

Fauna in Wetland Landscapes: A Perception Approach

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ABSTRACT. *Perception and observation of the faunal component of the landscape have not been sufficiently examined for wetlands in the past. In the present study, a methodological approach is followed, based on a questionnaire that is used with different population groups involved in a wetland in southern Spain. Using this questionnaire, it is established that fauna, especially birds, is seen as a distinctive element of wetland landscapes. This study shows how the importance of the animal component goes beyond visual perception of the landscape, making a particular contribution to its sound dimension. Also identified are several factors that have a significant effect on the perception and observation of wetland fauna: knowledge about, interest in and familiarity with the subject. The results can be applied to the citizen participation policies favoured by the European Landscape Convention, as well as to the characterisation, protection, management and planning of landscapes where fauna is an appreciable element.*

KEY WORDS: Fauna, Landscape Perception, Wetland, Padul Wetland

Introduction

Wetlands are landscapes with a particularly significant faunal component in terms of abundance and diversity (Amezaga, Santamaría, & Green, 2002; Denny, 1994; Gibbs, 1993, 2000; Keddy, 2000). On a global level, pressures and changes undergone by this type of landscape over the centuries have brought about a marked deterioration and reduction in the fauna associated with lacustrine habitats (Dawson, Berry & Kampa, 2003; Johnson, Hoverman, McKenzie, Blaustien, & Richgels, 2013; Lehtinen, Galatowitsch & Tester, 1999; Quesnelle, Fahrig, & Lindsay, 2013; Rahel, 2002). As an initial response to biodiversity losses, there have been a succession of different international treaties since the 1960s that have obtained better recognition and protection of these spaces: MAR Conference, 1962 (IUCN/ICBP/IWRB, 1964); Ramsar Convention on Wetlands, 1971; Directive on the conservation of natural habitats and of wild fauna and flora (Council of European Communities, 1992); EU Birds Directive designating Special Protection Areas (SPAs) for the protection of endangered species of wild birds (European Parliament and Council of European Union, 2009). Furthermore, the emergence of diverse international treaties for the implementation of landscape policies—the European Landscape Convention (Council of Europe, 2000) and the Latin American Landscape Initiative (IFLA, 2013)—and the current steps towards an International Landscape Convention, have

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reinforced the public involvement in landscape matters; therefore, the perception and observation of animal life makes an appropriate subject for the current landscape arena with the aim of fostering public participation and action on landscape (protection, management and planning).

While wetland fauna as a whole has been extensively studied from the point of view of both ecology (Finlayson, Lowry, Beillo, Nou, Pidgeon, Walden, Humphrey, & Fox, 2006; Williams, 1998) and taxonomy (e.g. Escalera-Vázquez & Zambrano, 2010; Suren, Lambert, Image, & Sorrell, 2008; Taft, Colwell, Isola, & Safran, 2002), the animate element in both this type of environment and elsewhere has hardly been analysed at all in landscape studies carried out to date (Gómez Zotano & Riesco Chueca, 2010; Roe, 2013). Nonetheless, there is general agreement about considering it as a fundamental part of the landscape from an epistemological point of view (Bastian, Krönert, & Lipský, 2006; Bertrand & Bertrand, 2002; Zonneveld, 1989).

Beyond those studies that analyse fauna perception in general (Conrad, Christie, & Fazey, 2011; Kellert, 1991; Swanwick, 2009), work on public perceptions of landscape that include fauna is rare (Burmil, Daniel, & Hetherington, 1999; Robertson & McGee, 2003). Other studies (Dobbie and Green, 2013) have already shown the importance of fauna in the perception of wetlands. This present study is providing further characterization of that perception.

Responding to this gap, in the present paper, we analyse perceptions and observations of fauna in a wetlands landscape. The methodological approach followed was based around a questionnaire given to different groups of people involved in a wetland in southern Spain. These groups are: farmers (who visit the wetland and its surroundings for different farm jobs); fauna specialists (who visit the wetland for scientific purposes); and general public (who visit the wetland with recreational intentions). From this, we were able to establish that fauna, and birdlife in particular, is considered an important characteristic of wetland landscape.

Methods

Study Area

The analysis relates to the Padul wetland, which is located in the southeast of Spain at 37°01'01" N, 03°36'07" W, 744 m above sea level. The boundaries of the study area coincide with those established for the protection of the wetland in the Sierra Nevada Natural Park (Ley [Act] 2/1989 of 18 July, under which a list of Andalusia's protected natural sites was approved along with additional measures for their protection) (Figure 1). Measuring 327.3 hectares, this area occupies part of a tectonic depression (endorheic type) piled up with layers of natural detritus alternating with lacustrine formations such as sands and peat. The climate is continental Mediterranean (average annual temperature, 14.6°C; annual rainfall 430 l/m²). Hydrologically, the basin offers low drainage density, so the functioning of the wetland is regulated by two major carbonate aquifers in the area around the depression (Villegas Molina, 1967).

The soils, which are of a hydromorphic nature, are terric and fibric histosols with a high organic content (Sánchez del Árbol, 2009). On this, grows a hydrophilous and helophytic vegetation characterised by associations with reed beds (*Phragmites australis*) and bulrush beds (*Typha dominguensis*), which alternates with small elm groves (*Hedera helix*-*Ulmus minoris*) (Pérez Raya & López Nieto, 1991).

Studies of fauna have listed a great many species of birds using this habitat as a breeding area (*Rallus aquaticus*, *Acrocephalus scirpaceus*), as an area for wintering (*Phylloscopus collybita*, *Remiz pendulinus*) or as an area for resting (*Charadrius hiaticula*,

Tringa glareola). Also of note are various different species of fish (*Cyprinus carpio*), amphibians (*Pleurodeles waltl*), reptiles (*Mauremys leprosa*) and mammals (*Talpa occidentalis*, *Mustela nivalis*) that are typical of lake and marsh habitats (Álvarez Fernández & González Cachinero, 2003; Rivas Fernández & Moreno Rueda, 2009).

The fertility and depth of the soils, together with the abundance of water, have favoured human exploitation of the wetland over the centuries. From the 18th century onwards, successive drying operations intensified and were extended because the wetland was regarded as unproductive and even as an unhealthy land, full of disease-carrying insects (Villegas Molina, 1967). Currently, the wetland is part of the Sierra Nevada Natural Park, is a designated Special Protection Area (EU Birds Directive, SPA code ES6140004) and, since 2006, has been included in the Ramsar list of Wetlands of International Importance. Despite this, it is still subject to intense transformation processes (peat extraction as well as development).

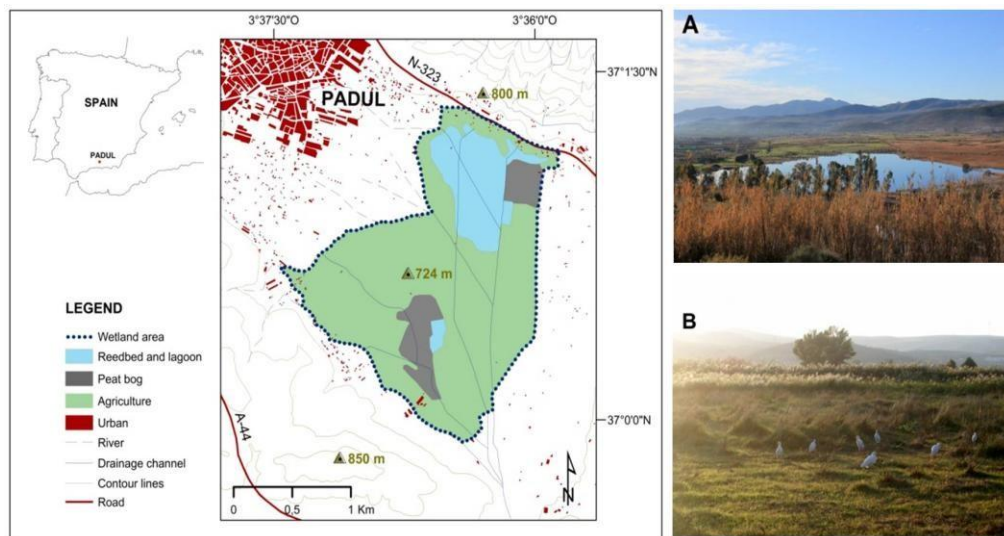


Figure 1. Location map of the Padul wetland (A). Overview of wetland (B). Cattle egret (*Bubulcus ibis*) on wet grassland. Photographs: authors.

Survey Instrument

1. Sample

First, for the purpose of gaining a comprehensive overview of the perception/observation of fauna in this landscape, the different groups of wetland users were identified. During 7 days (both on working days and at the weekend), people who visited the wetland were observed and classified according to access, purpose and range of observation. From this, three different groups (general public, farmers/farmworkers and fauna specialists), as well as their spatial interaction were considered (Table 1).

Table 1. Main characteristics of the user groups

User groups	Access	Purpose	Range of observation	Spatial interaction
General Public	Access inside	Leisure	Reed beds and areas of open water	Linear (direct, deliberate)
Farmers/Farmworkers	Around the perimeter	Water and soil use	Surrounding agricultural area	Around the perimeter (indirect)
Fauna Specialists	Random, no concrete place predetermined	Research	Reed beds and areas of open water	Criss-crossing

2. Questionnaire design

A one-page questionnaire, consisting of six questions and an annex on respondent information: gender, age, occupation, nature-related interest and frequency of visits to the wetland (see Appendix I), was developed as a survey instrument for analysing perception/observation of the wetland's fauna. The design of the questionnaire was based on our knowledge of the ecology and public use of the wetland, through exploration of different works on landscape preferences and perception (Arnberger & Eder, 2011; Curado, Manzano-Arrondo, Figueroa, & Castillo., 2013; Grammatikopoulou, Pouta, Salmiovirta, & Soini, 2012) and following the methodological recommendations of Bailey (1994) and Pavlikakis & Tsihrintzis (2003).

The first question in the questionnaire seeks to address the main question of this research: what place does fauna occupy in the perception of wetland landscape? This raises a general question about what the most interesting elements of this landscape are in order to assess the place that fauna occupies in relation to the rest of the landscape components (relief features, climate, water, vegetation, soils, crops and buildings as part of the infrastructure).

The second question (2a and 2b) is aimed at uncovering the reasons for which, in the previous question, fauna has either been accepted or dismissed as a distinctive element of this landscape. It is a closed question and provides several options to choose from, based on the different responses obtained during the questioning process.

The questionnaire continues with two questions whose purpose is to identify the types of fauna noted in the wetland using the different senses. The answers obtained reveal those species or taxa that are most easily spotted or which take on particular significance from a landscape point of view. To identify the different species, fauna identification guides, which were either specific to the place (Rivas Fernández y Moreno Rueda, 2009) or related to the Mediterranean area in general (Svensson, Mullarney, & Zetterström, 2010), were used where necessary.

The purpose of the fifth question is to examine the animal species encountered that most capture the attention, and the last question in the questionnaire is aimed at finding out about user hopes in this regard.

To complete the questionnaire, there is a section for information about the survey respondent, from which characteristics can be established that might affect perception and

observation of the fauna in this landscape (gender, age, occupation, nature-related interests and frequency of visits).

The eventual format was decided after trialling the questionnaire in the study area over 2 days with the aim of avoiding potential misunderstandings due to the wording of the questions. The questionnaire was tested with 33 people (16 visitors or general public, 8 farmers/farmworkers and 9 fauna specialists).

3. Conducting the survey

The fieldwork was carried out at the lagoon and its surrounding areas in the months of March, April and May 2014 (both on workdays and on holidays) during a time of 32 days (10 days in March, 11 days in April and 11 days in May). The questionnaire was carried out to people who visited the wetland and its surroundings: general public in reed beds and areas of open water; farmers/farmworkers in the surrounding agricultural area; and fauna specialists again in reed beds and areas of open water. The purpose of the visit to the wetland of each respondent allowed the classification in one user groups. A total of 300 people were invited to take part in the survey, with a response rate of 88.3%. This response rate was much higher than that of other landscape perception studies (Curado et al., 2013; Junker & Buchecker, 2008; Ryan, 2002; Schaid, 2009; Van den Berg & Koole, 2006). The final tally was 265 completed questionnaires from general public (175), farmers/farmworkers (50) and fauna specialists (40). The research was carried out in a direct and personal way by interviewing the different users face to face. Based on the differences in the activity patterns of the different species, the surveys were carried out at different times of the day: between 9.30am and 1.00pm and between 5.00pm and 8.30pm. On average, the whole interview took approximately 10 minutes.

Data Analysis

The six questions in the questionnaire and their possible answers (71) generated a large volume of information (18,815 answers from the total number of people surveyed). The data collected were analysed by percentage frequencies using Microsoft Excel 2013 for Windows 8.

Results

Fauna's Place in the Landscape

The purpose of the first part of the questionnaire is to find out what place fauna occupies in the perception of wetland landscape in relation to other elements found there (Figure 2). The general findings show that fauna represents the second most striking element for those surveyed (24.2%) after water (50.2%), although for the specialist group, it is the most characteristic element (82.5%).

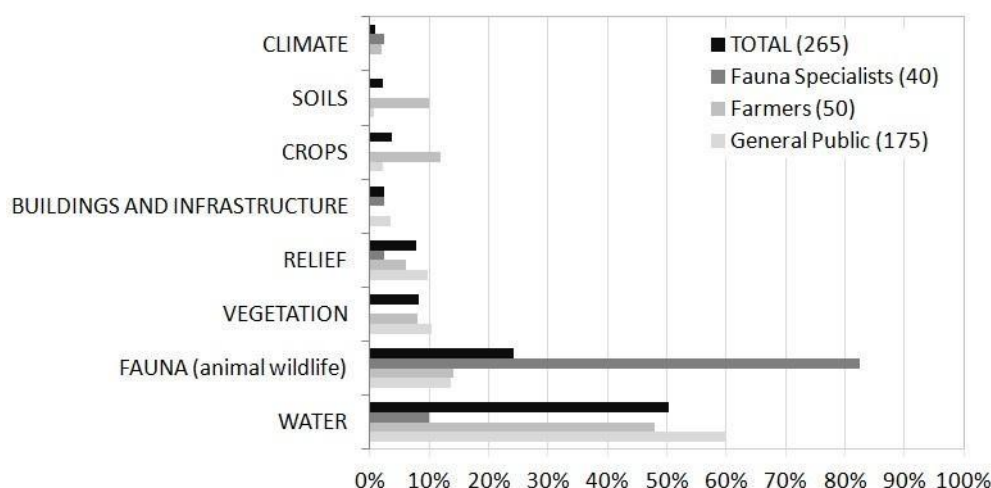


Figure 2. Striking elements of the wetland landscape.

Of the survey respondents, 66.4% consider fauna to be a significant part of the landscape, while 33.6% do not include it (Figure 3). A majority of those surveyed consider it significant because it is a distinctive part of the ecosystem and the landscape, and only 5.3% think about its aesthetic value. On the other hand, those who do not include it mention the difficulty of seeing, hearing, smelling or touching it (15.5%), or else its scarcity and lack of diversity (13.6%). Only 0.8% do not consider it an important part of the ecosystem and landscape.

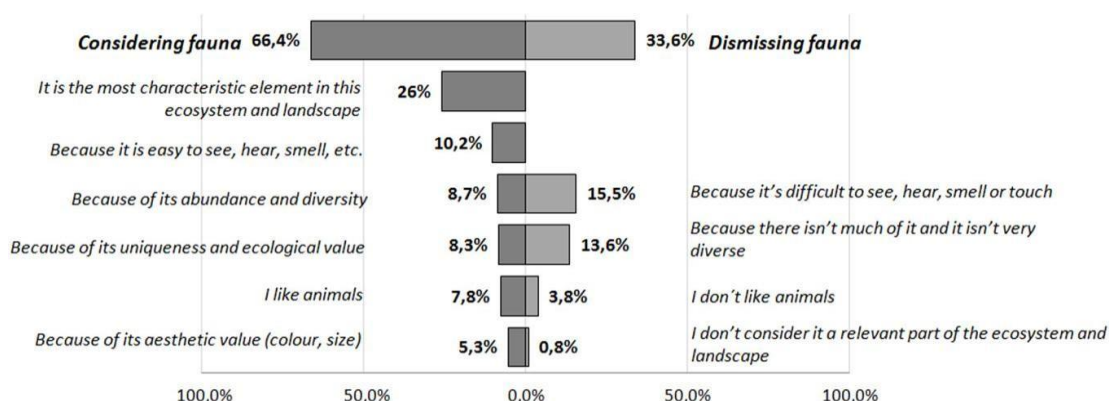


Figure 3. Main reasons for considering or dismissing fauna in the landscape.

All of the specialists (100%) considered fauna to be a striking element in the landscape, and 65% of them gave, as the main reason, that the fauna is a significant part of the ecosystem and landscape. This reason goes down to 24% in general public. Farmers/farmworkers, however, say that it is easily seen, heard, etc. (22%) and that it is plentiful and diverse (18%). In this group, only 2% of those surveyed mention fauna as the most characteristic feature of the ecosystem and the landscape.

General public who do not include fauna as a component of the wetland landscape say in the main that it is difficult to see, hear, smell or touch (21.7%), or that it is scarce and not very diverse (14.9%). The farmers/farmworkers give similar reasons, but are the only group in which some respondents (4%) do not consider it a significant element of the ecosystem and landscape.

Observation of Fauna in the Landscape

An analysis of the most seen and heard species groups shows a clear preponderance of three main groups (Figure 4): first birds, which were noted by 97.7% of those surveyed, followed by amphibians (81.1%) and then invertebrates (75.8%).

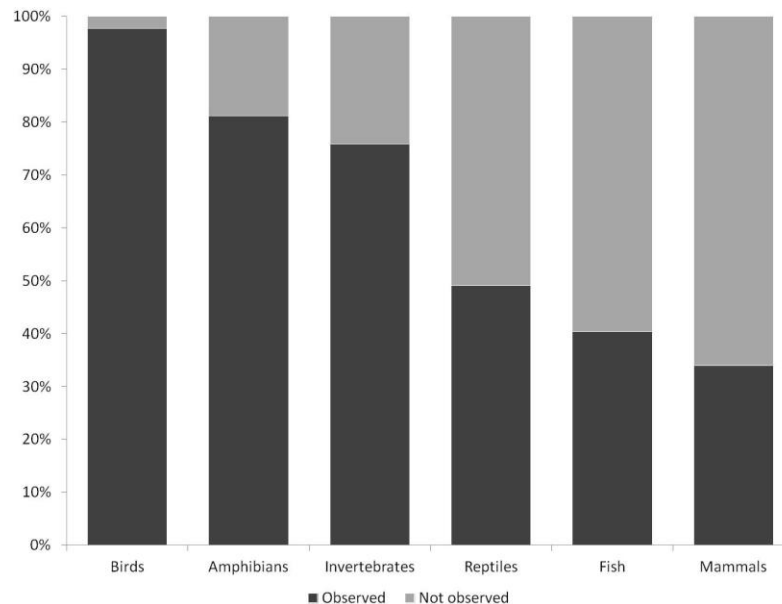


Figure 4. Fauna observed in the wetland landscape.

A majority of the farmers (98.5%) and fauna specialists (75.2%) visit the wetland frequently (>6 times a year); however, the rate of visits to the wetland by general public is lower (only 50.1% visit the wetland frequently and 25.2% rarely do it). Given the frequency of visits to the wetland by farmers/farmworkers and the greater knowledge of the fauna specialists, these two groups show higher observation rates in relation to the different categories, with birds standing out in both cases (100%). The least noted categories are fish in the case of farmers/farmworkers (34%) and mammals in the case of fauna specialists (30%) (Table 2).

The general public, on the other hand, record considerably lower levels of fauna observation but in accordance with the general trend, what stands out most are observations of birds (96.6%), amphibians (73.7%) and invertebrates (67.4%). Among the categories least noted by this group are mammals, which go unnoticed by 85.7% of general public.

As for the role of the different senses in observations, sight is the main sense used for all species groups—particularly birds (94.3%)—except amphibians, where hearing is the predominant sense (72.1%). For birds, auditory perception prevails (85.7%). Tactile perception or touch is the sense least used for all the species groups, apart from invertebrates, owing to the large numbers of mosquitoes providing involuntary contact. Similarly, the use of smell is negligible.

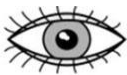
		<i>Sense</i>			
<i>Species group</i>					
	Mammals	31.3%	11.7%	1.1%	1.1%
	Birds	94.3%	85.7%	-	7.2%
	Reptiles	44.2%	10.6%	-	3.4%
	Amphibians	37.7%	72.1%	-	4.5%
	Fish	40.4%	-	-	1.1%
	Invertebrates	62.6%	35.5%	-	55.5%

Table 2. Wetland fauna observations by sense

An analysis by different wetland user groups reveals certain differences. In the case of sound perception or hearing, the main differences lie in the fact that the least observed categories after fish are mammals in the case of general public (1.7%) and reptiles for farmers/farmworkers and fauna specialists (16% and 37.5%, respectively). The use of olfactory perception or smell is negligible: only 0.6% of general public and 5% of farmers/farmworkers detected mammals using this sense. Lastly, although tactile perception or touch is only of any significance in the case of the invertebrate group, it registers higher with the farmers/farmworkers and more so with the fauna specialists. This is because of the direct relationship these groups of users have with the wetland and the surrounding area (agricultural activities for the former, and activities of a scientific nature for the latter, such as bird ringing and counting). These activities make farmers and fauna specialists have direct touch with some animals.

Finally, the purpose of the last part of the survey is to establish the relationship between animals observed that most captured the attention of the respondent (Figure 5) and the hopes that they had concerning the fauna they were hoping to find at the wetland (Figure 6).

Putting these two questions together, we find birds stand out in both. 87.5% of the respondents consider them to be the category that they find most striking, and 95.1% say they are the group they most hope to encounter in the wetland. Amphibians, invertebrates and reptiles achieve lower percentages. Mammals and fish, for their part, are the least striking categories, being, at the same time, the ones that go most unnoticed.

Fish deserve special mention. While only attracting the attention of 4.5% of those surveyed, they represent the second fauna category that these respondents most hope to come across at the wetland (33.6%). Across all the animal categories, observation hopes (Figure 6) exceed both actual observations (Figure 4) and observations of the most striking species (Figure 5).

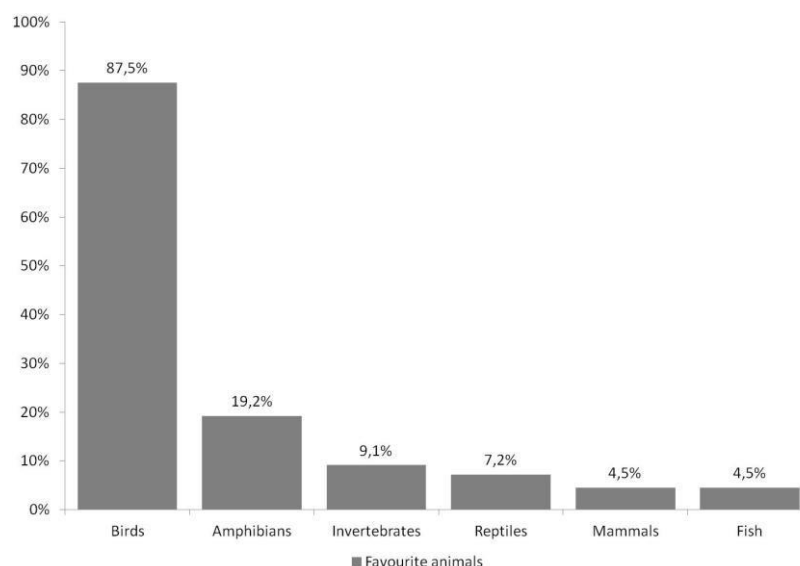


Figure 5. Mention of animals that most attract attention.

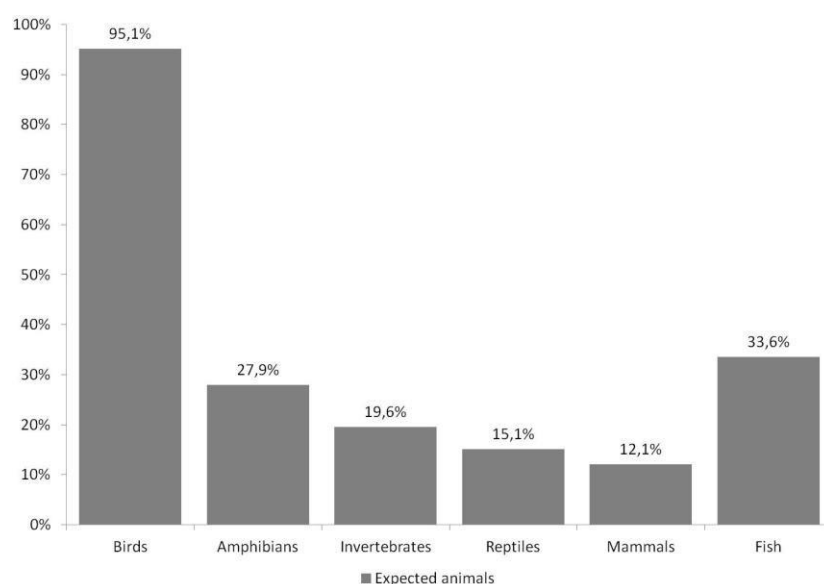


Figure 6. Mention of animals that respondents hoped to find in wetland landscape.

Looking at the different groups of wetland users, the general public makes particular reference to birds as the category that most draws their attention (86.8%), singling out mallard (*Anas platyrhynchos*), coot (*Fulica atra*), grey heron (*Ardea cinerea*) and cattle egret (*Bubulcus ibis*). 20.6% of the general public is interested in amphibians, particularly Perez's frog (*Pelophylax perezi*), the Mediterranean tree frog (*Hyla meridionalis*) and the common toad (*Bufo bufo*). Where invertebrates are concerned, general public emphasises the abundance of insects, and for reptiles, they mention snakes and Spanish pond turtles (*Mauremys leprosa*). On the other hand, the mammal and fish categories are least mentioned, although they are also the least observed. As for the categories that they hope to find, they again put birds top (95.4%), with a particular preference for finding a greater number of grey heron (*Ardea cinerea*) and a greater diversity of birdlife.

The farmers/farmworkers also make particular reference to observing birds (88%) and single out mallard (*Anas platyrhynchos*), common moorhen (*Gallinula chloropus*) and cattle

egret (*Bubulcus ibis*). These species are also the ones they hope to find at the wetland (94%). They are followed by amphibians, invertebrates and reptiles. Unlike the general public, only 12% of farmers/farmworkers hope to find fish.

The fauna specialists give similar percentages for animals observed and animals they hope to come across at the wetland. Birds stand out (particularly birds of prey, rails, passerines), and this is again the category that is of most interest and which creates the most hopes with regard to visits to the wetland. On the other hand, animals and fish, species groups least observed by the specialists, take on added interest when it comes to hopes of what may be found at the wetland.

Discussion

What People Perceived in Wetland

In this paper, a description of the perception and observations of fauna in a wetland (peat bog) landscape in the south of Spain has been conducted with the help of a questionnaire. Three different participants groups have been identified: general public, farmers and fauna specialists.

Some authors have highlighted the suitability of surveys as a tool for understanding the landscape and its dynamics (Ribas Vilas, 2004). This method has already been tried and tested, both in analyses of landscape preferences and perception (e.g. Arnberger & Eder, 2011; Sevenant & Antrop, 2009; Grammatikopoulou et al., 2012; Soliva, Bolliger & Hunziker, 2010), as well as in various studies on fauna perception and observation (e.g. Andersone & Ozolins, 2004). This analysis demonstrates that this questionnaire in particular, can provide useful information in order to analyze the perception of fauna in wetland landscapes. Nevertheless, given the diversity of wetlands (typology, location, ecohydrological management, and other factors), developing a general method is complex.

Considering some questions such as the role of fauna in wetland landscapes and its perception, this article shows that fauna constitutes, after water, a notable element in this kind of landscapes. User groups mainly refer that the animal component constitutes a characteristic element from this ecosystem as well as from the landscape, and that it is easily perceptible. In this sense, Dobbie & Green (2013) already established that animals were important in the perception of wetlands.

An analysis of the most animals perceived shows a clear preponderance of three main groups: birds, followed by amphibians and invertebrates. As for the role of the different senses in observations, sight is the main sense used for all species groups. As for birds, all participants groups highlight both visual and hearing perception. According to Taft, Colwell, Isola, & Safran (2002), wetlands provide habitat for numerous migrant birds, sedentary, breeding birds, etc. These species are easily noticeable, but variable through the year (seasonal difference).

Differences in fauna perception arose only from familiarity and visit frequency. Familiarity is thought to increase knowledge of detailed features of a landscape (Zube, Simcox, & Friedman, 1998). Farmers and fauna specialists visit the wetland frequently (>6 times a year), whereas only one half of the respondent general public often visits it. Consequently, the perception rate is higher in the case of farmers and fauna specialists. General public presents a lower rate of perception. This result demonstrates that perception is related to personal factors such as visit frequency. Previous works has shown the relationship between familiarity and perception of wetlands (Dobbie, 2013). According to Aretano, Petrosillo, Zaccarelli, Semeraro, & Zurlini (2013); Buijs, Pedroli, & Luginbül (2006) and Kaplan (1979), landscape perception is

determined by experience and by functional links with the locality, as well as by individual and cultural factors, which explains the higher numbers of animal observations among farmers/farmworkers and fauna specialists in the case we have looked at.

While most animal species are observed visually, not all are capable of dominating the landscape. The multiple dimensions of the landscape enable the inclusion of fauna at different levels (collective imagination, toponymy, sound perception, etc.). Although visual observation of wetland fauna is the commonest means of perception, the present paper shows the important contribution fauna makes to the sound dimension of the landscape, as shown in previous works (Farina, 2014; Pijanowski, Villanueva-Rivera, Dumyahn, Farina, Krause, Napoletano, Gage, & Pieretti, 2011). In this sense, intangible landscape aspects appear to be considered important. Results provide empirical support for Phillips' (2005) assertion that landscape is experienced by all senses; management measures must thus address more than just the visual.

Otherwise, there are also differences according to the perceived fauna and the observation hopes. For all participants, observation hopes exceed actual observations. However, fauna specialists give similar percentages for animals observed and animals they hope to come across at the wetland. Specific knowledge of fauna in this participants group could explain it. In this sense, previous works (Nassauer, 2004) comment that those who are knowledgeable about wetland function or hold attitudes or values that support nature might see beauty or attractiveness in some wetlands that the broader public sees as unattractive.

Implications for Wetland Landscapes Management

The ELC makes no mention to fauna in its different guidelines. However, it establishes public participation as both an instrumental and substantive goal. There is thus an important role to be played by perception research in determining how the ELC can best be implemented in practical terms. Moreover, the definition of landscape quality objectives which "reflect the aspirations of the public" is likely to be a challenging aspect of the ELC, considering the fact that aspirations of different groups within the wider public are likely to vary. In this sense, this survey has been useful to analyze: fauna perception relevance in the landscape by user groups; perceived species and mode of perception; a comparison between actual perceptions and hopes.

Management interventions for any landscape must be category-specific and scale-appropriate (Eaton, 2001). According to Riesco Chueca, Gómez Zotano, & Álvarez Sala (2008), the question of scale is fundamental to differentiate the faunal element in the context of landscape from other concepts such as the ecosystem, ecotope or biome. This study has illustrated how a group of citizens perceive wetland fauna that they might encounter in their everyday life. In this sense, the results that have been obtained can be used to make an agreement about future restorations in the landscape, as well as to create spaces for public use and of educational and scientific interest based on the fauna perceptible and hoped for the different user groups. Previous works (Armitage, Jensen, Yoon, & Ambrose, 2007; Burger, 2003; Natuhara et al., 2005; Tunstall, Tapsell, & Eden, 1999) have illustrated that wetlands and its fauna are an educational and recreational resource for local people. The influence of familiarity on fauna perception could also contribute to their management. Managers could implement interpretation signage and education programs to increase familiarity with fauna wetlands and enhance their perception.

Understanding how fauna is a notable element in landscape can assist in their sustainable management. Thus, these attributes can be used in wetland management and design to achieve desired aesthetic outcomes appropriate to the context. For example, water quality

could be improved to promote increased abundance of specific animals (waterbird, fishes, diverse amphibians, etc.).

On its behalf, the Ramsar Convention and the different Recommendations and Resolutions which are derived from itself, constitute a reference framework for the planning and rational use of wetlands by local, regional, national and international actions. According to the VII.1 and VIII.17 Recommendations from the Ramsar Convention, wetlands which are related to peat bogs are some of the most vulnerable ones in the planet, due to its low spatial representation in relation to other types of wetlands (Ramsar Convention 1999; 2002). The Convention itself has recognised the numerous values of wetlands: economic, cultural, scientific and recreational (Ramsar Convention Secretariat, 2013). The results of this study are particularly significant as peat bogs, the wetland type that is the subject of the study, because they are relatively scarce in the south of Europe (Joosten & Clarke, 2002). All of that justifies the need of preserving this kind of landscapes in general, but also its fauna in particular. The public perception of fauna constitutes an useful tool for this purpose.

This study shows how different user groups perceive fauna in wetlands. In future research, it would be worth delving further into survey population characteristics (age, gender and level of education) that, according to Buijs, Pedroli, & Luginbül (2006) and Stern, Dietz, & Yaloff (1993), are thought to be important variables in landscape perception. Another aspect to look at in greater depth would be the intra-annual perception/observations of fauna in the landscape because wetlands vary seasonally and so too might their fauna.

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Appendix I. Questionnaire to be completed by different user groups

PARTICIPANT GROUP: ☐ General Public ☐ Farmer/Farmworker ☐ Fauna specialist			
DATE:		TIME:	
Sex:	Age:	Occupation:	
Nature-related interests		How often do you visit this wetland?	☐ This is the first time ☐ Rarely (1–2 times per year) ☐ Often (3–6 times per year) ☐ Very often (>6 times per year)
1. Which aspects of this landscape attract your attention?		Observable elements	
		Relief (hills, valleys, etc.)	
		Climate	
		Water	
		Vegetation	
		Soils	
		Fauna (animal wildlife)	
		Crops	
		Buildings and infrastructure	
Other			
2a. Why did you include fauna (animal wildlife)?		2b. Why did you not include fauna (animal wildlife)?	
1. I like animals 2. Because of its abundance and diversity 3. Because it is easy to see, hear, smell, etc. 4. Because of its uniqueness and ecological value 5. Because of its aesthetic value (colour, size) 6. It is the most characteristic element in this ecosystem and landscape		1. I don't like animals 2. Because there isn't much of it and it isn't very diverse 3. Because it's difficult to see, hear, smell or touch 4. I don't consider it a relevant part of the ecosystem and landscape	
3. Did you spot any of the following wildlife species?		YES/NO	4. Using which sense?
Mammals (e.g. fox, weasel, shrew, rat, wild boar, etc.)			Sight Hearing Smell Touch
Birds (e.g. duck, heron, water rail, common snipe, etc.).			
Reptiles (e.g. turtle, lizard, snake, etc.)			
Amphibians (e.g. Iberian ribbed newt, frog, toad, etc.)			
Fish (e.g. cyprinid [sqalius pyrenaicus], carp)			
Invertebrates (e.g. mosquitoes, dragonflies, spiders, crabs, etc.)			
5. Of the animals you observed, which ones most attract your attention?		Mammals	☐
		Birds	☐
		Reptiles	☐
		Amphibians	☐
		Fish	☐
		Invertebrates	☐
		None noted	☐
6. What animals did you hope to find in the wetland?		Mammals	☐
		Birds	☐
		Reptiles	☐
		Amphibians	☐
		Fish	☐
		Invertebrates	☐
		None	☐