

The evaluation of the present anchorage condition and the development tendency in Zadar County

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Abstract

As result of consistently more rigorous and demanding regulations on the protection of marine environment and coastal landscape, as well as following the requirements for integral management of coastal area and sustainable development of nautical tourism, any new intervention in the highly sensitive littoral area is subject to strict assessments. Accordingly, the development of new infrastructure objects of nautical tourism is frequently questioned.

Due to the continual increase of nautical vessels that sail and permanently or temporarily stay at the east coast of the Adriatic Sea, the reception capacity of nautical ports is limited and consequently navigators, especially those with bigger vessels, deploy anchorages as their destination points. Respecting the current reality and the necessity to develop nautical tourism as an important economic function in Croatia this paper gives a systematic analysis of the anchoring issue. The authors research the method and the need for anchoring on free and institutional anchorages and evaluate the role of anchorages in the economy. The aim of the paper is to analyze the current situation based on the example of the Zadar County, especially the spatial-geographical conditions for the development of anchorages in the Zadar County. The goal of the paper is to establish the interdependence between the institutional anchoring and development of nautical tourism in the Zadar County.

Keywords: anchorage, institutional anchoring, nautical tourism, Zadar County.



1 Introduction

The Croatian coast of the Adriatic Sea is a paradise for navigation experts, with more than one thousand islands and well-indented coasts, clear sea and favourable climatic conditions. As the navigation experts' interest in the coast grew, so did the required infrastructure develop, as well as marinas and ports for residing, moorings were arranged, anchorages organised as well as facilities for vessels and yachts' supply and maintenance. Every year, the number of vessels is in the increase and so is the demand for berths. Many small ports, marinas and piers are desirable destinations for moorings during the summer season and every protected bay becomes a mooring.

The coastal waters of Zadar County comprise of an attractive part of the Croatian coast set between the foothills of Velebit Mountain on the coast and Silba and Olib islands in the NW, and Vrgara, Murvenjak and Murter in the SE. Besides natural beauties and a quality tourist offer, the area has a favourable climate for ship accommodation. There is a growing need for new nautical moorings in Zadar County, especially for the ones that could accept larger nautical vessels, and the boaters evaluate it as favourable for navigation and ship accommodation.

The subject of author's research is nautical anchorages of Zadar County. The aim of this research is to get known with the importance of nautical anchorages, and their role in sustainable development of nautical tourism in Zadar County.

The purpose of this research is to explore and analyse nautical anchorages of Zadar County and point to their role in economic development of Zadar County.

2 Theoretical guidelines and analysis of the issue

The research of scientific literature that thematically analyses nautical anchorages indicates a very small number of scientific papers as well as to a modest official range of pieces of information about registered physical traffic in organized nautical anchorages, especially of the ones of Zadar County and of the type, scope and service quality provided.

Nautical tourism is a specific form of tourism based on recreation activities related to the sea, lake and river navigation [1]. The motive for a trip is recreation and pleasure on the vessel and the sea and it is the key criterion to distinguish nautical tourism among other tourism forms. Nautical tourism has a complex structure and heterogeneous nature. Besides its own specific features, it also has elements of health, sport, excursion, cultural and other similar forms of tourism.

Anchorage is a part of water area equipped for the mooring of vessels in a bay protected from any bad weather. Safe anchorages are located in water area of the port or bay, and open anchorages are located in the unprotected water area and are intended for a short stay of vessels (overnight stay/several days). These anchorages aren't equipped with commercial infrastructure. From the nautical

aspect, anchorages that are charted and marked with clear signs should be differentiated from the ones intended to vessels that are subjects to payment system.

2.1 The analysis of anchorages' effects on the economy

There are numerous bays favourable for anchoring along Croatian islands and coast. Many of them are still intact, un-built, and the others are periodically inhabited, and along some coasts are old insular places.

Anchorage managing is under the authority of regional government in accordance with acts and ordinances that regulate that area [2–5]. It implies granting the concession and monitoring due to which a part of maritime domain is excluded from public use and is given to the authorized concessionaire to be used. The authorized concessionaire is in charge for keeping the order on organized anchorages in accordance with the Concession contract. A person operating a yacht or a boat shall be responsible for safety of the vessel while at anchorage, and shall be obliged to follow instructions of the concession holder and the competent harbourmaster's office. When anchored, a person operating a vessel shall ensure that the vessel is sufficiently removed from the nearest vessels in all directions and all weather conditions. When anchored, a vessel shall exhibit day signals and lights according to the "International Regulations for Preventing Collisions at Sea". The fee for anchoring depends on the location and anchorage organisation, and it is additionally regulated by provisions. A concession holder of a special purpose port – anchorage shall issue to a person operating a vessel a receipt for dues paid. If dry waste was collected, the concession holder shall issue a receipt for collection of the waste from the vessel. The dues charged shall include the service of collecting dry waste from the vessel. A person operating a ship, a boat or a yacht shall keep on the vessel the invoice and the receipt until leaving the territorial sea of the Republic of Croatia. The concession holder shall present, at the navigator's request, the price list of dues charged for mooring, certified by the County Office. According to Tomas Nautica Yachting Survey 2012 [6], an organised anchoring attracts boaters. Only the cognition that there is an organized system, gives a sense of security to the crew and the vessel overcomes the expense of anchorage fee.

According to Tomas Nautica Survey 2012 [6], Yachtsmen realized 12 overnights on average during their journey; of those, 7 overnights on average in marinas, and 1 to 2 overnights on average in town ports and on corpo-morto and moorings outside marinas/ports; yachtsmen in Croatian charter realized 9 overnights on average, while on vessels of personal ownership, ownership of friends/relatives and foreign charter they realized 16 overnights. Average number and distribution of overnights by location is shown in the Table 1.

A small number of yachtsmen realized overnights in accommodation facilities on shore. The number of overnights moored out of town ports and marinas by vessel ownership is shown in the Table 2.



Table 1: Average number and distribution of overnights by location.

Number of overnights	Average number of overnights	%
On corpo morto out of town ports and marinas	1.5	11.7
Moored out of town ports and marinas	1.7	13.3
In accommodation facilities on shore	0.2	1.4
TOTAL	12.4	100.0

Source: [6].

Table 2: Number of overnights moored out of town ports and marinas by vessel ownership.

Number of overnights moored out of town ports and marinas	Total	Croatian charter	Other
0	62.9	62.8	63.1
1 to 3	20.8	25.2	16.5
4 to 7	11.5	10.4	12.6
8 to 14	3.2	1.5	4.9
15 to 21	1.0	0.1	1.9
22 and more	0.5	.	1.0
TOTAL	100.0	100.0	100.0

Source: [6].

The biggest number of overnight stays on average was realized by charters from Russia (10), and between 9 to 10 overnights were realized by Frenchmen, Germans, British and the Dutch. More than the average overnight stay in marinas was realized by Russians (70% of all overnight stays was realized by Russians), Italians have realized a relatively smaller number of overnight stays (50%) and they have realized overnight stays in ports above the average (20%) and on buoys outside local ports and marinas (14%).

Domestic charters realized overnight stays on buoys more than others (14%), while most Slovenians stayed overnight on the anchor outside marinas and local ports (18%). The biggest share of charter carriers, who during the navigation visited four or more marinas, was among the Swedes (45%), Russians (43%) and British (40%) [6]. Vessels longer than 12 meters in Croatian nautical tourism ports have an insufficient number of berths. The number of overnights moored out of town ports and marinas by length of vessel is shown in Table 3.

With the increase of vessel's length, the share of navigations with 15 and more overnight stays was decreased (29% for vessels up to 9 meters and 16% for vessels longer than 13 meters). The smallest share of overnight stays in marinas was recorded among boaters with vessels up to 9 meters (54% of all overnights), while boaters on longer vessels more than 60% of all overnights realized on average in marinas. Boaters on vessels up to 9 meters stayed overnight on anchors outside local ports and marinas more often than average boaters (17% of all overnight stays).

Table 3: Number of overnights moored out of town ports and marinas by length of vessel.

Number of overnights moored out of town ports and marinas	Total	Up to 9.0 m	9.1 to 11.0 m	11.1 to 13.0 m	13.1 m and longer
0	62.9	58.0	64.5	62.9	64.6
1 to 3	20.8	20.2	21.2	22.2	19.4
4 to 7	11.5	14.9	11.4	10.0	10.9
8 to 14	3.2	5.5	1.8	2.9	3.6
15 to 21	1.0	0.5	0.7	1.6	1.0
22 and more	0.5	0.8	0.4	0.3	0.5
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: [6].

2.2 The effect of anchorages on marine environment

Under the development pressure, many bays have changed their indigenous shape during the last decades and they have become apartment resorts and nautical marinas, moorings and anchorages. Motives for mooring have significantly changed due to sport and entertainment with the development of nautical tourism and in the last thirty years with the development of navigation. While anchorages were a necessity to professional navigators and fishermen due to the lack of ports or while they were waiting to enter the port, anchoring is often both the purpose and the aim of the navigation for boaters. Boaters often use anchorages for the following purposes: planned due to the way they use their vacations (swimming, fishing, diving, ...), as a shelter from wind and sea during the storm or a malfunction on the vessel, as a necessity due to the shortage of berths. Due to a large number of vessels during summer there is often a shortage of berths in ports or moorings so anchorage becomes a necessary choice to many boaters. Many boaters, who navigate on their own vessels with a smaller budget, visit isolated bay because they don't have to pay a berth there or if there is an organized anchorage, the berth is much cheaper than the one in marinas.

Natural resources are still the main motivational factor for the arrival and stay of tourists in Croatia. The negative influence of tourism on the area and the environment can be reduced to the minimum only by regulating its development, which presumes the planning of a rational and controlled [7], that is, limited and directed use of space for the building of accommodation, and the implementation of all environmental protection measures. The main precondition for a sustainable coexistence among certain activities is their appropriate locating and responsible management [7]. Garbage is regularly gathered and taken on organized anchorages, and other activities with the aim to protect maritime environment are as well carried out. The garbage is sorted and taken to an appropriate place provided for disposal.

It is particularly significant because of two invasive green algae *Caulerpa taxifolia* and *Caulerpa racemosa*, which represent the biggest threat to biological

diversity and, in the long-term, can adversely make damages. *Caulerpa taxifolia* is particularly dangerous. It is known for a long period of time in the Adriatic. It has been proved that from the area where it settles, it extrudes all other algae and animals, especially sponges, corals and sea urchins. *Caulerpa taxifolia* is spread by transport on anchors and nets. The spreading can only be prevented by physical removal, and by prohibition of anchoring and fishing at places where it was discovered. That is why it is recommended the use of buoys for a safe anchoring and sea bed protection from the above mentioned invasive alga.

3 Methodological approach to the issue

Maritime region of Zadar County outshines in comparison to other areas of Croatian coast thanks to insular groups with its distinct degraded, scattered, indented coastal line and specific parallel spread in several lines that follow the direction of spreading basic geological and geomorphologic structures on the nearby land. A large number of bays protected from the wind and storms are natural shelters. Once were a salvation for fishermen, labourers and passengers, and now are safe retreats for nautical tourists who use them more and more due to the lack of berths and moorings in nautical tourism ports.

3.1 The analysis of spatial and geographic features of the Zadar County

Zadar County spreads over 7.276,23 km² and it is situated in the central part of Croatian coastal area. Due to its natural location, Zadar County is a significant transport connection; it is connected by state roads and Zagreb-Split highway, airlines (Zadar airport), and ferry lines with Ancona in Italy (departure from the City of Zadar) and rail routes with the rest of Croatia.

The main characteristics of Zadar sea waters are numerous islands and islets set in several lines that aren't significantly distant and that are partly connected with slit channels. Coastal area of Zadar County is relatively lowland coast and somewhere it is also sandy. The coast is more indented in the Velebit Channel. Zadar archipelago is the most indented Adriatic archipelago with numerous beauties of nature and 4 lines of islands: 24 big ones and 300 smaller islets and cliffs, out of which only 17 ones are inhabited.

With 1,300 km long costal line (island included), it is the most indented coast in the whole Mediterranean. Sea and offshore zone of Zadar County are considered to be particularly sensitive resource and it is enclosed with special regulations from the Strategy and the Programme of Physical Planning of the Republic of Croatia [8].

3.2 Oceanographic features of Zadar County archipelago

Main oceanographic features of Northern Dalmatian waters coincide with average values of the entire Croatian coast with appropriate particularities that derive from the geographic position, geomorphological segmentation and climate features.



The deepest parts of Zadar County waters are NW part of Silban channel (116 m), western entrance to Maknare passage (98 m), Murter sea (94 m), and the area between Žirje and lines of islets and reef (Blitvenica, Kosmerka, Vrtlac and others) up to 108 meters deep. The sea bed near the coast is mostly rocky and sandy (especially in bays and vast shallows), and deeper parts of sea bed are covered with silty sediments on which in some places are deposited thinner layers of different mollusks shells [9]. More important areas with sandy sediments are on the sea bed between Vir and Privlaka and along the coast around Olib Island. Sea temperatures on the surface of internal part of Northern Dalmatian waters (according to the data for Zadar and Veli Rat, for which a continuous statistical line for more years doesn't exist) are from the lowest average of 10.8°C in February and the highest one of 23.6°C in August. Sea transparency is significant. It is mainly over 10 meters, and often is around 20 meters. It is bigger along islands of the middle and outer line and in the areas of rocky sea bed. There is less transparency in the internal channels which are influenced by various forms of pollution from the nearby mainland, especially in the area of Zadar and Šibenik. During the summer, long-periodical gradient streams of the SW or S directions prevail in some channels, especially in those closer to the open sea. The average speed of surface currents in the Vir Sea is 11 cm/s (0.21 knots), and in Zadar Channel only 8 cm/s (0.15 knots) [10]. Maximum current speeds in northern part of Šibenik archipelago are relatively large (up to 61 cm/s or 1.2 knots in Žirajski Channel), and the average speeds (17.9 cm/s or 0.34 knots Kaprijski channel and 16.1 cm/s or 0.31 knots in Žirajski channel) are above the average Mediterranean Sea channels. Tidal currents are very expressed in the internal channels. The average speed of tidal currents is 20.5 cm/s (0.4 knots). The current is intensified, especially during live tides on the full moon and the new moon, when the speed can reach up to 154 cm/s (3 knots). The average difference between high and low water is 29 cm, and the average extreme amplitude is 38 cm [11]. There is a greater difference between high and low waters when the sea level is influenced not only by tides but also by greater changes in air pressure. The average sea salinity is approximately 38‰. In general, the annual fluctuations are mostly expressed in Velebit Channel and Pag Bay. The lowest degraded in these waters are in February and May, primarily due to the influx of fresh water from the mainland and occasional flows on the island of Pag during winter months, and due to snow melting from Velebit during the spring. The quality of sea water in Zadar County waters is marked by the second grade quality, which, among other things, makes it suitable for various forms of economic evaluation (fishing, aquaculture, tourism, etc.) Since the installation of a collector is only a partial solution, the construction of the device for waste water purification has largely been completed in Zadar, which significantly affects the increase of sea water quality in Zadar Channel.

3.3 Analysis of nautical tourism in Zadar County

Tourism is one of the strategic development guidelines [12] of Zadar County that is based on a significant tourist potential and resources [13] such as: attractive



coastal area (beaches, anchorages, etc.), vast areas of protected natural heritage (National Park Velebit, Nature Park Telašćica, etc.), cultural heritage (town of Zadar, Nin, Pag, etc.), medicinal mud (Pag, Nin, Karin, Posedarje, etc.), and a geographic location that is relatively close to one of the most important tourist generating areas.

The most important form of tourism in Zadar County is nautical tourism [14]. According to typology, with the reference to the motive of the subjects in the area of North Dalmatia there is mobile, navigational and sunbathing nautical tourism. From the aspect of the size and type of vessels, there is yachting and motorboat nautical tourism. From the aspect of share, volume and area of navigation, there is "small" nautical tourism, and from the aspect of the organisation of navigation there is individual nautical tourism. According to the purpose of navigation there is excursion, cruising, sailing, and navigation for sports and entertainment. According to areas where it takes place, nautical tourism is divided in coastal and insular nautical tourism.

Data indicates that Zadar County was visited by a total number of 1119,119 guests in 2010, thus realizing 7,973,587 overnight stays. In average, duration of stay was 7.1 day and most foreign guests arrived from Germany (144,426 guests) who realized 1219,278 overnight stays. They were followed by guests from Slovenia (130,464 guests) who realized 1009,765 overnight stays and 82,770 guests from Austria who realized 539,643 overnight stays [15]. Tourism in Zadar County has seasonal character, 34% of the total arrivals are recorded in July. Also, 75% of overnight stays is realized in July and August. The total income from tourism in Zadar County was 696.075.899 Kuna in 2010. The same year, investments in tourism were in total 117.605.188, 00 Kuna [15].

In 2012, there were 19 ports, 7 anchorages, 2 moorings and 10 marinas (of which two land marinas and eight marinas categorised in categories: 4 in the 2nd category and 4 in the 3rd category) in Zadar County. The capacities in Zadar County include 828,000 square meters of water surface area, or 25% of such surfaces in the country. There are 3,557 moorings or 20% of moorings in the country or more than 25% of such areas in the country. More moorings than the Zadar County has only the County of Istria. The profit realised by nautical ports in 2011 and 2012 is shown in the Table 4.

Table 4: Profit realised by nautical ports in 2011 and 2012 in 000 HRKa.

	2011	2012	Indices 2012/2011
The County of Zadar	137,731	141,689	102,9
Renting of moorings	101,657	105,256	103,5
Stationed	90,675	94,696	104,4
In transit	10,982	10,560	96,2
Maintaining services	12,112	9,057	74,8
Other income	23,962	27,376	114,2

Source: [15].

There were 3,031 of vessels permanently moored in Zadar County that is about 20% more of such vessels in Croatia. Istria with 3,500 and the Primorsko-Goranska County with 3,100 vessels had more permanently moored vessels than Zadar County. The total income realised in nautical ports in 2012 in Croatia amounted to 660 million Kuna, out of which 487.8 million Kuna was realised through the renting of moorings that is 73.9% of the total realised income. As compared to 2011, the total profit increased by 10%, while the income gained through renting of moorings increased by 11%. These indicators show that the income realised through moored vessels amounted to 105.3 million Kuna, and through other marina services (maintaining services and other services) 141700,000 Kuna in Zadar County that is 23% of the total income of all nautical ports. The income increased by 2.9%, out of which for the moorings 3.5%.

During the summer, the density of vessels in northern waters of Zadar County often surpasses permeable power of small inter-islands water and narrow straits. Boaters then join various participants of already intensified maritime traffic in the part of the year with the most favourable meteorological and oceanographic conditions. Numerous fishing boats and excursion vessels sail out then from island's bays and the nearby mainland even without boaters, and the frequency of marine lines that connect islands to the mainland is increased.

The most important centre of nautical tourism in the region is Zadar with the surrounding neighbourhood. There are several marinas in Zadar (*Zadar – Tankerkomerc* with 300 berths and 200 dry berths in Vrulja bay, *Uskok* with 500 berths and 50 dry berths and *Borik* with 220 berths and 50 dry berths in the western part of the city), and on the border of Bibinje and Sukošan is the biggest Croatian marina *Dalmacija* with 1200 berths and 500 dry berths.

Big marinas are also located in Biograd (*Kornati* with 500 berths and 60 dry berths and *Šangulin* with 150 berths and 10 dry berths), Tribunj (*Tribunj* with 260 berths and 150 dry berths), Vodice (*ACI Vodice* with 415 berths and 90 dry berths), Skradin (*ACI Skradin* with 200 berths), Šibenik (*Mandalina* with 280 berths and *Solaris* with 320 berths), Primošten (*Kremik* with 393 berths and 150 dry berths) and Rogoznica (*Frapa* with 300 berths and 150 dry berths in *Soline bay*).

Zadar County has launched the organization of moorings with buoys on favourable locations along the Zadar archipelago which are granted in a concession usually to the islanders themselves.

3.4 The analysis of receptive capacities of organized anchorages in Zadar County

In 2013, Zadar County has granted 30 concessions for anchorage management. The total area of concessional organized anchorages is 369,511 m². There were 607 buoys while the average price per day for one meter in length was 12 Kuna.

Economic effects of concessions on nautical anchorages are visible through financial results and employment [13, 16, 17]. Direct financial effects of granting a concession on maritime domain are: fixed fee of the concession fee, and variable fee of the concession fee. Indirect financial effects of granting a concession are: income tax, contributions from salaries, and Value-added tax.



Investment in anchorages brings positive effects for employment. It is foreseen that at least 3 workers during the season (2 months) will be employed on one anchorage. The structure of persons employed is the following one: diver (1), maintenance worker (1) and worker on the dock (1). That system doesn't require large investments (it is necessary to set buoys, concrete weights and build moorings on the coast), and it allows boaters a safe berth without the need of anchoring, and an organized waste collecting. In that way, the possibility for "a black berth" is minimized, and boaters are gathered in local ports where it is increased the spending possibility, on average, of wealthy tourists in local restaurants and other existing service facilities (shops, rarely souvenir shops, etc.). Moorings motivate smaller investors to build supporting facilities (restaurants, cafes, etc.) that is an additional confirmation of successful model of adjustment of the existing modest infrastructure to the needs of boaters and the local community.

4 Results and discussion

The development of the coastal area must be sustainable for a longer period of time because the preserved area is the most important resource. Sustainable development includes the fulfilment of human needs without reducing the possibility to meet the needs of future generations [18]. Sustainability, when it comes to nautical tourism, implies the balance between reducing possibilities for economic development and permissible reduction in the quality of coastal ecosystems. Therefore, future development has to be based on the policy of nature preservation, in order to ensure socio-economic prosperity of locations and areas where the activity is being performed. Particularly important segment of sustainable development is the creation of economic and social preconditions for the life of local population employed in service sector of nautical tourism.

Management and use of integrated approach in the development of coastal area implies significant evaluations, aim defining and management of coastal systems and resources, and at the same time take care about traditional, cultural and historic interests. It should be a constant evaluation process.

Inshore and maritime area of Zadar County offer significant possibilities for economic growth, entertainment and life. There is also a rich but very fragile biodiversity that requires a transparent management, maintenance and protection. Organised anchorages have a significant development potential that wouldn't significantly violate maritime environment. Practically it can be discussed about monitoring the sea water by not violating the freedom to navigate. Every partial management of nautical tourism subjects and objects, organised anchorage system included, should be harmonized with specificities and demands of local community [19–21].

Organised anchorages increase the supply and complementary services based on boaters' demands, and its purpose should be to create competitive position on the market and improve socio-economic indicators in those areas, including indirect and direct factors. Prospects for the development of economy from the aspect of the development of organised nautical anchorages with its direct and

indirect complementary activities and their effects can be analysed through the expected growth of: catering capacities, services, employment.

Effects that nautical tourism can have on economic activities can be direct and indirect. Direct effects of nautical tourism are primarily connected to local labour employment, stimulation of different service activities important for boaters (vessel and engine servicing, equipment, catering, supplies). There are also many indirect effects of nautical tourism, for example boaters are interested in visiting cultural events in coastal towns and sightseeing local cultural and historical monuments [9, 22]. The development of organized nautical anchorages cannot be seen only as a process of social change of living conditions in nautical destinations but also as an incentive process that can influence the change of social and economic structure of services and activities on islands and coast.

Increasing the number of organized anchorages, it is possible to expect positive results of the process of employing local inhabitants that are not in the direct relation with the anchorage. This primarily relates to the employment related to the offer from local food products, restaurants and other services.

5 Recommendations and possibilities for further development

The development of nautical tourism is primarily conditioned by boaters' demand that refers to the formation of new capacities, i.e. berths in marinas and tourist ports but also by the demand of vessels on the mainland. It is expected that with the assumption of general economic and social development, a significant potential demand will be formed in Europe.

The demand for nautical anchorages is inversely proportional to the demand for berths in nautical tourism ports. More berths in marinas means also a lower demand for anchorages, i.e. lack of berth in marinas increases the demand for organised and unorganized anchorages.

Taking into account that nautical tourism still has a seasonal character in the area of Zadar County, the need to construct new nautical tourism ports is questioned here. The offered solution is in ecological-acceptable system of organised anchorages that would satisfy the nautical demand. At the same time, nautical tourism of Zadar County would increase its berths' offer by an appropriate control and monitoring of anchorage use. When planning new anchorages or spreading the capacities of existing anchorages, the total receptive capacities of Zadar County's sea water should be taken into account. Zadar County, as the area with great potential, for the establishment of organized anchorages should continue to operate in the way to issue concessions on attractive but also on less attractive locations.

6 Conclusion

Great landscape diversity of County's mainland part, a combination of the mountain, valley, sea and numerous islands make Zadar County extremely attractive for the development of elite and selective form of tourism. The main feature of Zadar archipelago are numerous islands and islets situated in a few



lines, that aren't significantly distant, and are partly interconnected with narrow passages. The coastal area of Zadar County is relatively low land coast, somewhere also sandy. Among significant socio-economic effects of organized anchorages on the local community and beyond, their biggest contribution is the sea protection. It becomes an integral element of coastal zone management, it reduces "wild anchoring", uncontrolled waste dumping into the sea, it increases safe navigation and completes tourist offer. Although nautical tourism still isn't a major polluter, a constant increase in the number of vessels, tendency of the arrivals of larger nautical vessels, multiplies the amount of produced waste (biodegradable but also non-biodegradable) that should be gathered and properly treated. Organized anchorages protect the environment through the proper waste disposal. The construction of new anchorages should be viewed as an important part of nautical tourism that contributes to social and economic development of coastal areas and island in Zadar County. It is also a form of the offer that opposite to marinas includes simple services with an emphasis on boaters' safety and the safety of their vessels.

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