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The Northern Forest Canoe Trail: economic impacts and implications for community development

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tourists for decades, other types of trails have been developed more recently, such as the Great Texas Coastal Birding Trail and the European Route of Industrial Heritage. Yet little information exists about how these trails create economic benefits in rural economies, and most economic impact studies are either focused on single recreation sites or are conducted at too large of a scale to capture sub-regional differences. Therefore, policy-makers and community development practitioners may hold incomplete and rudimentary perspectives that fail to take account of the suite of context-specific variables that drive the actual economic impacts of recreation. This paper examines the Northern Forest Canoe Trail (NFCT) as a case study to identify the factors that affect a recreation trail's economic benefits and to demonstrate how sub-regions can experience and respond to a regional recreational resource differently.

The NFCT is a 740-mile canoe and kayak route that traverses the Northern Forest, a 26-million-acre bioregion extending across northern New York and New England. The trail follows waterways historically used by Native Americans and early settlers, and passes through both remote wilderness and populated areas (NFCT, 2006). Since 2000 the Northern Forest Canoe Trail association has been developing campsites, signage, portage trails, and promoting the trail in the media. Community involvement is a key part of trail development and, similar to community development efforts throughout the USA, multiple participation tools have been used to gather input and involve stakeholders (Chase, Amsden & Phillips, 2011). The association has found that in several Northern Forest communities there is a marked variation in both the recreation infrastructure in place and the perceptions of the value that nature-based tourism can bring to their communities.

Conceptualizing economic impacts

Economic impact analysis measures commerce attributable to recreational activities to determine effects in local economies (Cloke, 1993; Douglas & Harpman, 1995; Stynes, 1999). Visitors drawn to an area for its recreational resources spend money for goods and services. Their expenditures circulate among businesses before leaving the local economy (Blakely & Bradshaw, 2002; Power, 1996).

Input...output models, which combine visitor expenditure data with regional, industry-specific multipliers, are a tool for estimating economic impacts (Blakely & Bradshaw, 2002). They quantify indirect and induced impacts by calculating the multiplier effect, or the degree of monetary recirculation within the local economy. While concerns exist regarding the tendency of input...output models to overstate multipliers, appropriate corrections can be applied (Loomis, 2007).

Several input...output models have been developed for trails and park economic impact studies, including the Money Generation Model (MGM2), developed by the National Park Service, and IMPLAN, developed by the United States Forest Service and then MIG, Inc. (Douglas & Harpman, 1995). Input...output models also estimate the number of jobs and personal income supported by visitor expenditures.

Factors influencing economic impacts

A review of previous studies suggests that the characteristics of a recreational activity significantly affect the economic impacts in local communities. Relevant variables appear to be the number of visitors, the mix of local and non-local users, the

quantity and pattern of visitor expenditures, and the degree of multiplication and leakage within the local economy.

The volume of visitors is a significant driver of economic impacts. For example, Blank and Simonson (1982) estimated that 12,000 paddlers visiting the Crow River in Wisconsin contributed \$148,000 to the local economy in one season. In contrast, an estimated 76,750 paddlers visited a comparably sized section of the upper

Surveys were also administered directly by staff at several campgrounds. Staff were asked to distribute the survey to every paddling group entering the park. Groups were identified by the presence of canoes or kayaks on top of their vehicle, and surveys were completed during the campsite registration process. In practice, not every paddler group was asked to complete the survey. However, when approached, sampled groups were willing to participate about 90% of the time (n = 51).

Following a procedure used by Daigle (2004), surveys were distributed to paddlers at two North Maine Woods checkpoints. Staff were asked to distribute the survey to every paddler group whose destination was the Allagash Wilderness Waterway. A letter describing the study and a self-addressed, stamped envelope were provided with each survey. One hundred and eighty-nine surveys were distributed in this manner. While the response rate (21%) and sample size (n = 40) were relatively low, paddler demographics and trip characteristics were similar to those reported in previous studies of Allagash paddlers (Daigle, 2004).

All surveys were checked for completeness and consistency. Attempts were made to contact respondents to clarify responses with inconsistencies relating to trip lengths, accommodation types, and expense estimates. Questionable surveys that could not be clarified were excluded from the data analysis.

In-person interviews were conducted with managers of lodging establishments and campgrounds with waterway access to obtain an estimate of the number of paddler groups entering the waterways via staffed locations. A list of all lodging establishments with water access was tabulated and sorted into four geographic locations. Every other lodging establishment from this list was chosen for a study sample. A mail-back questionnaire was distributed to gather detailed quantitative data. Follow-up telephone calls were conducted in November to obtain end-of-season use data as needed from the campgrounds. A total of 37 lodging and campground surveys were completed, with a response rate of 77%.

Using the surveys completed at registration kiosks, visitation rates were estimated by dividing the number of paddling trips reported by the registration, valid response, and operational kiosk rates. The valid response rate is the percentage of completed surveys that had the necessary responses to conduct this analysis. Operational kiosk rates were region-specific calculations of the percentage of the season kiosks that were fully operational.

Data obtained in the lodging and campground surveys were used to estimate the number of lodging and campground users in the Adirondack and Rangeley Lake study regions. At lodging establishments, the methodology was customized based on the data availability of each establishment. At campgrounds, visitation estimates were calculated by multiplying staff estimates of the proportion of campers and day users that were paddlers by the number of camping and day user groups recorded using the facility over the course of the 2006 season. North Maine Woods also keeps records of all the number of groups using the Allagash Wilderness Waterway. These records were subdivided into the different user types by using the proportions established through the paddler survey.

total number of estimated groups by the number of groups in the sample, and then rescaling these values to reflect the actual sample size.

Survey respondents provided information on their home town, Based on their responses, users were classified as local users or non-local users. Local users were defined as groups travelling less than 25 miles to reach the waterway. Groups were further differentiated based on trip length, and types accommodation utilized while in the region:

- . Local day users visitors with a residence within 25 miles of the waterway.
- . Non-local day users paddlers with a residence further than 25 miles from the waterway, on a day trip to the region.
- . Second-home owners visitors staying at a vacation home situated within 25 miles of the waterway, or staying, as a guest, with local residents.
- . Hotel, cabin renters visitors staying in a hotel, motel, or vacation cabin rental.
- . Campground campers visitors staying in a front country public or private campground.
- . Canoe campers visitors staying at backcountry campsites, reached by boat.
- . Guided campers campers on a backcountry trip led by professional guides.

The MGM2 was used to model economic impacts of visitor spending. This program, developed by Michigan State University in conjunction with the National Park Service, is a spreadsheet-based program that includes generic multipliers that control for the study area's geographical and demographic characteristics (Stynes et al., 2000).

To quantify sub-regional characteristics, univariate and bivariate analyses were

group compositions. The Androscoggin and the Allagash were more popular with large youth groups than other regions. This is probably due to the abundance of

experience; 90% of the respondents were canoe campers. The Missisquoi was dominated by non-local day users, who made up 46% of the paddler groups. None of the respondents in this region were canoe campers.

Economics variations

While the average paddler group reported spending \$343...416 within 25 miles of the waterway during the duration of their trip, or \$39 per person per day, expenditures varied significantly between user types and regions (4831, p5 0.001). Local groups spent a mean of \$12...28, or \$5 per person per day; non-local groups spent a mean of \$414...498, or \$46 per person per day. Guided campers (\$564...936) and hotel/cabin renters (\$613...929) had the highest expenditures, followed by campground campers (\$282...392), canoe campers (\$166...240), second-home owners (\$181...309), non-local day users (\$29...73) and local day users (\$9...29). Allagash respondents had the highest expenses, followed by Rangeley Lake, the Adirondacks, the Northeast Kingdom, the Androscoggin, and the Missisquoi (3.63, p5 0.001) (Table 3).

The results of the Tobit regression analysis provide further evidence that trip lengths, travel distance, and the use of hotel or cabins, guides or outfitters are significant variables in explaining total trip expenses, explaining about one-third of the variation ($r^2 = 0.27$). Group size, household income, and the number of annual paddling trips in the region were not significant variables (Table 4).

Based on the MGM2 model, an estimated \$8.8 million was spent in local economies by paddlers in the six study regions. After accounting for multiplier effects, these expenditures created \$6.6 million in value added to the local economy, supported an estimated 283 jobs and provided \$4.1 million in personal income. Table 5 summarizes the economic impacts in each study region. Total impacts were greatest in the Adirondacks, Rangeley Lake, and the Allagash due to high visitation by non-local paddlers on overnight trips in the region. Local communities in the Northeast Kingdom, and near the Androscoggin received modest benefits from paddler tourism and recreation. Due to relatively low use levels, particularly among tourists, paddlers on the Missisquoi contributed the least, even after accounting for variations in the size of the study regions.

Discussion and conclusions

The results of this study indicate that paddler recreation and tourism is currently supporting a modest number of jobs in local economies along the NFCT. However, intra-regional variation in impacts is significant; paddler recreation in the Adirondack study site has a 100-fold greater impact than recreation along the Missisquoi River. The NFCT study sites span the known range of average trip expenses across paddler studies in several other locations (Figure 2). Variations in visitor numbers, user types, trip characteristics, and expenditure patterns appear to be driving these differences along the NFCT.

Local communities have a key role to play in guiding the development of regional trail systems. Building campsites, developing new access points, permanently protecting river corridors, hosting canoe races and boat festivals, and promoting recreational opportunities in the media are largely locally driven efforts. The degree to which communities ch031wt2tudyt3ttgr784.6(t1s)-and -8.2(e2(t55)-367rcommuvelogie

Table 3. Mean expenditures per group per trip.

Expense category	Adirondacks	Missisquoi River	Northeast Kingdom	Androscoggin River	Rangleley Lake	Allagash	All regions
Lodging	\$235.16	\$17.44	\$17.68	\$94.55	\$181.40	\$68.92	\$127.86
Restaurants	\$81.11	\$12.85	\$13.03	\$14.24	\$94.86	\$54.93	54.62
Groceries	\$45.79	\$13.96	\$20.95	\$68.07	\$83.19	\$62.30	\$48.69
Transportation	\$36.33	\$8.11	\$10.96	\$46.65	\$39.19	\$159.81	\$54.13
Access fees	\$2.20	\$0.24	\$0.30	\$2.26	\$0.49	\$97.56	\$19.27
Guides, outfters	\$18.30	\$1.03	\$1.78	\$3.39	\$0.76	\$266.69	\$56.70
Other retail	\$37.50	\$3.44	\$10.86	\$12.28	\$27.07	\$25.97	\$24.57
Entertainment	\$7.56	\$0.12	\$1.19	\$0.00	\$14.24	\$0.00	\$4.69
Other	\$7.95	\$0.00	\$6.84	\$14.85	\$3.42	\$32.67	\$11.77
Total expenses	\$470.45	\$56.76	\$83.44	\$255.58	\$443.92	\$750.35	\$400.34
n	430	68	171	34	95	33	831

Note: Standard errors are in italics.

Table 4. Results of Tobit regression analysis.

Variable	b	p value
Trip lengths	50.15	0.00
Travel distance (miles)	0.099	0.02
Hotel/cabin renters	496	0.00
Guide/outfitter users	278	0.00
Household income	0.09	0.75
Number of paddling trips	7.2	0.26
Group size	4.12	0.28

Table 5. Economic impacts of visitor spending across study regions.

Study region	Trail miles	Output/sales (x \$1000)	Personal income (x \$1000)	Value added (x \$1000)	Total jobs	Income per trail mile (x \$1000)
All regions	219	12 039	4143	6626	283	18.96
Adirondacks	58	6089	2104	3342	134	36.59
Missisquoi	10	64	21	33	2	2.10
Northeast Kingdom	33	557	195	305	15	5.91
Androscoggin	17	452	156	252	12	9.18

a coordinated approach serving as a component of a larger, more regional tourism development strategy that reflects the economic realities of paddler spending profiles.

Variations in the types of users drive regional differences in economic impacts.

stewardship organizations form realistic expectations of the benefits for local economies. Results indicate the presence of significant sub-regional variations in visitation rates, trip characteristics, and resulting economic impacts. This variation has important implications for regional land managers and community development practitioners planning linear recreational networks that span a variety of sub-regions with differing use characteristics and economic impacts.

The recent formation of the NFCT provides a unique opportunity to study community change early in the process and to measure the impacts of recreation trail development. Continued sub-regional monitoring will shed insights on how communities respond differently to the opportunities and challenges that the trail presents. These insights will be relevant for regional land managers, community development practitioners, and policy-makers seeking a more sophisticated understanding of the implications of recreation trails for community development in rural areas.

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