

## Conservation implications of birder visitation to Douglas Marsh, Manitoba: expectation - satisfaction levels of birders on commercial trips versus other birders

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**Abstract:** The purpose of this paper is to report on the implications of the human dimensions portion of an integrated conservation project concerning of yellow rail (*Coturnicops noveboracensis*) habitat at Douglas Marsh Important Bird Area (IBA), Manitoba. Self-administered questionnaires were made available to birders visiting the Marsh to address demographics, previous experiences and linked expectation-satisfaction levels. Respondents were classified as birders on commercial trips or other birders. Birders on commercial trips possessed higher expectations to visually observe birds and wildlife. This is unrealistic for yellow rails, given the species' secretive nature. Other birders demonstrated little concern for trampling nesting habitat. Satisfaction levels for observing yellow rails were low for both groups. These results indicate a poor understanding regarding yellow rail ecology, which likely leads to unrealistic expectations and low satisfaction. Recent restrictions in access to portions of the privately-owned habitat, where recent surveys have indicated yellow rails are more concentrated, likely increases dissatisfaction. This trend may lead to decreased interest in visiting Douglas Marsh and less opportunity for conservation in the future. Mitigation in the form of increased communication between local stewards and birders, and education programs to foster more realistic expectations, is recommended.

**Key words:** *birders, conservation, expectation, Manitoba, satisfaction, yellow rail*

## Introduction

Human dimensions research can be an important addition to ecological understanding in the development of conservation management programs (Wade and Eagles 2003; Leberman and Holland 2005). The importance of incorporating social and natural understanding in non-consumptive wildlife ecotourism was modelled by Duffus and Dearden (1990), who explained that without an understanding of both the ecological requirements of the species in question and the needs and desires of the wildlife user group effective management cannot be achieved. Reynolds and Braithwaite (2001) expanded upon this model to incorporate satisfaction of the wildlife users within the social component. Hvenegaard and Dearden (1998) further stated that ecotourism activities should contribute to conservation initiatives through an understanding of visitor demographics (Butler and Fenton 1987) and motivations (Manning 1986). Indeed, a contribution to conservation is one of the defining components of ecotourism (Lindberg and Hawkins 1993; Ceballos-Lascuráin 1996).

While there is a strong literature addressing the satisfaction of ecotourists, few studies recognize the importance of also collecting data regarding their expectations prior to engaging in their chosen activities (McKay and Crompton 1988; Wade and Eagles 2003). The benefit of understanding both expectations and satisfactions of ecotourists lies in the manager's ability to assess both what is of primary importance to visitors, as well as their post-experience assessment of those important aspects. One technique to address ecotourist expectation-satisfactions is Importance-Performance Analysis (IPA) (Martilla and James 1977). IPA asks pre-experience questions such as "how important are the following services we provide to your experience", followed by post-experience questions such as "please rate your satisfaction with the following services we provide". By plotting importance and performance on an x-y axis respondents' mean results fall into one of four quadrants:

*Unsatisfactory experience*: an aspect of importance to the respondent, which has not been satisfied,

*Satisfactory experience*: an aspect of importance to the respondent, which has been successfully satisfied,

*Low priority*: an aspect of little importance to the respondent, which received low satisfaction, or

*Possible overkill*: an aspect of little importance which, however, was reported as a satisfactory experience.

Analysis of the results provides a clear indication where management action should be placed, particularly those aspects that fall into the *unsatisfactory experience* quadrant. IPA has been applied to subjects such as automobile service (Martilla and James 1977), health care (Dolinsky and Caputo 1991), banking (Ennew *et al.* 1993), and in a recreation/tourism context to hotels (Martin 1995), guided tours (Duke and Persia 1996), downhill skiing (Hudson and Shepherd 1998), and whale watching (Malcolm 2003). In the case of birding ecotourism, where satisfaction may be related to an encounter with particular bird species, IPA can be a powerful management tool, particularly when target bird species are at-risk as is the case in this paper.

With respect to birding, detailed human-dimension studies have been made of demographics (e.g., Kellert 1985; Hvenegaard *et al.* 1989; Hvenegaard and Dearden, 1998; Eubanks *et al.* 2004), motivations (e.g., Boxall *et al.* 1991; McFarlane 1994; Hvenegaard and Manaloor 2001; Eubanks *et al.* 2004), and specialization (e.g., McFarlane 1996; McFarlane and Boxall 1996; Cole and Scott 1999; Hvenegaard 2002; Scott *et al.* 2005) that provide human dimensions knowledge applicable to conservation. The results of this research reveals that birders tend to be older, highly educated, employed in professional careers, and more affluent than the general public. Birders demonstrate a desire to see birds, improve birding skills, interact socially with family, friends and others of like interests, and to contribute to conservation. Birders can be grouped into the classic specialized beginner to expert typologies (Bryan 1977) but do not necessarily comprise a continuum of demographics, motivations and activities within these typologies. To this point, however, there has been no research linking expectations to satisfaction levels of birders that apply directly to conservation issues.

Documentation of a site as being important for ecotourism coupled with ecological knowledge such as habitat use by a species-at-risk should provide strong pressure for conservation, even in the presence of private land ownership, as is the case in this instance. The purpose of this paper is to report on the human dimensions portion of an integrated social and natural science project to provide recommendations for yellow rail (*Coturnicops noveboracensis*) conservation at Douglas Marsh, Manitoba, Canada. This research looks at the expectations, satisfaction levels and attitudes of birders visiting Douglas Marsh. The results this research will be combined with an ongoing yellow rail census and habitat mapping project to develop recommendations for management.

## Background

### Douglas Marsh:

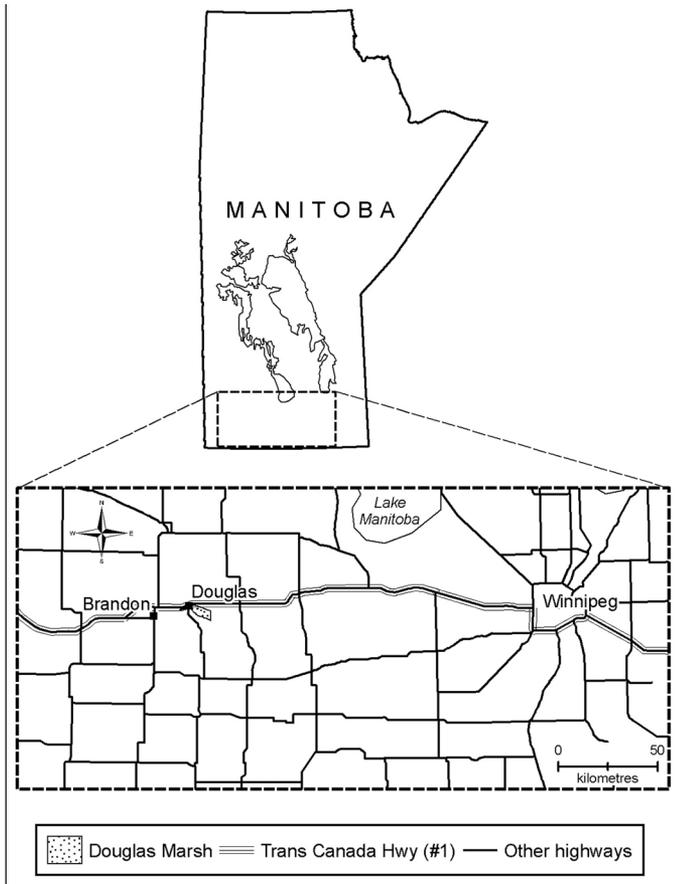
Douglas Marsh is a shallow wetland (18 km<sup>2</sup>) located 17 km east of Brandon, Manitoba (see Figure 1). The marsh is relatively intact. One main thoroughfare, Manitoba Provincial Highway 340, bisects the marsh north to south, south of the Town of Douglas. Ground water seepage creates a consistently wet environment which has restricted land use activities beyond haying and summer grazing of domestic livestock. Douglas Marsh is a productive ecosystem, characterized by a high degree of biodiversity in locally rare plant and bird species. Breeding bird species include the yellow rail, Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), Wilson's snipe (*Gallinago gallinago*), Nelson's sharptail sparrow (*Ammodramus nelsoni*), and Le Conte's sparrow (*Ammodramus leconteii*) (Cochrane Environmental Consultants 1998). In particular, the breeding population of yellow rails has drawn attention to Douglas Marsh as a locally unique ecosystem of conservation importance. The main conservation challenge at Douglas Marsh is that the land is entirely privately owned.

### Yellow Rail Research and Conservation Status:

Yellow rails prefer to remain under a canopy of vegetation rather than flying, and are extremely difficult to flush. In addition, the males vocalize almost exclusively at night. These characteristics make the yellow rail one of the most elusive birds in the world (Bookhout 1995). The yellow rail has also received little research attention; it is likely one of the least understood birds in North America (Bookhout 1995).

This lack of understanding is particularly true with respect to migration and winter range (Bookhout and Stenzel 1987; Bookhout 1995; Kehoe *et al.* 1998; Robert and Laporte 1999). The species is suspected to be a population in decline, due to habitat loss in both its breeding and purported wintering range (Bookhout 1995; Alvo and Robert 1999). Alvo and Robert (1999) estimated the population to be 8000 breeding pairs, 5000 of which are suspected to breed in the Hudson Bay Lowlands, 2000 in south-central Canada and 800 in the United States. Bookhout (1995) cautions, however, that the yellow rail may be more numerous than suspected, due to its elusiveness and the limited research focus applied to the species. Of concern is that the lack of knowledge and research may also lead to unidentified yellow rail habitat in need of conservation.

The yellow rail is specialized in terms of nesting habitat, which may further imperil its conservation status. Nesting habitat use has been the most common type of research conducted on the species (e.g., Bart *et al.* 1984; Gibbs *et al.* 1991; Cochrane Environmental Consultants 1998; Kehoe



**Figure 1:** Location of Douglas Marsh, Manitoba.

*et al.* 1998). Current knowledge indicates that yellow rails prefer to nest in large marshes dominated by low graminoids with a senescent canopy. Nests have most often been found constructed in water less than twelve centimetres deep, over substrate that is saturated throughout the breeding season (Bookhout 1995; Alvo and Robert 1999). These structural characteristics appear to be more important than use of particular plant species (Alvo and Robert 1999; Goldale *et al.* 2002).

The yellow rail is designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a species of “Special Concern” (Alvo and Robert 1999) and is listed as such in Schedule 1 of the Canadian Species-at-Risk Act. It is not listed federally under the United

States Endangered Species Act, but is listed as “Endangered” in Illinois (Bowles et al. 1981), “Threatened” in Michigan (Hyde 2001), and a species of “Special Concern” in California (Remsen 1978) and Minnesota (Minnesota Department of Natural Resources 1996).

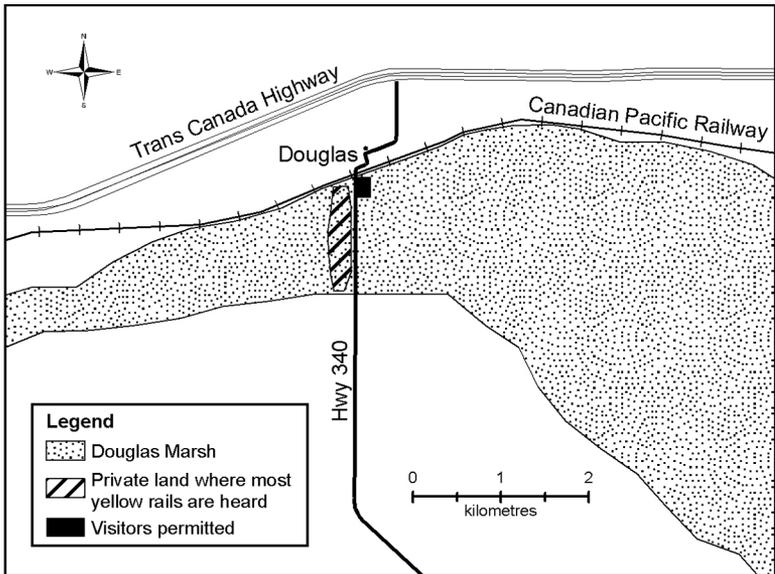
### **Yellow Rails and Conservation in Douglas Marsh:**

Yellow rails have been recorded in southern Manitoba since the 1930’s (Freyer 1937) and specifically the area east of Brandon since the 1960’s (Lane 1962). The bisection of Douglas Marsh by Highway 340 makes Douglas Marsh easily accessible and the Town of Douglas (see Figure 1) advertises itself as “Home of the Yellow Rail”. The only rigorous research project to document yellow rails and habitat use in Douglas Marsh prior to 2003 was conducted by Cochrane Environmental Consultants (CEC) (1998) and funded by Manitoba Highways as part of an environmental impact assessment to explore the diversion of Highway 340 around the Town of Douglas. CEC recorded 108 yellow rail calls in 1993 and 89 in 1994, and located eleven nests during searches from 1993 to 1996. CEC concluded that: i) yellow rails used recently burned sites at the marsh for feeding, ii) all nests in the marsh were in or near water, and iii) yellow rails at the marsh tended to prefer sites with dense cover having no more than 20 cm depth of water. All birding and research activity has been focussed along Highway 340, south of Douglas, due to private land ownership.

In 1999, Douglas Marsh was declared an Important Bird Area (IBA), under the IBA Canada co-operative initiative between Canadian Nature Federation (now Nature Canada), Bird Studies Canada, and BirdLife International. The IBA program in Canada is an initiative to “identify, conserve and monitor a network of sites that provide essential habitat for Canada’s bird populations” (IBA Canada 2004). Local efforts by the Douglas Marsh Community Action Committee, a sub-committee of the Brandon Naturalists Society, are currently being made in coordination with the IBA Canada program and Brandon University to monitor the yellow rail population, and with Manitoba Habitat Heritage Corporation to establish Conservation Easements on the private lands that compose Douglas Marsh. Recent surveys of habitat use by yellow rails in 2003 and 2004 indicate that yellow rails prefer habitat on the west side of the highway (Malcolm and Wilson 2004).

### **Birding at Douglas Marsh:**

The presence of suitable habitat along Highway 340 makes this breeding population of yellow rails one of the most accessible in North America. In addition, a small portion of land (0.17 km<sup>2</sup>) on the east side of the highway, just south of Douglas, has been made accessible to birders



*Figure 2: Area visited by birders at Douglas Marsh.*

by the landowner (Figure 2). Thus, in recent years this site has become a “celebrated locale” for yellow rail birding experiences, and is often included as an important stop during birding tours that pass through Manitoba (Manitoba Avian Research Committee 2003, 156). However, following a change in land ownership in 2002 the land directly opposite on the west side of the highway, which had in the past has also been available to birders, has been restricted by “No Trespassing” signs.

Birding for yellow rails takes place at night, when the males vocalize. Due to the species’ elusive nature, birders who wish to observe the species visually often employ spotlights, gradually pinpointing locations from successive vocalizations of an individual yellow rail. The authors of this paper has observed that some birders will also attempt to coax males from their cover by playing vocalization recordings or using stones to imitate vocalizations. The Douglas Marsh Community Action Committee was initially formed due to a concern of nest trampling by birders attempting to observe yellow rails visually at Douglas Marsh (J. Horton, pers. com.). Cochrane Environmental Consultants (1998) reported one observation of a trampled nest in their report.

## Methods

A four-page questionnaire, composed of two main sections, was administered to birders by intercepting them when they arrived at Douglas Marsh. Section One, answered when birders arrived at the site, included demographic, type of birding group, previous birding experience and expectation questions. Type of birding group options were “commercial birding trip”, “non-commercial, organized birding trip”, “single individual” or “with friends and/or family”. Previous experience questions were included to establish a simple specialization continuum along which to analyse expectation, satisfaction and management opinions. Questions included frequency of birding, interest in birding and nature, level of knowledge about yellow rails and Douglas Marsh, and previous learning regarding yellow rails. Expectation questions asked the participants to rate the importance of the following: “view a yellow rail”, “view many yellow rails”, “hear a yellow rail”, “view a variety of birds”, “hear a variety of birds”, and “view a variety of wildlife.” The expectation options provided were “very unimportant”, “somewhat unimportant”, “neutral”, “somewhat important”, and “very important”.

Section Two, answered following the birding experience, included satisfaction and management questions. Expectation and satisfaction questions were linked. Respondents were asked to report their satisfaction on the same expectation items from Section One; expectation options were “very dissatisfied”, “somewhat dissatisfied”, “neutral”, “somewhat satisfied”, and “very satisfied”. Based on the importance-performance model (Martilla and James 1977), mean expectation and satisfaction scores for each item were plotted against each other to assess the respondents’ viewing experiences at Douglas Marsh.

Data were first analysed for frequencies by question. Birders were then classified into two groups, 1) birders on commercial trips and 2) non-commercial trip birders. Chi-square tests (significance level = 0.05) were then used to examine for differences between the two groups that might point towards management and education needs.

## Results

A total of 65 questionnaires were completed: 34 in 2004 and 31 in 2005. There was a 7.5% refusal rate. Data for the two years were merged given the small sample size.

**Demographics:**

Most of the birders visited Douglas Marsh as part of a commercial birding trip (44%), followed by single individuals (24%), groups of friends/family (22%), and non-commercial, organized birding trips (10%). When grouped together however, the non-commercial trip birders formed 66% of respondents. Similar to other birder studies, all participants were above middle age: 6.2% reported their age as 40-49, 56.9% were 50 to 59 years of age, and 36.9% indicated they were 60 to 69. There was a statistically significant difference in age between birders on commercial trips and other birders; non-commercial trip birders were slightly older ( $\chi^2=7.017$ ,  $df=2$ ,  $p=0.030$ ).

**Birding experience:**

Table 1 indicates that participants in both groups were characteristically experienced birders. Approximately 78% of participants had been on more than ten birding trips. Almost half (43.1%) of the respondents had previously taken part in six or more commercial birding trips and 90.7% had travelled outside their country of origin to engage in birding activities. There was a statistically significant difference between the two birder groups with respect to previous participation on commercial birding trips. While 65.5% of birders on commercial trips had previously participated on six or more commercial trips, only 25.0% of non-commercial birders had done so ( $\chi^2=21.651$ ,  $df=4$ ,  $p<0.000$ ).

No respondents indicated their level of birding expertise as “beginner” or “occasional”, while 77.0% of the participants indicated they were “experienced” or “very experienced”. The lack of beginner and occasional birders prevented the creation of a simple specialization continuum. There was no statistically significant difference between the two birder groups for indicated level of birding expertise.

Table 2 reveals which type of medium participants learned about yellow rails before visiting Douglas Marsh (if at all). Although the samples for each learning medium were too small to perform tests for statistical differences, the results indicates that 23.7% more birders on commercial trips had spent time learning about yellow rails from a guide / interpreter, 23% more from field guides, and 16.6% more from magazines or journals, than non-commercial birders.

**Environmental attitudes / knowledge:**

Table 3 shows that respondents rated themselves as very interested and concerned about birds and the environment, somewhat knowledgeable about yellow rails (commercial birders: 44.8% somewhat high; non-commercial birders: 44.3% somewhat high) and relatively uninformed about

**Table 1:** Results of statements regarding birder experience.

Question	Percentage of Respondents			$\chi^2$
	Birders on Commercial trips	Non-commercial birders	Combined Groups	
About how many birding trips have you been on before?				0.103
None	0.0	0.0	0.0	
1 to 5	6.9	0.0	3.1	
6 to 10	27.6	11.1	18.5	
11 to 15	13.8	13.9	13.8	
More than 15	51.7	75.0	64.6	
About how many commercial, organized birding trips have you participated?				0.000
None	0.0	38.9	21.5	
1 to 5	34.5	36.1	35.4	
6 to 10	41.4	25.0	32.3	
More than 10	24.1	0.0	10.8	
About how many times have you travelled outside your country of origin on birding trips?				0.155
None	6.9	11.1	9.2	
1 to 5	65.5	52.8	58.4	
6 to 10	27.6	36.1	32.3	
More than 10	0.0	0.0	0.0	
Please indicate your level of birding expertise:				0.066
Beginner	0.0	0.0	0.0	
Occasional (can identify a few birds and their calls)	0.0	0.0	0.0	
Relatively Experienced (can identify numerous birds and their calls)	34.5	13.9	23.1	
Experienced (can immediately identify many birds and their calls)	31	58.3	46.2	
Very Experienced (can immediately identify many birds and their calls; birding is an important part of my lifestyle)	34.5	27.8	30.8	

the Douglas Marsh ecosystem (commercial birders: 79.3% low scores combined; non-commercial birders: 88.9% low scores combined). There were no statistically significant differences between the two birder groups for these items.

When asked about the potential impact of trampling (given that yellow rails and other marsh birds nest on the ground and birding takes place in the dark), 75.5% of birders on commercial trips and 13.9% of non-commercial birders agreed that their own group could have a somewhat high to very high impact; the difference in agreement for this item is statistically

**Table 2:** Previous learning about yellow rails.

Learning Medium	Percentage of Respondents		
	Commercial	Non-commercial	Groups Combined
Never before	9.1	10.7	10.1
Guide / interpreter	27.3	3.6	14.3
Magazines / journals	27.3	10.7	18.2
Internet	9.1	10.7	10.2
Field guides	40.9	17.9	28.4
Other books	13.6	10.7	12.2

**Table 3:** Attitudes toward the environment and Douglas Marsh.

Statement	Percentage of Respondents					χ <sup>2</sup>
	Very Low	Somewhat Low	Somewhat High	Very High	Not Sure	
Your interest in birds:						
Birders on commercial trips	0.0	0.0	6.9	93.1		0.3
Non-commercial birders	0.0	0.0	13.9	86.1		66
Your interest in nature:						
Birders on commercial trips	0.0	0.0	6.9	93.1		0.3
Non-commercial birders	0.0	0.0	13.9	86.1		66
Your concern for the environment:						
Birders on commercial trips	0.0	0.0	6.9	93.1		0.0
Non-commercial birders	0.0	0.0	25.0	75.0		53
Your level of knowledge about the yellow rail:						
Birders on commercial trips	13.8	20.7	44.8	20.7		0.0
Non-commercial birders	36.1	13.9	44.4	5.6		90
Your level of knowledge about the Douglas Marsh ecosystem:						
Birders on commercial trips	27.6	51.7	13.8	6.9		0.3
Non-commercial birders	50.0	38.9	8.3	2.8		02
Your opinion of the following potential impacts to the Douglas Marsh habitat:						
i. Vegetation trampling by your own group						
Birders on commercial trips	6.9	27.6	31.0	34.5	0.0	0.0
Non-commercial birders	36.1	50.0	2.8	11.1	0.0	00
ii. Vegetation trampling by other groups						
Birders on commercial trips	6.9	34.5	24.1	34.5	0.0	0.2
Non-commercial birders	25.0	22.2	27.8	25.0	0.0	07
iii. Highway traffic						
Birders on commercial trips	6.9	20.7	27.6	27.6	17.2	0.5
Non-commercial birders	0.0	25.0	36.1	25.0	13.9	36
iv. Wetland drainage						
Birders on commercial trips	0.0	6.9	6.9	69.0	17.2	0.2
Non-commercial birders	11.1	2.8	11.1	50.0	25.0	35
v. Domestic farm animals						
Birders on commercial trips	0.0	6.9	24.1	55.2	13.8	0.0
Non-commercial birders	11.1	25.0	13.9	36.1	13.9	73

significant ( $\chi^2=20.367$ ,  $df=3$ ,  $p<0.000$ ). There was similar agreement between birders on commercial trips and non-commercial birders regarding potential trampling impact for groups other than their own; 58.5% of birders on commercial trips and 52.8% of non-commercial birders felt that groups other than their own had a somewhat high to very high potential for impact.

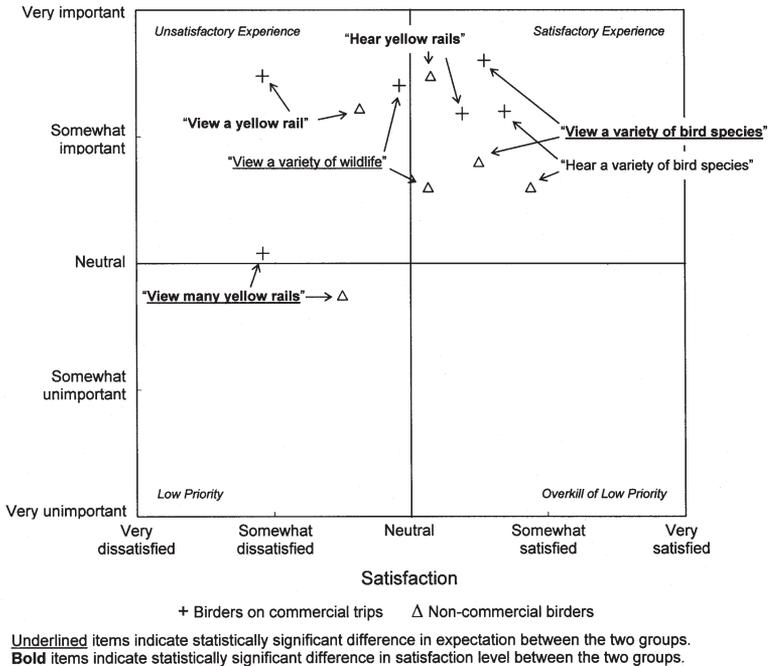
With respect to potential impacts of other human activities on the Douglas Marsh habitat, responses were varied but no statistically significant differences existed: respective percentages for birders on commercial trips versus non-commercial birders who indicated “somewhat high” to “very high” impact were 55.2% and 61.0% for “highway traffic”, 75.9% and 61.1% for “wetland drainage”, and 79.3% and 50.0% for “domestic farm animals”.

### **Expectations / satisfaction:**

Using the importance-performance model (Martilla and James 1977), Figure 3 presents the expectation-satisfaction data comparing birders on commercial trips versus other birders. The most important expectation for birders on commercial trips was “view a variety of bird species” ( $x=4.59$ ), followed by “view a yellow rail” ( $x=4.52$ ), “view a variety of wildlife” ( $x=4.38$ ), “hear a variety of bird species” ( $x=4.17$ ), “hear yellow rails” ( $x=4.24$ ), and “view many yellow rails” ( $x=3.03$ ). The most important expectation for non-commercial trip birders was “hear yellow rails” ( $x=4.28$ ), “view a yellow rail” ( $x=4.22$ ), “view a variety of bird species” ( $x=3.81$ ), “hear a variety of bird species” ( $x=3.61$ ), and “view a variety of wildlife” ( $x=3.58$ ). “View many yellow rails” was reported as unimportant ( $x=2.69$ ).

Statistically significant differences in expectation between birders on commercial trips and non-commercial trip birders exist for “view a variety of bird species” ( $\chi^2=16.246$ ,  $df=3$ ,  $p=0.001$ ), “view many yellow rails” ( $\chi^2=11.914$ ,  $df=4$ ,  $p=0.018$ ), and “view a variety of wildlife” ( $\chi^2=10.372$ ,  $df=4$ ,  $p=0.035$ ). In each case birders on commercial trips possessed higher expectations than non-commercial trip birders; for “view many yellow rails” birders on commercial trips possessed an important expectation, while non-commercial trip birders considered it to be unimportant.

The highest satisfaction level for birders on commercial trips was “hear a variety of bird species” ( $x=3.58$ ), followed by “view a variety of bird species” ( $x=3.52$ ), and “hear yellow rails” ( $x=3.41$ ). “View a variety of wildlife” ( $x=2.83$ ), “view a yellow rail” ( $x=1.97$ ), and “view many yellow rails” ( $x=1.90$ ) were deemed unsatisfactory. The highest satisfaction for non-commercial trip birders was also “hear a variety of bird species” ( $x=3.89$ ), followed by “view a variety of bird species” ( $x=3.56$ ), “hear yellow



**Figure 3:** Expectation-satisfaction scatter plot for birders on commercial trips versus other birders.

rails” ( $x=3.15$ ), and “view a variety of wildlife” ( $x=3.13$ ). “View a yellow rail” ( $x=2.61$ ), and “view many yellow rails” ( $x=2.50$ ) were unsatisfactory.

Statistically significant differences in satisfaction levels between birders on commercial trips and non-commercial trip birders exist for “view a yellow rail” ( $\chi^2=20.628$ ,  $df=3$ ,  $p<0.000$ ), “view a variety of bird species” ( $\chi^2=22.000$ ,  $df=4$ ,  $p<0.000$ ), “hear yellow rails” ( $\chi^2=15.198$ ,  $df=4$ ,  $p=0.004$ ), and “view many yellow rails” ( $\chi^2=8.615$ ,  $df=2$ ,  $p=0.013$ ). Birders on commercial trips had a lower satisfaction level for “view a yellow rail”, “view a variety of bird species” and “view many yellow rails”, while non-commercial birders had a lower satisfaction for “hear yellow rails”.

## Discussion

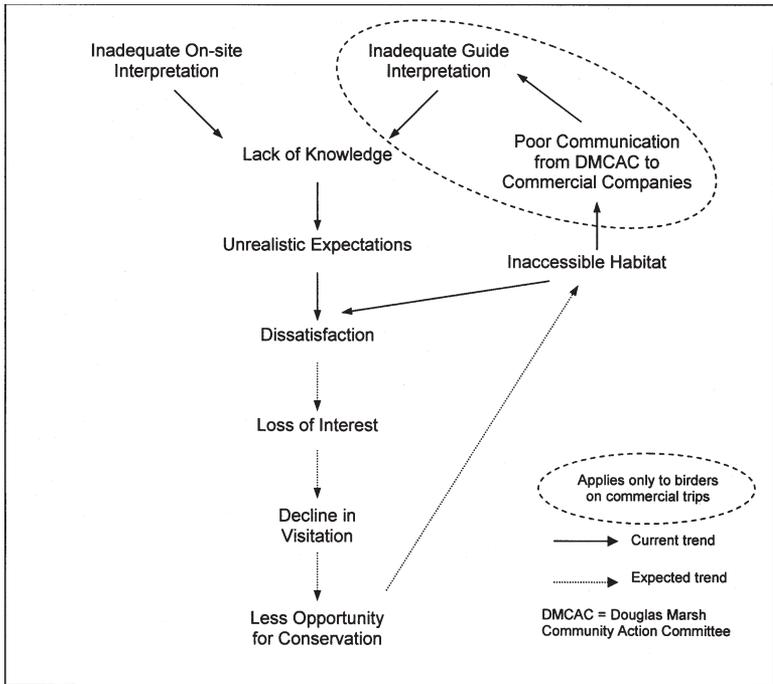
Analysis of the data presented here reveals an important conservation issue: the possible loss of interest in Douglas Marsh by birders, particularly by commercial birding trips. This possible loss of interest is revealed in

the unsatisfactory experiences observing yellow rails by the respondents of the questionnaire and reinforced by comments made to the author by the leader of one of the commercial bird watching tours: "Douglas Marsh has not been what it used to be... Yellow Rail [sic] has been so tough the last few years that we put less emphasis on it." (J. Langham, pers. com.). A loss of interest on the part of birders could lead to a general lack of local public interest in conservation of the habitat as visitation and publicity decline. This concern can be avoided through active management in the form of education and effective communication. The theoretical benefits of eco-education as a conservation management tool have been explored by authors such as Forestell (1993), Thorn *et al.* (1994) and Orams (1996, 1997), and successfully tested by Orams and Hill (1998), who found that pre-visit education limited touching of dolphins at a dolphin feeding site.

Figure 4 illustrates the factors leading toward a trend of disinterest in the case of Douglas Marsh. Important factors include inadequate on-site interpretation, inadequate guide interpretation, and lack of knowledge, which may lead to unrealistic expectations on the part of birders visiting the site. Unrealistic expectations are evident in the high importance of "view a yellow rail" on the part of both the commercial trip and other birders. While the majority of both groups of birders indicated they were experienced, possessed a relatively high level of knowledge about the yellow rail, spent time learning about the species, and were concerned about the environment, they apparently did not possess a sufficient understanding of yellow rail behaviour to lower their expectations to observe one visually. The respondents' lower reported knowledge of Douglas Marsh and local ecological impacts is indicative of a need for education about the local context before arriving at the site.

Education should be an effective means to temper unrealistic expectations. This needs to occur both at the site and through guides on commercial birding trips. On-site interpretive education could incorporate reflective signs and pamphlets at the gate and/or community volunteers present during high visitation times. Both on-site and commercial guide interpretation should emphasise the cryptic behaviour of yellow rails and the fragility and vulnerability of their nests (along with other resident ground-nesting species). Pre-trip education could be supplied by guides for commercial birders by way of websites, research papers and field guides.

Beyond the general interpretation above, birders on commercial trips and other birders require different emphases in education treatments. For birders on commercial trips viewing their birding quarry (be it yellow rails or other species) is of paramount importance. The top three expectations for this group are the "view" expectations (variety of birds, a yellow rail, and wildlife). The "hear" expectations are less important; "hear a yellow



**Figure 4:** Elements of declining interest, visitation and opportunity for conservation at Douglas Marsh.

rail” is rated even less important than “view a variety of wildlife”. A high expectation placed on visual observation of a yellow rail will invariably lead to a low level of satisfaction due to the remote probability of viewing an individual. For this group further emphasis should be placed on the rare opportunity provided by Douglas Marsh to access yellow rail habitat for the purpose of *listening* to their unique vocalizations. If the “hear” expectations become the more important grouping of expectations, with the “view” expectations less so, satisfactions will likely be higher, given realistic expectations. Hearing yellow rails, although given less importance than viewing yellow rails and other species, currently receive satisfactory scores from birders on commercial trips.

Birders on non-commercial trips reported their most important expectation as “hear a yellow rail” and indicated that they were generally satisfied with what they heard of the species. They also indicated that “see a yellow rail” was very important, and can therefore also benefit from interpretation that deemphasises visually observing yellow rails. However, for this group management needs to address the lack of concern regarding

trampling impacts of their own groups; this is evidence again of insufficient appreciation that yellow rail nests are essentially invisible in the dark, underneath a canopy of dead vegetation, and that individual rails will rarely flush to indicate nest locations.

Currently, inaccessible habitat at the site likely compounds the dissatisfaction of visually observing a yellow rail, particularly as the research indicates that yellow rails prefer habitat on the west side of the highway, recently closed off to the public by new landowners (Malcolm and Wilson 2004). This is principally applicable to birders on commercial trips, led by guides who have been able to access the western habitat in the past. More efficient communication by the Douglas Marsh Community Action Committee with commercial companies known to visit the site should place guides in a better position to prepare their clients before arriving. This communication should include information regarding appropriate interpretation (to give beforehand and direct their clients to on-site) to provide context and achieve the goal of realistic expectations.

Since the land within Douglas Marsh is privately owned, maintaining public interest in conserving the habitat is important. Without public interest and support there is less impetus for agencies such as Manitoba Habitat Heritage Corporation and Manitoba Conservation to engage in collaborative initiatives with landowners to conserve the habitat.

## **Conclusion**

This research reveals the utility of examining linked expectation-satisfaction responses of birders. When coupled with previous experiences and opinions toward conservation issues management needs can be identified. In this case a combination of directed on-site and guide-based interpretation, along with effective communication between local stakeholders and commercial companies, was identified as a means to foster realistic visitor expectations, heighten visitor satisfaction, and maintain visitor interest in yellow rail birding and conservation at Douglas Marsh.

The research also reveals differences in previous birding experiences, expectations, satisfaction levels, and opinions between birders on commercial trips and non-commercial trip birders. The human dimensions of these two groups of birders should be investigated further for trends that can inform site development and management in various situations.

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## References

- ALVO, R. and ROBERT, M. 1999 *Status Report on the Yellow Rail (Coturnicops noveboracensis) in Canada* (Ottawa: Committee on Status of Endangered Wildlife in Canada (COSEWIC) and Canadian Wildlife Service, Quebec Region)
- BART, J., STERN, R.A., HERRICK, J.A., HEASLIP, N.A., BOOKHOUT, T.A. and STENZEL, J.R. 1984 'Survey methods for breeding yellow rails' *Journal of Wildlife Management* 48(4), 1382-1386
- BOOKHOUT, T. 1995. 'Yellow rail (*Coturnicops noveboracensis*)' No. 139 in *The Birds of North America*, eds. A. Poole and F. Gill (Philadelphia and Washington, DC: The Academy of Natural Sciences and The American Ornithologists Union)
- BOOKHOUT, T.A., and STENZEL, J.R. 1987 'Habitat and movement of breeding yellow rails' *Wilson Bulletin* 99(3), 441-447
- BOWLES, M.L., DIERSING, V.E., EBINGER, J.E. and SCHULTZ, H.C. Eds. 1981 *Endangered and Threatened Vertebrate Animals and Vascular Plants of Illinois* (Springfield, IL: Illinois Department of Conservation)
- BOXALL, P. C., STELFOX, H. A. and HVENEGAARD, G. T. 1991 *A Socioeconomic Study of Urban Participants in the 1988 Christmas Bird Count in Alberta*. Socioeconomic Technical Report No. 5 (Edmonton, AB: Alberta Forestry, Lands and Wildlife)
- BRYAN, H. 1977 'Leisure value systems and recreational specialization: the case of trout fishermen' *Journal of Leisure Research* 9, 174-187
- BUTLER, J. R., and FENTON, G. D. 1987 'Bird watchers of Point Pelee National Park, Canada: their characteristics and activities with special consideration to their social and resource impacts' *Alberta Naturalist* 17(3), 135-146
- CEBALLOS-LASCURAIN, H. 1996 'Introduction', in *Ecotourism: A Guide for Planners and Managers*, eds. K. Lindberg, M. Epler Wood and D. Engeldrum (North Bennington, VT: The Ecotourism Society)
- COCHRANE ENVIRONMENTAL CONSULTANTS INC. 1998 *Environmental Impact Assessment for the Upgrading of PR 340* (Winnipeg, MB: Cochrane Environmental Consultants Inc.)

- COLE, J.S. and SCOTT, D. 1999 'Segmenting participation in wildlife watching: A comparison of casual wildlife watchers and serious birders' *Human Dimensions of Wildlife* 4(4), 44-61
- DOLINSKY, A.L. and CAPUTO, R.K. 1991 'Adding a competitive dimension to Importance-Performance Analysis: an application to traditional health care systems' *Health Marketing Quarterly* 8, 61-77
- DUFFUS, D. A. and DEARDEN, P. 1990 'Non-consumptive wildlife-oriented recreation: A conceptual framework' *Biological Conservation* 53, 213-231
- DUKE, C.R. and PERSIA, M.A. 1996 'Performance-Importance Analysis of escorted tour evaluations' *Journal of Travel & Tourism Marketing* 5, 207-223
- ENNEW, C.T., REED, G.V. and BINKS, M.R. 1993 'Importance-Performance Analysis and the measurement of service quality' *European Journal of Marketing* 27, 59-70
- EUBANKS, Jr., T.L., STOLL, J.R. and DITTON, R.B. 2004 'Understanding the diversity of eight birder sub-populations: socio-demographic characteristics, motivations, expenditures and net benefits' *Journal of Ecotourism* 3(3), 151-172
- FORESTELL, P. 1993 'If Leviathan has a face, does Gaia have a soul?: incorporating environmental education in marine eco-tourism programs' *Ocean and Coastal Management* 20, 267-282
- FREYER, R. 1937 'The yellow rail in southern Manitoba' *Canadian Field Naturalist* 51, 41-42
- GIBBS, J.P., SHRIVER, W.G. and MELVIN, S.M. 1991 'Spring and summer records of the yellow rail in Maine' *Journal of Field Ornithology* 62, 509-516
- GOLDALE, C.M., DECHANT, J.A., JOHNSON, D.H., ZIMMERMAN, A.L., JAMISON, B.E., CHURCH, J.O. and EULISS, B.R. 2002 *Effects of Management Practices on Wetland Birds: Yellow Rail* (Jamestown, ND: Northern Prairie Wildlife Research Centre)
- HORTON, J. personal communication. Founding and Board Member, Douglas Marsh Community Action Committee, Brandon, MB.
- HUDSON, S. and SHEPHARD, G.W.H. 1998 'Measuring service quality at tourist destinations: an application of Importance-Performance Analysis to an alpine ski resort' *Journal of Travel & Tourism Marketing* 7, 61-77
- HVENEGAARD, G.T. 2002 'Birder specialization differences in conservation involvement, demographics, and motivations' *Human Dimensions of Wildlife* 7, 21-36
- HVENEGAARD, G.T. and DEARDEN, P. 1998 'Ecotourism versus tourism in a Thai national park' *Annals of Tourism Research* 25(3), 700-720
- HVENEGAARD, G. T. and Manaloor, V. 2001 *The Economic Benefits of the Beaverhill Lake Snow Goose Festival on Tofield, Alberta* (Camrose, AB: Augustana University College)
- HVENEGAARD, G. T., BUTLER, J. R. and KRYSTOFIAK, D. K. 1989 'The economic values of bird watching at Point Pelee National Park, Ontario' *Wildlife Society Bulletin* 17, 526-531

- HYDE, D. 2001 *Special Animal Abstract for Coturnicops novaboracensis (Yellow Rail)* (Lansing, MI: Michigan Natural Features Inventory)
- IBA CANADA. 2004 *Important bird areas of Canada*. (Available at: <http://www.ibacanada.com>, accessed 15 January 15 2006)
- KEHOE, F.P., SWANSON, L.A., FORBES, G.J., BOWES, S. and PEARCE, P.A. 1998 'New yellow rail, *Coturnicops noveboracensis*, site in Atlantic Canada' *Canadian Field Naturalist* 114(2), 331-332
- KELLERT, S. R. 1985 'Birdwatching in American society' *Leisure Sciences* 7, 343-360
- LANE, J. 1962 'Nesting of the yellow rail in southwestern Manitoba' *The Canadian Field Naturalist* 76, 189-191
- LANGHAM, J. personal communication. Professor of Biological Sciences, College of Natural Sciences and Mathematics, California State University; Tour Leader, Victor Emanuel Nature Tours (VENT)
- LINDBERG, K. and HAWKINS, D.E. 1993 *Ecotourism: A Guide for Planners and Managers, Volume 1*. (North Bennington, VT: The Ecotourism Society)
- MACKAY, K. and CROMPTON, J. 1988 'A conceptual model of consumer evaluation of recreation service quality' *Leisure Studies* (7), 41-49
- MALCOLM, C.D. 2003 *The current State and Future Prospects of Whale-Watching Management, With Special Emphasis on Whale-Watching in British Columbia*. PhD dissertation, University of Victoria, Victoria, BC
- MALCOLM, C.D. and WILSON, H.F. 2004 *Yellow Rail Census Habitat Mapping at Douglas Marsh, Summer 2003 and 2004*. (Winnipeg, MB: Environment Canada, Habitat Stewardship Program for Species-at-Risk)
- MANITOBA AVIAN RESEARCH COMMITTEE 2003 *The Birds of Manitoba* (Winnipeg, MB: Manitoba Naturalists Society)
- MANNING, R.E. 1986 *Studies in Outdoor Recreation* (Corvallis, OR: Oregon State University Press)
- MARTILLA, J.A. and JAMES, J.C. 1977 'Importance-performance analysis' *Journal of Marketing* 41(1), 75-77
- MARTIN, D.W. 1995 'An Importance/Performance Analysis of service providers' *Perception of Quality Service in the in the Hotel Industry* (3), 5-17
- MCFARLANE, B.L. 1994 'Specialization and motivations of birdwatchers' *Wildlife Society Bulletin* 22, 361-370
- MCFARLANE, B.L. 1996 'Socialization influences of specialization among birdwatchers' *Human Dimensions of Wildlife* 1(1), 35-50
- MCFARLANE, B. L. and BOXALL, P.C. 1996 'Participation in wildlife conservation by birdwatchers' *Human Dimensions of Wildlife* 1(3), 1-14
- MINNESOTA DEPARTMENT OF NATURAL RESOURCES 1996 *Minnesota's List of Endangered, Threatened, and Special Concern Species* (St. Paul, MN: Minnesota Department of Natural Resources, Section of Ecological Services)
- ORAMS, M. 1996 'A conceptual model of tourist-wildlife interaction: the case for education as a management strategy' *Australian Geography* 27(1), 38-51
- ORAMS, M. 1997 'The effectiveness of environmental education: can we turn tourists into "greenies"?' *Progress in Tourism and Hospitality Research* 3, 295-306

- ORAMS, M.B. and HILL, G.E. 1998 'Controlling the ecotourist in a wild dolphin feeding program: is education the answer?' *The Journal of Environmental Education* 29(3), 33-38
- REMSEN Jr., J.V. 1978 *Bird Species of Special Concern in California: Yellow Rail* (Sacramento, CA: California Department of Fish and Game)
- REYNOLDS, P.C. and BRAITHWAITE, D. 2001 'Towards a conceptual framework for wildlife tourism' *Tourism Management* 22, 31-42
- ROBERT, M. and LAPORTE, P. 1999 'Numbers and movements of yellow rails along the St. Lawrence River, Quebec' *The Condor* 101, 667- 671
- SCOTT, D., DITTON, R.B., STOLLAND, J.R. and EUBANKS Jr., T.L. 2005 'Measuring specialization among birders: utility of a self-classification measure' *Human Dimensions of Wildlife* 10(1), 53-74
- THORN, T.F., BLAHNA, D.J. and JOHNSTON, B. 1994 'A process for developing wilderness user education plans' *Journal of Environmental Education* 25(2), 37-43