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The Proposed Park in Maine's North Woods:

Preferences of Out-of-State Visitors

by Ryunosuke Matsuura, Sahan T. M. Dissanayake, and Andrew Meyer

The proposal to create a new national park and national recreation area in northern Maine has generated support, but also sometimes heated opposition within the state. This article discusses findings from a survey of out-of-state visitors' preferences and willingness to pay for the proposed park. The results support the proposal to create both a national park and a national recreation area.

BACKGROUND

The National Park Service (NPS) turns 100 years old on August 25, 2016. The national park system covers more than 84 million acres and includes over 400 sites. In 2014 NPS lands attracted 292 million visitors (Cullinane Thomas, Huber, and Koontz 2015). The visitors to NPS-managed lands spent \$15.7 billion in local gateway regions, which resulted in 277,000 jobs and \$29.7 billion in economic output (Cullinane Thomas, Huber, and Koontz 2015). The act creating the NPS emphasized both conservation and recreation, and this emphasis is a core foundation of the NPS today. National recreation areas were established in the early 1960s in an effort to include more recreational activities in protected areas.

Acadia National Park is currently the only national park in Maine. Over the last few decades, there have been multiple efforts to introduce a second national park in Maine (see Lilieholm 2007 and Vail 2007 for a discussion of these efforts). These efforts started in the 1980s as Maine's economy started changing with the availability of cheap overseas timber and the decrease in the demand for paper. This resulted in a shift in the ownership of Maine forests from timber/paper corporations to investment firms, specifically timber investment management organizations and real estate investment trusts, and private homes (Bell 2007; Clark and Howell 2007; LeVert, Colgan, and Lawton 2007). With these growing changes, an increasing need to protect the land and create additional economic opportunities beyond the timber industry led to the initial efforts to create a new national park and develop the Maine North Woods

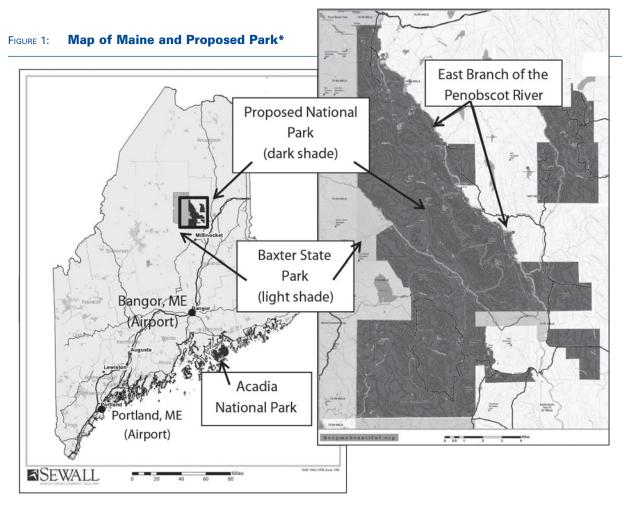
as a tourist destination that included trails, heritage attractions, and resorts (Lilieholm 2007; Vail 2007).

The current effort focuses on creating both a national park and a national recreation area in the Maine North Woods. (See map, Figure 1.) Elliotsville Plantation, Inc., (EPI), a nonprofit foundation, has offered to donate about 75,000 acres for a national park and about 75,000 acres for a national recreation area. According to articles in the *Bangor Daily News* by Judy Harrison (January 6, 2016) and Nick Sambides (June 2, 2015), EPI has also proposed to create a \$40 million endowment to pay for the management and infrastructure of the national park.

National Parks and National Recreation Areas

The National Park Service Organic Act, signed into law by President Woodrow Wilson in 1916, created the National Park Service "to conserve the scenery and the natural and historic objects and wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

The system of national recreation areas was created by an executive branch policy signed into law by President John F. Kennedy in 1963. National recreation areas are focused on outdoor recreation and typically allow hunting and off-road vehicle activities. National recreation areas can be maintained by multiple federal agencies.



*Boundary shown is approximate. Baxter State Park is not part of the proposed park. These maps were included in the introduction to the survey we conducted of out-of-state residents.

Source: Maps obtained from the Natural Resource Council of Maine (NRCM).

Currently there is a good understanding of local preferences both in support and in opposition to the park. However, there is no information about preferences of out-of-state visitors for the proposed park. This information is important as out-of-state visitors to the proposed national park may constitute a significant portion of total visitors, and they have the potential to contribute to economic growth in the region and in Maine. We hope to fill this information gap with our study.

In the sections that follow, we briefly discuss the current support and motivation for the proposed park; present our central thesis about the importance of out-of-state visitors' preferences; discuss our methods; analyze our results; and finally discuss implications for policy.

PREFERENCES OF MAINE RESIDENTS

Support

Supporters of the proposed park argue that it would bring a number of tourists into Maine and help boost the stagnating economy of the region. Lucas St. Clair, the president of EPI, said that a park would generate 400 to 1,000 jobs for the local economy;² promote the diversification of a Katahdin region economy devastated by closure of paper mills; and coexist with traditional industries while preserving the area's recreational heritage (Headwaters Economics 2012).

As reported by Lisa Pohlmann in the *Bangor Daily News* (December 1, 2015), a survey conducted in May

2015 by Moore Information, a nationally respected Republican polling firm, found that a majority of 500 respondents across the second congressional district in Maine are supportive of a national park: 57 percent of Republicans, 77 percent of Democrats, and 68 percent of independents. Overall, 67 percent of respondents surveyed approved the creation of a park, whereas about 25 percent opposed it. The survey also found that among residents who describe themselves as "somewhat" or "very" conservative, slightly less than the majority support the proposal. About 35 percent of all respondents said they were less likely to support the park if the "designated national park would only bring restrictions on access to the nature in the area, which is currently accessible to Mainers." Similar results were identified in a statewide tracking survey conducted by Critical Insights that documented 3:1 statewide support vs. opposition for the park proposal (NRCM 2016).

The proposal for the park is also receiving growing support from business. Nick Sambides reports in the *Bangor Daily News* (April 15, 2016) that more than 200 businesses in the region and multiple regional chambers of commerce, the Maine Innkeepers Association, and the Bangor City Council have endorsed the proposal for the park.

If the new park attracts new out-of-state visitors...it will be much more successful in contributing to the local economy.

Opposition

There has been steadfast opposition to the park from local activists. In stories in the *Bangor Daily News* on June 23 and June 29, 2015, Sambides reports that a majority of residents in Medway and East Millinocket voted against a proposed 150,000-acre national park in nonbinding referenda: 252 out of 354 voters in Medway and 320 out of 511 voters in East Millinocket opposed the park.³ In April 2016, residents of Patten voted 121-53 against the park in a nonbinding referendum (Sambides, *Bangor Daily News* April 20, 2016).

There has been a recent movement to designate the proposed park area as a national monument, which can be established by a presidential executive order and does not require Congressional authorization as national parks do. Monument status, too, has opposition. Three members of Maine's Congressional delegation (Senators Angus King and Susan Collins and second district Representative Bruce Poliquin) sent a letter to President Obama expressing "serious reservations and significant concerns" about the national monument designation (Miller, Portland Press Herald, November 23, 2015). Maine Governor Paul LePage introduced a largely symbolic bill in the legislature in opposition to national monument status for the proposed park area. As reported by Kevin Miller (Portland Press Herald, April 11, 2016), that bill, in revised form, passed narrowly in both the Maine House and Senate in April 2016.

Opponents of a national park claim that it would create only seasonal, lower-paying jobs and hurt traditional industries such as forest product industries. They also believe that a park would bring undesirable federal government authority into Maine. According to these newspaper articles by Miller and Sambides, strong opponents include hunters and snowmobilers, who believe that hunting, snowmobiling, and other activities would be restricted if a national park were to be created.

STATED PREFERENCES OF OUT-OF-STATE VISITORS: THE MISSING INFORMATION

Ithough Maine residents' preferences for the Aproposed park are well documented, there has been no attempt to date to understand the preferences of residents of neighboring states. It is important to understand these preferences because out-state tourists contributed more than \$5 billion to Maine's economy and typically make up over 90 percent of overnight and over 65 percent of day visitors to sites in Maine (MOT 2014). Though out-of-state visitors are likely to make up smaller percentage of visitors to locations in northern Maine, these visitors are going to end up deciding if the proposed park will contribute to improving the economy of northern Maine. If the park does not attract new visitors, the economic impact will be low, as visits will come from locals and most possibly as a substitution for other activities in Maine. If the new park attracts new out-of-state visitors to the region and to the park, it will be much more successful in contributing to

the local economy. The results from our study on preferences of out-of-state visitors provide valuable information as Maine's policymakers and residents discuss and debate the costs and the benefits of a new national park.

METHODS

Choice Experiment Survey

We used a choice experiment survey to elicit preferences of out-of-state visitors for the proposed park. Choice experiment surveys are an example of stated preference methods used by environmental economists to elicit public preferences and willingness to pay (WTP) for specific goods, services, or policies (Adamowicz et al. 1998; Hensher et al. 2005). Choice experiments are often used to value nonmarket resources, such as environmental conservation projects, restoration of natural land, or the impact of pollution (Carlsson 2003; Meyer 2013; Dissanayake and Ando 2014). Choice experiment surveys are based on Lancaster's (1966) consumer theory and random utility theory (McFadden 1974). Lancaster asserted that consumers' utility is derived from properties or characteristics of the goods, rather than goods themselves.

The thought process is that when a consumer purchases a pizza (or a car) what the consumer is actually purchasing is a collection of attributes such as toppings, crust, brand name, delivery time, or price, and the consumer's utility (or satisfaction) is a based on these characteristics. By asking consumers to repeatedly make choices over pizzas (or cars) with varying characteristics, we can understand how the characteristics of the pizza (or the car) influence choices, and we can calculate the marginal value price of the characteristics (e.g., what is the additional value of a topping or ensuring quicker delivery).

A choice experiment follows this approach and presents respondents with the opportunity to choose from bundles of goods or policies where the levels or values of the characteristics of the bundle change based on a systematic design. Thus, choice experiment surveys allow the researcher to examine the distinct components of the respondents' preferences. Since choice experiment surveys allow the calculation of the trade-off between the specific characteristics of a composite good, the researcher can understand how respondents weigh each characteristic of the good relative to another.

Design of the Choice Experiment and Data Collection

At the beginning of the survey, respondents were provided information about the location of the park using maps that clearly identified Portland, Bangor, Acadia National Park, and Baxter State Park in addition to the proposed park and recreation area. (See map, Figure 1.) The survey also included limited information about the proposed park and the environmental amenities to be expected in the park.4 The survey allowed respondents to express their preferences over pairs of hypothetical parks that have the following attributes: types of access (fishing and hunting), types of trails (hiking and ATV/snowmobile), economic impact (expected number of jobs), and entrance fee. These attributes were selected after informal discussions with the public, researchers, and policymakers; conducting multiple formal focus groups; and a trial survey of out-of-state residents. The payment attribute—the entrance fee-presented six levels ranging from \$10 to \$60. All the nonmonetary attributes have three different levels as shown in Figure 2. We calculated the marginal willingness to pay (WTP) for each attribute by comparing the relative value for the attribute with the relative value for the entrance fee.

Using experiment design techniques, we generated 42 choice questions. Each respondent answered six of these questions. Figure 3 illustrates one set of choices presented to respondents.

Besides the choice question sets, the survey included sociodemographic questions that inquired about the respondents' involvement in hunting and snowmobiling and their beliefs about appropriate and inappropriate government involvement. The answers to those questions were used to analyze and explain the heterogeneity in respondents' preferences based on their levels of involvement in hunting and/or snowmobiling activities and their belief about government involvement.

The survey was conducted by Qualtrics, a professional survey firm, using an online panel in October 2015. The survey results were collected from 532 randomly selected out-of-state residents from Connecticut, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, and New York. We purposefully did not specify demographic characteristics for the online panel to ensure a random sample. In summary, the sample is similar to the population of these states on income and educational distribution,

FIGURE 2: Attribute Levels

Benefits	Definition
Types of Access	Types of Access: refers to the types of recreational activities that will be permitted within the park boundaries No Fishing & No Hunting Fishing but No Hunting Fishing & Hunting Permitted
Expected Economic Impact	Expected Economic Impact: refers to the total contribution to the Maine economy from the National Park from visiting tourists, new jobs being created and local industry surrounding the park. - 400 New Permanent Jobs (about \$10 million added to the economy) - 800 New Permanent Jobs (about \$20 million added to the economy) - 1200 New Permanent Jobs (about \$30 million added to the economy)
Types of Trails	Types of Trails: refers to the types of trails that will run through the park boundaries. Different trails will promote/allow different modes of transportation. Only Hiking, Biking, and Cross-Country Skiing ATV/Snowmobile Access & Hiking/Biking/Cross-Country Skiing
Cost to Households	Cost to Visitors: refers to the entrance fee to visitors of the new park. Entrance Fee (per vehicle) - \$10 - \$20 - \$30 - \$40 - \$50 - \$60

but is younger and comprises more female participants.⁶ (Details about the demographic characteristics of the respondents are available from the corresponding author.) In the estimation, we account for all these variables and find that age and gender do not have a significant influence on the preferences. We present the results and policy implications next.

RESULTS

The majority of respondents expressed interest in travelling to the proposed park in Maine: 68 percent of respondents said that they would be likely to visit the park. Only 22 percent of respondents had visited Acadia National Park in the last five years and less than 7 percent of respondents had visited Baxter State Park in the last five years. The results do show that a large number of residents from neighboring states might

be interested in visiting the proposed park and that the park would attract new visitors to Maine. It is important to note that since the survey asked "Are you likely to travel to this park?" actual visits may be lower than the 68 percent reported by our respondents.

We found that visitors would stay for three to five days on average and that 50 percent would combine a visit to the proposed park with a visit to either Acadia National Park or to some other destination on the Maine coast. These figures highlight that out-of-state visitors to the park would also visit other locations in Maine and as such can provide an important boost to the economy in both northern Maine and coastal Maine.

Choice Experiment Results

We analyzed the choice experiment results using a conditional logit (CL) model, a mixed multinomial logit (MMNL) model, and MMNL model

FIGURE 3: Sample Choice Question

Choice Question 1

Suppose Option A and Option B were the **only** hypothetical national park projects you could choose. Which **one** would you choose? Please read **all** the features of **each** option and then **check the box that represents your choice**. If you do not like either option A or option B, then please choose the box marked "No National Park" which is Option C.

Attribute	Types of Access	Types of Trails	Economic Impact	Entrance Fee	I Would Choose
Option A	Fishing Permitted & No Hunting	ATV/Snowmobile Access & Hiking/Biking/Cross- Country Skiing	400 New Jobs	\$50 Entrance Fee	□A
Option B	Fishing & Hunting Permitted	Only Hiking, Biking, and Cross-Country Skiing	800 New Jobs	\$20 Entrance Fee	□В
Option C	No National Park (No recreation access and no new jobs)			No Cost	□с

with interaction terms. The detailed regression results are available from the authors; we synthesize the results in this article. The results indicate that respondents value access to fishing and the creation of jobs for the local economy. Respondents in general dislike the access to hunting and to ATV/snowmobiling in the proposed park. Not surprisingly, however, the respondents who engage in hunting and/or snowmobiling support access to hunting and/or snowmobiling in the proposed park.8 The results also show that respondents with higher income are willing to pay more for entrance to the proposed park. In addition, respondents who believe that the federal government should be more involved in protecting the environment, ensuring access to health care, and reducing poverty are more likely to support a national park.

Table 1 shows the marginal willingness to pay (WTP) of each attribute averaged for the CL and

MMNL main effects models. We find that respondents are willing to pay on average \$83 dollars for admission to the park before taking into consideration the values for the other attributes. The marginal WTP values indicate that respondents value access to fishing and creation of jobs for the local economy, but dislike allowing hunting and ATV/snowmobile use in general. The results show that respondents would pay approximately \$12 more if fishing is allowed in the proposed park. Similarly, respondents would pay approximately \$3 more if 100 additional jobs are created, indicating that though job creation is important for out-of-state visitors, recreational amenities are more important. However, respondents on average would pay approximately \$17 less if hunting is allowed. These estimates are highly statistically significant and robust across both the CL and MMNL models.

TABLE 1: Marginal WTP of Each Attribute from CL and MMNL Model

Attribute	Marginal WTP¹ (\$)		
Alternative specific constant	83.0***		
Fishing is allowed	12.4***		
Hunting is allowed	-17.4***		
New jobs created (in hundreds)	2.9***		
ATV/Snowmobile allowed	-0.3		
Observations	9,576		

p < 0.1, p < 0.05, p < 0.01, p < 0.01

To better understand how the preferences vary across sociodemographic factors, we expanded the analysis to account for respondents' recreation behavior and income, gender, education, and age. We found that higher-income and more educated respondents are willing to pay more for the proposed park, but age and gender do not have a significant influence on the WTP for the park.

Table 2 shows the marginal WTP for allowing hunting based on engagement in hunting and belief regarding government involvement in policy. We differentiate hunters⁹ from nonhunters and respondents who believe that the federal government should be more involved in protecting the environment, ensuring access to health care, and reducing the poverty from other respondents.

TABLE 2: Marginal WTP for Allowing Hunting Based on Engagement in Hunting and Belief in More or Less/Same Government Involvement*

Government	Engage in Hunting		
Involvement in Policy	Yes	No	
More	\$64 [\$17, \$111]	-\$32 [-\$49, -\$14]	
Same/Less	\$47 [\$19, \$74]	-\$23 [-\$32, -\$14]	

^{*} The results are significant at the 0.01 percent significance level. The 95 percent confidence intervals are provided within the brackets.

The result indicates that the marginal WTP for allowing hunting is significantly different between hunters and nonhunters while the marginal WTP is not significantly different between respondents who believe in more governmental involvement and other respondents. Therefore, though only 9.8 percent of the sample engaged in hunting, allowing for hunting in part of the proposed park might attract more visitors who are willing to pay an additional amount.

Finally, we calculated the total willingness to pay (TWTP) for the proposed park. As we have discussed, this value would vary based on a number of factors including park characteristics and visitor characteristics. Therefore, we present values for a park that allows fishing and would lead to the creation of 400 jobs. If the park allows for hunting and snowmobiling (a national recreation area), respondents who engage in these activities would be willing to pay on average \$182. For a park that does not allow hunting and snowmobiling (a national park), respondents who do not engage in hunting and snowmobiling would be willing to pay on average \$120. As mentioned previously, hunting has a negative marginal WTP for those who do not engage in hunting; therefore, respondents who do not engage in hunting and snowmobiling would only be willing to pay on average \$95 for a national recreation area and are thus less likely to visit the national recreation area.

CONCLUSION

Our survey of respondents from neighboring states to understand preferences for the proposed Maine park found that 68 percent are likely to visit a new park and would stay on average three to five days. We also found that more than 50 percent of the respondents would combine a visit to the new park with a visit to Acadia National Park or the Maine coast. These findings suggest that a proposed national park and recreation area has the potential to draw new visitors to Maine and to increase tourism to other parts of the state.

We found that the preferences and WTP for the new park are influenced by respondents' current recreation activities. Those who currently engage in hunting, fishing, and snowmobiling are willing to pay more in entrance fees for a park that allows these activities. We also found that the WTP of respondents who do not engage in hunting decreases if hunting is permitted. Thus, creating both a national park (without access to

¹ The results show the average values between the CL and MMNL models. Full results tables including t-statistics can be obtained from the corresponding author.

hunting and ATV/snowmobile routes) and a national recreation area (with access to hunting and ATV/snowmobile routes) might attract the most visitors for a given entrance fee, compared to having just a national park. In fact, the current proposal includes 75,000 acres to be designated as a national park and another 75,000 acres to be designated as a national recreation area where the land and cleared trails are open to hunters and snowmobilers. The biggest policy recommendation from our work is that by including both a national park and a national recreation area, the current proposal aligns with the preferences of a broad group of likely visitors from neighboring states. By having both a national park and a national recreation area, the current proposal caters to the preferences of more visitors and could provide a significant boost to the local economy both around the park and in other areas of Maine.

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ENDNOTES

- 1 EPI currently owns 87,500 acres of land east of Baxter State Park and is seeking to purchase additional 62,500 acres to create a national park and recreation area.
- 2 The employment figures are based on a study conducted by Headwaters Economics. The study is available at http://headwaterseconomics.org /economic-development/local-studies/katahdin
- 3 However, St. Clair pointed out (*Portland Press Herald*, November 29, 2015) that chambers of commerce, business groups, newspaper editorial boards, and some

- local officials have supported the park campaign and did not see the referenda in the two towns as a failure of the campaign.
- 4 The survey did not include explicit information about nonenvironmental amenities such as hotels or restaurants in the area.
- 5 The monetary attribute has six levels, and each of the nonmonetary attributes have three different levels. Since a full factorial design of all possible combinations is computationally unreasonable, we used a fractional factorial design to reduce the full factorial design to 42 choice sets, which were separated into blocks of six choice profiles, giving seven unique survey versions with six questions each.
- 6 Approximately 39.5 percent of the respondents have bachelor's degrees, whereas 36 percent of the population in the seven states has a college degree (demographic information on the seven states comes from the U.S. Census [http://www.census.gov/quickfacts]). The highest number of respondents was in the \$50,000 to 74,999 income category and the median income for the population of the seven states in 2014 was \$64,071. Approximately 80 percent of the sample is female while only 51.4 percent of the population for the seven states is female. More than half the respondents are younger than 35 years, whereas the median age for the population of the seven states is 39.
- We asked the following question, "Are you likely to travel to this new park? If yes, how long will you stay? Yes, ____ days. No."
- 8 Of the respondents, 9.6 percent reported engaging in hunting and 8.6 percent in snowmobiling.
- 9 Respondents who have been hunting at least once in the last five years.

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Andrew Meyer is an assistant professor of economics at Marquette University. He conducts research in the areas of environmental, behavioral, and education economics. Much of his work focuses on understanding what affects individuals' pro-environmental behavior and willingness

to pay for environmental amenities.