

URBAN ENCROACHMENT BRINGS DEVIANT BEHAVIOR TO RESOURCE RECREATION AREAS

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Abstract.—The encroachment of urban areas on resource recreation areas has added several challenges to resource and recreation managers. Unfortunately, Chavez and Tynon (2000) indicated one of the impacts of urban encroachment on natural resource areas is an increase in crime. Given that with urban encroachment comes a heightened perception of crime (Chavez & Tynon 2000, Wynveen et al. 2005), this study's purpose was to identify specific crimes which were perceived by park rangers to occur with a varying frequency depending on the proximity of the respondent's park to an urban area. Study results indicated that urban encroachment is correlated with the perceptions of crime in a resource area. Burglary, arson, motor vehicle theft, homicide, and vandalism are crimes perceived to occur more frequently in parks closer to urban areas. In contrast, wildlife poaching and artifact theft were significant crimes perceived to occur more often in parks farther from urban centers.

1.0 INTRODUCTION

Land agencies are continually adapting to changes in visitor use patterns and behaviors. These changes in visitors, along with recent political developments, have placed federal, state, and local land agencies in a precarious position. The encroachment of urban areas on natural resource recreation areas has added several challenges to resource and recreation managers. Unfortunately, Chavez and Tynon (2000) indicated one of the impacts of urban encroachment on natural resource areas is an increase in crime.

It is widely accepted that criminal activity negatively impacts visitors' recreation experience in the nation's

parks and forests (Fletcher 1983). "Much of the undesirable behavior which managers must deal with in the wilderness is behavior that disrupts the natural order or the ability of others to experience nature" (Wallace 1990, p. G4).

Given that with urban encroachment comes a heightened perception of crime (Chavez & Tynon 2000, Wynveen et al. 2005), the purpose of this study was to identify specific crimes which were perceived by National Park Service (NPS) rangers to occur with a different frequency depending on the proximity of the respondent's park to an urban area (a metropolitan area with population of 75,000 or more). Based on the literature, it was hypothesized that urban encroachment would be correlated with perceptions of crime in a natural resource area. Specifically, it was hypothesized that universal crimes (crimes that did not involve the resource) would be perceived to occur more frequently the closer the park was to an urban area. Also, intentional resource violations (crimes purposely damaging the resource) would be perceived to occur more frequently in parks farther away from metropolitan areas.

2.0 RELATED RESEARCH

2.1 Recreation and Crime

It could be assumed that crime and recreation are not strongly related in any manner. However, Pendleton (2000) writes that "the meaning of crime and the meaning of leisure are determined by interactions between people and between people and the settings in which they find themselves" (p. 113). The interaction between people and crime is the basis of a few studies on visitor perceptions of safety and how those perceptions change visitors' behavior. Fletcher (1983) found that crime impacts an individual's recreation in the following ways: "(1) ...actual and perceived safety and security problems appeared to affect negatively the use and enjoyment of parks; ... (2) safety and security concerns were reasons for reduced use and enjoyment of the parks by a minority of those users interviewed..." (p. 34).

The mechanisms involved in creating the negative impact of crime on recreation are many. The literature cites two main constructs linking crime and the recreation experience: constraints and Csikszentmihalyi's flow experience. Crawford and Godbey (1987), Crawford et al. (1991), and Mannell and Kleiber (1997) have all indicated that fear can be a constraint to leisure participation. Hence, fear for personal safety and of crime may prevent an individual from enjoying or even participating in recreation on protected lands. The flow experience, which matches skill level and challenge of experience over time to create satisfaction, may also be affected by perceptions of crime and safety. For example, if visitors perceive crime to be a problem to be overcome during their recreation experience they may question their ability to negotiate the perceived dangers inherent to crime (Coble et al. 2003). Thus, if participants perceive that they are not overcoming the challenges involved in their experience, they will fall below the optimal flow zone, hence having a diminished and unsatisfactory leisure experience. Clearly, theories of recreation constraints and flow experience describe how crime can have a negative impact on the leisure experience.

Although crime has direct and indirect negative impacts on recreation, the techniques used to deter criminal behavior may also have an indirect impact on recreation. For example, rules and regulations designed to encourage appropriate visitor behavior also confine the recreational experience. "On the one hand is the need to maintain law and order in the park. On the other is the need to recognize law enforcement practices may negatively and unfairly impact the average visitor" (Phillely & McCool 1981, p. 367). In 1982, Lucas postulated that rules and recreation are opposed to each other when freedom of choice is considered. Perceived freedom is a main tenet of recreation, yet regulations limit that freedom. Hence, although the rules and regulations are developed for the good of the resource and the visitor and to limit the negative impacts of inappropriate behavior of a few, they create a burden on the recreational experience of the law-abiding visitor. Furthermore, Hammitt and Cole (1998, p. 222) posit: "Regulations are particularly undesirable toward the primitive end of the recreational opportunity spectrum, where regimentation is supposed to be low."

Clearly, both criminal behavior and management techniques designed to limit these behaviors constrain visitors. Thus, it is important for rangers to choose enforcement techniques carefully. However, in order for law enforcement officers to make wise decisions, further research is needed on the enforcement techniques currently advocated by rangers.

2.2 Perceptions of Crime in Protected Areas

Although criminal activity occurs in protected areas, it is unclear if the amount of crime occurring is perceived accurately. Chavez and Tynon (2000) indicated there is a lack of public awareness of crime on U.S. National forests. Dunham and Alpert (1997) indicated the public believes crime, in general, is progressively getting worse even though it is not. Moreover, they found that citizens do not understand the forces underlying the crime rate. "Crime rates are affected by vast social, economic, and political forces" (Dunham & Alpert 1997, p. 240).

Where do these perceptions originate? This question has yet to be fully answered. Phillely and McCool (1981) indicate sources such as gossip, hearsay, and (un)educated guessing. Among law enforcement rangers, they posit that perceptions may be influenced by background, law enforcement experience, and length of tenure dealing with crime.

Regardless of the basis for crime perceptions, they exist and are correlated with a number of factors. Phillely and McCool (1981) found, among NPS managers, perception of the amount of serious crime was positively correlated with the number of acts of vandalism reported in the park. Furthermore, they indicated that managers' perceptions were affected more by the total number of criminal acts rather than the crime rate (acts per 100,000 visitors). To understand the perceptions of visitors and protected area employees, there is a need for more research on the differing perceptions of crime and law enforcement.

2.3 Type of Crimes

Another topic in the literature concerning protected areas and crime are typologies of the crimes that take place. Hendee et al. (1990) (as cited in Lukas 1999) indicate there are five different types of violations against

protected areas beyond intentional violations such as tree theft and poaching. The first type Hendee et al. describe is that of *illegal uninformed actions*. These are criminal actions taken by individuals who are unaware of laws and regulations or are unaware that they are in a protected area. Examples of illegal uninformed actions might be off-highway vehicle use, theft of artifacts, or camping in a restricted area. *Thoughtless violations* are acts committed by an individual who does not think about the consequences of his actions or does not understand the effects of an action. Unintentional littering or failure to comply with boating safety regulations can be examples of thoughtless violations. The third type of violation that Hendee et al. describe is *unskilled actions*, which are actions taken by an individual to solve a problem because that individual does not have the skills to handle the problem appropriately. Such actions might be the ditching of a tent or using damaging equipment while rock climbing. *Uninformed behavior* are actions taken by individuals who were never informed of actions that impact the protected areas. Uninformed behavior takes place when changes in regulations and laws are not adequately publicized or when agency staff does not take the necessary steps to provide users with the appropriate information. The last type of violation that Hendee et al. recognizes is *unavoidable minimum impact*. These are violations due primarily to the presence of human beings in an area. Unavoidable minimum impacts are characterized by such impacts as compaction of vegetation and soils from hikers who have strayed off the trail. The above actions combined with the following distinctions complete the typology of behaviors that can occur in protected areas: *intentional resource violations* and *universal crime*. Intentional resource violations are crimes that obviously impact the resource in a destructive way, such as poaching and artifact theft. Universal crimes are crimes that can occur in any setting.

3.0 METHODS

3.1 Study Area, Population, and Response Rate

The data were collected via a Web-based survey in early March 2005, with 3,023 full-time NPS rangers and superintendents contacted via email to participate in the study. Completed surveys were returned by 527 respondents and 94 of the email addresses were

determined to be invalid (effective N=2,933). Thus, a response rate of 18.0% was achieved.

3.2 Survey Instrument

The instrument used to survey the NPS employees was a Web-based questionnaire. A Web survey was chosen because it was determined to be the most appropriate way of contacting individuals across all states and territories of the United States. Furthermore, Dillman (2000) indicated that response rates and response validity are similar or better than a paper mail survey when dealing with a population that has complete email and World-Wide Web access as does the population in this study. The research team designed the instrument based on the relevant literature and conversations held with personnel in the Law Enforcement and Emergency Services Office of the NPS. The instrument was reviewed by an expert panel of law enforcement officers. After the individual items of the instrument were compiled, the instrument was then formatted to be used with *Web OnQ* (Witte 2004).

4.0 ANALYSIS AND RESULTS

The sample consisted of 527 usable surveys returned electronically through the World-Wide Web. About two-thirds of the respondents were male (n=342, 68.4%). The mean age was 44.3 (sd=9.2) with a range of 23 to 65 years of age. The length of employment with the NPS ranged from less than one year to over 40 years, with a mean of 18.2 years (sd=8.9). Almost three-fourths of respondents (n=372, 71.7%) had full-time law enforcement experience within the NPS. Over three-fourths (n=404, 76.66%) of the rangers surveyed currently worked in parks within a hundred miles of a metropolitan area of 75,000 persons or more. In summary, the respondents were predominantly male, in the middle of their NPS careers, and worked in park units within a couple hours of an urban area. Many have had law enforcement experience.

4.1 Crime and Urban Proximity

The analysis of the relationship between proximity of a national park and NPS rangers' perceptions of the frequency of crime occurrence indicate that certain crimes are perceived to occur at different frequencies at different distances from urban areas (Table 1). Burglary,

Table 1.—Differences among proximity to wildland-urban interface concerning perceived frequency of crime type (n= 515)

Criminal behavior	F	p	Distance in miles of park from urban area (n)		
			Less than 50 (281)	50 - 199 (180)	200 or greater (54)
Burglary	4.07	0.02	1.49 ^a	1.23 ^{a,b}	1.02 ^b
Theft	1.60	0.20	2.18	1.96	1.98
Arson	4.02	0.02	0.80 ^a	0.71 ^a	0.38 ^b
Motor Vehicle Theft	7.89	0.01	1.04 ^a	0.65 ^b	0.62 ^b
Homicide	3.63	0.03	0.54 ^a	0.41 ^{a,b}	0.28 ^b
Rape	0.28	0.76	0.61	0.58	0.52
Robbery	6.20	0.01	0.88 ^a	0.71 ^a	0.35 ^b
Aggravated Assault	1.12	0.33	1.17	1.26	0.96
Assault	0.49	0.61	1.33	1.46	1.36
Liquor violations	0.13	0.88	2.94	2.87	2.83
Drug violations	0.70	0.50	2.89	2.80	2.60
Wildlife poaching	3.56	0.03	1.97 ^a	2.38 ^b	2.06 ^{a,b}
Plant/Tree theft	1.07	0.34	1.38	1.55	1.26
Artifact theft	8.75	0.01	1.46 ^a	2.04 ^b	1.85 ^{a,b}
Vandalism	6.85	0.01	2.94 ^a	2.84 ^a	2.11 ^b
Other resource damage	0.28	0.76	2.76	2.86	2.71
Traffic violations	2.12	0.12	3.29	3.11	2.76

^{a,b} Means with different superscripts indicate statistically significant difference at the 0.05 level

Means based on a 5-point frequency rating scale (0=no occurrence; 3=moderate occurrences; and 5=heavy occurrences)

arson, motor vehicle theft, homicide, robbery, and vandalism are perceived to occur significantly more frequently in parks closer to urban areas. For instance, on a six-point rating scale (0=no occurrences, 3=moderate occurrence, and 5=heavy occurrence) respondents indicated that motor vehicle theft occurred more frequently at parks within 50 miles of an urban area ($\bar{x}=1.04$) than at parks 50 or more miles from an urban area ($\bar{x}=0.65$). Motor vehicle theft is the only crime that is significantly different between the two lowest distance categories. Burglary, arson, homicide, robbery, and vandalism are all significantly different at parks over 200 miles from an urban area and those within 200 miles of an urban center. Hence, the results indicate that although proximity to urban areas does affect the perception of the frequency of these crimes, the perceptions do not change at each distance interval.

The opposite relationship was found concerning wildlife poaching and artifact theft. These crimes are perceived to occur significantly more at parks more distant from urban areas. For instance, wildlife poaching occurs more frequently at parks between 50 and 199 miles from an

urban center ($\bar{x}=2.38$) than at parks within 50 miles of an urban area ($\bar{x}=1.97$). It is interesting to note that there is no significant difference between the farthest distant category and the closest category in regards to the perceived occurrences of either wildlife poaching or artifact theft. The mean value for perception of occurrence of wildlife poaching ($\bar{x}=2.06$) and artifact theft ($\bar{x}=1.85$) at distances over 200 miles from an urban area differed only from the 50-199 mile category, but not from the less than 50 miles from an urban area category (poaching $\bar{x}=1.97$; artifact theft $\bar{x}=1.46$).

After considering the rangers as a whole, analysis was conducted on the two-subgroups represented in the sample: sworn law enforcement officers and rangers who were not law enforcement officers. These data indicated that the trends identified above hold true for both subgroups analyzed individually. Universal crimes, such as motor vehicle theft, are perceived to occur more frequently at parks more proximal to the wildland-urban interface, whereas resource-dependent crimes, such as poaching, were perceived to occur more frequently at distant park units. This analysis also suggested that

although similar trends hold for each subgroup, non-sworn law enforcement rangers perceive crime occurrence less than sworn law enforcement officers. In turn, non-sworn law enforcement rangers do not perceive the difference between distance categories as great as sworn rangers.

5.0 DISCUSSION

The purpose of the present study was to understand the perceptions of NPS rangers concerning the frequency and type of crimes that occur across park units at different distances from the wildland-urban interface. While the limited research on this topic has focused on impacts of crime on the visitor experience or on protected area managers, the present study is important in that its focus was the relationship between the wildland-urban interface and park rangers' perceptions.

Urban encroachment was found to differentiate the rangers' perceptions of type and frequency of crime. These data support the first hypothesis that was tested. That is, crimes that can occur anywhere (major city, small town, or national park unit) occur in park units closer to urban areas. This finding suggests that the encroachment of the urban world on resource recreation areas influences the type of crimes and the perceptions of the frequency of those crimes. Non-resource dependent (*universal crimes*), such as burglary, motor vehicle theft, vandalism, etc., are perceived to occur more frequently at parks within 200 miles of a metropolitan area of over 75,000 people. These perceptions may be a result of increased visitation, greater infrastructure promoting accessibility of the parks to all users (law abiding and deviant), increased awareness on the part of the rangers, or a combination of these factors. This finding supports previous work done by Chavez and Tynon (2000), who documented the effects of urban encroachment on U.S. Forest Service land. Chavez and Tynon described the problems of "urban" crime on forest land in the west. They cited crimes such as drug manufacture, assault, and vandalism as occurring frequently in their case studies. Also, previous work by Wynveen et al. (2005) suggested that NPS rangers working closer to urban areas used more heavy-handed enforcement techniques than those at urban distant parks, who used more educational approaches. The perceptions of crime identified in this study may

help understand why rangers closer to urban areas felt it necessary to use harsher enforcement techniques. Clearly, there is more room for research in this area.

These data also supported the second hypothesis.

Intentional resource violations such as wildlife poaching and artifact theft were perceived to occur more frequently at parks more distant from the wildland-urban interface. Again, the reasons for this relationship need further study, but the user base and the size of the more remote park units may play a role. Successful poaching requires a person who is knowledgeable about flora and fauna. These crimes may occur more frequently at parks whose local populations have a better understanding of these concepts, which are typically not urban dwellers. Furthermore, many resource violations are committed because violators are using the resource for subsistence purposes. Those who live near more distant parks may have a greater need to use the resources around them for subsistence purposes. Research needs to be conducted to ascertain the truth concerning the antecedents of deviant behavior in natural settings.

One question regarding this research is that it does not address the reality of the crime rates for the crimes examined or the reality of these crimes at parks at varying distances from metropolitan areas. Admittedly, this is a legitimate concern. However, at this time, there is no reliable or valid way to test the reality of these relationships because data on actual crime rates are problematic. In the NPS or any federal and many state land management agencies there is not a standard way to report crime statistics. This is often a case of jurisdiction. Many resource recreation areas are large and crimes are handled not only by the land management agency personnel but also by local law enforcement agencies. Hence, when a person is charged with a crime there is not a central database that records criminal activity across the NPS or even at most national park units. Without uniform reporting the validity of any comparison is suspect. In a study done by the International Association of Chiefs of Police (IACP 2000), however, an attempt to list crime by park was made. Without statistical evidence, it appeared that the relationships described in this study hold true for the data obtained from the IACP from 1995-1999. Moreover, law enforcement literature

suggests that the actual crime rate is not as important a factor concerning people's responses to crime as is the perception of crime. Dunham and Alpert (1997) indicate that it is common for people to perceive an increase in crime even when actual crime rates are being maintained or are dropping. These perceptions are what the public and thus law enforcement then base their behaviors on. Hence, the reality of crime at a park is not as directly related to individuals' recreation experience as their perception of crime might be. Thus, with the limitations of actual crime data and the important influence of perceptions on behavior, this line of research into the perceptions of crime is well founded.

Lastly, these data suggested that there are two categories of crimes that were perceived differently by rangers depending on the distance the park unit was from the wildland-urban interface. Arson, burglary, motor vehicle theft, vandalism, homicide, and robbery are all universal crimes. They can occur in any setting without major modification in how the behavior is exhibited. In contrast, artifact theft and wildlife poaching are behaviors that are dependent on the resource. Furthermore, violators are aware that by exhibiting these behaviors, they are affecting the resource in some way. Since these behaviors have a negative impact on the resource and they cannot be committed in other settings (e.g., urban street corner) without major modification, these behaviors can be labeled an *intentional resource violation*. Adding the two categories of *universal crime* and *international resource violation* to Hendee et al.'s (1990) labeling of deviant behavior in natural resource areas would complete the typology. The typology would then describe the full spectrum of unacceptable behaviors that occur in a resource recreation area. Everything from unintentional behaviors that offend social norms to crimes that have been codified by the legislature would then be represented in their typology. Obviously, research confirming the conclusion of this study is needed to support this proposed addition to the typology, yet this study does point in the direction of a larger typology of deviant behavior.

5.1 Implications

The implications for this study are twofold. First, the results indicate that different crimes occur at different

parks. This finding suggests that management techniques should adapt to these changes. Targeted patrols for certain crimes may be needed. For example, resource recreation areas closer to the wildland-urban interface may increase targeted patrols of areas that are often vandalized, whereas more distant parks may increase patrols around areas that contain important artifacts. Furthermore, crime prevention through environmental design may be utilized to deter crime. Urban proximal parks may design front-country areas with landscaping, lighting, and architecture that limit the desirability or opportunity for a person to commit robbery or vandalism. Lastly, educational and awareness materials could be provided to all park visitors. At more remote parks, materials could be provided that inform the visitor as to the problems of artifact theft and what to be suspicious of if they see another visitor stealing artifacts. Engaging the public as eyes and ears working for law enforcement has often led to decreased crime in community settings (Alpert & Piquero 1998). The same may hold true in park settings.

The second implication of this study involves the need for future research. This research represents one of only a few attempts to link crime in resource recreation areas with other outside variables. Research is needed to confirm the conclusions of this study across management agencies and across resource settings. Beyond replicating this study, research needs to be conducted with visitors as the unit of analysis. Visitor perceptions are important to understanding how deviant behavior affects the recreation experience. Finally, once management suggestions based on these proposed research topics are implemented, studies on the effectiveness of the management techniques implemented need to be conducted. Clearly, there is a need to complete more work in this line of research.

5.2 Limitations

As with all research, this data set has its limitations. The generalizability of these findings is limited by the low response rate achieved, less than 20%. However, the sample for this study was the true population. Hence, the sample represents about 500 individuals of the true population of approximately 3000 rangers. Furthermore, with the exception that law enforcement

rangers were over-sampled, the demographics of the sample are representative of the population. The other major limitation of this study is that it only considered NPS rangers and not rangers of other land management agencies. Perceptions may differ across agencies due to numerous factors. Hence, future research on this topic should be conducted to confirm these findings and generalize the conclusions to other agencies and across other populations.

6.0 CONCLUSION

Deviant behavior and crime in resource recreation areas has become an important concern for land managers. In an effort to better understand the relationships between crime and the urban-wildland interface this study examined National Park Service ranger perceptions of the frequency of certain crimes in park units. It is necessary to better understand how these topics relate to each other and the visitor experience. A thorough understanding of deviant behavior, crime, law enforcement, and the affect of these factors on the recreation experience will contribute to the existing literature on this topic and provide a basis for further research.

This study provided information to both researchers in the field of recreation resource management and to the managers who make decisions within resource recreation areas. Results indicated that urban encroachment was found to differentiate the rangers' perceptions of type and frequency of crime. Specifically, certain *universal crimes* occur more frequently in parks closer to urban areas. Also, *intentional resource violations* occur more often in NPS units distant from the urban-wildland interface.

Lastly, the results indicate a need to include *universal crimes* and *intentional resource violations* in future typologies of deviant behavior occurring in natural resource areas.

7.0 CITATIONS

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