one of the most valuable parts of a marine ecosystem), especially in those parts of the Croatian Adriatic which would, without this coastline, have a completely high-seas character (a comparison of the Croatian and Italian part of the Adriatic proves this point). In this lies the most important meaning of their existence and their greatest asset, which calls not only for adequate attention but also for adequate care to ensure



these assets are permanently preserved. For the needs of research, a thorough and uniform analysis was conducted, followed by an interpretation of determinants relating to space and position, nature, history and culture, and ownership. For each MPNNOo, a database was developed, the value of which has gone beyond the framework and tasks of the Programme. In the study, each of the almost 700 MPNNOos was processed with regard to attributes vital for establishing protection measures and usage opportunities, such as position and space, heritage – natural, and cultural and historical, usage potential, spatial planning attributes, and ownership structure. This data will help to determine which MPNNOo needs to be provided additional protection in the form of public preemptive right to purchase. It also suggests the many ways in which the assets that MPNNOos, as an island segment, possess, in terms of nature, space and position, can be concurrently valorized and protected. Such an approach – in fact, the only viable approach – will transform the database into a combination of *encyclopedia and atlas* of MPNNOos in the Croatian Adriatic, giving the database a much broader and more diverse application than the one originally envisioned.

The list of MPNNOos is based on the Act on Amendments [9] to the Islands Act [8], and it contains 681 islands and islets by region ranging from the north to the south of the Adriatic. During the development of the National Programme, field surveys and other relevant facts indicated the need of additionally refining the MPNNOo list by omitting certain islands and/or islets, while including other islands and/or islets to ensure equal criteria that an island or islet must meet to belong to this category. As a rule, the criterion, by which about 4,000 m<sup>2</sup> was the lower limit for surface area, was applied to proposals for including specific islands and islets to the MPNNOo list. In this way, islands and islets, which, for a variety of reasons, had been omitted in the existing act, were added to the list. It should be noted that there are some private-owned above-sea-level formations below the 4,000 m<sup>2</sup> limit, not all of which are included in the MPNNOo category. Such small formations should be provided full protection by the institute of the maritime domain. This excludes the preemptive right to purchase (if they are private-owned), which provides protection only to MPNNOos. Size is also the most important criterion applied to islets that have been proposed for omission from the MPNNOo list. Namely, the list contains a considerable number of miniature islets and rocks, the surface area of which is below the 4,000 m<sup>2</sup> limit and which have, accordingly, been proposed for omission. The list also contains a number of formations that are not islets at all, as well as formations that have ceased to be islets through human intervention (islets connected to land by embankments, etc.). By creating the MPNNOo category in this way, a number of islands and islets have been added to the list because of so-called technical inhabitancy (according to the census, they are uninhabited because the place of permanent residence of the people who stay, dwell, work, do their jobs, or provide services on these islands and islets is elsewhere). They are different types of islands with regard to “technical inhabitancy” [10]. These are:

- hotel and tourism islands (accommodation, hospitality): Sv.Nikola, Sv.Katarina, Sv.Andrija and Maškin, Mali Brijun and Veliki Brijun, Obonjan, Otok Života (Govanj)



- monastic islands: Košljun, Galovac, Badija, Sv.Marija
- islands that have, until recently, been inhabited and could easily become inhabited again: Škarda, Svetac/Sv.Andrija
- islands that are on the way to becoming permanently inhabited (based on their size, position, past inhabitancy and economic changeover): Sv.Klement, Šćedro, Žut,
- production and/or service islands: Uljanik, Katarina, Lokrum
- Lighthouse islands, a specific form of production and/or service islands: Sv.Ivan na Pučini, Porer, Grujica, Tajerska Sestrica, Blitvenica, Murvica, Sušac, Palagruža, Sv.Andrija na Pučini.

The group of inhabited islands consists of 50 islands and islets: Krk, Cres, Lošinj, Unije, Vele Srakane, Male Srakane, Susak, Ilovik, Rab, Pag, Premuda, Silba, Olib, Vir, Ist, Molat, Zverinac, Dugi Otok, Sestrunj, Rivanj, Ugljan, Ošljak, Iž, Rava, Pašman, Babac, Vrgada, Kornat, Murter, Žirje, Kaprije, Prvić, Zlarin, Krapanj, Mali Drvenik, Veli Drvenik, Čiovo, Šolta, Brač, Hvar, Vis, Biševo, Korčula, Vrnik, Lastovo, Prežba, Mljet, Šipan, Lopud, Koločep. On most MPNNOs, nature is well preserved. The planned protection of MPNNOs, specified in space use and in conditions for space usage, has been incorporated into the existing spatial planning regulatory rules. Given today's spatial planning theory and practise and current spatial plans, practically all MPNNOs are protected from any kind of change – construction, in particular, while the use of MPNNOs in recreational purposes and for organized visits is encouraged (this is almost the only type of usage allowed, and also the only usage that cannot be prevented). This usage refers exclusively to short, one-day visits, excluding any kind of spatial or environmental intervention

Relying on the natural environment, the islands, as a rule, have a simple economy, the structure of which has always seemed poor in comparison with the economy of the mainland. Even today, the islands lack entire productive sectors, and the existing businesses, which are often the only representatives of their branch, generally have no more than ten workers. The islands' economic structure is extremely meagre. Agriculture has been neglected, while the prevailing activity is tourism, followed by commerce, shipping and some industrial activities, the most important involving ship repair yards, fish processing, quarrying, and wine and wine distillate production.

Today, about 45,000 islanders have jobs. Slightly less than 40,000 have jobs on the islands, while the rest live on the islands but work on the mainland. Due to transport expenses, the cost of living and the amount of investment required is greater on the islands than on the mainland. On the larger and more accessible islands, living costs are higher by about 10 per cent, while on smaller and more distant islands, they are higher by as much as 30 per cent.

In the nineteenth century, 59 fish processing factories were built along the entire coast of the eastern Adriatic, 32 of which were located mostly on the outer islands. By absorbing the surplus of the agricultural population, the factories played a vital role in the lives of islanders in both the past and present century. They directly encouraged the fishing industry and indirectly, agriculture. With



the closure of the fish factories, jobs and the market for pelagic fish began to disappear, one of the most important existential mainstays of the islanders. The emigration of islanders from marginal islands can be primarily attributed to the decline of the fish processing industry.

The state of island shipyards varies from satisfactory to very poor. Island shipyards, whose businesses are linked to the large Croatian shipyards, as is the case of all shipyards on Korčula Island, find themselves sharing the problems of the large shipyards. The situation is considerably better in shipyards, such as Punta, Lošinj and Cres, whose activities are focused on ship repair and on providing tourism services.

## **6 Recommendations for improving the island economy**

The island economy can be revitalized by encouraging the development of a diverse economic structure and the development of multi-product households [2]. A series of coordinated fiscal policy measures are required, among other things, to generate the economic conditions in which the above objectives can begin to be accomplished. The measures should help to encourage small and middle-size investment in those activities which can ensure sustainable island development, in the users of sustainable technologies and in households eager to increase the number of their activities. Special incentive should be provided to households whose activities combine tourism with agriculture. Activities which should be encouraged on all Croatian islands include [1]: organic farming on existing and new fields, in open as well as in protected areas, extensive and semi-extensive sheep farming and goat farming, bee-keeping, the processing of agriculture products into foodstuffs with Protected Designations of Origin, shellfish farming, fish farming and the farming of other marine organisms, coral farming, sponge farming, quarrying, stone masonry, sail making, the production of fishing gear, pottery, the production of special island souvenirs, small-scale tourism in existing renovated and converted facilities, Robinson Crusoe-type tourism, nautical tourism and organized berthing, small-scale shipbuilding, private-owned maritime, road and air carriers, private-owned health care, private schools.

Diverse fiscal measures are needed which will encourage investors on small islands, as well as investors who are counting on the return of emigrated islanders. The most neglected islands in terms of development have been identified, on which investors and potential newcomers will be given special advantages. The islands Unije, Susak, Srakane Vele, Ilovik, Premuda, Silba, Olib, Škarda, Ist, Molat, Dugi Otok, Zverinac, Sestrunj, Rivanj, Rava, Iž, Ošljak, Vrgada, Prvić (the Šibenik island), Zlarin, Kaprije, Žirje, Veli Drvenik and Mali Drvenik, Vis, Biševo, Lastovo, Mljet, Šipan, Lopud and Koločep belong to this group. To this group should also be added once inhabited but today deserted islands, or islands that are occasionally inhabited: Sveti Andrija and Jakljan, together with the Kornati islands and the islands of the Žut-Sit group.

Today, island ports are poorly managed. The rental potential of ports has not yet been tapped into, while the lack of funds consistently makes port maintenance difficult and, on small islands, often impossible. This situation



could be improved if the same measures of planning and management were applied to all ports on Croatian islands.

Hunting management plans for island hunting grounds should prohibit the introduction and breeding of game that is not native to a specific island and should ensure that in no way does hunting jeopardize the island's agricultural activities.

## 7 Conclusion

The socio-economic model of island development is based on the Croatian Regional Development Strategy and the National Programme for Island Development, as well as on numerous instruments and acts aimed at protecting islands and islets with the surrounding sea area. All development is based on the protection of the sea and the marine environment, and it is closely connected to coastal zone management and sustainable development. The future appearance of landscapes depends upon the relationship of people towards the environment, and it is up to the State to adopt measures that will foster island development.

Regrettably, in the previous period, centralized state and regional management, coupled with over-restrictive environmental conservation measures, has created insurmountable constraints to sustaining life on the smaller islands. It is an absurdity that by focusing our attention on the conservation of animal and plant communities we have endangered the survival of people on small islands. To reverse the island emigration trend, a powerful turnaround is needed to ensure the basic living conditions in a given community (infrastructure, education, jobs). This is the only way to make the islands be seen as a desirable place to make a life. This can be achieved through various forms of benefits and by encouraging the immigration of young professionals who, by taking a systematic approach to sustainable development, will ensure that island life will become not only possible but also desirable, even a matter of prestige as in highly developed countries. The islands must become what they once were, places in which people lived happy and satisfied lives.

## References

- [1] Gržetić, Z., Kovačić, M., Favro, S., Possibilities and Limitations in the Development of Selective Forms of Tourism in the Croatian Archipelago, Case Study – Istrian Islands, 1<sup>st</sup> International Conference on Science Development, April, 19th–21st, Brač, Croatia, pp. 3-12, 2010.
- [2] Montana, M., *Ekonomija malih razmjera u otočnom razvoju*, Društvena istraživanja, Zagreb, Vol.3 No.4-5 (12-13), 1994.
- [3] Nacionalni program razvitka otoka (Sabor RH od 28. 2. 1997.), Ministarstvo pomorstva, prometa i infrastrukture; dostupno na: <http://www.mmpi.hr/userdocsimages/2007/NPRO-RH.pdf>
- [4] Božičević, S., *Geomorfološke i speleološke specifičnosti jadranskog otočja*, simpozij Strategija održivog razvitka hrvatskih otoka, Hvar, pp. 383-387, 1994.



- [5] Riđanović, J., *Geografija mora*, hrvatski zemljopis – dr. Feletar, Zagreb, 2002.
- [6] Duplančić – Leder, T., Ujević, T., Čala, M., Viđak, I., *Categorization and Number of Islands in the Republic of Croatia*, Period, *biol.* Vol. 102, Supplement 1, pp. 281-84, 2000.
- [7] Duplančić, Leder T., Ujević, T., Čala, M., *Coastline Lengths and Areas of Islands in the Croatian Part of the Adriatic Sea Determined from the Topographic Maps at the Scale of 1:25.000*, *Geoadria*, 9, pp. 5-32, 2004.
- [8] Zakon o otocima (NN 34/99).
- [9] Zakon o izmjenama i dopunama Zakona o otocima (NN, 32/02, 33/06).
- [10] Državni program zaštite i korištenja malih, povremeno nastanjenih i nenastanjenih otoka i okolnog mora, Ministarstvo pomorstva, prometa i infrastrukture; dostupno na: <http://www.mmpi.hr/>

