

Changing the Social perception for the illegal poaching on the Ionian Islands : Campaign Evaluation for the refugees of immigrating birds.

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Abstract

On the current project, the informational campaign that took place is being evaluated in relation to the spring poaching of the migrating birds on the Ionian Islands and within the framework of the European Program LIFE11INF/IT/253 «Safe shelters for wild birds». The target of the research was a) Locating and recording possible changes on the attitude and behavior of target groups after the campaign and b) the evaluation of the education roles as well as informing the public on the fight against poaching phenomenon. The research was focused on 3 islands that the phenomenon poaching seems more intense. The data that were collected through questionnaires on the start (2013) and through the end of the program (2015), so that comparing answers and data may be possible. The results showed that the students and the local community amplified their knowledge over the poaching phenomenon and the migration of the birds but the consequences of poaching on the subject while this kind of reaction was not observe by the hunting community which still believes the that the spring poaching is legal cause of its traditions and character.

Keywords: Environmental Education, Περιβαλλοντική Εκπαίδευση, Birdwathcing, Hunting, Mediterranean, biodiversity.

Introduction

In Europe and the Mediterranean countries, the problem of hunting during the migration seems to fall in deep roots which begin since ancient times. (Barca, Lindon & Root-Bernstein 2016). In every region different techniques are applied, differentiating based on the social and economic along with the cultural status and the and huntable species. The island of the Mediterranean, which are in the pathways of the migrating species are crucial resting places and for feeding. The very large consumption of energy that is required for the migration and the lack of other pathways leave the birds quite vulnerable and an easy target for the illegal hunters. Especially, on islands such as Malta, Cyprus and Sardinia Island along with the Ionian Islands, the poaching problem is quite severe (Smart et al. 2010) and constitutes a big threat for the preservation of the biodiversity (Brochet et al. 2016, Gavin, Solomon & Blank 2010, St. John et al. 2010), but an issue as well with the legal and ethical dimensions (Murgui 2014). It is a phenomenon with unforeseen consequences for the biodiversity which employs not only the nations that the phenomenon is observed on, but the international scientific society as well (BirdLife International 2015a).

In the Ionian region, the poachers invoke the “traditions” of their ancestors so they can exploit an immunity during the spring period as well as when they kill migrating species illegally.

The usual methods are “camps” and “hunt posts”. In more detail the interest for the Ionian and most of the Mediterranean countries is presenting the spring migration of the *Streptopelia turtur*, a species that begins from regions under the Sahara desert so it can migrate and finally arrive towards North Europe. During this period heavy poaching has been recorded with millions of dead birds species in the Ionian region and in the Mediterranean countries, along the migration corridors. According to recent estimations, the number of deaths every year in the Mediterranean regions is around 11 to 36 million (Brochet et al. 2016). Although the European instructions forbid strictly the hunting during the migration period, this illegal habit continues in the Ionian region with unabated intensity but in other Mediterranean regions as well. (Arizaga & Laso 2015, Barca, Lindon & Root-Bernstein 2016, Murgui 2014, Raine, Gauci & Barbara 2016).

Aim

In the current research paper there was an observation and evaluation of the information and awareness conducted by that the Greek Bird Society on spring poaching in the Ionian islands, in the frame of the LIFE+ Information project and Communication «Safe homes for the wild birds» (LIFE11INF/IT/253). The main objective of the research was a) to identify and record possible changes in the attitude and behavior of selected target groups after the information campaign and b) to evaluate the role of educating and informing the local communities in tackling poaching.

Methodology

Area of Research

The Ionian Islands possess an ecological and environmental value, as confirmed by the established Natura 2000 sites hosting and including a National Marine Park (Zakynthos and Strofades), a National Park (Ainos Kefalonia), 19 Sites of Community Importance and Special Protection Areas under Directives 92/43 / EK and 2009 / 147 / EC respectively, as well as 11 Wildlife Refugees. In the Ionian Islands there have been recorded 98 wetlands of around 2.250 ha (WWF Greece 2012), that support many kinds of migrating birds. A key element of the area of interest is the importance of the Ionian Islands as intermediary resting and refueling stations during spring migration (Karris et al., 2015).

Data Collection

For the implementation of this survey, Zakynthos Island, Corfu and Paxi Islands were selected. Criteria for that choice were a) their importance as intermediate migratory bird stations b) the poaching magnitude that is recorded through time. Poaching in these areas is a desirable activity and a social phenomenon, which poachers associate with the "traditions" of the Ionian region.

The research took place with the participation of 3 different target groups a) the students b) the local hunters and c) the local community (non hunters). For each of those groups a different questionnaire was created which had open and closed-ended questions. The questions concerned general information on the profile of the questioned such as gender, age, level of education, participation in environmentally education programs, as well as questions about the perceptions and knowledge that users might have about the value the Ionian Islands had for the migrating birds, the need of preservation of these values, and the spring poaching as a social phenomenon and its risk towards the conservation of the migrating birds. The sampling was random and the anonymity guaranteed, in order to increase the willingness of respondents to participate in the survey and it was not possible to link potential incriminating elements to specific users.

The implementation of this research was carried in two different phases. The first phase took place since 01/12/2012 to 10/04/2013 and addressed to the target teams towards the start of the implementation of the program. The data from this phase of research were used as a base report for the comparison of answers and perceptions of the different teams, with the proper data that were to be collected on the second phase of the distribution of the questionnaires. The second phase was done from 10/07/2015 to 10/09/2015 and after the LIFE+ Project was completed. The second phase was aimed at detecting of target groups with possible knowledge enhancement in relation to the migrating birds/and possible change of attitudes towards the spring poaching.

Data Analysis

The data that was collected from using the questionnaires was used as category-based data, which was checked for their regularity (standard residuals values). The statistical analysis was done with the Pearson's Chi-Square test as a independence test for the samples and the simulation method Monte Carlo that was necessary with the instructions of the Chi-Square test (Dafermos 2011). For the statistical analysis IBM SPSS statistics 20 was used.

Results

Students

The total of students that were a part of the 2 different phases of the survey were 201 persons, with the two genders being represented in almost same percentages (54,2% Boys and 45,8% Girls). There was representation of both Primary and Secondary Education, with 26 (13,0%) elementary school pupils, 134 (66,6%) high school students and 41 (20,4%) lyceum students. In 2015 when the second part of the research took place, the percentage of students that had already took place in environmental education programs (Table 1), was statistically greatly higher than the equivalent of 2013 (X-squared=10.714, df=1, p-value<0.05). Also in 2015 the percentage of students that knew the significance of the Ionian Islands for the migration of the birds (Table 2), was found to be statistically significantly higher than in 2013 (X-squared=4.184, df=1, p-value<0.05).

Table 1 : Participation of students in programs of Environmental Education (EE)

		Participation in Environmental Education programs		Total
		Yes	No	
Year	2013	56 (47,9%)	61 (52,1%)	117 (100%)
	2015	59 (71,1%)	24 (28,9%)	83 (100%)
Total		115	85	200

Table 2: Students' knowledge of the importance of the Ionian Islands area, for the bird migration.

		Knowledge of the importance of the region for bird migration		Total
		Yes	No	
Year	2013	60 (51,3%)	57 (48,7%)	117 (100%)
	2015	54 (65,9%)	28 (34,1%)	82 (100%)
Total		114	85	199

In 2015, the percentage of pupils who declared as intense the hunting activity in the Ionian Islands (Table 3) was statistically significantly higher than in 2013 ($X^2=10.401$, $df=1$, $p\text{-value}<0.05$). In addition, in 2015 the percentage of pupils who declared as intense the hunting effect to migratory birds crossing the Ionian Islands (Table 4), was statistically significantly higher than in 2013 ($X^2=4.572$, $df=1$, $p\text{-value}<0.05$). In particular, 67% of all pupils for both sampling periods said that hunting activity had significant negative effects on migratory birds. It is also worth noting that in 2015 the percentage of pupils who reportedly knew the existence of a national legislative framework for the control of hunting activity (Table 5) was higher than in 2013, but not statistically significantly different ($X^2=0.876$, $df=1$, $p\text{-value}=0.349$).

Table 3: Estimation of pupils for the intensity of hunting activity in the Ionian Islands area

		Hunting activity		Total
		Intense	Non-intense	
Year	2013	19 (16,2%)	98 (83,8%)	117 (100%)
	2015	30 (36,1%)	53 (63,9%)	83 (100%)
Total		49	151	200

Table 4: Student assessment of the impact of hunting activity on migratory birds in the Ionian Islands

		Effect of hunting on migratory birds		Total
		Yes	No	
Year	2013	87 (74,4%)	30 (25,6%)	117(100%)
	2015	72 (86,7%)	11 (13,3%)	83 (100%)
Total		159	41	200

Table 5: Knowledge of the students in the area of Ionian Islands on the existence of national legislation on the exercise of the hunting activity

		Knowledge of national legislation on hunting activity		Total
		Yes	No	
Year	2013	45 (39,1%)	70 (60,9%)	115 (100%)
	2015	38 (45,8%)	45 (54,2%)	83 (100%)
Total		83	115	198

Hunters

The total number of hunters (61 individuals) who participated in the two phases of the survey was men except one woman. There was representation of all ages, with most of them belonging to age classes 26-40 and 41-55 with percentages 42.6% and 31.1%, respectively. The majority of hunters, 60.7% of them, were secondary education, while in the question on their employment declared freelancers and civil servants in was mainly reported by freelancers and civil servants in percentages 39.3% and 19.7% respectively. The interviewed hunters claimed to have been engaged in hunting for more than 10 years (73.8%), while with the same percentage they declared their family environment as the main promoter for their pursuit of hunting activity. An overwhelming majority of hunters (89%) said that over the past decades they have seen a significant drop in the flow of migratory birds from their area during the spring. Similar was the percentage (88.5%) who declared that he had knowledge of the national legislation on the control of hunting activity, with their main sources of information from the Hunting Federations (through the Hunting Association to which they belonged) and, secondarily, from the Forestry with percentages 77.0% and 13.1% respectively.

In 2015, the percentage of hunters who said they had a good knowledge of the status of migratory bird species, was lower than in 2013, while the incomplete knowledge in 2015 was lower, compared to 2013 (Table 6). However, differences in the respective percentages were not statistically significant ($X^2 = 2.825$, $df = 2$, $p\text{-value} = 0.244$). Also, although only a small total of 21.3% declared ignorance of the migratory bird protection regime, 32.5% admitted that they also hunted in the months of April and May, when there was a clear ban on hunting of migratory birds. The hunters stated that the bodies that trust to receive up-to-date and valid information regarding the protection and conservation of migratory birds are mainly Hunting Federations (35-36%) and Forestry (26-27%) and Secondary Higher Tertiary Institutions Education, environmental non-governmental organizations and the Ministry of the Environment and Sustainable Development (Table 7). This preference seemed to remain unchanged between the two research implementation phases ($X^2 = 0.954$, $df = 4$, $p\text{-value} = 0.917$).

Table 6: The level of knowledge of hunters in the Ionian Islands for the status of protection of migratory birds

		knowledge of hunters in the Ionian Islands for the status of protection of migratory birds			Total
		Very good knowledge	Moderate knowledge	Incomplete knowledge	
Year	2013	19 (50,0%)	13 (34,2%)	6 (15,8%)	38 (100%)
	2015	7 (30,4%)	9 (39,1%)	7 (30,4%)	23 (100%)
Total		26	22	13	61

Table 7: Information bodies in the Ionian Islands area for immigration protection status issues

		Information body					Total
		Hunting Federations	Forestry	NGO	Univ/ties	Ministry of Env/ment	
Year	2013	12 (36,4%)	9 (27,3%)	3 (9,1%)	5 (15,1%)	4 (12,1%)	33 (100%)
	2015	8 (34,8%)	6 (26,1%)	4 (17,4%)	3 (13,0%)	2 (8,7%)	23 (100%)
Total		20	15	7	8	6	56

According to hunters, the main factors threatening migratory birds are, in order of significance, the use of insecticides-pesticides, followed by changes in land use, poaching and climate change, while it follows the use of poisoned baits with collateral losses causes (Table 8). The view on the challenges faced by migratory birds did not change during the survey, since according to the results of the Monte Carlo simulation method there was no statistically significant difference between the two sampling periods (X-squared = 0.991, df = 5, p -value = 0.966). During the first phase of the survey, the majority of hunters (62.2%) also stated that hunting activity strengthens the local economy (Table 9). This image changed significantly according to the second phase of the survey, where only 13% had the same view (X-squared = 13.935, df = 1, p-value <0.05). In addition, there was an increase in hunting participation in information campaigns on spring poaching between the two phases of the survey (Table 10), but this was not significant, according to the findings of the Monte Carlo method (X-squared = 3.515, df = 1, p-value = 0.061).

Table 8: The view of hunters in the Ionian Islands region, regarding the main threat to the conservation of migratory birds

		Threat to the conservation of migratory birds					Total	
		Land Use Change	Insecticides Pesticides	Poaching	Climate changes	Toxic baits	Other	
Year	2013	6 (15,8%)	8 (21,1%)	7 (18,4%)	7 (18,4%)	6 (15,8%)	4 (10,5%)	38 (100%)
	2015	5 (21,7%)	5 (21,7%)	4 (17,4%)	4 (17,4%)	4 (17,4%)	1 (4,4%)	23 (100%)
Total		11	13	11	11	10	5	61

Table 9: The view of hunters in the Ionian Islands for the contribution of hunting activity to the local economy

		Strengthening of local economy		Total
		Not at all or very little	Quite or too much	
Year	2013	14 (37,8%)	23 (62,2%)	37 (100%)
	2015	20 (87,0%)	3 (13,0%)	23 (100%)
Total		34	26	60

Table 10: Hunter participation in campaigns for the spring poaching

		Participation in information campaigns		Total
		Yes	No	
Year	2013	2 (5,6%)	34 (94,4%)	36 (100%)
	2015	5 (21,7%)	18 (78,3%)	23 (100%)
Total		7	52	59

Local society (non-hunters)

The total number of residents participating in the two phases of the survey was 119 individuals, with both sexes being represented at similar rates (44.5% and 55.5% for men and women respectively). There was representation of all ages, with most of them belonging to age classes 26-40, 41-55 and 18-25 with 50.4%, 22.7% and 21.0%, respectively. The majority of the respondents (60.5%) were of tertiary education, followed by secondary and primary school graduates, with rates of 34.5% and 5.0% respectively, while in the question of employment was mostly reported by freelancers and private employees in percentages 28, 6% and 26.1%, respectively.

The overwhelming majority of residents (86.6%), stated throughout the survey that they are aware of the importance of the Ionian Islands region for bird migration, with the corresponding percentage of residents in the second phase of the survey in 2015 is shown higher than in 2013 (Table 11), but not statistically significant (X-squared = 1.354, df = 1, p-value = 0.245). Unlike hunters, the majority of residents (62.2%) declared incomplete knowledge of the status of migratory species in both phases of the survey (Table 12). This placement of residents did not appear to change significantly between 2013 and 2015 (X-squared = 0.095, df = 2, p-value = 0.953). The residents have stated that the bodies that trust to receive up-to-date and valid information regarding protection and conservation of migratory birds are mainly environmental non-governmental organizations (32-37%), forest authorities (17-21%) and foundations Higher Tertiary Education (15-23%) and secondly the Ministry of Environment and Sustainable Development (12-15%) and Hunting Federations (10-15%) (Table 13). This preference seemed to remain unaltered between the two research implementation phases (X-squared = 1.835, df = 4, p-value = 0.766).

Table 11: Knowledge of residents about the importance of the Ionian Islands area for bird migration

		Knowledge of residents about the importance of the Ionian Islands area for bird migration		Total
		Yes	No	
Year	2013	42 (82,4%)	9 (17,6%)	51 (100%)
	2015	61 (89,7%)	7 (10,3%)	68 (100%)
Total		103	16	119

Table 12: Knowledge of residents on the status of protection of migratory birds

		Knowledge of residents on the status of protection of migratory birds			Total
		Very good knowledge	Moderate knowledge	Incomplete knowledge	
Year	2013	6 (11,8%)	14 (27,5%)	31 (60,7%)	51 (100%)
	2015	8 (11,8%)	17 (25,0%)	43 (63,2%)	68 (100%)
Total		14	31	74	119

Table 13: Bodies for the information of residuals in the Ionian Islands, on issues related to the protection of migratory birds

		Information Bodies					Total
		Hunting Federations	Forest Authorities	NGO	Universities	Ministry of Envir.	
Year	2013	7 (15,2%)	8 (17,4%)	17 (37,0%)	7 (15,2%)	7 (15,2%)	46 (100%)
	2015	7 (10,8%)	14 (21,5%)	21 (32,3%)	15 (23,1%)	8 (12,3%)	65 (100%)
Total		14	22	38	22	15	111

The majority of residents (68%) said that in recent decades they have seen a significant decrease in migratory bird flow from their area during the spring. According to them, the main factors posing a threat to migratory birds are poaching, followed by changes in land use, extensive use of insecticides and pesticides, the use of poisoned baits, followed by climate change (Table 14). The view on the challenges posed by migratory birds did not appear to have varied during the survey, since no statistically significant difference between the two sampling periods ($X^2 = 0.874$, $df = 5$, $p\text{-value} = 0.972$) was recorded. During the first phase of the survey, the overwhelming majority of residents (86.9%) also stated that hunting does not contribute to strengthening the local economy (Table 15). This view, which is in sharp contrast to what the hunters claimed at the same time, was strengthened but not significantly, according to the results of the second phase of the survey, where 90.9% of the residents claimed that there was no substantial contribution hunting activity in the local economy ($X^2 = 0.443$, $df = 1$, $p\text{-value} = 0.506$).

Table 14: The view of the inhabitants of the Ionian Islands about the main threat to the conservation of migratory birds

	Threat to the conservation of migratory birds							Total
	Land Use Change	Insecticides Pesticides	Poaching	Climate changes	Toxic baits	Other		
Year	2013	9 (17,6%)	9 (17,6%)	11 (21,6%)	9 (17,6%)	8 (15,8%)	5 (9,8%)	51 (100%)
	2015	12 (17,6%)	12 (17,6%)	16 (23,6%)	11 (16,2%)	13 (19,1%)	4 (5,9%)	68 (100%)
Total		21	21	27	20	21	9	119

Table 15: The view of the inhabitants of the Ionian Islands for the contribution of hunting activity to the local economy

	Strengthening of local economy		Total	
	Not at all or very little	Quite or too much		
Year	2013	40 (87,0%)	6 (13,0%)	46 (100%)
	2015	60 (90,9%)	6 (9,1%)	66 (100%)
Total		100	12	112

Discussion

According to Muth & Bowe (1998), in many societies poaching is part of local culture and is linked to tradition, national heritage and other socio-cultural factors, as is also seen in the Ionian Islands and especially in Zakynthos and Paxoi Islands. Poachers insist on the right to illegality despite clear scientific evidence showing the downward trend of the turtle dove (*Streptopelia turtur*) population (BirdLife International 2015b), making use of the value of the tradition. Although the Ionian hunters, despite receiving a significant reduction in the population of migratory species such as the *Streptopelia turtur*, insist on the view that poaching is a secondary threat factor in their area. This view loses its power since the community itself states, even after the end of the campaign, that it has moderate to deficient knowledge of the status of migratory bird protection, while recognizing the dramatic fall in spring flows over the islands in compared to the 1980s. However, there was a change in the perceptions of the community about the effect of spring poaching on the local economy, by renting out "posts" and hunting equipment trade, and which indicates the challenge prior positive aspect. The enthusiastic involvement of hunters in public debates that have taken place under the program is also assessed as a positive change of attitude.

With regard to residents in the research area who are not involved in hunting activities, they have high-level knowledge of the importance of the Ionian Islands for spring bird migration and indeed an upward trend in 2015. This is likely to be related to the fact that the majority of respondents were tertiary education, since previous research in the Paxi Islands region showed that the high educational level positively affects the degree of knowledge of the importance of the natural environment at the local level (Karris et al., 2010). On the other

hand, there has been no significant change in enhancing knowledge on the status of migratory birds protection at the end of the campaign, which shows that its impact at this level was not catalytic, and despite the fact that the inhabitants, according to their declarations, they are more credited with NGOs for the protection of the natural environment. Like hunters, local residents have remained firm in their views on the major threat to migratory birds, and this is poaching. So it seems that adults' perceptions of environmental issues are difficult to change significantly.

The evaluation of the results of the information campaign has shown that it has been able to influence pupils' perceptions rather than local communities and hunters. The strong positive impact that formal or non-formal environmental education may have on student attitudes and their subsequent behavior as citizens, regarding environmental issues, has also been shown in a recent study by Martinis et al. (2017) in Zakynthos. It is characteristic that during the time of completion of the LIFE + program, the pupils have significantly reinforced a) their participation in EE programs, b) their knowledge of the importance of the Ionian Islands region for bird migration and c) their view that poaching has a negative impact on migratory birds. All of this, combined with enhancing students' knowledge of the legislative framework governing hunting activity, is a positive omen for establishing a responsible attitude and behavior of future generations towards the problem of spring poaching, while enhancing the feeling responsibility and willingness to take part in the protection and sustainable management of the natural environment, as a common good.

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