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BLUE JAY

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Front Cover: *Swainson's Hawk* *- Kerry Hecker*

Back Cover: *Prairie Rattlesnake* *- Laura Gardiner*

Timber Wolf *- Nick Saunders*

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Blue Jay

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Snowy Owl *- Anne Brigham*

SOCIAL SCIENCE

SPECIES AT RISK POLICY: A SASKATCHEWAN CASE STUDY

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In late December 2002, Canada passed the federal Species at Risk Act (SARA). This came almost ten years after Canada ratified the United Nations Convention on Biological Diversity (UNCBD), under which it committed to create new domestic legislation. SARA is aimed at the protection and recovery of species at risk across all of Canada, but the law only extends mandatory protection to species and critical habitat found on federal lands such as parks, reserves and post offices. The legal teeth of SARA can bite into other land parcels, like provincial Crown lands or private property via a "safety net" clause that states SARA "can only apply on provincial or private lands if provincial legislation or other measures are not already in place to protect the species, and if cooperative stewardship measures fail.[1]" However, this clause has never been used and, thus, the protection of endangered species on private lands, where numerous species live, is left to the provinces and territories to regulate.

In 1996, under the *Accord for the Protection of Species at Risk*, the federal, provincial, and territorial governments agreed to a common and collaborative approach to protecting at risk species in Canada. In part, the goal is to have each province and territory create stand-alone legislation complementary to SARA and complementary to each other. However, in 2012 only six provinces and one territory have created stand-alone legislation and only Ontario and the Northwest Territories have updated their legislation post-SARA. The four laggard provinces are British Columbia, Alberta, Saskatchewan and Prince Edward Island, while Yukon and Nunavut join their ranks as the two territories without stand-alone legislation. It is true that all provincial and territorial governments have some form of protection for species at risk, often times inside wildlife, forestry or parks acts, but this is not in line with the conditions of the Accord or with the responsibility to safeguard biodiversity, as agreed to in the UNCBD.

When laggard provinces create stand-alone legislation, what kind of legislation should they create? Models range from the American-style command-and-control endangered species legislation that Ontario adopted in 2007 to the more relaxed and stewardship/public lands-focused policy in Manitoba. Each province in Canada has a unique landscape, both ecologically and politically, so it is not surprising that different provinces adopt different legislation. However, since biodiversity is important to all provinces and because Canada agreed to safeguard biodiversity in the UNCBD, it is necessary for all governments to work together and implement policies aimed at the protection and recovery of species at risk.

Using Saskatchewan as a case study, this paper examines the attitudes of

registered voters toward one important segment of the larger biodiversity sphere: species at risk. These species are in the greatest danger of going extinct and action must occur quickly to recover and protect these species. In order to create new species at risk legislation, as Saskatchewan intends to do, it is important to account for a cross section of attitudes held by urban, rural, and agricultural voters as well as Aboriginal peoples, since all residents in Saskatchewan will be affected by the loss of biodiversity. The 369 surveys responses in this study are an attempt to uncover urban and rural attitudes among non-agricultural residents. Responses indicate that individuals are largely in favor of protection of other species and the creation of conservation laws, but are less supportive of private land regulations. Demographic variables generally do not provide statistically significant explanation for attitudes, save for political ideology and rural geography in relation to property regulation. After a brief review of the literature and explanation of the methodology used in the study, the results are presented followed by a discussion of the implications for Saskatchewan environmental policy.

Case Study & Research Questions

Since Saskatchewan is one of the four provinces that have no stand-alone endangered species policy it is in a good position to make future policy consistent with SARA and the UNCBD. Moreover, Saskatchewan has a vast wealth of wildlife and plants that are of critical importance to Canada and to the rest of the world. Presently there are 76 SARA listed species (two amphibians, seven arthropods, thirty birds, nine fish, eight mammals, one moss, three reptiles, and 16 plants) that reside either solely or partially in Saskatchewan. The provinces' Wildlife Act also includes 15 species at risk, three of which are already extirpated (Greater Prairie Chicken, Black-footed Ferret, and the Plains Grizzly Bear). Of the remaining 12, five are endangered birds, one is a mammal and six are plants. The Act mandates that these plants and animals, although not their habitat, be protected from being disturbed, collected, harvested, captured, killed and exported. However, no recovery plans have been created for any of these species. Thus, under the Wildlife Act and under SARA, endangered species and their habitat are not being effectively protected.

Within Canada, Saskatchewan is home to native grasslands, of which only 20% remains in the wild. This is wreacking havoc on grassland birds and, according to the North American Breeding Bird survey, "grassland birds show the most consistent widespread and steepest decline of any group of birds in North America.[2]" One prominent example is the decline of the Burrowing Owl because its population has declined 93% in the last 20 years – largely due to changes in the prairie landscape, which have resulted in an 80% decline in prairie grass and a 40% decline in wetlands.[3] Also significant is that Saskatchewan and Alberta have the last surviving Sage-grouse in Canada, and it is estimated that the population will be extirpated in the next few years.[4] Threats to biodiversity are only increasing in the prairies and Saskatchewan needs policy in place to protect was is left and try to recover some of what is being lost.

Saskatchewan is also a valuable case study because the province is home to large number of private landowners and private land managers (in the case of those who lease crown lands).

In southern Saskatchewan about 80% of the land is privately owned or managed. This land is predominately farmland, as 46% of the province's total land is devoted to agriculture (crops and pasture). In fact, only 8% of Saskatchewan's total land is protected area (national or provincial parks and wildlife habitat areas). Even though urban landowners do not take up a lot of space (they comprise less than 0.5% of total land in the province), urban areas are where over 85% of the population lives. Thus, to some extent the voting power lies in urban areas making the attitudes of urban residents important.

The main research question of this paper is: how do registered voters in Saskatchewan feel about (a) species at risk; (b) private property; and, (c) government regulation for the purposes of conservation? Based on other studies that measure attitudes toward the environment[5 6 7 8 9] three hypotheses are tested:

H1: Respondents will know very little about legislation or endangered species in Canada and Saskatchewan, but yet generally support the idea of protecting endangered species.

a) Rural people will know more than urban people about endangered species.

b) Women will be more supportive of protecting other species than men

H2: Respondents will not support the regulation of private land.

(a) Rural respondents will be less supportive than urban respondents.

(b) Conservative respondents will be less supportive than liberal respondents.

H3: Respondents will support the creation of laws for the protection of species at risk.

(a) Rural respondents will be less supportive than urban respondents.

(b) Conservative respondents will be less supportive than liberal respondents.

Methodology

Saskatchewan, with a population of just over 1 million people, has 15 cities in total, the three largest of which are Saskatoon, Regina, and Moose Jaw. For this study 250 registered voters were sampled in four cities for a total of 1000 sampled voters. Swift Current was selected for inclusion as a fourth case on the basis that is the largest city in the southwest part of the province, where most species at risk are found. Moreover, this bifurcates the sample between urban centers (Saskatoon and Regina) and more rural centers (Moose Jaw and Swift Current). The focus of the study is non-agricultural residents so the sample is not split between urban residents and farmers/ranchers, but just between residents who live in bigger cities (more urban) and residents who live in smaller cities (more rural). A brief description of each city is provided in Table 1.

A package was mailed to the home address of each randomly selected voter, including a letter briefly describing

Table 1: Description of Case Study Cities in Saskatchewan

	Regina	Saskatoon	Moose Jaw	Swift Current
Population 2011	193, 000	234,000	37,000	15, 503
Total area	145 km sq	170 km sq	46 km sq	42 km sq
Major industries	Oil, natural gas	Potash, oil	Oil, agriculture	Agriculture
Ecosystem	Moist mixed grassland	Moist mixed grassland	Moist mixed grassland	Mixed grassland

the study, a two-page survey, a one-page demographic questionnaire, and a stamped return envelope. All 1000 surveys were mailed in January 2012, and in March 2012 a shortened version of the survey was sent to all non-respondents. In total, 369 surveys were returned for a response rate of 37%. The most surveys were received from Saskatoon with the least from Swift Current, but overall a similar number was returned from each city: out of the 369 responses there was 25% from Moose Jaw, 24% from Regina, 28% from Saskatoon and 22% from Swift Current. There are no reasons to suspect response bias as the non-responses is not limited to one segment of the population (see demographic variables).

All responses were coded, mostly on a scale from 1 (strongly disagree) to 4 (strongly agree) and entered into a SPSS spreadsheet. Only two questions were open ended: name an endangered species in Saskatchewan?; and, explain why species are endangered in Saskatchewan? Individual responses were recorded for all 369 respondents and examined as frequencies and via regression analysis with six demographic variables used as independent variables. The variable "urban" was coded 1 for Regina and Saskatoon, and 0 for Moose Jaw and Swift Current; "Gender" was coded as 0 for man and 1 for woman; "Age" was on a scale from 0 to 5 (the categories are in table 2); "Income" was on a scale from 0 to 3; "Education" was on a scale from 0 to 4; and "L-C" represents a self-reported "liberal-conservative" scale where 1 is liberal and 7 is conservative. The main dependent variables are attitudes to other species, attitudes toward private property and attitudes toward government regulation for the purposes of conservation. These variables are outlined in the tables below.

Results

The demographics of respondents varied greatly. Table 2 illustrates the variation between sample locations (the four cities) as well as the discrepancy between the sample population and the general population in Saskatchewan. Of particular interest is the age of the sample respondents, which is not representative of the population at large. Almost half the sample is older than 61 years old. This is not surprising for survey research, where it is expected that the retired population have more time (and perhaps desire) to participate in studies. The fact that the sample is skewed toward the older population is not necessarily a negative feature since it has been illustrated that older people are more likely to vote in elections.[10 11] Thus, if we are concerned with residents' attitudes because they are ultimately responsible for voting policy into effect, then the sample might be a better indicator of attitudes than a sample skewed toward youth attitudes. Moreover, outside of age, the sample population is generally representative of the overall population in Saskatchewan. This is important because there is adequate variation on all explanatory variables and because there is little reason to suspect response bias. For example, the sample is not predominately female New Democrats from urban areas. Instead, individuals from different political parties, different religious groups, and various education and income brackets responded.

Respondent attitudes, as frequencies, are presented in the aggregate (all four cities combined) and sub-grouped by hypotheses. Following a brief discussion of attitudes, regression analysis is used to explore statistical

relationships between demographics and various attitudes. Implications and conclusion are presented in the final section of the paper.

Hypothesis 1

As Table 3 shows, respondents knew very little about endangered species or endangered species policy in the province. It is true that 65% thought they could name a species, but some people misidentified a species. For example, five respondents listed "Snowy Owl," which is a species found in Saskatchewan but is nowhere near extinction. Another two respondents listed "Red Fox," which is another species in great abundance in the province. Moreover, not one respondent, out of 369 said "prairie grass" or listed another plant species, even though plants represent some of the most endangered species in the province. In fact, of the respondents

Table 2: Sample and Population Demographics

Demographic	Saskatoon	Regina	Moose Jaw	Swift Current	Total Sample	Sask
Gender						
Male	48%	48%	56%	66%	**54%**	49.5%
Female	52%	52%	44%	34%	**46%**	50.5%
Age						
18 - 30	2%	7%	4%	8%	**5%**	15%
31 - 60	48%	42%	53%	42%	**46%**	65%
>61	50%	51%	43%	50%	**49%**	20%
Income						Median income per capita is $35948
< 25	22%	24%	12%	15%	**20%**	
25 - 50	31%	37%	36%	31%	**33%**	
50 - 100	35%	24%	36%	36%	**32%**	
>100	12%	15%	16%	18%	**15%**	
Education						
Elementary	9%	7%	8%	11%	9%	22%
High school	25%	45%	25%	39%	33%	25%
College/ diploma	66%	48%	67%	50%	58%	53%
Religion						
Protestant	36%	46%	39%	43%	**41%**	47%
Catholic	26%	19%	23%	20%	**22%**	32%
Christian*	16%	13%	19%	28%	**19%**	4%
Other	22%	22%	19%	9%	**18%**	17%
Political Party						
Sask. Party	32%	35%	49%	68%	**45%**	64%
Liberal	14%	14%	7%	8%	**11%**	1%
NDP	45%	35%	35%	17%	**34%**	32%
Green	4%	7%	3%	2%	**4%**	3%
Other**	5%	9%	6%	5%	**6%**	0%

* Christian other than Catholic or Protestant

** This category includes "independent" as well as the few people who indicated parties like Marxist and Libertarian.

who could correctly identify an endangered species (only 48%), 78% listed the “Burrowing Owl.” It is good for the owl that so many people are aware of its plight, but somewhat surprising that so few other species could be named despite their endangered status.

Also surprising is that while 22% claimed to be familiar with SARA, 92% thought it applies to their property. This is important for two reasons: first, 70% of people admitted that they are unfamiliar with a federal law. Second, would have little interface with wildlife issues, it is far more likely that the Wildlife Act would pertain to them than SARA. This suggests that people in Saskatchewan are either misinformed or simply unaware of species at risk in the province.

Despite their lack of information about endangered species and legislation, respondents were generally quite supportive of conservation. Almost all landowners agreed that it is important for human beings to protect other

Table 3: Knowledge of, and attitudes toward, endangered species and legislation from respondents in 4 sample cities (aggregated)

Question	Agree/ Yes	Disagree/ No	Don’t Know
Are you familiar with the Saskatchewan Wildlife Act?	59%	24%	17%
Are you familiar with the Species at Risk Act?	22%	56%	22%
Can you name an endangered species in Saskatchewan?	65%	35%	0%
Can you name a reason why species are endangered in Saskatchewan?	47%	53%	0%
Do you think the Wildlife Act applies to your property?	66%	44%	0%
Do you think SARA applies to your property?	92%	8%	0%
Would you agree it is important for human beings to protect other species?	96%	3%	1%
Do you agree that other species have a right to exist?	82%	11%	7%
Is it okay for human beings to let other species go extinct because of human activities?	17%	70%	13%

rows may not add to 100% due to rounding

92% of the respondents were incorrect: SARA does not apply to private lands. Likewise, a majority of respondents claimed to be familiar with the Wildlife Act but only about the same number thought the Act applied to them. While in most cases these respondents

species. Such agreement suggests response bias where individuals are providing what they consider to be the “right” answer or the “socially acceptable” answer. Even if this is the case, there is still reason to suspect that a majority or respondents felt that

Table 4: Regression analysis for attitudes and knowledge

Variables	Urban St. Co°	Gender St. Co	Age St. Co	Income St. Co	Edu St. Co	L-C St. Co	Adj. R	F-test
Familiar with Wildlife Act?	-.08	.069	.173	.076	.04	-.003	.008	.826
Name a species in SK?	-.169*	-.007	.055	-.013	.149*	-.08	.014	1.350
Agree it is important to protect other species?	.082	.081	.022	.031	.028	.075	.017	.535
Agree other species have a right to exist?	-.048	.075	.022	-.025	-.099	-.024	.017	.534
Agree Extinction is okay?	.011	-.136	.091	.087	-.100	-.035	.04	1.109

° Standardized Co-efficient
* P<.10; **P<.05; ***P<.01

protection is important. Furthermore, most landowners felt that other species have a right to exist and were generally against human-caused extinction. This indicates strong support for the protection of other species in the province.

Ordinary Least Squared (OLS) regression analysis reveals that there is no statistically significant relationship between demographics, including urban-rural, and support for conservation. See table 4 for results. This means that women and liberals were no more likely than anyone else to know about legislation or support conservation. However, rural residents (those living in Moose Jaw and Swift Current) as well as the more educated were more likely to be able to name an endangered species in the province. But since the model is not significant it is difficult to interpret these patterns, and the results should not be emphasized.

Hypothesis 2

Overall, respondents had mixed feelings about private property. When asked if they thought private property is an absolute right only a fifth of respondents agreed, but when asked if property is more of an instrumental right, half agreed. See table 5 for results (including the wording of the questions). Nevertheless, in both questions a large number of individuals, a quarter for each question, were unsure of how they felt. Part of this may be due to the questions, which were fairly abstract and come from an interview instrument used in prior research. In order to clarify attitudes, respondents were asked if they agreed more with the absolute view, more with the instrumental view or would place themselves in the middle. In total, 35% felt closer to the instrumental view, 11% closer to the absolute view, 24% were in the middle, and 30% could still not decide. Thus, it is only possible to conclude that there is more support for the instrumental notion of private property than the absolute notion, but how strong that

Table 5: Attitudes toward private property by respondents in sample cities (aggregated)

Question	Agree/ Yes	Disagree/ No	Don't Know
Some people think of private property as an absolute or "God-given" right that must be respected by a legitimate government. What do you think of this view?	17%	55%	26%
Some people think of private property as a right created by government that can be changed over time according to the changing needs to society? What do you think of this view?	48%	20%	32%
Do you trust the government to protect private property rights?	86%	10%	4%
Do you think it is unfair to expect landowners to bear the cost of protecting endangered species on their own property?	62%	18%	20%

support is remains unclear. In contrast, respondents were much clearer in their attitudes toward trust. The vast majority of respondents say they trust the government to protect private property rights in the province.

In terms of the relationship between property and regulation, a majority of respondents felt that it would be unfair for the government to expect landowners to bear the cost of conservation on private lands. This is similar to prior research where landowners in Indiana and Utah[12] [13] as well as Ohio and Ontario[14] agreed that it is unfair for landowners to have to shoulder the burdens of conservation. Even though respondents agreed that property is something created by government and responsive to societal needs, there is more hesitation about actually expecting property owners to pay for the protection of a social good.

Unlike the models above, regressing demographic variables against property attitudes proved more fruitful. Gender and urban living significantly predict attitudes toward private property. And the relationship is in the expected direction, whereby urban respondents, those living in Regina and Saskatoon, were less likely to agree that property is an absolute right. And women were also less likely then men to agree that property is an absolute right. The models for instrumental property views and trust in government are not statistically significant, but political ideology is a significant predictor of attitudes toward fairness. The more conservative a respondent is, the more likely he or she is to agree that it is unfair for the government to expect landowners to bear the costs associated with conservation. Income was also significant, with wealthier respondents more likely to agree it is unfair, but no other variable was a significant predictor, including rural location.

Hypothesis 3

A large number of respondents thought that the government should be involved in conservation and almost as many thought the government should make laws to protect species. See table 7 for results. Far fewer, but still a

Table 6: Regression analysis for attitudes toward property

Variables	Urban St. Co°	Gender St. Co	Age St. Co	Income St. Co	Edu St. Co	L-C St. Co	Adj. R	F-test
Agree that property is an absolute right	-.17**	-.14*	-.10	.12	.06	-.47	.22	6.815***
Agree that property is an instrumental right	.066	.10	.090	.233**	.057	-.104	.03	1.684
Trust government to protect property rights	-.054	.094	.008	-.013	.049	.018	.013	.364
Agree it is unfair to landowners	.089	-.001	-.037	.081**	.062	.229**	.033	1.825**

° Standardized Co-efficient
* P<.10; **P<.05; ***P<.01

majority, of respondents, thought that the government should punish people who violate conservation laws. What is most revealing is the sudden drop in support from conservation laws (95% support) to laws with sanctions (60% support). In the latter category, almost a quarter of respondents where unsure, suggesting both that the question is too vague and/or that the actual sanction may be important, e.g. a small fine might be okay, but imprisonment might not be acceptable.

Examining the relationship between demographics and attitudes toward regulation, the only statistically significant model is attitudes toward conservation laws with sanctions. In this case, women and liberals were more likely to agree that punishment is okay. The models for government involvement in conservation and the creation of conservation laws were not significant so the findings about ideology and urban location cannot be clearly interpreted.

Discussion and Implications

There is limited support for the three hypotheses originally proposed. Regarding the first, respondents knew very little about species at risk and legislation but still supported protecting other species. However,

Table 7: Attitudes toward Conservation laws by respondents in sample Cities (aggregated)

Question	**Agree/ Yes**	**Disagree/ No**	**Don't Know**
Do you think the government should be involved in the conservation of species at risk?	95%	1%	4%
Do you think the government should make laws to protect species?	90%	3%	7%
Do you think the government should punish people who violate conservation laws?	60%	17%	23%

Table 8: Regression analysis for attitudes toward conservation laws

Variables	Urban St. Co°	Gender St. Co	Age St. Co	Income St. Co	Edu St. Co	L-C St. Co	Adj. R	F-test
Agree that government should be involved	.046	.008	.080	.053	.121	.205*	.024	1.67
Agree that government should make laws	.142*	.077	.005	.042	.030	.096	.003	.925
Agree that government can punish violators	-.035	.120**	-.015	-.103	.063	-.16**	.018	2.424**

° Standardized Co-efficient
* P<.10; **P<.05; ***P<.01

rural individuals did not know more about species than urban individuals. It could be the case that the sample is not adequately "rural" as all respondents lived inside a city of ten thousand people or more. More research is needed to compare across different land parcels like farms and ranches (agricultural rural), small towns (rural), suburban and urban areas. All types of landowners vote and, more importantly, all types of people interact with the environment in ways that effect species at risk.

Women in this study did not care more than men about the protection of species at risk. Empirical data has presented mixed results on gender and attitudes toward wildlife and endangered species. Olive[15] found that women care differently about different animals, showing great concern for a tortoise in Utah but virtually no support for endangered snakes in Ohio. Thus, it might matter specifically which species at risk are in question. To test this, future research should examine attitudes toward species like Burrowing Owls, Swift Fox, the Great Horned Lizard and other species at risk in the province. Men and women might feel differently about these species, implying that outreach and education should be targeted to certain groups. Also, if we know what women are supportive of specific birds or plants, then steps could be taken to involve women, either through financial contributions or directly through conservation initiatives.

Support for hypothesis two is mixed. Respondents were not overly supportive of the regulation of private property but, as predicted, rural individuals and conservatives were less supportive than urban and liberal respondents. Almost a majority of respondents felt that private property is an instrumental right, created by government, that can change over time as the needs to society change. Only rural landowners felt strongly about the absolute notion of property, and they were statistically more likely to agree with that viewpoint. Thus, there is not overwhelming support for regulation, but the fact that a majority disagreed with the absolute notion of property means there is political space, or at least some public support, for the regulation of private land in the province. However, 60 percent of respondents also felt that it would be

unfair to expect landowners to bear the costs associated with conservation. This was especially true for wealthy and conservative respondents. This suggests that the province is going to have to work with private landowners, especially in rural and politically conservative areas, to enhance stewardship. This might entail the use of incentives or cost-share program so that landowners do not have to finance conservation out-of-pocket.

Finally, regarding the third hypothesis, residents did support conservation law, but rural individuals and conservatives were no more or less supportive than urban individuals or liberals. Respondents seemed to favor government involvement in conservation as well as the creation of laws for conservation, but a smaller majority supported the use of sanctions against those who would violate conservation laws. Surprisingly, even though rural respondents were more likely to agree with the absolute notion of private property, they did not reject the creation of laws for conservation. Also, despite feeling it is unfair to burden private land with conservation costs, conservative respondents did not reject the creation of laws for conservation. They were, however, less supportive of the use of sanctions. So, again, this suggests that the new conservation laws might need to rely upon stewardship funds and incentive programs to ease the burden on private land. A carrot approach would likely be more popular than a stick approach, but a balance of carrots and sticks seems to have wide public support.

What does all of this suggest for stand-alone species at risk policy in Saskatchewan? What should new legislation look like? All respondents, regardless of age, income, ideology, education or location, felt that it is important to protect species and prevent (or at least not cause) their extinction. This is a good starting place for the creation of new species at risk legislation in the province. Moreover, the vast majority of respondents, despite demographics, supported government involvement in conservation and the creation of laws for the purposes of conservation. This too bodes well for the development of species at risk legislation.

The lack of information about endangered species and current legislation is both surprising and problematic. First, a majority of respondents could not correctly name a single endangered species in the province. Species at risk are obviously not a salient issue and, perhaps, not part of the education system or public discourse in the province. While it is good to know that people still support conservation despite their lack of knowledge, it will be crucial for individuals to know about species - what is endangered and why - in order to steward such species. This is particularly true in Saskatchewan where the prospects of property regulation are low and unpopular. Essentially, the government is not likely going to mandate that landowners conserve species on private property (command and control) so it will be up to individuals to willingly steward species. The chances of this leading to effective conservation are low, when so little information exists about endangered species. No-one can steward species that they have never heard of or cannot identify in the wild.

If education and outreach are part of the long-term species at risk strategy in Saskatchewan, then a SARA-like approach might be the best policy to

enact. SARA takes a stewardship-first approach to conservation[16, 17] by providing funds and incentives to assist conservation on non-public lands. Saskatchewan should follow this lead and back-up policy with regulations that apply to all land parcels, such a critical habitat designation and protection. The point is not to punish landowners with species on their land, but to reward them with financial assistance once it has been determined that their actions are maintaining critical habitat on the land. This will require the use of taxpayer money, so it is necessary to have wide public support in urban areas where most taxpayers live and to inform all taxpayers in the province about the value of species at risk and biodiversity. My data suggests there is public support for conservation laws but there is a lack of knowledge about species. Lastly, before any policy can be created, other stakeholders, most notably agricultural landowners, will need to be included in public discourse. Agricultural landowners are obviously rural (with the few exceptions of farmers who live Saskatchewan's larger cities) and rural parts of Saskatchewan tend to be quite conservative. In the 2011 election the Saskatchewan Party (far right) won the majority of seats (49), while the New Democratic Party (far left) won the remaining 9 seats - all in urban areas (in fact, all in Regina and Saskatoon). Given the conservative and rural nature of agricultural parts of Saskatchewan, future research will need to focus on their attitudes toward private property and regulation. It is also essential to uncover what kind of conservation solutions or policies rural or conservative respondents will support. While it may be that farmers and other rural residents are no more or less concerned about biodiversity than their urban counterparts, they may be less supportive of specific policy approaches, especially land-use regulations for rural residents[18] and proposals that seem to threaten their sense of identity, place, and way of life.[19 20] This all needs to be considered before Saskatchewan moves forward with new legislation.

Canada has a rich array of natural capital and, in 1992, became the first country to ratify the UNCBD, committing itself to the protection of biodiversity. The estimated value of the ecological goods and services in various Canadian eco-regions ranges from $2.6 billion per year from southern Ontario's Greenbelt[13], to $5.4 billion from B.C.'s lower mainland[14], to $703 billion per year from Canada's boreal forests.[21] As Canada continues to urbanize and as climate change and other factors threatens species from coast to coast, it is absolutely essential that individual provinces join forces with SARA to confront, and potentially reverse the loss of biodiversity. This study shows that Saskatchewan residents value other species and support the creation of conservation laws. It is time for the province to create stand-alone species at risk legislation that respects private property but at the same time meaningfully protects biodiversity.

Acknowledgements

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Piping Plover *- Randy McCulloch*

Swift Fox *- Lowell Strauss*

BIRDS

"DUMP" NESTS OF THE REDHEAD DUCK: ANECDOTAL COMPARISONS OF FACULTATIVE AND OBLIGATE BROOD PARASITISM AT DELTA MARSH, MANITOBA

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Introduction

Some avian brood-parasites lay their eggs in other nests of their own or of other species. People living in North America are familiar with the parasitic habits of the Brown-headed Cowbird (*Molothrus ater*). Cowbirds and about 100 species worldwide are obligate brood parasites that never build their own nests; instead, they lay all of their eggs in nests of other species, called the hosts, which rear their young for them. Another type of parasite found among birds is the facultative brood parasite. These species often lay some of their eggs in other nests of the same or related species, then build nests in which they lay and incubate clutches of their own. Not surprisingly, the facultative parasites have been more difficult to identify and study because their eggs are often identical in size and appearance with those already in the nests, as often those eggs were laid by another female of the same species. Radio-telemetry and molecular genetic techniques have facilitated studies of facultative brood parasitism and the determination of the importance of this breeding strategy for the species' reproductive success.[1,2] The Redhead (*Aythya americana*) is one of the most comprehensively studied species of facultative brood parasite among the ducks of North America,[1,3,4,5,6] but several other studies have revealed high levels of parasitic egg laying among other species of duck.[5,6,7,8]

The most comprehensive studies of the Redhead's parasitic egg laying were conducted by Milton Weller in southern Manitoba and in Utah in the 1950s, before radio telemetry was available for use in studies of birds,[3] and by Rodney Sayler and Michael Sorenson in southern Manitoba in the 1980s.[1,6] The latter researchers used time-lapse photography to study the behaviour of parasites at the nest[6,9] and Sorenson employed radio telemetry to track individual females to nests in which they laid eggs parasitically, and also in their own nests.[1] Results of these studies revealed that individual females choose one of three egg-laying strategies to maximize their reproductive output: females may (1) lay all of their eggs in their own nests — producing a "normal-sized" clutch, i.e., the "typical" pattern (Fig. 1), (2) lay eggs in other females' nests before building their own nests in which they lay and incubate their own eggs, or (3) lay all of their eggs in other females' nests, thus being completely parasitic. High water levels in spring, and the resulting production of abundant food spread among a large number of wetlands, and reduction in the risk of mammalian predation, influence the egg-laying strategy used by females in a particular year.[1,3]

An interesting behavior that is occasionally recorded involves multiple Redhead females and sometimes

Figure 1 - "Typical" nest of Redhead constructed over water at the edge of a clump of bulrushes, about 10 km south of Battleford, Saskatchewan, 14 June 1960.

also females of other species laying in the same nest until there are, in many cases, dozens of eggs piled in several layers. These nests, often referred to as "dump" nests,[6,10] begin as active nests and, hence, attract laying females. Eventually the host female cannot incubate any more eggs and, not knowing which ones to discard, abandons the nest; usually most or all of the eggs do not hatch.[3,6] Dump nests have puzzled biologists because so many eggs appear to be wasted. Here I describe a Redhead "dump" nest at Delta Marsh, Manitoba and compare anecdotally aspects of multiple laying by facultative and obligate brood parasites, using examples from the work of me and my students on cowbird parasitism at Delta Marsh.

Observations and Discussion

I recorded a Redhead dump nest in a small marsh near the southern edge of Delta Marsh, Manitoba (50°09´N, 98°18´W), in 2004, during a study of reactions of Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*) to experimental cowbird parasitism. I flushed a female Redhead off 13 Redhead eggs plus one Canvasback (*A. valisineria*) egg on 3 June (Fig. 2, top). On 9 June, no adult flushed and the nest appeared abandoned, but now there were 19 eggs — 16 Redhead eggs and two Canvasback eggs in the nest bowl plus one Redhead egg that had rolled out of the nest on to flattened vegetation but was still visible to one side (Fig. 2, bottom). Canvasback eggs are slightly larger and olive-green in colour compared with the ivory-coloured and glossy Redhead eggs (shown by arrows in Fig. 2). There were no eggs under the nest or in the water. The excluded Redhead egg may have been displaced during a struggle between the host female and a would-be parasite, or between two parasitic females attempting to lay at the same time.[3] The nest bowl was empty on 14 June, when I next inspected the nest. Redhead

Figure 2 - (top) Nest from which a female Redhead flushed that contained 13 Redhead eggs plus one Canvasback egg (indicated by the arrow), along the southern edge of Delta Marsh, Manitoba, 3 June 2004;
(bottom) The same nest containing 16 Redhead eggs plus two Canvasback eggs (indicated by arrows); another Redhead egg had rolled or was kicked over the side of the nest, 11 June 2004.

dump nests containing even more eggs have been described by other workers.

Weller recorded nests with up to 30 Redhead eggs at Delta Marsh, Manitoba, and reported other records

from the literature, including one nest with 87 eggs.[3,11] He published Bernard Gollop's photograph of a nest at Whitewater Lake, southwestern Manitoba, that contained a total of 74 Redhead eggs plus one egg of the Black Tern (*Chlidonias niger*); the latter egg was on top of the duck eggs.[3] Weller did not speculate on how the tern's egg got there, but Black Terns are not known to lay parasitically,[12] thus, this may have been a true case of egg dumping, possibly when the tern discovered that its nest had been destroyed during egg laying and it needed a place to lay its next egg. This scenario is reminiscent of Brown-headed Cowbirds and Common Cuckoos (*Cuculus canorus*) occasionally laying eggs in nests of obviously inappropriate hosts, such as ducks and shorebirds.[13,14,15] Redheads also have been recorded laying in nests of species other than ducks,[3,16] particularly in nests of the American Bittern (*Botaurus lentiginosus*),[3,17] whose young are reared at the nest site, unlike the precocial Redheads.

Dump nests among waterfowl are not restricted to the Redhead, but have been recorded frequently in hole- and cavity-nesting ducks such as Wood Duck (*Aix sponsa*) and goldeneyes (*Bucephala* spp.) where individuals may face a shortage of adequate nest sites. In these species, however, reproductive success of the hosts is not always compromised.[7,8] Gollop wondered whether Eared Grebes (*Podiceps nigricollis*), which are known to parasitize each other's nests,[18] have dump nests, as he discovered several "conglomerations" of Eared Grebe eggs — one with 101 eggs, a second with 94 eggs — at a large slough north of Mantario, Saskatchewan, in 1958.[19] The eggs were laid by multiple females on mats of dead vegetation, not in nests, as Redhead dump nests generally are, and within a few metres of active nests. None of the eggs appeared to have been incubated. Gollop's observations apparently are the only records of such nests reported for the Eared Grebe.[20] I have never observed dump nests in any of the 25 or so Eared Grebe colonies

Figure 3 - Portion of a colony of Eared Grebes showing eggs in three nests anchored to new growth in a cattail marsh, about 8 km west of Kindersley, Saskatchewan, late June 1957.

in which I have observed adults and inspected nests at various sites across the southern Prairie Provinces, the first of which was located about 10 km west of Kindersley, Saskatchewan, in late June 1957 (Fig. 3).

It may be misleading, albeit convenient, to call these nests "dump" nests. Time-lapse photography has revealed that individual Redheads continue to lay eggs after the "host" has abandoned the nest, with each female following other females to the nest because they assume that it is still active. This behavior is possibly reinforced by the eggs that females can see in the nest bowl,[6] therefore, laying continues, even though the nest has been abandoned, because hens perceive the likelihood that the eggs will hatch, rather than laying the eggs on the ground or in the water.

Multiple egg laying occurs frequently among most of the species of obligate parasitic cowbirds (*Molothrus* spp.), but in some cases this would not be considered dump nesting, even if the host's nest eventually contained only cowbird eggs. To illustrate this point, all Veery (*Catharus fucescens*) nests parasitized on our study area at Delta Marsh over 16 years (14 of 21 nests, 66.7% parasitized) received more than one cowbird's egg — one nest had five cowbird eggs plus one Veery egg (Fig. 4), another held seven cowbird eggs and one Veery egg. The first nest was depredated, whereas the second nest produced only cowbirds. More than one cowbird apparently laid eggs in the first nest, as suggested by a comparison of the spot patterns among the five cowbird eggs in the nest (see pointers in Fig. 4): three fairly distinct patterns can be identified, which suggests

Figure 4 - Veery nest containing five Brown-headed Cowbird eggs plus one Veery egg, forested dune ridge, Delta Marsh, 16 June 1980. Note: immaculate Veery egg is the top-most egg; two sets of connected pointers indicate cowbird eggs that were likely laid by the same females; the fifth cowbird egg (apparently laid by a third female) is immediately beneath the Veery egg.

three females laid in this nest.[21] Taking this farther, using molecular genetic techniques, we identified two strategies female cowbirds apparently use when parasitizing Song Sparrows (*Melospiza melodia*) at Delta Marsh: (1) the same female cowbird may parasitize the same nest again, i.e., lay in the same nest more than once, and (2) two or more females may parasitize the same nest,[22] as was apparently the case in the Veery nest highlighted above. Hosts whose nests eventually contained only cowbird eggs have been reported rearing at least some of the parasitic young,[23] having lost their own eggs to cowbirds when the nests were parasitized.[24] These observations reveal the variable and complex interactions that ensue between brood parasites and their hosts at the time of eggs laying, of which we are only just beginning to understand.

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Canvasback pair *- Randy McCulloch*

OBSERVATION OF INTERSPECIFIC COURTSHIP FEEDING BETWEEN A CLARK'S AND A WESTERN GREBE

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Abstract

Two observations of Interspecific feeding classified as courtship feeding between a Clark's (*Aechmophorus clarkii*) and a Western Grebe (*A. occidentalis*) are reported. Due to the reproductive isolation between Western and Clark's Grebes, Interspecific feeding between both Aechmophorus species may be uncommon. But in regions of largely allopatric distribution, for instance in Canada, its occurrence could be more frequent.

Introduction

Mate feeding, the delivery of a food item to a possible breeding partner, is widespread in grebes.[1] It is well known in Aechmophorus grebes where it is frequent just prior to nest-building.[2] Food delivery has also been reported from wintering Western Grebes (*A. occidentalis*).[3] Occasional partner feeding in the context of courtship has been observed in other grebe species, for instance in Little (*Tachybaptus ruficollis*),[4] Great Crested (*Podiceps cristatus*),[5] White-tufted (*Rollandia microptera*)[1] and Red-necked Grebes (*P. grisegena*, pers. observations). According to Nuechterlein and Storer,[2] Western and Clark's Grebes (*A. clarkii*) have a short period of intensive mate-feeding behavior immediately preceding nest-building and egg laying. Mate-feeding is not part of the early pair formation rituals. Instead, it occurs during the pair-liaison period during which pair bonds are conspicuous and mates usually remain close together.

I here report of two observations that do not conform to the above contextual premises of Nuechterlein and Storer[2] and that involved both Aechmophorus species, food having been delivered twice by a Clark's Grebe to a Western Grebe. Recognized only as separate species by the A.O.U[6] in 1985, the genetic differentiation between both is not well established.[7,8,9,10,11,12,13] Hybridization nevertheless seems to be rare and below 1% even in areas of largely sympatric occurrence,[14,15,16,17] but may have increased more recently.[18,19]

Place Of The Observations And Circumstances

The observations were recorded from the shore at the Salmon Arm's Bay of Shuswap Lake, British Columbia, in the afternoon of 6 July 2012. Record high water levels had so far prevented Aechmophorus grebes from nesting in that season. From over 100 grebes present earlier only about 20 Western Grebes and a single Clark's Grebe were still present inside the bay. The observations were eased by Zeiss 10x25 binoculars and a Sigma 800 mm lens mounted on a tripod. The Clark's Grebe was initially as close as 20 m to the shore. When meeting the Western Grebe for the first feeding, he may have moved about 40 m further out. For the second food delivery, the distance to the shore had increased by another 30 m. In the field, both Aechmophorus species are easily distinguished by the extent of white in their facial pattern: in Clark's Grebes, the white of the face extends to well above the eye whereas in Western Grebe the black crown comes down to well below the eye. In addition, Clark's Grebes have orange-yellow bills, those of Western Grebes are yellow-green.[17,18]

Figure 1. Western Grebe (with black crest reaching to below the eye) about to swallow the fish delivered by the Clark's Grebe (with white of the face extending to well above the eye).

The Observations

In a shallow corner to the east of the marina, the single Clark's Grebe and a single Western Grebe were diving for food at maximum distances from one another of about 20 m. Two or three single Western Grebes and two pairs were scattered 150-200 m farther out; they were mostly loafing.

When the Clark's Grebe surfaced with a fish about 10 cm in length, it first handled it for a while in its beak so as preparing its swallowing. But then the grebe firmly locked the fish in between its mandibles, elevated its head and started calling. The Western Grebe in its vicinity showed no reaction. Having received no answer after several bouts of calling, the Clark's Grebe started to swim to and fro and repeated the calling. After some two or three minutes, a Western Grebe from farther out started to slowly swim in the direction of the Clark's Grebe. When the latter noticed this, it increased its swimming speed targeting the Western Grebe. This one at first continued its slow and apparently hesitant swimming before stopping its progression still at some 30 m from the Clark's Grebe. This grebe continued until both grebes met. The Clark's Grebe offered the fish to the Western Grebe who without displaying any begging behavior and after insistence by the donor accepted the gift and swallowed it (Figure 1). Both grebes now seemed to remain together for loafing, but quickly the Clark's Grebe resumed calling. However, the Western Grebe showed no interest in courtship activity and soon returned to the loose group from where it originated. The Clark's Grebe remained in place for a minute before it also left and resumed diving in the shallow corner.

It first caught a smaller fish that it swallowed quickly itself before again

surfacing with another bigger fish. After handling it for perhaps 30 seconds, the fish was firmly trapped in the beak and the Clark's Grebe re-initiated its calling. Again, there was no immediate reply, neither by the Western Grebe that was still present in the corner nor by any other grebe farther out. The Clark's Grebe began swimming slowly into the direction of the scattered group of grebes, continuing the calling on its way and stopping now and then to survey the surroundings. The Western Grebe from before did not move in its direction. After having covered over 100 m, the Clark's Grebe finally came close to a Western Grebe to which it offered its gift. It was presumably the same that had profited from the first fish. Only reluctantly the Western Grebe accepted the delivery, swallowed it, stayed close for less than one minute and then swam away. The calling of the Clark's Grebe could not make it stay and a few minutes later, the Clark's Grebe had again returned to the corner.

Discussion

The present observations of food delivery were peculiar in as far as they appeared not necessarily to involve two birds with an established liaison and they were interspecific.

In Aechmophorus grebes, according to Nuechterlein and Storer,[2] feeding of a conspecific does not occur in early courtship, but only after firm pair liaisons are established. The term "mate-feeding" was chosen because food delivery then may become regular and potentially provide a significant direct energy contribution by males to egg formation. Although the observation of Salmon Arm occurred rather late in the season, the Clark's Grebe involved did not appear to have a pair liaison with the Western Grebe that received the fish and so far no nest-establishment efforts were recorded for the season. Mate feeding as defined by Nuechterlein and Storer[2] and serving the energy needs of the female for egg formation therefore appears unlikely.

Also extra-pair feeding as reported by Forbes[20] whereby unpaired male Western Grebes provide food to paired females tending young can be excluded, no young having been produced for the season. Forbes[6] saw two possible reasons for the behavior: (1) the unpaired bird could be related to one of both parent birds and increase its inclusive fitness by enhancing the survival chances of the chicks in the brood, (2) the unpaired male could be attempting to procure a mate. James[3] observed feeding of conspecifics in wintering Western Grebes: in several pairs this was not occasional, but the female could be provisioned with several fish within a short period of time. While discarding the possibility that the behavior could be aberrant, James suggested that the feeding helped the formation of new or the maintenance of existing pairs and/or could be used by the females to assess male parental quality. Contextual evidence of the observations at Salmon Arm rather speaks in favor of an attempt of mate procurement or courtship feeding. Previous reports of food delivery by male Aechmophorus grebes did not mention interspecific feeding as was the case in Salmon Arm. Such observations may be generally rare as a consequence of the reproductive isolation between Western and Clark's Grebes. Differences in their advertising calls are to prevent both species from forming mixed pairs. Only in regions with largely allopatric distribution males show poor discrimination.[14] Also late-courting males may be less choosy as with the progress of the season mating opportunities diminish.[16] In this sense, the Salmon Arm Bay population and Canadian populations of Aechmophorus grebes more generally, including those of the prairie states, could be particularly auspicious to the observation

of interspecific feeding. Clark's Grebes being generally rare in Canada,[16,21,22] they often have no choice but to pair with a Western Grebe. In Salmon Arm, the first documented presence of a Clark's Grebe dates back to 1987. Since then, there have been regular annual sightings of single male birds that at least occasionally appear to have interbred with Western Grebe females.[23]

In conclusion, interspecific feeding between Clark's and Western Grebes may occasionally occur and Canadian populations from British Columbia to Manitoba may present the most favorable conditions for the observation of the three different kinds of food delivery in Aechmophorus grebes, namely courtship feeding,[3] mate feeding[2] and extra-pair feeding.[20]

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American Bittern *- Randy McCulloch*

NATURE NOTES AND LETTERS

PALE MOONWORT IN MANITOBA: AN OLD RECORD CONFIRMED

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The pale moonwort (*Botrychium pallidum W.H. Wagner*)is a small and inconspicuous fern that was recently excluded from the list of Manitoba moonworts because of the apparent absence of voucher specimens.[1] Its original inclusion into the Manitoba flora[2] was based on an account of a collection from near Otterburne in south central Manitoba in 1959.[3] Detective work by CF has resulted in the rediscovery of the original specimen at the Herbier P. Louis-Marie, Université de Laval, Québec, QC where it is listed as specimen #199082. We are grateful to D. Farrar (Iowa State University) for confirming the identity of this specimen from a photograph. The inclusion of this species into Manitoba's flora will make it the 11th species of the Ophioglossid fern in the province[1]. Please see the photograph of the specimen and the distribution map (Figure 1).

The herbarium label provides the following information which may help in determining whether a population still exists at that location: " 5 juin 1958. *Botrychium lunaria* (L.) Sw. Bois (à l'est du chemin de fer) au nord du village (Otterburne, Manitoba). J-P. Bernard #58/7." There is a hand written, unauthored annotation on the herbarium sheet made in 1989 "B. pallidum Wagner". The estimated location of the collection site is 14 0641191E 5484868N, or lat-long: 49 30N, 97 03W.

Pale moonwort is a species that appears in late spring in shady or grassy places throughout the Great Lakes region with disjunct populations elsewhere.[4] This species has been reported from the Cypress Hills of Saskatchewan,[5] but not from Alberta.[4] It has been given the Conservation rank of S1, i.e. "endangered", in both Saskatchewan[5] and Manitoba.[1]

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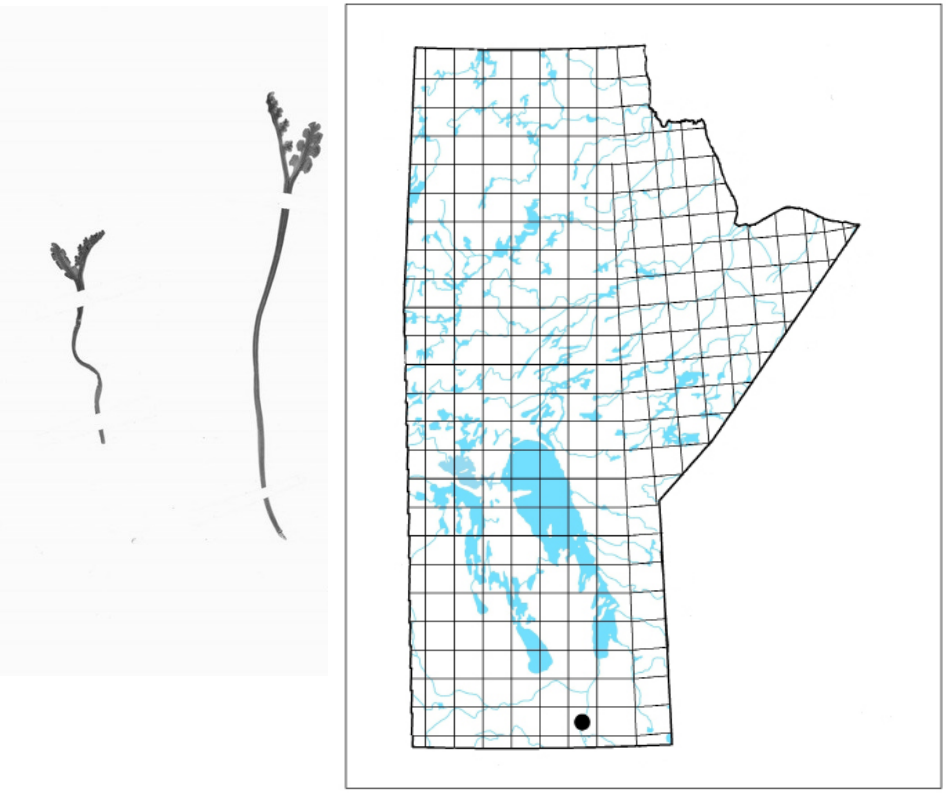

Figure 1. Left: Specimens of pale moonwort collected by J-P Bernard from near Otterburne, Manitoba in 1958. Right: Location of collection site in Manitoba. The map shows a grid of 50 km2 squares according to the 1984 Universal Transverse Mercator projection.

"In nature we never see anything isolated, but everything in connection with something else which is before it, beside it, under it and over it." - Goethe

SQUIRREL HOUSE ON THE PRAIRIE

PETER TAYLOR P.O. Box 597, Pinawa, MB, R0E 1L0
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In the late afternoon of 3 December 2011, Reto Zach and I were birding along Overwater Road, a lightly used gravel road in open cropland east of Stead, Manitoba. We had paused to watch a snowy owl *(Bubo scandiacus)* when I noticed a red squirrel *(Tamiasciurus hudsonicus)* at the entrance to a tunnel in a snowdrift near some isolated farm buildings – a wooden equipment shed and four steel granaries (Figure 1). As we watched, a second squirrel appeared in a window frame on the shed. The location (50.341°N, 96.328°W) was not typical red squirrel habitat, the nearest sparse shelter belt being 700 m to the south, and the nearest forest edge was 3.1 km to the east.

Figure 1: Unusual winter habitat for red squirrels near Stead, Manitoba. - Peter Taylor

I revisited the site on 11 December 2011 and saw three red squirrels on or near the equipment shed (Figure 2). Tracks and tunnels in the snow radiated from the shed and were concentrated alongside the 60-metre access trail from the road. There was no evidence that the squirrels had entered the securely closed granaries. Peering through a broken window in the shed, I could see no obvious food supply inside.

One alert squirrel was seen at a snow-tunnel entrance on a third visit on

8 February 2012, but there was no sign of activity on 18 March 2012, shortly after the unusually early spring thaw. Checking the area where the snow tunnels had been, I found a narrow (< 1 m wide) strip of unharvested soybeans alongside the access trail. These had evidently been the principal, if not only, food supply for the squirrels.

Based on their seemingly placid coexistence, the squirrels may have been a family group. Their occurrence so far outside forested habitat was possibly related to a poor cone and wild fruit crop the preceding fall. Red squirrels are opportunists, frequently visiting bird feeders and boldly entering attics whenever an opening is available. Nevertheless, their ability to survive for much of the winter at a site meeting the barest requirements of food and shelter in a hostile landscape is remarkable.

Figure 2: Red squirrel at shed window, 11 Dec 2011. - Peter Taylor

EASTERN BLUEBIRDS AT PRINCE ALBERT NATIONAL PARK IN 2011

MAURICE (Moe) and MARGARET (Marg) MARESCHAL Birch Hills, SK

On 19 June, 2011, Bill and Lois Lang of Calgary, AB were on their last day of a two week photography and birding trip to Prince Albert National Park (PANP) they made an amazing discovery. On this day they happened upon a male Eastern Bluebird (EABL) in the fire-break just off highway 263 on the opposite side of the road from the Waskesiu Golf Course. At that time, Bill photographed the male with insects in it's mouth while the bird sat on a 6 meter snag. Near the top of the snag was a woodpecker hole of a size a Downy Woodpecker would have excavated.

The male transferred the insects to the female who briefly stuck her head out of the hole, she disappeared inside while the male again went out hunting. Subsequently, the Langs left to report the sighting at the Parks Canada Administration building in the Waskesiu townsite. Not long after making that report, Lois sent the message out to the birding community. A day later, my wife Marg and I left for our cabin at Waskesiu. Our intent: to monitor the location and activity around what was likely the most northern nest site ever reported for Eastern Bluebirds. Over the next four weeks we made four trips back and forth from our home near Birch Hills.

Data and Field observations:

20 JUNE 2011 – During a brief lull in the rain, we found the male bluebird but not the nest hole.

22 JUNE 2011 – Cloudy but no rain.
-- 06:00 - Male skittish but staying relatively close and eventually noticed that he preferred to stay in one area. After much searching, we saw the female poking her head out of a hole we'd earlier dismissed. It was only 20 meters from the western edge of the highway. Later, she emerged and immediately began hawking for insects, returning to the nest after feeding for about 15 minutes.

Other birds we saw or heard in nesting area (150m x 100m): Common Raven, American Crow, Ruby-crowned Kinglet, Redwing Blackbird, Yellow Warbler, Pileated Woodpecker, Song Sparrow.

01 JULY 2011 - Clear & Calm - 07:00 – Male actively hawking for insects. Male waited till I took a position in the highway ditch where I was partly hidden before he carried food to top of snag where the female promptly stuck her head out of the cavity and accepted the food before retreating into the nest hole carrying the food. She didn't eat any that I could observe.
Other birds we saw or heard in the nest area: Black-billed Magpie, Common Raven, House Wren, Yellow Warbler, Chipping Sparrow, Cedar Waxwing, Song Sparrow, unknown warbler.

09 JULY 2011 – Clear & Calm – 06:00 – Observed for 45 minutes. Male in the area but ranging farther than before. Not hawking as vigorously as previously. Female not seen.

10 JULY 2011 - Clear and Calm - 06:15 – Observed the area for one hour. Male ranging about but did not return to the nest site. Erratic hawking. Again, female not seen.

Birds we saw or heard in the nesting area: Gray Jay, Common Raven, Cedar

Waxwing, Hairy Woodpecker, Downy Woodpecker, Song Sparrow, Merlin.

13 JULY 2011 - Mostly clear – wind NW 10 km, 24˚C, 14:30
–Male observed 200 meters from nest site half-way up on a branch of a dead spruce tree. Observed for one hour. female not seen.

Other birds we saw or heard in nesting area: one Song Sparrow, one Merlin.

15 JULY 2011 – Clear, calm – 16˚C – 07:00 – Unable to find male EABL – The only birds seen or heard: 2 American Robins across the highway towards the golf course and 1 Merlin during one hour of observation.

Conclusions:
1. The probability is very high that this pair of EABL had established a viable nest even though direct observation of the nest was impossible without actually destroying it.

2. It is possible that the female became a victim of the Merlin which, ironically, had it's own nest only 30 meters from our cabin.

3. Eastern bluebirds will nest in north central Saskatchewan if suitable habitat is found. However, the presence of the EABL this far north could also be attributed to the very wet 2010 summer and the water-logged 2011 Spring. With the massive flooding of EABL habitat in Manitoba and south-eastern Saskatchewan, many of those birds may have expanded their search for suitable habitat and ended up outside of their usual breeding habitat. The report of a sharp increase of EABL in the Broadview area in a personal communiqué would tend to support this. (Don Weidl - personal e-mail.)

In another communication from Judy Nielsen at the Minewukaw sub-division at Candle Lake, an Eastern Bluebird had come to their feeder in late May 2011 but stayed only for a short time.

We waited to see if the Eastern Bluebird male would again return to PANP with a mate. However, despite intense searching in the 2011 nest area and other likely habitats in the southern part of the Park, no bluebirds were discovered in 2012.

Eastern Bluebird in Prince Albert National Park
- Moe Mareschal

AFTER-HATCHING-YEAR SUBADULT COMMON LOONS IN MANITOBA

GORD HAMMELL, Erickson, MB, R0J0P0; Email: *hammell@inetlinkwireless.ca*

The common loon (*Gavia immer*) is familiar to most Canadians, breeding across Canada in suitable lakes and rivers and in most cases, migrating south to coastal waters in winter.[1,2] Population trends from the annual Breeding Bird Survey (1970-2009)[3] suggest increasing populations for Canada and Manitoba but a slight decrease for Prairie Potholes Bird Conservation Region (Fig.1). The area south of Riding Mountain National Park in southwestern Manitoba is "pothole" country within this Region and the topography is rolling with numerous lakes and ponds interspersed with agricultural lands. I have been conducting waterfowl surveys in this area near Erickson (Fig 2) for several years and have regularly seen common loons (hereafter loon) occupying and successfully raising young in the area. For example, in 2011 on a 22.km^2 (~9 sq miles) study area, counts conducted over three time periods (May 23-25, May 29-June 2, and June 6-10) produced respectively, zero, five, and four adult individuals in breeding plumage. No chicks were seen on the study area but were observed on lakes within 400 m of the boundary.

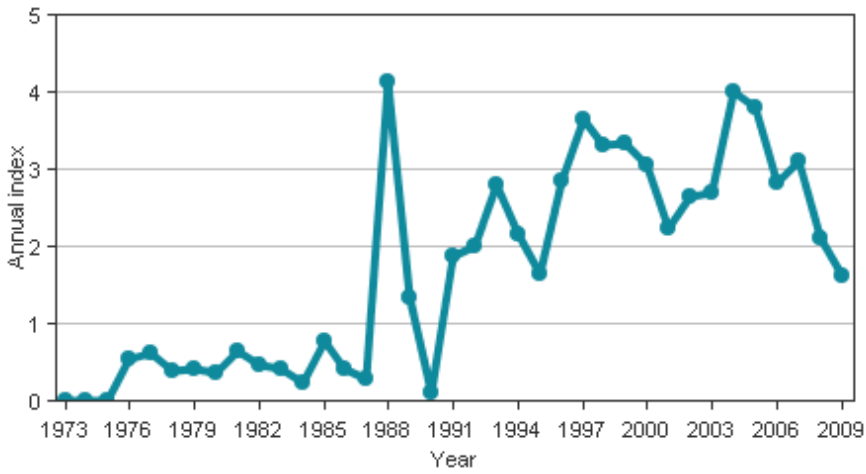

Figure 1. Annual indices of population change for the Common Loon in Manitoba based on Breeding Bird Survey data (1973 - 2009). Trend +15.5

While conducting waterfowl brood counts in the early morning on June 29, 2011, I observed a large white-looking bird on a 16 ha lake (50.43083, -99.724717) ~ 11km southeast of Erickson. I initially assumed that it was a gull because it appeared so white. The bird was at ~ 100m distance and upon closer examination with a 20-60x spotting scope, I realized that the bird was facing me and was a loon. No other loons were on the lake. The observed whitish glow was from its white breast, neck and throat. The back of the bird was greyish. I immediately assumed that this was a juvenile bird from the previous year but was surprised to see

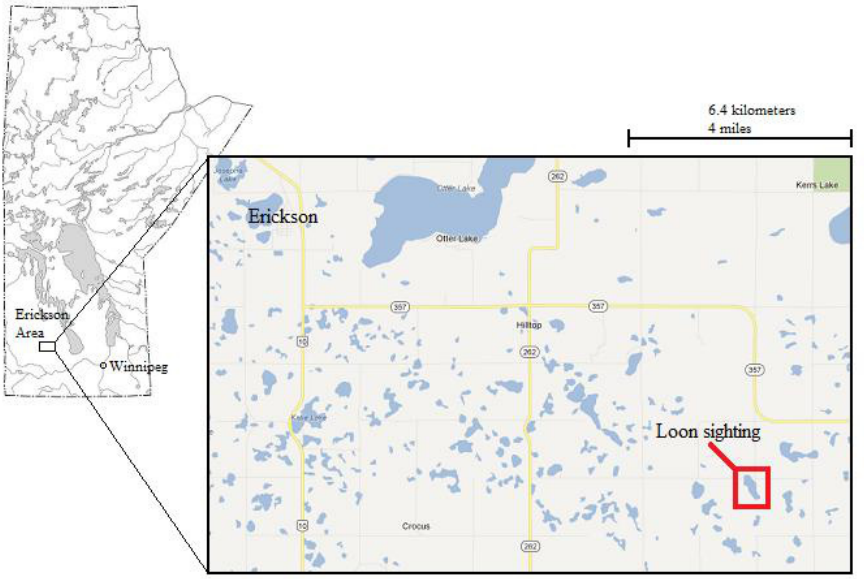

Figure 2. Location of common loon sighting near Erickson, MB

it as I could not remember seeing a juvenile of this size and colour except in the late summer and early fall. Loon chicks in late June in this area are downy and much smaller. I returned to my birding books and discovered that this bird was most likely a subadult ; ie: a juvenile from a previous year in basic plumage. If a subadult, then this bird should be on or near salt water for several years (usually three to five)[4,5,(C. Walcott, pers.comm.)] before returning to breeding areas in breeding (alternate) plumage. I revisited the lake the next morning, found the bird still in the same spot and examined it more carefully. I noted a white partial triangular collar on the sides of the neck, a diagnostic characteristic of basic- plumaged birds and a mottled back of brown, black, and white, giving a greyish appearance. It lacked all of the plumage characteristics of an adult in breeding plumage. I returned to the lake in one week and the bird was gone and was not knowingly seen by me again in the area (this bird might have been confused with some young-of-the-year later in the summer).

My interest was aroused so I contacted several experienced birders in Manitoba, Saskatchewan and Ontario and asked if they had observed these birds in spring or early summer. In Manitoba, one observer recorded five May-July sightings since 1977 in Pinawa area (P. Taylor, Fig. 3) and another recorded one sighting in Riding Mountain National Park in May, 1984 (C. Cuthbert). Another from southwestern Manitoba has not seen loons in basic plumage in spring or early summer (K. Kingdon). For Saskatchewan, I was unable to find anyone who had seen one of these birds (S. Houston, T.Stene, R.Wilson). Although far from a comprehensive survey, the scarcity of sightings suggests that basic-plumaged birds are infrequent (but perhaps regular?) visitors to Manitoba inland breeding grounds in spring and summer. Discussions with these observers

suggest that the abundance, distribution and movements of these birds are largely unknown. In Ontario in summer, these basic- plumaged loons are known to occur in small numbers on large inland lakes (e.g., the Great Lakes)[4,6,7,8] but the authors imply that they do not continue on to breeding lakes. During autumn migration, loons stage on the lower Great Lakes mainly from August to December, a few lingering into January. They are known to over-winter on the Great Lakes extremely infrequently and in very small numbers (usually< 10 on Lake Ontario Mid-winter Waterfowl Count, Kingston to Niagara).[9,(D.Tozur, pers. comm.)] Therefore, there exists the possibility that basic-plumaged birds seen in Manitoba in spring and summer over-wintered on the Great Lakes. Although this possibility cannot be ruled out, this seems unlikely given the small number observed over-wintering. It seems most likely that the basic-plumaged birds seen in summer in the breeding range over-wintered in the regular (salt water) wintering grounds and returned the following spring (D.Tozur, pers. comm.).

I gathered additional insight on loon behavior from results of a comprehensive study with a large banded population of loons in Wisconsin.[10] Researchers there found that of the hundreds of loons seen each summer, only one or two would be in basic plumage (J. Mager, pers. comm.). Usually they remain on large lakes used only for foraging, not for breeding. This behaviour of breeding lake avoidance might be expected as territorial pairs are very aggressive towards intruders.[10] Although hundreds of adults and chicks have been banded in the Wisconsin study area over two decades, a banded loon in basic plumage has not been seen in early summer; these authors suggest that these loons could be "prebreeders" but without marked individuals, one can only speculate as to the age and identity of these birds.

Figure 3 Loons - sub-adult left adult right - Gervase Orton

I suspect that few birders in Manitoba and in other areas are aware that all or almost all loons seen in breeding plumage in summer are adults at least 3 years of age. The subadult reported here and the other referenced sightings of a basic-plumaged loon in early summer in Manitoba are to my knowledge the only ones reported for Manitoba. A more comprehensive survey would undoubtedly reveal more. In the future, I (and I hope others) will appreciate more fully observations of this species and will be on the lookout for early summer basic-plumaged birds

so that we might be able to monitor spacial and temporal changes to this segment of the loon population .

Acknowledgements

My thanks go out to all those individuals who, by their assistance in the writing of this note, have made loons more interesting than they already were. They include Cal Cuthbert (Ducks Unlimited, Brandon), Stuart Houston (Saskatchewan), Kathy Jones (Canadian Lakes Loon Survey, Birds Studies Canada), Ken Kingdon (Parks Canada, Manitoba), Jay Mager (Ohio Northern University), Walter Piper (Chapman University),Theresa Stene (Parks Canada, Saskatchewan), Peter Taylor (Pinawa, Manitoba), Doug Tozer (Bird Studies Canada), Charles Walcott (Cornell University), and Rob Wilson (Saskatchewan). Thanks also to Marg Hammell for reviewing this document and Bruce McLavy for helping with map-making.

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DON FORBES, VULTURE NEST FINDER, AND ERNEST FORBES, WING-TAG READER

C. STUART HOUSTON, *863 University Drive, Saskatoon, Sask S7N 0J8*

Don Forbes and his son Ernest have made exceptional contributions to our Turkey Vulture Tracking Project.

Nest Finding by Don Forbes: In 2005, Don checked 20 deserted houses in the Porcupine Plain area, west to Chelan and south to Kelvington. Some log houses were almost invisible in the overgrowth of caraganas and poplars around long-deserted farmsteads that Don remembered from the past. To his and everyone's amazement, four deserted houses in that relatively small area contained active vulture nests. Stuart Houston and his crew arrived in early August to place alphanumeric wing tags (e.g. A22) on the young vultures when they were seven to eight weeks of age, just before they were ready to fly.

In his second year, 2006, this quiet, modest member of Nature Saskatchewan, with his friend Bernard Hayunga, visited 42 deserted buildings. That year and the next, Don found an unprecedented eight active successful vulture nests, including one each in a bunkhouse and a granary, more than anyone else reported in North America. In 2008, without increasing the size of the area, Don found ten active vulture nests which produced 19 young. Since then, deserted houses abandoned by vultures have been replaced by new sites, some found in company with Cliff Logan. A record 11 buildings were used by vultures in 2011. One building, reported to us initially by Brian Shuya, has raised vulture young for nine consecutive years. Another building has produced young during eight consecutive years and three other deserted houses for seven years. Three deserted houses were occupied only once. In total, 70 of Don's vulture nest attempts over eight years have produced a remarkable 128 young, eight of which fledged without wing tags.

Elsewhere in central Saskatchewan, nest finders have been spurred on by the example of Don Forbes. Finders of multiple vulture nest houses, from west to east, have been Doris Forsyth near Edam; Orval and Bev Beland widely around Cater and Medstead; Herman Thiessen near Debden; and Joe Graumans and Hank Donkers near White Fox. While traveling to inspect or tag at active vulture nests, Marten Stoffel, Harold Fisher and Mike Blom also add numbers of new nest sites each year.

For vultures, the term "nest" is a bit misleading. In fact, they don't build a nest as other bird species do. Vultures simply lay two eggs, two or three days apart, on dirt, hardwood, plywood, linoleum, or cement, in a somewhat darkened attic, clothes closet or basement of a deserted farm home.

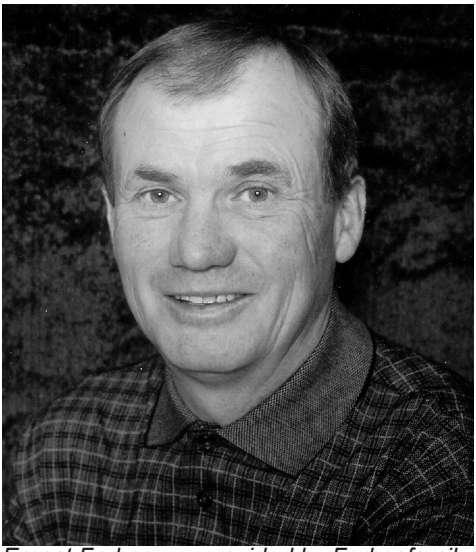
Tag Sighting by Ernest Forbes: Tagging vultures bears fruit when someone reports a wing tag at a different time or place. From 2008 to 2011, Ernest Forbes established a very different vulture record. On 11 occasions over 4 years, 2008 to 2011, Ernest read the numbers of 11 vulture wing-tags, tops for North America. While hauling waste to the Provincial Park sewage lagoon for L.A. Septic, Ernest noted an average of 30 vultures present on a sunny day; a few times

each summer one vulture would have a readable wing tag. Up to three such sightings yearly included eight birds that had been raised in five different vulture nests within 5 to 19 km from the sewage lagoon, and another raised 252 km distant near Big Shell Resort (Table 1). Not a single vulture returned to the sewage lagoon when only one year old. We estimate that fewer than half the tagged vultures, after most of them winter in Venezuela, return all the way north to Saskatchewan when one year old. Five tags were read by Ernest at 2 years, two at 3 years, three at 4 years, and one at 5 years. Ernest read T37, tagged 14.2 km from the sewage lagoon, three times, 3, 4 and 5 years after it had been tagged as a nestling. It has now reached breeding age and we hope it will take up residence in one of our known buildings.

Unlike Ernest Forbes, the great majority of observers have each read or photographed a wing tag on a single vulture, -- but these add up, even though fewer than one vulture in a thousand in Saskatchewan carries a wing tag. We have now had several hundred sightings from the 927 Turkey Vultures tagged, 2003-2012 inclusive.

Recoveries/Encounters after leaving Porcupine Plain: In addition to Ernest Forbes' 11 sightings at the sewage lagoon, five other tagged vultures from the Porcupine Plain area have been sighted or photographed later. One nestling was found dead on a road only 16 km from its nest on its first migration south. Four more distant sightings or photographs of Porcupine Plain area birds have been from near the Highway 312 bridge east of Rosthern at 3 years; two in South Dakota at Akaska and Selby at 1 year; and near Young, Saskatchewan at 3 years.

Author's note: A tragic postscript ends this account. While returning on Highway 38 from an art class in Kelvington, Ernest Forbes died at 9.30 pm on 7 August 2012 following a fatal collision with an Elk. Marten Stoffel and Stuart and Mary Houston represented Nature Saskatchewan at Ernest's funeral in Porcupine Plain on 14 August 2012.



Ernest Forbes - provided by Forbesfamily

Table 1. - Sightings of vulture tags

ERNEST FORBES SIGHTINGS (11) AT GREENWATER SEWAGE LAGOON					
TAG	date tagged	where tagged	date sighted	distance (km)	# yrs
T13	1Aug06	Big Shell	19Jul08	252.3	2
T37	4Aug06	Chelan S	7Jul09	14.2	3
		"	20Sep10	14.2	4
		"	2Jul11	14.2	5
T40	4Aug06	Kinloch N	14Jul10	8.8	4
T41	4Aug06	bunkhouse	17Aug08	8.8	2
A20	2Aug07	Kelvington E	12Jul09	19.1	2
A22	2Aug07	Kinloch N	16Jun09	6.9	3
A24	2Aug07	Greenwater	24Jun11	6.5	4
B29	6Aug08	Greenwater	16Jun10	6.5	2
S61	12Aug09	Kelvington E	2Jul11	15.1	2
Maximum 30 to 50 vultures 24 June 2011					

Don Forbes with Turkey Vulture *- Brent Terry*

REGINA'S MUTE SWAN MYSTERY

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We know when Mute Swans were first introduced to the brand new Regina Waterfowl Park in Regina: 1956, when swans first wintered on open water heated by the Power Plant. During the next 20 winters, the Regina Christmas Bird Count (CBC) recorded one to twelve each winter, the final two on 26 December 1975.

Pair of Mute Swans *- Fred Lahrman*

We know why the swans disappeared. Year-round presence of these stately birds was doomed when the power plant shut down for the first time in 1978-79 and the marsh froze. For an estimated three winters the swans were housed in pens as a temporary but unsustainable experiment.[1]

While we didn't then know where the swans came from, we could conclusively contradict erroneous statements in two otherwise reputable books. John L. Long's 1981 statement, "Recently reported to be nesting and wintering in Regina, Saskatchewan,"[2] is true, but he concludes "probably after wandering from the New York region"[2] and gives Godfrey 1966[4] as his authority. The swans did not "wander" from New York nor was Godfrey his source. Christopher Lever's 1966 presumed arrival date is ten years late, and he too is wrong when he suggests that they "presumably dispersed [to Regina] from northwestern Michigan."[3] Lever gave W.T. Munro, formerly of the CWS at Saint-Foie, Quebec, as his source, but Munro (pers. comm.) assures me he said no such thing.

Margaret Belcher in *Birds of Regina*[5] wrote: "The Mute Swan is the familiar captive swan of city parks, beloved of photographers ... In the winter of 1956-57 four Mute Swans wintered in the open waters of the Waterfowl Park, and since then there have been Mute Swans there each winter".[5] In her second edition, she adds "Some of the progeny of the wing-clipped birds brought into Regina have been full-winged birds."[1] This of course was true, because the permit requirement to pinion each hatchling when seven days old was not always followed. But the Belcher statements beg the question:

Where did the Regina swans come from? Ottawa? The United States? England? Fred Lahrman, diorama artist at the Saskatchewan Museum of Natural History, thought the swans came from England. He told Lorne Scott that when Governor-General Vincent Massey opened the Saskatchewan Museum of Natural History, 16 May 1955, he promised on behalf of the Queen that a pair of Mute Swans would be sent to the brand new Wascana Waterfowl Park.

The Protocol Office in Regina referred me to Lee-Ann Irvine, Collections Registrar at the Royal Saskatchewan Museum, who dug into the museum archives and produced *Regina Leader-Post* clippings that give possible credence to the Lahrman hypothesis. A pair of two-year-old swans, named Carl and Cathie, arrived in 1955 and over-wintered in the Moose Jaw Animal Park. On 3 May 1956 these two pinioned three-year-old swans were released by W.A.C. Leitch and Walter Sweet of the Regina powerhouse staff, with Fred Bard looking on (*Regina Leader-Post*, exact date missing). The situation is somewhat confused, however, by mention of Regina's "two senior swans, Joe and Moe, and their four cygnets" which had been released at Rotary Park, Regina, the day before (photo and caption in *Regina Leader-Post* 9 May 1956**).** It may ever remain a mystery whether or not the latter six swans were part of the same shipment from England.

When the Queen and Prince Philip visited the Saskatchewan Museum of Natural History in July 1959, they in turn were hosted by Fred Bard ("Observant: that's how Prince Philip impressed museum men," *Regina Leader-Post,* 24 July 1959). That visit fulfilled one requirement for the later museum name change proclamation in 1993 to the Royal Saskatchewan Museum (Graham Preston, pers. comm.).

In March 1963 a SMNH pamphlet, "Wascana Marsh," featured 16 bird species of interest, including the Mute Swan, "an introduced species."[6] In November 1964, the Museum pamphlet, "Swans, Ducks, Geese and Cranes of Saskatchewan," contained sketches and text concerning Trumpeter and Whistling [now Tundra] Swans, and

Fred Bard at Mute Swan Nest - Tern Island Wascana Lake - Fred Lahrman

a photograph of the year-round Mute Swans feeding at Wascana Lake.[7] But there was no indication of the *source* of the year-round swans.

Might the swans have come from the small flock known as "the Royal Swans" in Ottawa? Not a chance! The chronology was wrong. Not until 1967, in honour of Canada's Centennial Year, did Ottawa receive six pairs of pinioned Mute Swans, from Her Majesty Queen Elizabeth (CBC News Broadcast, 25 Jun 2010, 9:19 am EST, downloaded 7 Feb 2011). Christine Hartig, Ottawa's Royal Swan Program coordinator, informs me that these swans, pinioned at seven days of age, had been sent from the River Thames near Abingdon-on-Thames, 9 km south of Oxford, England. "They were a gift from Her Majesty Queen Elizabeth II to commemorate the Centennial of the confederation in 1967. Ottawa, as Capital, was the recipient of this Royal gift on behalf of the Nation." (Christine Hartig, Power Point Swan presentation, February 2011). The Royal Swans in Ottawa had not, as some of us had guessed, originated from Peter Scott's Severn Wildfowl Trust at Slimbridge, Gloucestershire, the home of the world's largest collection of waterfowl. The arrival of swans in Ottawa had occurred 12 years following the arrival of Mute Swans in Regina. Janice Dowling of Ottawa sent me a news item from the Ottawa Citizen "Royal Swans may soon escape Swantanamo Bay" for a needed $375,000 shelter (CBC News Broadcast, 25 Jun 2010, 9:19 am EST, downloaded 7 Feb 2011).

However, the thought of ceremonial exchanges within the British Commonwealth brought to mind Ralph Edwards at the appropriately-named Lonesome Lake in the interior of British Columbia. His altruistic efforts to save another species of swan, the Trumpeter, were described by Leland Stowe, a best-selling author, Pulitzer prize winner, and roving editor for *Reader's Digest*. Chapter 14, "Saga of the Trumpeter Swans," in *Crusoe of Lonesome Lake* reveals a series of remarkable coincidences.[6] John P. Holman of Fairfield, Connecticut, happened to come over the mountains in 1925 to Lonesome Lake, B.C., to hunt Grizzly Bears; he met and hired Ralph Edwards as his guide. Holman, an amateur ornithologist and a member of the Audubon Society, was amazed to see the substantial but hitherto unknown wintering population of endangered Trumpeter Swans and reacted "like a prospector hearing of a gold strike." He quickly shared his findings with J.A. Munro of the Canadian Wildlife Service (CWS), and with the world. Edwards shortly became an unpaid bird warden for CWS.[6]

1930 brought an unusually severe winter to Lonesome Lake; only 19 of the swans survived. Realizing the value of this flock, CWS provided grain to Ralph Edwards and his daughter Trudy – half a pound of barley per swan per day. The swans became habituated to the daily feeding time of 11 a.m. and the flock size grew to 130 by about 1950.[6]

How does the Trumpeter Swan fit into the Mute Swan story? When Princess Elizabeth visited Canada in 1951, Peter Scott asked whether, in honour of that Royal Visit, Canada might make a gift of Trumpeter Swans to the Princess and the British people. There was only one place in Canada where Trumpeter Swans were tame enough to capture and Trudy Edwards was the only person who could get close to them. The next year, 1952, Princess Elizabeth became Queen on 6 February. That summer, CWS biologists Ronald H. McKay and Dave Munro flew in from Vancouver to assist Trudy once she had caught the swans.[6] The five captured Trumpeter Swans were the first ever to be flown across the Atlantic. Trudy Edwards received a personal letter of thanks from Queen Elizabeth and another thank-you from Governor-General Vincent Massey.

For a few years, as a Patron of the Wildfowl Trust, the Queen, accompanied by her keen conservationist husband Prince Philip, paid almost annual visits to Slimbridge; their third visit was in pouring rain in April 1961 ("Umbrella Day at Slimbridge: Royal Party tour [sic] wildlife pens," *Dursley Gazette*, 28 April 1961). Slimbridge, the first Wildfowl and Wetlands Trust reserve, opened 10 November 1946. However, a review of the Wildfowl Trust's Annual Reports (WTAR) from the mid 1950s Dr Eileen Rees, Head of UK Waterbird Conservation at WWT, did not find any mention of Slimbridge being the source of the Mute Swans arriving in Saskatchewan in 1955, which therefore must have come from elsewhere. Incidentally, Peter Scott was knighted by the Queen in 1973.

Nevertheless, it may not be too fanciful to suggest that the Canadian gift of Trumpeter Swans to Slimbridge was among the considerations, although not a delayed reciprocity, for the Mute Swans that had come to Regina in 1955 from some other location in England. Lorne Scott and I suspect that Fred Lahrman thought so.

1. BELCHER M (1980) Birds of Regina (revised edition). Saskatchewan Natural History Society Special Publication 12:1-151.

2. LONG JL (1981) Introduced birds of the world. Universe Books, New York.

3. LEVER C (1987) Naturalized birds of the world. Longman Scientific & Technical, Harlow, Essex, England.

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5. BELCHER M (1961) Birds of Regina. Saskatchewan Natural History Society Special Publication 3:1-76.

6. ANONYMOUS (1963) Wascana Bird Sanctuary. Saskatchewan Museum of Natural History Popular Series No. 6.

7. ANONYMOUS (1964) Swans, Geese and Ducks and Cranes of Saskatchewan. Saskatchewan Museum of Natural History Popular Series No. 9.

8. STOWE L (1957) Crusoe of Lonesome Lake. Random House, New York.

Mute Swan at Nest *- Fred Lahrman*

PHOTO ESSAY

SWAINSON'S HAWK

ROSS DICKSON[1] and KERRY HECKER[2], *Environment Canada, Canadian Wildlife Service - Last Mountain Lake National Wildlife Area*
[1] *text - Nokomis, SK.*
[2] *photographs - Simpson, SK*

Swainson's Hawk (*Buteo swainsoni*) is an opportunistic predator, focusing on available prey whether small rodents, birds, reptiles or invertebrates.

Hunting methods are as varied as the prey. Soaring above a grass fire or farm machinery allows the hawk to find suddenly homeless voles.[1] Others may watch patiently from a tall perch before stooping on a rodent. Aerial agility allows it to catch large flying insects like dragonflies with its talons and eat in flight. Swainson's Hawk walks easily as it chases and pounces on grasshoppers.

When hunting ground squirrels (*Thomomys* spp.) it perches near fresh mounds, waiting for gophers to push fresh dirt to surface, then pounces stiff-legged on the mound and pulls out the gopher.[2]

Eating requires different skills. A larger prey such as a pocket gopher is carried to a feeding perch and picked apart. When the hawk wants to move, it may use its talons to transfer the prey remains to its beak, before flying away.

1. Taylor PS (2007) Swainson's Hawk response to fire at Last Mountain Lake National Wildlife Area, SK. Blue Jay 65:138-139.

2. Bechard MJ, Houston CS, Sarasola JH and England AS (2010) Swainson's Hawk (*Buteo swainsoni*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/265

MYSTERY PHOTO

DECEMBER 2012 MYSTERY PHOTO

This hawk was caught on camera perched on a fence post eating a tasty treat (colour photo on inside back cover). It was seen at the Last Mountain Lake National Wildlife Area, in Mid-July 2008. After looking at the photos, we realized that the prey was visible, and although only half-there, it might be recognisable to someone. So the mystery question is: what is the creature that is being eaten by this Swainson's Hawk? Bonus points for it's Latin name.

Email your answer to:
bluejay@naturesask.ca.

Correct answers will be entered to win a prize from Nature Sask.

SEPTEMBER 2012 MYSTERY PHOTO

Myrna Townsend

We had NO answers submitted for the September 2012 mystery photo of squirrels with white tails and bellies. That means that the cool NS swag is unclaimed for this issue!

Editor's best guess:

These partially white squirrels appear to be exhibiting partial leucism, a condition characterized by reduced pigmentation in animals caused by a recessive allele. Unlike albinism, it is a reduction in all types of skin pigment, not just melanin. More common than a complete absence of pigment cells is localized or incomplete hypopigmentation, resulting in irregular patches of white on an animal that otherwise has normal colouring and patterning. This partial leucism is known as a "pied" or "piebald" effect; and the ratio of white to normal-coloured skin can vary considerably not only between generations, but between different offspring from the same parents, and even between members of the same litter. [Wikipedia, "Leucism"]

Boreal Owl *- Christian Artuso*

Wanted: Blue Jay Indexor

After many years of diligent work,Teresa Dolman is stepping down as indexor for the Blue Jay. We thank her for her work!

This means that we need a new volunteer to compile the annual index for the Blue Jay, as shown in this issue, pages 281 - 291. This job requires meticulous work once a year, and there are detailed guidelines to follow. If you are interested in this job, please contact Kerry and Lowell, the editors of Blue Jay, at

bluejay@naturesask.ca

Blue Jay Index 2012 (Volume 70)

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2012 ILLUSTRATION INDEX

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Rattlesnake, prairie: GARDINER December back cover

Whose woods these are I think I know.

His house is in the village, though;

He will not see me stopping here

To watch his woods fill up with snow.

- Robert Frost

Black-capped Chickadee *- Vicky Kjoss*

"In all things of nature there is something of the marvelous." - Aristotle

Porcupine *- Christian Artuso*

White-breasted Nuthatch *- Nick Saunders*

What happened here? Best guess - Great Horned Owl looking for a snack.
- Lowell Strauss

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Common and scientific (Latin) names are used for all species. Common bird names follow the Checklist of North American birds by the American Ornithologists' Union (7th edition, 1998); mammal names: Mammal Species of the World by Wilson & Reeder; butterfly names: The Butterflies of Canada by Layberry et al.;and names of reptiles and amphibians follow Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with comments Regarding Confidence in our Understanding, Sixth Edition, by The Committee on Standard English and Scientific Names (Brian I. Crother, Chair) (2008).

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