SOCIO-ECONOMIC ANALYSIS OF PERCEPTION AND CAUSES OF ILLEGAL KILLING OF BIRDS IN THE NERETVA DELTA, CROATIA



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1. Introduction

According to data from Birdlife International¹, a minimum of 166,000 birds are illegally killed in Croatia every year, while the maximum number rises up to 855,000 of individual birds per year, placing Croatia among the top 10 Mediterranean countries with bad records of illegal killing of birds. Some of the hotspots of illegal killing are the Neretva delta and inland fishponds, the habitats of great importance for strictly protected bird species as breeding, wintering, and resting sites. It is precisely the reason why Association Biom has chosen these areas as a focus for its activities in tackling illegal killing of birds.

As stated by Šarić Kapelj from Biom Association, citing the Directive on wild birds² of the European Union and Croatian legislation, the means, devices, or methods of large-scale or non-selective capture or killing are banned because of the excessive impact, which they have or may have on the numbers of birds. However, poachers in Croatia often use those illegal means or methods, such as electronic decoys, nets, traps, automatic or semi-automatic weapons, artificial light sources, motor vehicles and boats. Besides, poaching often takes place during night, in the areas which are not hunting grounds (the sea and specific protected areas) and from unregistered hunting facilities.

Therefore, several Association Biom projects deal with fighting this type of illegal killing of birds. Considering that the majority of the public is not widely familiar with the bird poaching in Croatia, and relevant institutions do not systematically tackle it, the project Adriatic Flyway 4: Safe Flyways – stop illegal killing of birds in the Mediterranean is focused on addressing these problems. The project's main objective is to protect the Neretva delta as a crucial area for resting, wintering, and breeding along the Adriatic migration route. The socio-economic analysis is one of the project's activities with the main aim to get a clearer insight into motivation and causes behind illegal killing activities in the

¹ Brochet, A. et al. (2017). Illegal killing and taking of birds in Europe outside the Mediterranean: Assessing the scope and scale of a complex issue. Bird Conservation International, 29(1), 10-40. doi:10.1017/S0959270917000533

² Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds

area, as well as into perceptions and attitudes of local community stakeholders towards the Neretva delta natural values and poaching. Peta diciplina, trade for scientific and technical services and consulting, as Biom's external associate, conducted the socio-economic analysis of perception and causes of illegal killing of birds in the Neretva delta.

In addition to conducting the research, Association Biom monitors the condition of bird populations on the Neretva Delta, organises educational lectures and workshops for the local population, takes part in drawing up management plan of the area with Public Institution for Management of Protected Natural Areas of the Dubrovnik-Neretva County and monitors the impact of illegal killing on birds. Through cooperation with main stakeholders and the local population, Association Biom strives to reduce the threats to migratory birds and preserve a diverse world of birds.

Ivana Šarić Kapelj from Association Biom has conducted the research Illegal killing of birds in Croatia: An overview of attitudes and needs of police officers. Since police officers are among stakeholders that this socio-economic analysis works with, it is worth mentioning the key results of this study. In her research results, Šarić Kapelj states that most police officers, 76.9% of them, almost never encounter illegal killing in the field. The police officers from Dubrovnik-Neretva County are most familiar with this illegal activity and that corresponds with the findings that the Neretva delta is one of the hotspots for illegal killing of birds in Croatia³.

The research results show that as many as 47.6% of the police officers are motivated or highly motivated to fight against poaching, whereas 16.5% of them are not motivated. The remaining 35.9% of the officers are moderately motivated to reduce poaching. As the main obstacle to tackle illegal killing of birds, the police officers mentioned insufficient knowledge on the topic, especially on strictly protected species, regulations, and procedures related to poaching. Moreover, they claim lack of awareness of the scale of the problem and the importance of birds for nature. As their major recommendation for more successful fight against

³ Šarić-Kapelj I. (2020): Illegal killing of birds in Croatia: An overview of attitudes and needs of police officers.

poaching, the police officers noted additional education on poaching including legal regulations, illegal tools used in poaching, habitats and critical poaching spots, along with demonstration in the field. Moreover, they point out the need for knowledge of species recognition, at least the ones most frequently killed in poaching.

As another problem, the police officers state lack of capacity to fight poaching in terms of available officers, equipment and internal organisation. Moreover, the problem is shortage of time to deal with prevention of poaching due to other obligations, and excessive bureaucracy. Besides, in their opinion it is hard to operationally cover a large area where poaching takes place, and that poaching is a specific type of crime happening in the area that is not often monitored by the police. Their conclusion is that there are currently not enough police officers available for regular fight against poaching. The officers also mentioned lack of technical equipment, such as appropriate vehicles, boats, equipment for night work and surveillance cameras. For example, the police officers from the Neretva delta do not own a vessel, which is necessary for combat poaching because it happens exclusively in wetland areas or the sea. They also state that there is currently not, or they are not aware of, a single protocol or procedure how to handle poaching in the field. Shift work is also considered a problem of internal organisation. In some areas there is no available shift at dawn when poaching often takes place. Corruption is one more issue, especially information leakage from a police station in smaller towns where officers often know poachers personally. As a conclusion, the respondents suggest that with increased number of police officers, more frequent patrols, better work organisation and appropriate equipment they could fight against poaching more successfully.

2. Methodology

The research has been conducted using mixed methods, more precisely a combination of secondary data analysis, survey questionnaire, interviews with key stakeholders (representatives of local authorities and two key figures from the police) and taking notes in the field. The central data collection method is a sampling survey consisting of probability-based subsamples and purposive subsamples of target stakeholder groups from the Neretva delta area: the police (police stations Metković and Ploče), hospitality establishments, food markets, Public Institution for Management of Protected Natural Areas of the Dubrovnik-Neretva County, hunting associations present in the area, farmers, tourism sector (travel agencies, photo safaris, kite surfers, hotels).

The survey questionnaire consists of two large parts. The first refers to better understanding of perceptions and attitudes related to poaching activities in the Neretva delta; better understanding of causes of illegal killing of birds in the Neretva delta; better understanding of behaviour patterns while buying and/or consuming illegally killed birds, better understanding of perception and awareness level about the Neretva delta natural values and their significance for target groups. The second part refers to socio-demographic and socio-economic issues with possible minor modifications according to specific nature of individual target groups. During the field research, the interviewers immediately entered the data in online survey set via SurveyMonkey platform which enables metadata recording via smartphones, recording of start and end time of survey in real time, and monitoring of the filling of individual quotas.

Interviewers were provided with 2-hour training session with the following content: 1) survey: content and instructions for completing the survey; 2) sample: learning about sample structure and monitoring of quotas filling of individual subgroups; 3) working in the field: communication and other issues (safety, health, etc.); 4) interviewer's log. The training session for field research was held on 20th April, 2021 and on 18th June, 2021. Face to face field survey was conducted in the Neretva delta during May, June and July 2021.

For conducting the interview, a protocol with questions was prepared. The questions were related to the topics relevant for the research goals. Between June 21 and 24, 2021, in the area of the Neretva delta, seven in-depth interviews were held on the topic of illegal killing of the Common coot. Interviewees were mayors of Ploče and Opuzen, chief police officers from Ploče and Metković and representatives of the local boards of Rogotin, Komin and Baćina. The interviews lasted about 30 to 60 minutes, were recorded, and took place in different locations, depending on the interviewees' wishes. Interviewees agreed to be recorded. The interview with the mayor of Metković was planned but cancelled due to multiple changes of the agreed time for the interview.

The data required for sampling were obtained from relevant registers and Croatian Bureau of Statistics. Planned subsamples were partially intentional because it was more appropriate for the aim and purpose of the research to look for target groups that were considered most informed (mayors, managers of relevant offices, etc.), and this type of sampling was applied to: police stations, food markets, hospitality sector, tourism sector and Public Institution for Management of Protected Natural Areas of the Dubrovnik-Neretva County.

The planned survey sample size was 134 respondents.

Stakeholders	Realized	Planned
Farmers	39	40
Hunters	23	48
Tourism sector	15	15
Hospitality sector	11	11
Food markets	3	5
Police	9	11
The Public Institution for Management of Protected Natural Areas of the Dubrovnik-Neretva Region	4	4
Total:	104	134

Table 1: Comparison of realized and planned samples

The deviation of the planned versus realised sample is most evident in the subgroup of hunters. This group proved to be extremely non-cooperative during

conduction of the field research, partly because they already know the work of Association Biom, and the field research was carried out by Biom employees, and partly because there is no directory of all hunters in the Neretva delta area. At the time of the research preparations only the contacts of the presidents and secretaries of the hunting associations were publicly available, whereas of other hunters were not. Therefore, the field researchers had a very demanding task of conducting snowball sampling method, which means they had to ask one respondent about the contact details of the next and continue until the quota was met. It is important to emphasize that a total number of hunters in the Neretva delta area is estimated at 300 and 23 interviewed hunters is enough for the sample (approximately 8% of the population).

Statistical analysis was carried out using univariate and bivariate techniques with special focus on nature and intertwined links among studied phenomena. The processing was done in R programming for statistical computing. The results of statistical data analysis are displayed in the form of tables, charts and pictures. To run the qualitative analysis of the interview content, the interview transcripts were entered into the database of the MAXQDA software programme which was used for qualitative data analysis. The results of the interview content analysis are presented in this text in the form of descriptive analysis with examples. Individual coherent thematic units are displayed descriptively because it was very important to support the interpretation of the findings of the quantitative survey with citations.

3. Results

3.1. Socio-demographic and economic profile of the respondents

Out of 104 respondents 31.7% are female and 68.3% male. This deviation from distribution according to gender in relation to general population (51% female and 49% are male) is expected since the sample is partly intentional and does not reflect the general population structure. According to this gender distribution, it is obvious that there are fewer female hunters, police officers and owners of local family farms. The age distribution of the respondents shows that the youngest respondent is 27 years old and the oldest 86, with the average age of 49 (median 47.5).

According to Figure 1, only 2% of the respondents have the highest level of education (master's or doctoral degree or specialisation) while the majority of them (49%) have secondary school degree.

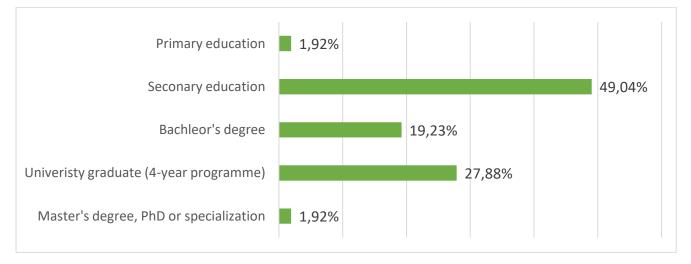


Figure 1. The highest completed level of education.

The survey results of employment structure show that two-thirds of the respondents (62.5%) are permanently employed, while an equal proportion (13.5%) of them are seasonal workers or do not work at all. The remaining 6.7% of the respondents have fixed-term employment contracts and 3.9% are part-time workers.

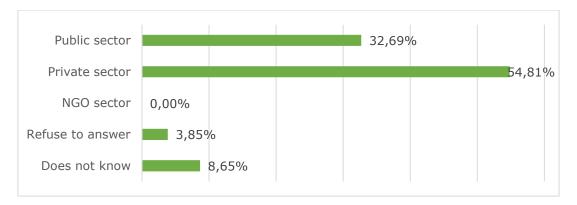


Figure 2. Employment sectors.

As seen in Figure 2, more than a half of the respondents (55%) are employed in the private sector, whereas 33% of them are in the public sector.

According to Figure 3, monthly household incomes range from HRK 3,000 to more than HRK 21,000. The largest number of the respondents (23%) belong to the income range HRK 6,001 to HRK 9,000. One fifth (21.1%) has income from HRK 9,001 to HRK 12,000, whereas 11.5% of the respondents' income ranges from HRK 12,001 to 15,000. It is of high concern that 13.5% of the respondents have monthly household income up to HRK 3,000, which indicates a potential risk of poverty for this group.

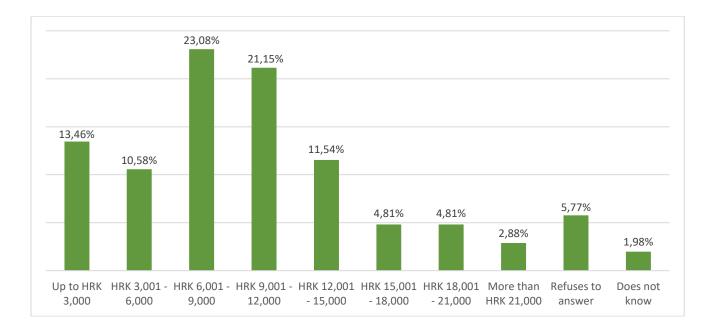


Figure 3. Monthly income of households (data from the previous month).

3.2. Respondents' environmental attitudes

As clearly seen in Table 2, two thirds (76.9%) of the respondents in this research consider excessive application of pesticides and mineral fertilizers as the most serious threat to sustainable development of the Neretva delta. The second place is reserved for increased soil salinity due to hydropower plants, what is stated as a threat by 58% of the respondents. More than a third of respondents think air pollution is the third significant threat to sustainable development of the area. One fourth of the respondents agree that illegal killing of birds is a serious threat. This puts bird poaching as the fourth threat to sustainable development of the Neretva delta what makes sensitising citizens on the topic and working on illegal killing of birds prevention more challenging since it is not perceived as the major problem.

Table 2. The most serious threats to sustainable development of the Neretva delta.

Of the following environmental threats to sustainable development of the Neretva delta, choose up to three you consider the most serious: (choose up to three answers)	% (N=104)
Excessive application of pesticides and mineral fertilizers in agriculture	76.9%
Increase in soil salinity due to hydropower plants	57.7%
Air pollution	36.5%
Illegal killing of birds	25.0%
Trenching and dredging – creation of new agricultural land	18.3%
Illegal fishing	18.3%
Illegal construction	10.6%
Something else	10.6%
Sand extraction	8.7%
Sports activities that threaten nesting of bird species	1.9%

In addition to the above-mentioned threats to sustainable development of the Neretva delta, the participants stated the following threats: habitat loss due to scarcity of water, waste from watering thrown down the canals, wastewater coming by the Neretva River, unfinished reclamation, disturbed natural balance, wind farms on Pelješac, Zaton, that influence bird migration, negligence of the local community, pollution in general, the Port of Ploče, fires, sewage going to the Neretva River, plasticizers coming by water through a tunnel, and a landfill site.

The interviewees share the attitudes with the survey respondents. For example, the representative of Bačina Local Board says: "The problem specific to our lakes is a sewage system, all septic tanks around the lake are connected to the lake. We hope the works will start soon and we will solve the problem. Another problem is the landfill site that has been here for many years. These problems are bigger than this one" (author's remark, it refers to Coot poaching).

The representative of Komin Local Board perceives pesticides as a significant threat to sustainable development of the Neretva delta and says: "Well, I think pesticides must be controlled. It all comes down to pesticides and they enter our Neretva. They pollute our river and drive the fish away and many other things, pesticides destroy us. How much has the pesticides quantity increased since last year in the Neretva delta? OK, for the last year and a half they haven't measured it due to coronavirus. But it has increased for 50% since the year before last. Has anyone raised this question? No, they are busy with Coots". The Komin Local Board representative mentions American blue crab as an allochthonous species. "It came somewhere from America. This guy here, the American, he used to be a fisherman in the Gulf of Mexico. He arrived here and is currently working on something with the Institute for Marine and Coastal Research in Dubrovnik and hunts these crabs. Now they have appeared in Split, too. They have reproduced a lot and entered the Neretva River, all the way up to the bridge in Rogotin. There is no more fish because of the blue crab".

The representatives of Rogotin Local Board also consider the blue crab and pesticides the key challenges for sustainable development of the Neretva delta. "Cidikor is a substance for weeds treatment and was banned by the EU. Salinisation of the Neretva River, the Port of Ploče, the dams built but not maintained and it became a problem. Today there are some marine fish species in Metković, you can catch a squid in the middle of the river, it is not an ecological problem, but it means that dams and sluices should be maintained, and no one's is doing it. The Port of Ploče has been consistently widening the canal, it's getting deeper. The inflow of salt water is greater. And there is a problem which does not

occur anywhere else in the world. Or maybe it does but here we take is a normal situation. It is about ballast water and some animals that arrived with ballast water disharge and they are not autochthonous. One example is the blue crab which is not an issue for Neretva at the moment, but in 5 to 10 years it will be a huge problem. It has already eaten everything, juvenile fish, eels, and one day, when there is nothing else left in the sea, it will catch the Coot and eat it. You can't believe it, but this little crab would eat sea bass as big as the 2-litre bottle of Coke because when it catches something, it doesn't let it go. One crab lays a million eggs.

The mayor of Ploče exhaustively described the topic of environmental threats to the Neretva delta: "The Neretva River is formed upstream at the level of Konjica, after that there are one or two hydropower plants that block freshwater flow. The water primarily comes from rainfall and, since the related industry doesn't have proper drainage system, wastewater drainage, it is all released in the river and everyone can figure out that you don't have a cleaning system, but the one that pollutes the system and you have reduced what helps cleaning it. That's one thing. Another thing is that the whole river up to Komin is a natural river flow. Only 5 to 10 km till the river's mouth are artificial banks that redirected the flow. What used to make up an estuary with millions of rivulets, was slowly turned into the area more acceptable for people by land reclamation. Back then, people fought for food, the food was their motive. The Austro-Hungarian Empire significantly changed the Neretva River inflow, but they knew how to reasonably develop agriculture and how to preserve important parts of nature. Through that process new channels were formed to make a way to farming areas, which were miniature compared to what we have today. People used to maintain those channels, therefore there was a larger inflow of healthy water to the wetlands which were not maintained and where there was no natural inflow of freshwater. Today, the habitat has changed, the species that used to live there do not live anymore because of the changed conditions, sometimes some other species uses it as a new habitat, but the biological cycle is disrupted, and it leads to further repercussions. Fishing has always been present on the Neretva River, but the human impact of fishing cannot disturb natural balance so severely disturbed today. It happened due to numerous factors, there is the issue of Baćinska Lakes naturally connected to the sea, so their depth lowered by 30 to 40%. Then, there is the man who connected Vrgorsko Lake with Baćinska Lakes as a mid-space where the water drains and above the lakes the extensive agriculture developed. Unfortunately, in my opinion, the extensive agriculture and people's greed in the manner of today's system have led to the use of large amounts of illegal substances to increase agronomic yields, and they all have the long half-life in nature. Then they are cleansed by water and enter in the same Baćinska Lakes. It is the first lake where the canal from Vrgoračko Lake flows into, once at the depth of 15m, today at 3 metres, its biodiversity almost no longer exists. In the last five years or less, there was a fish species, the common bleak, and, at a certain period of year, at the point where the water flows into the lake, you could catch a huge amount of that fish. Today, there's only few fish left. One more species, the pigo, which used to be fished here and was good for consumption, is almost gone today. It used to be normal to catch about 100kg of the fish in a small net. No one pays attention to problems like these. Then they find some niche with some endemic species that is not such an important factor in this cycle of biodiversity preservation, and a lot of funds are allocated for that, scientists do research, they want to protect it and so on, and what is really important is ignored. So, this is how the small agricultural areas of 50 ha became 1000 ha of agricultural land. Lot of pesticides and herbicides are used there, and it is visible in the last part of the river flow where it enters the sea, there are changes in biodiversity. Another thing that happened, probably also due to human intervention, is the appearance of the blue crab which entirely changed the existence of the domestic crab species that almost died out. The blue crab has also eaten the majority of fish fry. Moreover, the appearance of the bluefish, also not a domestic species, decreased certain populations, many things have changed here. Not to mention the cormorants, they should be actively exterminated here because this is not their natural habitat, even legally, but since they are protected at fishponds, and as far as I know they are listed as protected species here as well, they should not be killed, but they are not [protected], no one encourages the killing of them. The cormorant has a significant negative

impact on preservation of many species. The cormorant's daily fish consumption is exceptionally high, from 1.5kg to 3kg of fish⁴, and the fish it feeds on, juvenile fish and fry, when it is all summed up, the number of this fish is decimated. One of high valued fish species here is the grey mullet, it has almost gone extinct. The causes are the above mentioned, not maintained canals, the bluefish, probably toxins, the blue crab and the cormorant, and you killed an entire population that was important for biodiversity and people. No one has any reactions to that, and I come across situations when they react on how to hunt the Common coot, and no one has proven to me that since all the hunters in the world hunt the Coot, how could I possibly endanger it?"

Environmental awareness of respondents was generally measured with a shortened and modified version of the questionnaire known as NEP (New Ecological Paradigm). The majority of the respondents disagree with the statement that people have the right to modify the natural environment according to their needs. As many as 64% of the surveyed participants do not share this opinion, which means that they distance themselves from anthropocentrism. Similar distribution of disagreement occurs with the statement that the inhabitants of the Neretva delta have the unlimited right to use natural resources for economic benefits. In fact, as many as 76% of the respondents do not agree with this statement. The agreement with the statement that the Neretva delta natural resources are limited and therefore it is important to preserve the ecosystem, says a lot about the high level of environmental awareness and the respondents' desire to preserve biodiversity and ecosystem of the Neretva delta.

⁴ Neretva delta is a natural habitat for two species of cormorant - Pygmy cormorant (*Microcarbo pygmeus*) and Great cormorant (*Phalacrocorax carbo*). Pygmy cormorant is a rather small bird (Coot-sized) which is present in the Neretva delta the whole year. Pygmy cormorant is a strictly protected species in Croatia. Great cormorant is a large species, present in the Neretva delta in winter. Great cormorant is not a strictly protected species in Croatia. Averagely one Pygmy cormorant eats 200g of fish per day (Platteeuw M. et al., 2004), one Great cormorant eat 400g of fish per day (van Eerden et al., 2012).

Moreover, the respondents predominantly believe (88.5%) that the natural beauties of the Neretva delta improve the quality of their lives.

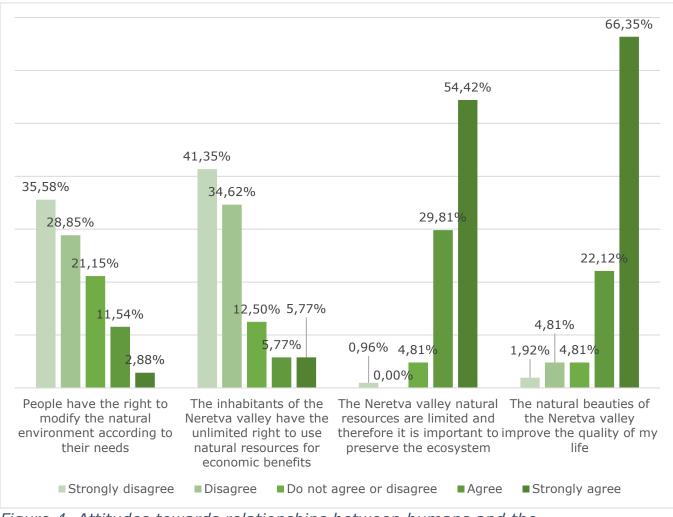


Figure 4. Attitudes towards relationships between humans and the environment.

3.3. The Common coot consumption

A little over a fifth of the respondents (23.1%) claim that they have never consumed the Common coot. A bit less than a fifth (19.2%) say that they used to eat the Coot, but don't eat it anymore. Almost a third (26.9%), what is also the largest share of participants, claim that they consume the Coot once a year. The respondents whose answer was of these (never consumed the Coot, they used to but not anymore, consume it once a year) were not asked additional questions about how and where they get the Coot, who they eat it with, for what occasions they eat it. Those questions were for the participants who answered

that they eat the Coot 2 to 5 times a year (15.4%) and those who consume it more than 5 times a year (13.7%).

Do you consume the Common coot and how often?	% (N=104)
I have never eaten the Common coot	23.1%
I used to eat it but not any more	19.2%
Once a year	26.9%
2 to 5 times a year	15.4%
More than 5 times a year	13.7%
Refuses to answer	0.96%
Does not know	0.96%

Table 3. Frequency of the Common coot consumption.

We checked if socio-demographic features of the respondents and their attitudes towards the environment are behavioural predictors that differ those respondents who do not consume the Coot from those who do (regardless of how often). For this purpose we carried out a logistic regression in which binary criterion variable was the Coot consumption, and prediction set included the following variables: gender, age, education (dichotomized in two groups: lower education that includes all up to secondary school degree, and higher education that includes college or university), the type of employment (respondents are classified in three groups: full time; unemployed; part-time or seasonal workers), and attitudes towards relationships between humans and the environment (four variables presented in Figure 5; the details on regression model are in Attachment 1). The results indicate that the key predictor in the Coot consumption is gender with men consuming the Coot more often than women. In addition, another statistically significant predictor is fixed-term employment, seasonal or part-time. A more detailed insight on relationship between the two variables is presented in contingency tables below (Table 4 and Table 5).

Table 4. The Common coot consumption and gender.

	Does not consume the Coot	Consumes the Coot			
Female	68.97%	31.03%			
Male	31.67%	68.33%			
$\chi^2 = 9,5851, df = 1, p < 0.01$					

Table 5. The Common coot consumption and types of employment.

	Does not consume the Coot	Consumes the Coot
Full-time employment	52.38%	47.62%
Fixed-term employment, seasonal or part-time workers	26.09%	73.91%
Do not work	0.00%	100.00%
$v_2 = 7.1535 df = 2 n < 0.05$		

 $\chi^2 = 7.1535$, df = 2, p < 0.05

The respondents who consume the Common coot, most often consume it with family and friends at home, as many as 87% of them. A smaller percentage of those respondents eat the Coot in restaurants (10.9%).

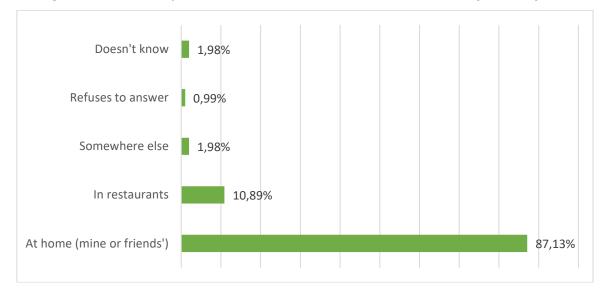


Figure 3. Places where the Common coot is consumed most often.

According to Figure 6, the Coot is most frequently consumed with friends (70.3%) and with household members (64.4%). Only a small percentage of the

respondents eat the Coot with business partners (7.9%), and with extended family (3%).

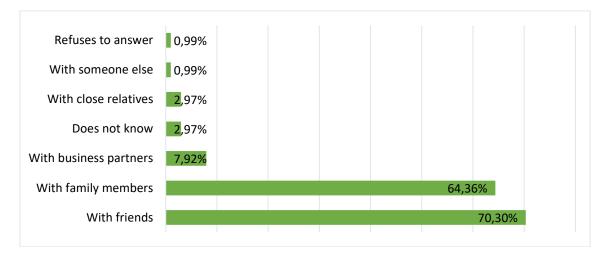


Figure 6. People who the Coot is most often consumed with.

In relation to the data in Table 6, as many as 74.3% of the inhabitants of the Neretva delta most often consume the Coot during family and friends' gatherings for no special occasion. The fact that the Coot is most frequently consumed for no special reason is supported by additional answers such as: "no special reason", "any day – it is normal for me", "there is no special occasion", "during the season of collard greens", "seasonally consumed", "on any occasion", "whenever it is available". A fifth of the respondents consume the Coot for important religious holidays, whereas 15.8% of them eat the Coot for special events (wedding anniversary, birthday, wedding, christening, etc.).

Table 6. Most common occasions for the Coot consumption.

What are the most common occasions when you/the inhabitants of the Neretva delta consume the Common coot? (Choose up to two answers)	% (N=104)
Gatherings with family and friends for no special occasion	74.26%
Important religious holidays	20.79%
Special occasions (wedding anniversary, birthday, wedding, christening, etc.)	15.84%
Some other occasions	8.91%
Business success celebration	5.94%
Does not know	3.96%
Refuses to answer	0.99%

Concerning the questions of the Coot consumption, the respondents' answers are also aligned with the answers of the interviewees to a large extent. The representative of Baćina Local Board says that the Coot is most often boiled with cabbage and potatoes. For him the occasion when he most often eats the Coot is: "In my case it happens when the friends gather in winter in a holiday house or somewhere else, then we buy a few coots and prepare them".

The representative of Komin Local Board says that the Coot consumption "is related to all our festivities that every tribe in the village has. Every surname in Komin has its own special saint. Our saint, the patron of our town, is St. Anthony. But, for example, someone else's surname celebrates All Saints, my surname St. Nicholas, every tribe has its own saint".

The representative of Rogotin Local Board also claims that the Coot is consumed for festivities. "There are festivities in Rogotin, Komin, Opuzen, the Coot is part of tradition. In Komin, if you visit someone and they do not have the Coot, it is a shame. The hunting season for the Coot is from 1st of September till Christmas, New Year, January".

The mayor of Ploče states "people either love the Coot or they mostly don't eat it. Not many people will eat the Coot at home by themselves, it is related to gatherings. These days you can purchase the Coot from fewer people than before, it used to be sold even at the food market. The Coot is considered as fasting, it is even consumed at Christmas Eve".

The representative of the police station in Metković says he isn't much of a coot fan and that "the Coot is served with collard greens, and that is winter vegetable, it is a type of cabbage, I don't like it".

3.4. Purchase of the Coot, prices, and earnings

The highest number of the interviewees (43.3%) get the Coot for personal and family consumption by hunting it. One third of them (30%) buy it from hunters they know, whereas 26.7% of the interviewees get the Coot as a

gift from friends and acquaintances. The Coot is bought at the food market or along the road by 3.3% of the respondents.

The representative of Baćina Local Board says: "The Coot is bought from poachers, let's say people who do that, and you can buy from them. I used to buy it, too (laughing) because it is a specialty here, I adore it and I buy it without a problem".

"It is complicated to get the Coot because there is none ... I am here with my wife for All Saints Day, and I asked a couple of hunters for two coots, but they say there are no coots. This year was very bad, they were skinny, it was not a proper winter. If the Coot is killed the first night it arrives here, it stinks of mud. When it is here over night and drinks this water, cleanse itself, feeds on proper food as much as it needs, then it is a different story".

Table 7. Th	e ways of	purchasing/ge	etting the	Common coot.
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How do you most often purchase/get the Coot for family	%
or personal consumption? (Choose up to three answers)	(N = 74)
I hunt it	43.3%
I buy it from the hunter I know	30.0%
I receive it as a gift from friends/acquaintances	26.7%
I get it some other way	6.7%
I buy it at the food market	3.3%
I buy it along the road	3.3%
I exchange my products (fruit, vegetables) for the Coot	3.3%
I eat it only in restaurants and taverns	0.0%
Does not know	0.0%

When asked how much the Coot costs, the participants answered differently. The price varies from HRK 25 minimum to HRK 100 maximum. The average is HRK 56.3 while the median is HRK 50. According to the survey results, it can be concluded that the price ranges from HRK 50 to HRK 60.

The mayor of Ploče says he doesn't know the price. "I remember when it was 10 German marks, I believe it is HRK 60 now". The representative of Baćina Local Board also states that the price is about HRK 50 to 60. The representative of Komin Local Board says: "It used to be HRK 40 about 10 years ago, as far as I remember. I haven't seen it for last couple of years, I don't know if anyone has bought it, sold it, I don't know, the measures are harsher, the police are stricter than before, some guns were confiscated.

The representative of Rogotin Local Board says: "People give coots to doctors, it costs about HRK 50".

When asked how much the Coot hunting can contribute to yearly household income, the majority of participants claim they don't know, as many as 43.3%. That the Coot hunting can contribute with less than HRK 10,000 is opinion of 35.6% of the respondents, whereas only 9.6% of them believe that the household income can be increased by HRK 10,001 to HRK 20,000.

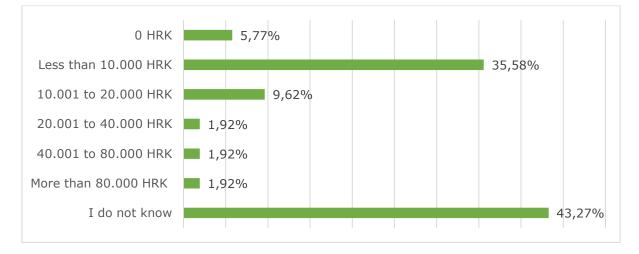


Figure 7. Estimation of possible annual earnings from the Coot hunting.

Here is the quotation from the representative of the police station Metković: "I don't think that existence is in question, we are not somewhere in Africa. For any criminal offence that endangers us or endangers the environment, what is the motivation behind that? I don't think it is about bare existence, it is about business. A hunter will, besides his job, go a few times at the weekend and, I don't know how many coots he can be caught, they say not many are left now. A successful hunt is 10 coots, and I don't know about the price, but I don't believe it is some enormous price, I don't know".

Interviewer: So, you don't think it is about HRK 100,000 per year?

"I don't have such data, no one has said that. But I don't believe that the police wouldn't know about it. Police find out everything, sometimes sooner sometimes later, but we do". Interviewer: You don't know that it is a profitable business?

"Well, I don't".

The representative of Baćina Local Board doesn't share this opinion. He says that the primary reason for coot hunting is "profit. If it is a successful evening, you can kill 40, 50, 60 coots... 20, 30, but it is every day, you can make a calculation, let it be 10 times 10 euros, that's one hundred euros per day".

He believes that poaching can be a good business: "Of course it can. Who wants that, they can surely find a way. I think it is a good money. Especially because there are fewer poachers today, and the demand is high, so it is not a problem for them to sell".

However, the representative of Rogotin Local Board completely disagrees and says that is it impossible to earn the income of HRK 80,000 per year from poaching: "Nonsense, I'd like him to explain how to do it. There are 90 days of hunting season, one person must kill 1,200 coots to earn that money. It can happen that for 15 days there are no coots, anywhere, not even one. It is physically impossible. That person should kill 100 coots per night. It is impossible. I kill 5 coots, turn on my motorboat and go home. There is no chance to reach that amount. You can kill 5 coots on average. You can't make a living by doing it. Traditionally, five men would go hunting, they were fierce competitors, the Coot was food and a specialty".

3.5. Attitudes towards illegal killing and its cause

The two most prevailing attitudes towards illegal killing of the Common coot and its causes are that illegal killing of the Common coot in the Neretva delta primarily occurs due to the centuries-long hunting tradition (on the scale from 1 to 5 where 1 means strongly disagree, and 5 means strongly agree, the average is 3.86), and that the illegal killing of the Common coot in the Neretva delta primarily occurs because the Coot is considered a delicacy (on the scale from 1 to 5 where 1 means strongly disagree, and 5 means strongly agree, the average is 3.84). According to the attitudes expressed, most respondents do not consider high earnings a cause of the illegal killing of the Coots (on the scale from 1 to 5 where 1 means strongly disagree, and 5 means strongly agree, the average is 2.55).

The research results from Table 9 clearly demonstrate that a great percentage of respondents agree that hunting with electronic decoys and baits should be legally banned (on the scale from 1 to 5 where 1 means strongly disagree, and 5 means strongly agree, the average is 4.32). Likewise, the majority of the respondents agree that it is necessary to restore the traditional practices of bird hunting (with traditional lure 'ćukalica' and boats without engines), and not to hunt at night with advanced technology. To a slightly lesser extent (on the scale from 1 to 5 where 1 means strongly disagree, and 5 means strongly agree, the average is 4.1) the respondents agree that every illegal killing in ornithological reserves needs to be punished with high penalty payments, even if it is for commercial purposes (in the categories Agree and Completely agree as many as 78.84% of the respondents). For the agreement with the statement that it is acceptable to hunt the Common coot but only for personal consumption needs, the average is 3.9 (on the scale from 1 to 5 where 1 means strongly disagree, and 5 means strongly agree). The same average of 3.9 is for the statement that only the illegal killing is a problem, not legal hunting and the Coot consumption.

It is clear also from the interviews that most of the participants support the attitude that it is necessary to restore the traditional way of bird hunting (with traditional lure 'ćukalica' and boats without engines). The representative of Rogotin Local Board says: "The tradition of the Coot hunting has existed since first records, there is also a video with the first camera. It was considered a tradition before the use of lights and everything else. There is a story that it was discovered by chance. While people were guarding cows and sheep, they were playing with reeds and got the sound that imitates the Coot call. Hunting was traditionally the source of food in the Neretva delta, hunters would kill for the week, they had this lure, a gun and a boat, this has been a tradition since people started to live here. It used to be a noble skill, not everyone could do it or know how to do it, and it was more expensive back then. Today it is not so important.

Among younger generations, only those who have hunters in the family are interested, it's been passed down from generation to generation. Young people are not so much into it". As the main cause of the illegal killing of the Coot, they state: "I think that the main cause is that people who lost their jobs after the war saw it as one way of surviving. In my opinion, there is not so much poaching today. I don't know much about it but from what I see it seems it all came down to a few individuals and a few traditional hunters. I would differentiate between the traditional hunter who kills for his family and friends and leaves, and the one who comes and spends the whole night killing as many coots as possible. It should be a difference among the one who killed 5 and the one who killed 25 and still wants more". The representative of Rogotin Local Board says: "The tradition of 'trupa' (a traditional small narrow wooden boat without an engine) and oar, we have reached the point that there are no more boats. I support hunting with 'trupa', you can't turn on the engine and lights and look for a bird. I would make a rule to go hunting with boat, kill 5 birds and leave. It is a skill, an extraordinary skill. People applied those skills in the war and were the best soldiers. It is shooting in the night, it is a skill, you can't bring it with you, I was taken on the boat by my father when I was 5".

Table 8. Causes of illegal killing of the Common coot in the Neretva delta.

Please indicate to what extent you agree or disagree with the following statements.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Avarage
Illegal killing of the Common coot in the Neretva delta primarily occurs due to the centuries-long hunting tradition	4.81%	9.62%	9.62%	39.42%	32.69%	3.86
Illegal killing of the Common coot in the Neretva delta primarily occurs due to family consumption	8.65%	17.31%	17.31%	41.35%	13.46%	3.34
Illegal killing of the Common coot in the Neretva delta primarily occurs due to sales and improvement household income to cover regular costs of living		15.38%	15.38%	30.77%	18.27%	3.29
Illegal killing of the Common coot in the Neretva delta primarily occurs because it is a profitable business	21.15%	32.69%	32.69%	4.81%	12.50%	2.55
Illegal killing of the Common coot in the Neretva delta primarily occurs due to excitement about hunting and recreation in nature	11.54%	14.42%	14.42%	44.23%	10.58%	3.28
Illegal killing of the Common coot in the Neretva delta primarily occurs because the Coot is considered a delicacy	4.81%	5.77%	5.77%	49.04%	25.00%	3.84
Illegal killing of the Common coot in the Neretva delta using calling devices, motorboats, torchlights etc. is part of modern culture where everything must be available quickly and easily	21.15%	21.15%	21.15%	26.92	18.27	3.00
Illegal killing of the Common coot in the Neretva delta is equally common as illegal killing of birds in other parts of Croatia	8.65%	14.42%	14.42%	34.62%	9.62%	3.22

Table 9. Attitudes towards illegal killing.

Please indicate to what extent you agree or disagree with the following statements.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Avarage
Every illegal killing in ornithological reserves needs to be punished with high penalty payments, even if it is for commercial purposes	5.77%	8.65%	6.73%	27.88%	50.96%	4.10
Hunting with electronic decoys and baits should be legally banned	5.77%	4.81%	4.81%	21.15%	63.46%	4.32
The use of lead shot in hunting on water surfaces has no particular impact on the environment	14.42%	25.96%	32.69%	19.23%	7.69%	2.80
I have no problem with coot hunting, neither for personal consumption nor for profit	3.85%	12.50%	11.54%	30.77%	41.35%	2.89
Only illegal killing is a problem, not legal hunting and the Coot consumption	9.62%	39.42%	17.31%	19.23%	14.42%	3.93
It is necessary to restore the traditional practices of bird hunting (with traditional lure and boats without engines), and not to hunt at night with advanced technology	2.88%	4.81%	14.42%	24.96%	51.91%	4.19
It is acceptable to hunt the Common coot but only for personal consumption needs	4.81%	11.54%	14.42%	24.04%	45.19%	3.93
I am disturbed by the noise from the gunshots during the hunting season	55.77%	21.15%	7.69%	5.77%	9.62%	1.92
Associations for nature protection do not take into account the challenges of human survival, but only of bird survival	14.42%	25.96%	20.19%	24.04%	15.38%	3.00
The problem is the Coot sales unless you buy it from an owner of hunting rights	12.50%	13.46%	25.00%	32.96%	16.35%	3.27

The representative of the police station Metković says that "in Kula Norinska they think that the Coot hunting is their mission. If we catch some older hunter he protests because he thinks he has the right to hunt, but if you go there and hunt in the same way, he will say that you are a stranger, he can only do it, he has the right by his origin".

The representative of Rogotin Local Board says: "I believe that if the hunters were promised they could kill 5 coots and report it to the hunting association, even with special tools, 98% of hunters would agree, but in return to be left alone. But if they kill 10 coots then they can't be left alone".

The mayor of Ploče has been particularly elaborative on the topic and says: "The tradition of the Coot hunting is at least 4 to 5 generations old. How important is this custom? It has survived with some part of the Neretva River inhabitants. Well, if it is still like it used to be, I don't think so because younger generations are less and less interested in that. But it still has an emotional value for some people. Rarely has someone passed those values down from their ancestors, therefore I think that the number of people emotionally attached to it has decreased. In my opinion, the problem is that people have different motives to go hunting. Today's hunters don't have the same level of traditional value. People who were into hunting before, they go hunting today with the same reasons. The ones that start hunting these days do not have this insight, the motivation is not the same. The traditional hunting skills have been forgotten. People who know how to hunt in a traditional way can be counted on one hand, and that is the problem. The approach used to solve this situation was inadequate, whether it was regulatory bodies, nature conservationists or the police. Actually, it is questionable if this situation had to be resolved at all. First question we need to respond to is whether the Coot hunting threatens biodiversity in any way. Personally, I think it doesn't and I don't see how extensive the Coot hunting should be in this area to endanger this population, and consequently endanger biodiversity which needs to be preserved.

What is important here is this estuary where freshwater mixes with the sea water and this bird, on its natural north – south flyway goes through one phase of preparation for the flight. It feeds on sand which cleanses its digestive tract

and drinks sea water. When the Coot arrives here, it is in a different condition compared to a day or two later. After that she starts feeding on the grass and its usual food for flight preparation and it is not of such a good quality for consumption. And that's why the tradition developed here. Who came up with the first idea, I don't know, but that person was surely innovative when they realised that with hunting tools, and that is 'ćukalica', you can lure the bird. That was the basis for further development. Unfortunately, today's society tends to productivity growth without much meaning, so the tools also became more sophisticated following new technology development. These days we have much more productive hunting methods easily accessible to hunters and hunters do not need to acquire hunting skills, it is all very easy to learn. It means that someone who has never been hunting, who hasn't been raised and taught how to treat wild birds, what nature preservation means, how important it is to maintain biodiversity, what the Common coot is, how it flies and lives, where it is vermin and where not, can go hunting today. All those things needed to be learnt when you started hunting. And when you don't have productive tool, and you didn't have it back then, you must know everything about that bird. Now the tools are so advanced that you can hunt the Coot in less favourable places and the competitors who hunt in a traditional way are not competitive there. From just a gun and some basic light, because the Coot hunt occurs only at night since the Coot flies only during the night, the today's basis for hunting regulations were created by people who don't know and don't understand those things. And when it was initially introduced as a regulation, the traditional hunters, the ones who don't disturb natural balance, became poachers. And when the poachers were created, there were many reactions, one reaction to another led to the current situation. There were not the inhabitants who produced poaching but those who did not understand, and still don't, what hunting means, and today they are spending material and human resources and try to control some things. There are so many other problems on that micro location that are not addressed, and that are obvious nature and biodiversity devastation. It is unbelievable. The changes of biodiversity in the sea and the estuary are visible within one to two years, before it was more than 10 years. You can see from your example,

Association Biom, what you are working on is not a problem at all. It has brought some changes to the way of hunting, to people's perception about its meaning, but the main goal is lost and that is biodiversity preservation.

The representative of Komin Local Board claims that "there is real poaching, there are 5% of people who ignore the law and they don't care about anything, 5 people here in the Neretva delta, it is hard to enter their brains, I am not a doctor... You won't catch that person and I think the police avoids doing it, too. The person like that will kill 15 coots and won't obey the law, he is stubborn and has nothing to lose, he is ready to fight for it, that's why I'm afraid for this police officer's life. This poacher lives only for that, that's the only thing that keeps him alive. It is real poaching, purely economical, it must be solved. Those five people should be sent to medical treatment. The profession should give opinion and we will control this easily, it is not a big area, two people can manage that. Give him a stamp, let him pay for membership fee and then let him stand the entire night in the water and you can control him if he killed 1, 2 or 5 coots. It is all possible and it should be done. For those 5% it is not about bribery and corruption of the police or anyone else. It is about not having access to them. They appear like ghosts and leave like ghosts, everybody knows it's them, but they are never caught." The representative of Komin Local Board says that those 5% of poachers are people who fought in the war, possibly with PTSD and the situation is very hard to deal with. "I believe education would help a lot, for sure, but it's mission impossible. I've asked for some things to be done, to restore traditional tools in the Neretva delta, it is a crime to have that device. I'm not sure if 10%, no, maybe 5% of hunters take the old 'ćukalica' made of reed and call the Coot. If this old tool was restored, no police, poachers, no one would go hunting, no way, they don't have the chance, they don't even know how to do it. Only our elders know that and that's it, especially now when the time has passed since this device is used. This device should be destroyed, that's what they need to do, destroy the device, and give a permit to those who came here from Australia or Germany, they know ... we should return to our values and customs and then people will be satisfied and will go hunting for pleasure, that's how it is supposed to be".

3.6. Priorities and obstacles in solving the problem of illegal killing of birds in the Neretva delta

According to the results presented in Table 10, key obstacle for successful tackling of illegal killing of birds in the Neretva delta is primarily lack of nature conservationists in the field, the opinion shared by 41.4% of the respondents. Next crucial challenge for successful combat of poaching is low awareness of the citizens about this problem, claimed by 32.7% of the participants, whereas a fourth (25%) of them consider that crucial obstacles are lack of police capacity to tackle illegal killing, and tradition and customs. A bit less than a fifth of the respondents believe that the obstacles are ineffective justice system (24%), ineffective legislation (23.1%) and lack of motivation of nature protection inspection to prevent illegal killing (22.1%). The fact that there is shortage of volunteers for the protection of natural bird habitats, the respondents consider the least obvious obstacle for fighting against illegal killing (only 4.8%) which might signify that the citizens think there are enough volunteers or that they are not a relevant factor in solving this problem. In addition to specified obstacles, the respondents were given the opportunity to mention other obstacles they consider relevant: "reduction of the hunting grounds", "pouching is not a problem", "there is not enough of personnel, in both inspections", "if only gamekeepers do their job", "an umbrella association which will be in charge of this area only, as if it was a nature park", "shortage of gamekeepers"

Table 10. Key obstacles for successful tackling of illegal killing of birds in the Neretva delta.

What do you consider key obstacles for successfully tackling illegal killing of birds? Please, choose up to three answers.	% (N=104)
Insufficient number of nature rangers in the field	41.4%
Low awareness of the citizens about this problem	32.7%
Lack of police capacity to tackle illegal killing	25.0%
Tradition and customs	25.0%
Ineffective justice	24.0%
Ineffective legislation	23.1%
Lack of motivation of nature protection inspection to prevent illegal killing	22.1%
Lack of cooperation from the competent authorities for tackling illegal killing	19.2%
Difficulty in detecting illegal killing	17.3%
Lack of motivation of hunting inspection to tackle illegal killing	15.4%
Something else	5.8%
Shortage of volunteers for the protection of natural bird habitats	4.8%
Does not know	1.9%
No obstacles	1.0%
Refuses to answer	1.0%

The respondents stated the following key prerequisites for successful tackling of illegal killing of birds: stricter and higher penalty payments for illegal killing of birds (45.2%); achievement of better cooperation between the police and competent authorities for tackling illegal killing, and education of citizens and the public on the subject of illegal killing of birds (34.6%); stricter and higher penalty payments for traders who sell illegally killed birds (30.8%). That the prerequisites would improve with promotion of hunting with authorised tools on the grounds allowed for hunting, believes 28.9% of the respondents. In addition to specified prerequisites, the respondents were given the opportunity to add other ideas that they believe would contribute to the successful suppression of illegal killing of birds, and so the respondents stated the following: "make ponds from useless reeds where the birds can lie down, because in the existing mud, except in places where hunters mow, nothing can live", "education of hunting", "stricter punishment for killing and traders", "cooperation with hunting

associations". The smallest percentage of respondents (4.8%) believe that improving the administration of justice would contribute to a more successful tackling of illegal killing of birds.

Table 11. Key prerequisites for successful tackling of illegal killing of birds.

Što smatrate ključnim za uspješno suzbijanje krivolova ptica? Molim Vas odaberite do tri odgovora	% (N=101)	
Stricter and higher penalty payments for illegal killing of birds		
Achieve better cooperation between the police and competent authorities for tackling illegal killing of birds	34.6%	
Educate citizens and the public on the subject of illegal killing of birds	34.6%	
Stricter and higher penalty payments for traders who sell illegally killed birds	30.8%	
Promote hunting with authorised tools on the grounds allowed for hunting	28.9%	
Improve the living standard so that people do not need additional income from killing and selling birds	22.1%	
Promote sustainable development	21.2%	
Increase awareness of profitability of birdwatching as a form of tourism services	17.3%	
Increase the capacity of the police	16.4%	
Improve administration of justice	14.4%	
Something else, what?	4.8%	
Does not know	1.0%	
Refuses to answer	0.0%	

Attachment 1. Regression model: the Common coot consumption

Do they consume the Coot?	по	
	yes	3.4670
Gender	F	
	M	1.6285**
Age		0.0104
Education	Lower (up to secondary school degree)	
	Higher (college or university)	-0.4045
Household income		-0.0171
Type of employment	Full-time employment	
	Unemployed	0.3311
	Seasonal, part-time, and fixed-time workers	1.2690*
People have the right to modify the natural environment according to their needs		-0.1434
The Neretva valley natural resources are limited and therefore it is important to preserve the ecosystem		-0.7377
The natural beauties of the Neretva valley improve the quality of my life		-0.1162
The inhabitants of the Neretva valley have the unlimited right to use natural resources for economic benefits		-0.2872
N		102
AIC		136.44
Pseudo R2		0.2176
AUC		0.7637

** p < 0,001, * p < 0,05 Reference category in italics.

1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree

References

Agencija za zaštitu okoliša (2005): Kartiranje i procjena ekosustava i njihovih usluga u Hrvatskoj, Zagreb.

Barcaa, Benjamin, Lindon, Adrien, Root - Bernstein Meredith (2016):

"Environmentalism in the crosshairs: Perspectives on migratory bird hunting and poaching conflicts in Italy", Global Ecology and Conservation 6, 189–207.

Brochet et. al (2017): *"Illegal killing and taking of birds in Europe outside the Mediterranean: assessing the scope and scale of a complex issue",* Cambridge University Press, DOI: 10.1017/S0959270917000533

Čaldarović, Ognjen (2006): "Socijalni aspekti za stjecanje uvjeta za proglašenje dijela ušća Neretve Parkom prirode" - sociološka studija (50 str.)

Čaldarović, Ognjen (2006): "Transkripti intervjua i sastanaka fokus grupa održanih u periodu 3.-7.srpnja 2006. g. u području delte Neretve uz sudjelovanje O. Čaldarovića. D. Markovića i K. Leke"

Hazdovac Bajić, Nikolina (2020): *"Istraživanje percepcija i stavova ciljanih skupina na Lastovu – prva dionica*", Institut društvenih znanosti "Ivo Pilar", Dubrovnik.

Javna ustanova za upravljanje zaštićenim dijelovima prirode Dubrovačkoneretvanske Županije (2019): *"Plan upravljanja zaštićenim područjima i područjima ekološke mreže Delta Neretve 2018. - 2027", Dubrovnik.*

Jenkins et al. (2017): "*Exploring differences in stakeholders'perceptions of illegal bird trapping in Cyprus*", Journal of Ethnobiology and Ethnomedicine, 13:67.

Karris, Georgios, Martinis, Aristotelis, Kabassi, Katerina, Dalakiari Aggeliki & Korbetis, Malamo (2018): *"Changing social awareness of the illegal killing of migratory birds in the Ionian Islands, western Greece*", Journal of Biological Education, DOI:10.1080/00219266.2018.1554597

Mondain-Monval, Jean-Yves (2011): "Hunting in Mediterranean wetlands and its cultural aspects - Culture and Wetlands in the Mediterranean: an Evolving Story", 198-210.

Platteeuw, M., Kiss, J.B., Zhmud M.Y. & Sadoull, N. (2004): Colonial Waterbirds and Their Habitat Use in the Danube Delta, as an example of a large-scale natural wetland. RIZA Report 2004. – Institute for Inland Water Management and Waste Water Treatment RIZA, Lalzstad; Danube Delta National Institute, Tulcea; Danube Delta Biosphere Reserve, Vilkove & Tour du Valat, Arles.

Stui, M.A.M., Baker, C.J. and Oosterberg, W. (2002): "The Socio-economics of Wetlands", Wetlands International and RIZA, The Netherlands.

Šarć Kapelj, I. (2020): "Protuzakoniti lov ptica u Hrvatskoj: stavovi i potrebe policijskih službenika". U D.Novak (ed.) Zbornik radova 6. Istraživačkih dana Visoke policijske škole u Zagrebu "Idemo li ukorak s novim sigurnosnim izazovima?" Zagreb, 2019.

Štefani, Krivanek, Žeger Pleše, Čaičić, Zupan, Preininger, Opačić, Vitas, (2020): "Stručna podloga za izmjenu granica Posebnog ihtiološko-ornitološkog rezervata jugoistočni dio Delte Neretve, izmjenu granica i prekategorizaciju Značajnog krajobraza Modro oko i jezero uz naselje Desne te zaštitu područja Kuti u kategoriji posebnog ornitološkog rezervata – II. Izmjene", Zavod za zaštitu okoliša, Ministarstvo za zaštitu okoliša, Zagreb.

Udruga Biom (s.a.) Adriatic flyway 4 kroz Biomove strategije. Udruga Biom, Zagreb.

Udruga Biom (s.a.) Zaštitimo jadranski seobeni put - Delta Neretve. Udruga Biom, Zagreb.

Udruga Biom (s.a.) Zločini protiv prirode. Udruga Biom, Zagreb.

van Eerden M.R., van Rijn S., Volponi S., Paquet J.-Y. & CarssD.N. 2012. Cormorants and the European Environment:exploring Cormorant ecology on a continental scale. COSTAction 635 Final Report I, NERC Centre for Ecology &Hydrology, UK. www.intercafeproject.net

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