



# HABITS, BEACHES, DOGS AND LEASHES: NON-COMPLIANCE WITH PARK REGULATIONS

Matthew Bowes<sup>1\*</sup>, Peter Keller<sup>2</sup>, Rick Rollins<sup>3</sup> and Robert Gifford<sup>4</sup>

\* Corresponding author: matthew.bowes@viu.ca

<sup>1</sup>Department of Geography, Vancouver Island University, Nanaimo, BC, Canada.

<sup>2</sup>Department of Geography, Simon Fraser University, Vancouver, BC, Canada.

<sup>3</sup>Department of Recreation and Tourism Management, Vancouver Island University, Nanaimo, BC, Canada.

<sup>4</sup>Department of Psychology and School of Environmental Studies, University of Victoria, Victoria, BC, Canada

## ABSTRACT

Protected areas are important for both conserving natural resources and providing visitor experiences, but these two objectives are sometimes compromised when visitors do not comply with regulations. This issue was explored in a study in Canada's Pacific Rim National Park Reserve where non-compliance with off-leash dog regulations has led to negative impacts on wolves, shorebirds and visitor experiences. The theory of planned behaviour (TPB) was applied to explore factors that influence non-compliance with off-leash dog regulations. This study found moderate to strong relationships between visitor behavioural intentions towards compliance and the three concepts associated with the TPB that may shape intentions: attitude, subjective norms and perceived behavioural control. Weaker relationships were found between these concepts and beliefs thought to influence each concept. The relationship between intentions to comply and actual compliance behaviour was weaker, but these predictions became stronger when past behaviour regarding leashing dogs in the park (habit) was considered. This paper discusses how habitual off-leash dog walking affects TPB's ability to predict future behaviour of dog walkers, and how management strategies aimed at providing persuasive arguments for dog leashing are not likely to be as successful, unless combined with other approaches outlined in the paper.

**Keywords:** Theory of planned behaviour, actual behaviour, non-compliance with park regulations, habit

## INTRODUCTION

Management of visitor behaviour in protected areas is critical for the success of both conservation efforts and the provision of high quality visitor experiences. These can be compromised when visitors choose to not comply with regulations. This study examines the issue of visitors choosing to ignore regulations to leash dogs in a national park (See Figure 1), regulations aimed at reducing conflict with other park visitors and reducing the impact of dogs on wildlife in the park.

Visitor impacts in parks and protected areas are often unintended, but occur from lack of awareness or knowledge of the results of their behaviour (Marion & Reid, 2007). Managing visitor impacts can employ 'direct approaches' that mitigate undesired behaviour (such as enforcement, regulations, zoning and closing areas for certain uses), or 'indirect approaches' aimed at

influencing rather than regulating visitor behaviour, through interpretation, visitor education and information programmes (Dawson & Hendee, 2009). Indirect approaches are thought to be cost effective, 'softer' and usually more consistent with leisure experiences than 'harder' direct approaches. However, deciding the most appropriate management response depends in part on an understanding of why visitors decide to comply or not comply with park regulations.

Accordingly, the Theory of Planned Behaviour (TPB) (Fishbein & Ajzen, 2010) was used in this study to gain insight into why visitor compliance with keeping domestic dogs on-leash in a protected area remained low despite considerable educational efforts using signs and other information to encourage compliance. TPB (Figure 2) proposes that behaviour depends on one's intentions to behave in certain ways, which is

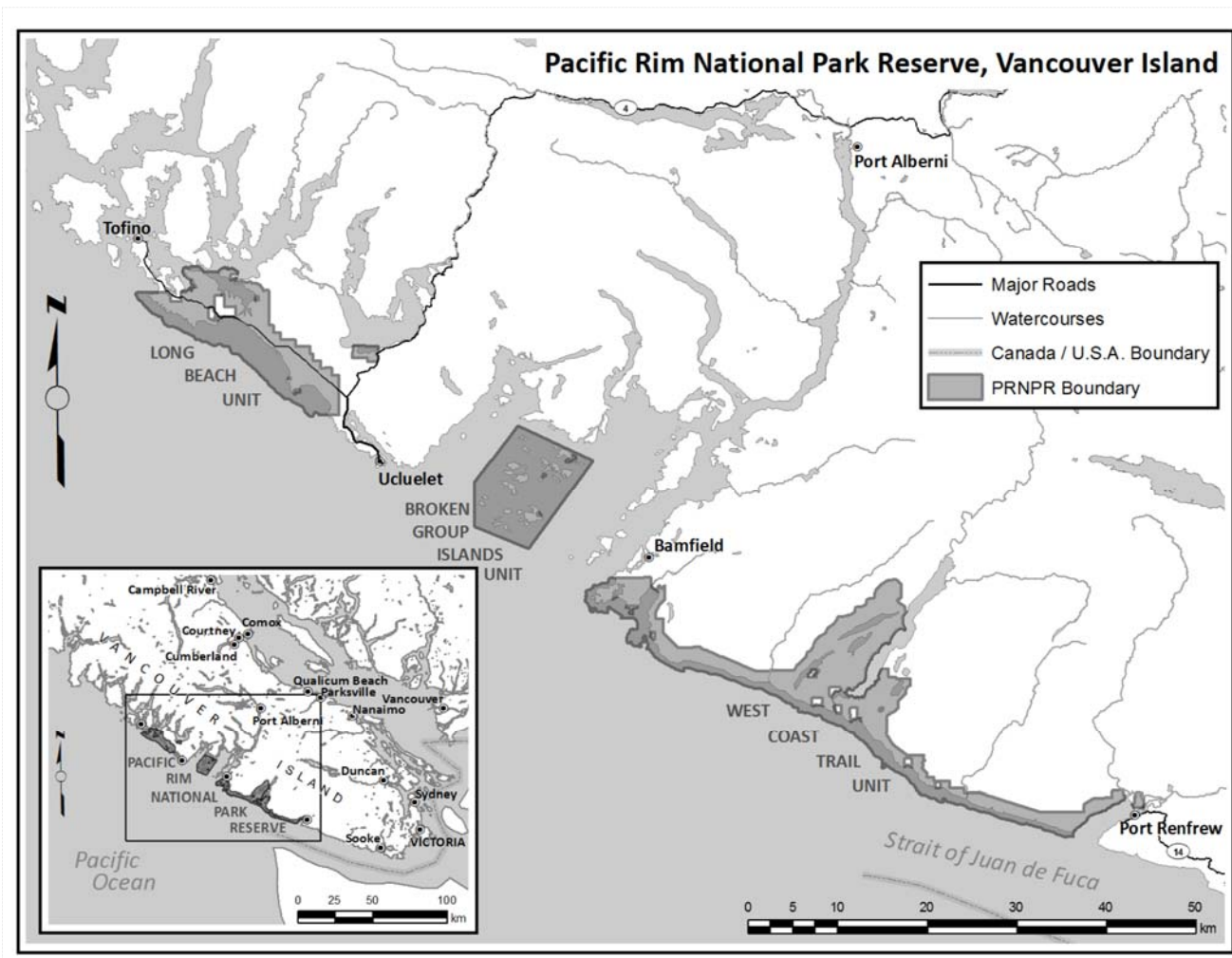


Figure 1. Location of the Long Beach Unit of Pacific Rim National Park Reserve (Parks Canada, 2014)

determined by three main concepts: (a) attitude towards the decision (i.e. how good or bad people feel about complying with the off-leash regulations), (b) subjective norms (i.e. influence of important others on my decisions to comply with regulations), and (c) perceived control over behaviours (e.g. do people have the ability to comply with regulations). Each of these concepts is influenced by relevant beliefs (Fishbein & Ajzen, 2010), as illustrated in Figure 2.

The TPB approach has been applied to national park behaviours including feeding wild birds (Ballantyne & Hughes, 2006; Hughes et al., 2009), staying on designated trails (Beeton et al., 2005; Bradford & McIntyre, 2007), 'bear proofing' and appropriate food storage (Lackey & Ham, 2003) and littering and garbage disposal (Brown et al., 2010). Specific to this article, Hughes et al. (2009) applied the TPB to leashing domesticated dogs. Message interventions targeted behavioural and normative beliefs to persuade park visitors to leash their pets. A 19 per cent increase in

leashing was noted, however the presence of researchers may have influenced compliance. In addition, increase in compliance did not lead to influencing beliefs or subsequent attitudes. Non-compliers had strong intentions to let their dogs run free in the park. Furthermore, these non-compliers tended to be repeat visitors, suggesting that allowing dogs to be off-leash was habitual behaviour, thereby challenging the TPB model.

The TPB is premised on rational decision-making where people make behavioural decisions through a consideration of the relevant beliefs (outcomes) of their behaviour. However, a possible weakness of the TPB is related to habitual behaviour that does not routinely involve rational consideration of outcomes. Actions performed many times become habitual, automatic and stimulated by cues in the environment (Aarts & Dijksterhuis, 2000; Ouellette & Wood, 1998). Similarly, wilderness recreationists with more experience have been argued to be less susceptible to persuasive

influences (Krumpe & Davis, 1982; Manfredo & Bright, 1991; Roggenbuck & Berrier, 1982). Consequently, indirect attempts at behaviour modification (e.g. park interpretation, signs) are less likely to succeed where behaviours are habitual and experienced many times over, particularly with off-leash dogs (Hughes et al., 2009). Ajzen (1991), Fishbein and Ajzen (2010) and others (e.g. Ajzen & Fishbein, 2005; Albarracín et al., 2001; Conner & Armitage, 1998; Ouellette & Wood, 1998) also acknowledge that TPB can be inadequate to explain the relationship between past behaviour and future behaviour, thereby challenging persuasive attempts to influence actions.

These issues were explored in a study conducted in Pacific Rim National Park Reserve located on the west coast of Vancouver Island in British Columbia, Canada, where non-compliance with regulations to leash dogs has led to conflict with other park visitors. Further, dogs running free on beaches in the park is one of the greatest sources of disturbance and displacement of sensitive habitat for migratory shorebirds (Esrom, 2004; Zharikov, 2011), and habituates wolves to dogs and people causing pets to become easy prey (Parks Canada Agency Human-Carnivore Conflict Specialist, personal communication, 2011, 2012, 2013, 2017). In a recent shorebird and visitor use study in this park, the compliance rate for leashing was just 39 per cent (Zharikov, 2011) despite considerable indirect management efforts with increased use of signs.

The research question investigated in this article is how does habit influence application of the TPB to gain insights into non-compliance behaviour, such as refusal to leash dogs in a national park?

## METHODS

The first phase of the study consisted of a belief-elicitation phase involving semi-structured interviews with convenience samples, on Long Beach in Pacific Rim National Park Reserve (see Figure 3), of 21 observed on-leash (i.e. compliers) and 21 off-leash (i.e. non-compliers). Following Middlestadt et al. (1996) and Fishbein and Ajzen (2010), interviews were used to elicit behavioural beliefs, or outcomes of leashing behaviour (e.g. What do you see as advantages to keeping your dog leashed/unleashed here on Long Beach?); normative beliefs or social referents (e.g. Who would approve/object to keeping your dog leashed here on Long Beach?) and control beliefs or factors that either facilitate or mitigate leashing (e.g. What things make it easy/difficult to keep your dog leashed on the beach here on Long Beach?).

Interviews were recorded on an iPhone, transcribed into a Word document and exported into qualitative research software, NVivo for analysis. A content analysis of the responses to the above questions resulted in a list of modal salient behavioural, normative and control beliefs. The concept of 'habit' also emerged as an

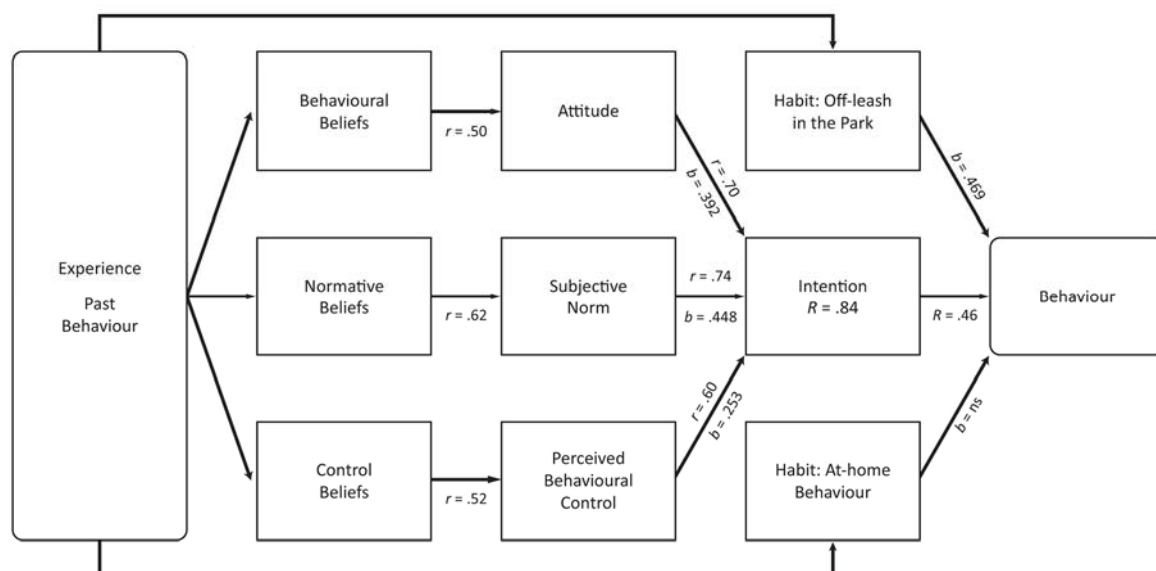


Figure 2. The theory of planned behaviour (adapted from Fishbein & Ajzen, 2010) as applied to dog-leashing in Pacific Rim National Park Reserve.

important insight from this formative research. The list of modal salient beliefs and habit informed the development of a questionnaire used to measure habit and beliefs in addition to standardised TPB measurement of attitudes, subjective norms, perceived behavioural control, intention and behaviour of observed on and off-leash dog walkers.

## Measurement of variables

### Attitude

Attitude about leashing their dog in the park was measured with a score formed by computing a mean score from responses to three items: (a) “leashing my dog on Long Beach is...” (7-point scale from “bad” to “good”), (b) “walking my dog on a leash on Long Beach is...” (7-point scale from “unpleasant” to “pleasant”), and (c) “using a leash for my dog on Long Beach is...” (7-point scale from “useless” to “useful”).

### Subjective norm

Subjective norm about leashing their dog in the park was measured by computing a mean score from responses to three items: (a) “most people walking their dogs here on the beach have them off-leash” (7-point scale from “false” to “true”), (b) “most people like me leash their dog on Long Beach” (7-point scale from “strongly disagree” to “strongly agree”), and (c) “I feel under social pressure to leash my dog at Long Beach” (7-point scale from “strongly disagree” to “strongly agree”).

### Perceived behavioural control

Perceived behavioural control about leashing their dog in the park was measured by computing a mean score to responses from two items: (a) “whether or not I leash my dog here is entirely up to me” (7-point scale from “strongly disagree” to “strongly agree”), and (b) “to keep my dog on leash is beyond my control” (7-point scale from “strongly disagree” to “strongly agree”). Although

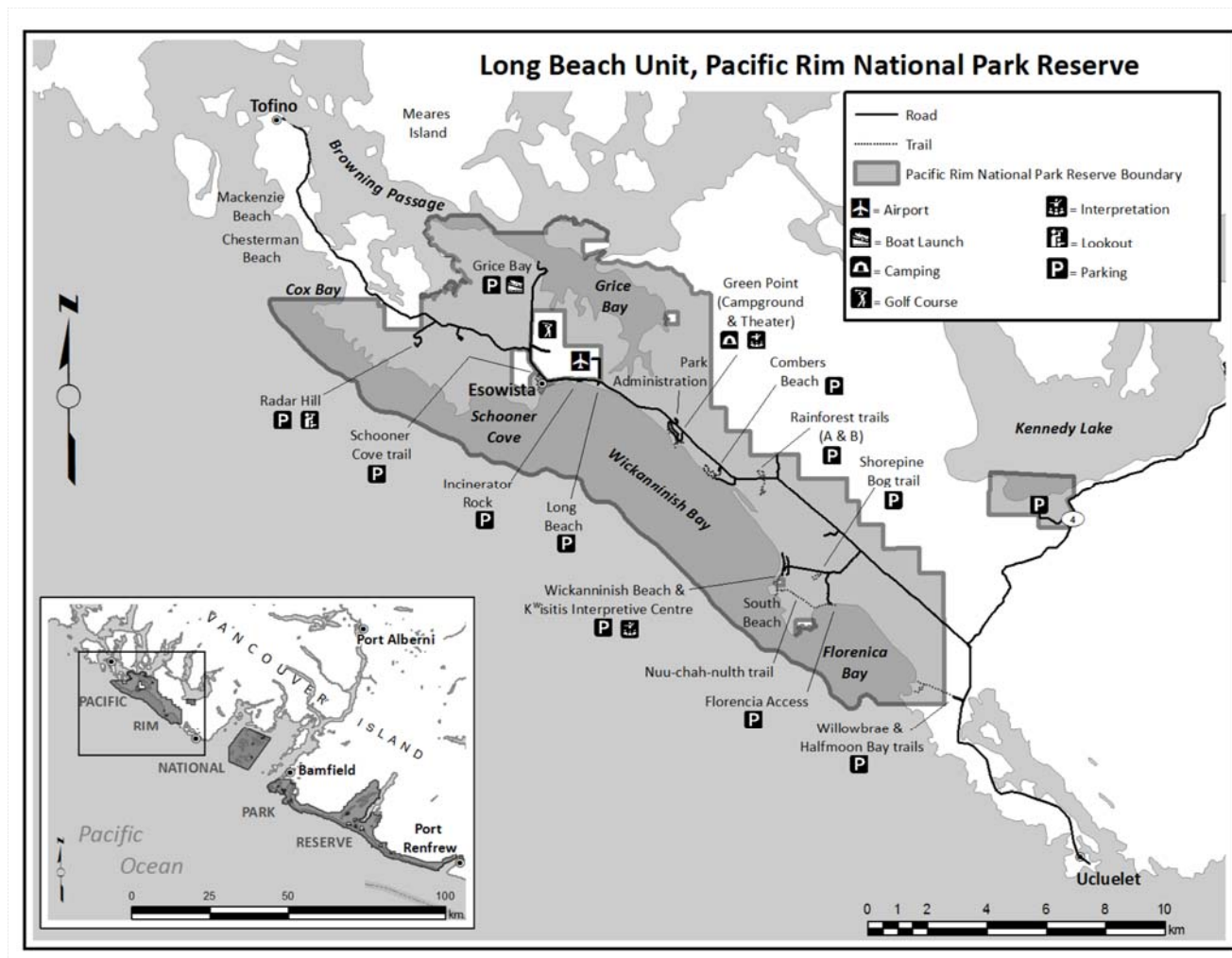


Figure 3. The Long Beach Unit of Pacific Rim National Park Reserve (Parks Canada, 2014).





Long Beach, Pacific Rim National Park Reserve © Matthew Bowes

it seems that leashing should be easy to control, perceived control of this behaviour may vary. There is no current accepted method in TPB to measure actual control, so perceived behavioural control was used as a proxy for actual control (Fishbein & Ajzen, 2010).

#### *Behavioural beliefs*

Salient behavioural beliefs were measured in two dimensions: belief strength, determined on a 7-point scale from “very unlikely” to “very likely” (e.g. “If I keep my dog on-leash, my dog will not run through flocks of shorebirds”), and belief evaluation determined on a 7-point scale from “bad” to “good” (for analysis, this was converted to -3 to +3) (e.g. “My dog, not running through flocks of shorebirds is...”). To determine the influence of each belief on attitude, a behavioural belief cross-product score was computed by multiplying the belief strength by the evaluation for each item, and then summing to derive a composite score that was then correlated with attitude.

#### *Normative beliefs*

Normative beliefs were also measured in two dimensions: normative belief strength, determined on a 7-point scale from “strongly disagree” to “strongly agree” (for analysis, this was converted to -3 to +3) (e.g. “Park wardens think I should leash my dog.”), and motivation to comply, determined on a 7-point scale from “I should not” to “I should” (e.g. “I want to do what park wardens think I should do.”). A cross-product was computed for each belief by multiplying the

normative belief strength by the motivation to comply. The cross-products for each item were summed to derive a composite score that was correlated with the subjective norm score.

#### *Control beliefs*

Control beliefs were also measured in two dimensions: belief strength, determined on a 7-point scale from “less likely” to “more likely” (e.g. “to have the right equipment to leash my dog”), and belief power, measured on a 7-point scale from “strongly disagree” to “strongly agree” (e.g. “that having the right equipment makes it easier to leash my dog”). The cross-products for each control belief were summed to derive a composite score that was correlated with the subjective norm score.

#### *Habit*

Habitual behaviour in this park was measured with two items: compliance behaviour in the park and compliance behaviour at home (Aarts & Dijksterhuis, 2000; Ouellette & Wood, 1998). At home compliance was measured on a 7-point scale from “strongly disagree” to “strongly agree” that “when at home I always comply with on-leash dog laws”. Compliance in the park was measured on a 5-point scale from “0 per cent” to “100 per cent” “of the time when I am in the park”.

#### *Compliance behaviour*

Compliance behaviour was categorised by selecting sample respondents according to their observed

behaviour when the questionnaires were administered as either compliers or non-compliers (Bowes, 2015).

An initial fixed-item questionnaire was pilot tested ( $n = 20$ ) with a sample of compliers ( $n = 10$ ) and non-compliers ( $n = 10$ ) on Long Beach (see Figure 3) in June 2013 to discover any problems with wording and formatting. After each completed survey, every other complier or non-complier was selected. Following refinement of the instrument, the main study was then conducted with 162 compliers and 142 non-compliers on Long Beach between 1 July and 30 September 2013. After each completed survey, every other complier or non-complier was selected after they were first observed unobtrusively in the park. Interviews were not conducted on rainy days, when the number of visitors on park beaches was low. The intent of this approach was to approximate systematic random sampling, and avoid bias in sample selection. Out of the total number of visitors contacted ( $n = 322$ ), the response rate was 94 per cent ( $n = 302$ ).

## RESULTS

Characteristics of the sample were as follows. For age, 1 per cent were under 21 years old, 26 per cent were 21-30 years old, 25 per cent were 31-40 years old, 27 per cent were 41-50 years old, and 22 per cent were over 50 years old. The sample consisted of 61 per cent men, 35 per cent women, and 4 per cent identifying as other. Most respondents were repeat visitors to this park (86 per cent) with few first time visitors (14 per cent). Place of residence consisted of 48 per cent from Vancouver Island, 46 per cent from elsewhere in British Columbia, 5 per cent from elsewhere in Canada, and 1 per cent from other countries.

Compliers leashed their pets both at home and in the park to a greater degree than non-compliers, although the standard deviation for each group indicates some variability in compliance (Table 1). The effect sizes were 'substantial' (Vaske, 2008) for compliance in the park ( $h = 0.41$ ) and at-home ( $h = 0.37$ ).



## Testing the TPB Model

Reliability of the questionnaire was tested with Cronbach's Alpha for intention: (.819), attitude (.864), subjective norm (.612) and perceived behavioural control (.493). The low alpha score for control reflects in part the use of just two items.

Relationships predicted by the TPB are illustrated in Figure 2. As predicted by the TPB model, linear regression indicates that intentions were influenced by attitudes ( $r = .70$ ,  $\beta = .392$ ), subjective norms ( $r = .74$ ,  $\beta = .448$ ) and perceived behavioural control ( $r = .60$ ,  $\beta = .253$ ). The effect size of each of these relationships was substantial (over .50) (Vaske, 2008).

**Table 1. Comparing Observed Compliance and Self-Reported Compliance at Home and in Park**

| Compliance          | Observed<br>Complier |           | Observed<br>Non-Complier |           | <i>t</i> | <i>p</i> | <i>Eta</i> |
|---------------------|----------------------|-----------|--------------------------|-----------|----------|----------|------------|
|                     | Mean                 | <i>SD</i> | Mean                     | <i>SD</i> |          |          |            |
| At Park (1-5 Scale) | 4.0                  | 1.01      | 2.0                      | 1.12      | 13.64    | < .001   | .41        |
| At Home (1-7 Scale) | 4.6                  | 2.19      | 3.0                      | 2.02      | 6.64     | < .001   | .37        |

At Park - 1=never, 2=~25 %, 3=~50 %, 4=~75 %, 5=always

At Home - 1=Strongly Disagree, 2=Somewhat Disagree, 3=Slightly Disagree, 4=Neutral, 5=Slightly Agree, 6=Somewhat Agree, 7=Strongly Agree

When these relationships were analysed with multiple regression, the multiple  $r$  was also substantial ( $r = .84$ ) (Vaske, 2008). However, the correlation between intention and observed leashing behaviour was lower ( $r = .46$ ) and 'typical' (Vaske, 2008).

Next, the influence of habit was examined through a multiple regression model with the dependent variable as observed leashing behaviour, and the independent variables as intention, habit at home, and habit in the park. The result was improved prediction of behaviour ( $r = .582$ ) from the original model in Figure 2 ( $r = .470$ ). Further, habit in the park was significant ( $\beta = .469$ ,  $p = .000$ ), as was intention ( $\beta = .206$ ,  $p = .000$ ), but habit at home was not significant.

Finally, the impacts of beliefs on attitudes, subjective norms and perceived behavioural control were computed using linear regression, as specified in the TPB literature (Fishbein & Ajzen, 2010). The relationship between attitude and behavioural beliefs was relatively strong ( $r = .50$ ), as was the relationship between perceived behavioural control and control beliefs ( $r = .62$ ) and the relationship between subjective norms and normative beliefs ( $r = .52$ ). Each of these

relationships was .50 or greater (i.e. 'substantial', Vaske, 2008).

### Analysis of beliefs

Analysis was undertaken to explore how compliers and non-compliers differed regarding behavioural beliefs,



Warning sign, Pacific Rim National Park Reserve © Matthew Bowes



Dogs on-leash and off-leash on Long Beach, Pacific Rim National Park Reserve © Matthew Bowes



normative beliefs and control beliefs, comparing the mean cross-product scores in each case. Compliers and non-compliers viewed just four of the nine behavioural belief items differently, and scores for compliers were more positive than for non-compliers for these items (Table 2). The effect sizes were generally minimal (Vaske, 2008), with the exception of slightly stronger ('typical') effect sizes for items dealing with the animal's freedom and the degree of control a leash affords.

Normative belief comparisons between compliers and non-compliers were statistically significant in all cases (Table 3). These scores were generally positive and higher among compliers and the greatest differences occurred for friends, families with small children, elderly people and family. Effect sizes were generally typical to minimal (Vaske, 2008).

Control beliefs were significantly different and more positive for compliers (Table 4). The greatest differences were evident with dogs well trained to be on-leash and having the right equipment. Effect sizes, however, were minimal (Vaske, 2008).

In summary, the TPB model demonstrated strong relationships between intentions and the three concepts that TPB posits to influence intentions: attitude, subjective norm and perceived behavioural control, with an overall robust predictive ability of intention. However, the relationship between intention and behaviour was somewhat weaker, but stronger when

habit was included in the analysis. When comparing compliers with non-compliers, substantial differences in beliefs were expected, but this was not the case, particularly with behavioural beliefs thought to influence attitude. This finding indicates that respondents are unlikely to be influenced by management messages aimed at influencing beliefs and attitudes, which is possibly linked to the strong influence of previous leashing behaviour in the park, as outlined in the following discussion.

## DISCUSSION

When visitors fail to comply with park regulations, such as leashing their dogs, management objectives aimed at supporting visitor experiences and conserving biodiversity may be compromised. In this study, the TPB was useful in providing a better understanding of non-compliance behaviour. The model demonstrated strong relations between intention and measures of attitude, subjective norm and perceived behavioural control, with an overall robust predictive ability of intention. However, relationships at the belief level were not as strong between behavioural beliefs and attitude, normative beliefs and subjective norm, and control beliefs and perceived behavioural control.

A plausible explanation for these findings is that habitual behaviour (86 per cent of participants were repeat visitors), which is resilient to persuasive influence, may be overwhelming the other influences that are included in the model. A routine behaviour that becomes 'habit' reduces reasoning in the decision-

**Table 2. Behavioural Beliefs Regarding Dog Leash Regulations: Comparing Mean Cross-Product Scores for Compliers and Non-Compliers**

| Behavioural Beliefs   | *Mean    |              |          |          |            |
|---|----------|--------------|----------|----------|------------|
|   | Complier | Non-Complier | <i>t</i> | <i>p</i> | <i>Eta</i> |
| <b>If I keep my dog on-leash...</b>   |          |              |          |          |            |
| My dog will be safer from wolves.   | 10.30    | 8.29         | 2.07     | .038     | .13        |
| It will be safer for other people.  | 8.70     | 6.70         | 2.36     | .019     | .14        |
| My dog loses the freedom to run, play, explore, sniff around and 'just be a dog.' | -7.14    | -13.13       | 5.31     | <.001    | .30        |
| I have more control over my dog.  | 13.20    | 8.63         | 4.70     | <.001    | .26        |
| My dog will attract wolves to me.   | -4.80    | -4.80        | -0.04    | .969     | .02        |
| My dog will bother other people.  | -4.32    | -4.40        | 0.14     | .887     | .03        |
| My dog will run through flocks of shorebirds                                      | -3.76    | 3.45         | -0.52    | .604     | .04        |
| My dog will behave aggressively towards other dogs.                               | -5.60    | -5.30        | -.048    | .633     | .04        |
| My dog pulls me around and it is hard to keep up to it.                           | -4.90    | -5.90        | 1.41     | .160     | .10        |

\*Cross-product mean for each behavioural belief can vary between -21 and +21



**Table 3. Normative Beliefs Regarding Dog Leash Regulations: Comparing Mean Cross Product Scores for Compliers and Non-Compliers**

| *Mean   |           |               |      |       |     |
|---|-----------|---------------|------|-------|-----|
| Normative Beliefs of Important Social Referents | Compliers | Non-Compliers | t    | p     | Eta |
| People who don't like dogs                      | 11.70     | 7.91          | 4.62 | .001  | .26 |
| People afraid of dogs                           | 13.32     | 9.44          | 5.08 | .001  | .29 |
| Families with small children                    | 10.54     | 4.48          | 6.37 | <.001 | .35 |
| Elderly people                                  | 8.50      | 2.67          | 6.20 | <.001 | .35 |
| Other cultures                                  | 6.56      | 3.93          | 3.10 | .002  | .19 |
| Wildlife conservationists                       | 9.53      | 5.43          | 5.00 | <.001 | .28 |
| Wardens   | 13.67     | 9.05          | 5.46 | <.001 | .31 |
| Tourists  | 5.31      | 1.48          | 4.67 | <.001 | .27 |
| Dog freedom people                              | -6.35     | -9.45         | 3.20 | .002  | .19 |
| People with well trained dog                    | 11.34     | 9.74          | 5.00 | <.001 | .28 |
| Local residents                                 | 7.91      | -3.52         | 4.25 | <.001 | .24 |
| My family                                       | 2.12      | -7.11         | 7.09 | <.001 | .38 |
| My friends                                      | 1.20      | -6.64         | 6.80 | <.001 | .37 |

**Table 4. Control Beliefs Regarding Dog Leash Regulations: Comparing Mean Cross Product Scores for Compliers and Non-Compliers**

| *Mean   |           |               |      |       |     |
|---|-----------|---------------|------|-------|-----|
| Control Beliefs                               | Compliers | Non-Compliers | t    | p     | Eta |
| Not enough education makes it difficult       | -2.22     | -4.35         | 2.20 | .029  | .02 |
| Dog trained well to be on leash makes it easy | 11.80     | 2.60          | 7.50 | <.001 | .16 |
| Breed of dog makes it difficult               | 4.35      | -3.73         | 5.20 | <.001 | .10 |
| The right equipment makes it easy             | 8.65      | 1.93          | 5.00 | <.001 | .08 |

\*Cross-product mean for each behavioural belief can vary between -21 and +21



Beach scene, Pacific Rim National Park Reserve© Matthew Bowes

making process (Aarts & Dijksterhuis, 2000; Ouellette & Wood, 1998), thereby challenges attempts at persuasive communication aimed at influencing visitor behaviour.

Hughes et al. (2009) found similar inconsistencies with park leashing behaviour. Although owners tended to leash pets in the presence of the research team and the 'authority' of the message in an intervention, dogs would later be set free once away from these sources of compliance behaviour. Furthermore, Zharikov (2011) observed dog walkers letting pets off-leash in the park once they were away from beach access points, where encounters with park officials were more likely and where 'dogs on-leash' signs were located.

### Management implications

The TPB is an effective approach for better understanding non-compliance with park regulations and how to reduce non-compliance. TPB identifies the beliefs that influence attitudes, subjective norms and perceived constraints. With this knowledge, park managers can target messages that challenge these beliefs, and ultimately improve compliance behaviour. For example, messages aimed at informing visitors of the impact of off-leash dogs on wildlife and on visitor safety will likely be effective in reducing non-compliance with many visitors (Dawson & Hendee, 2009). However, this approach is less likely to be effective with frequent visitors who have a history of keeping their dog off leash. For these experienced, repeat non-compliers with whom letting dogs run free is habitual behaviour, more complex strategies may be required (Roggenbuck, 1992; Hughes et al., 2009).

For these more experienced visitors, direct methods such as increased patrolling, actively enforcing regulations and closing sensitive areas may be required, but are more likely to be effective if combined with persuasive communication (Hughes et al., 2009; Roggenbuck, 1992) and other approaches (Mackenzie-Mohr, 2011; Coghlan & Kim, 2012; Weiler & Smith, 2009). One promising approach is community-based social marketing (Mackenzie-Mohr, 2011).

Similar to community-based social marketing, which emphasises personal contact in creating effective behaviour change strategies, the effectiveness of personal contact is well established in the parks and interpretation literature (e.g. Hughes & Morrison-Saunders, 2005; Roggenbuck, 1992; Roggenbuck & Berrier, 1982). Community-based social marketing to foster sustainable behaviour draws on similar notions, which suggest that initiatives carried out at the community level and that incorporate personal contact

have a higher likelihood of being more effective (Mackenzie-Mohr, 2011).

In national parks, relationships forged by community outreach can be fundamental to successful programmes aimed at influencing visitor behaviour (Knapp & Benton, 2004). Although much social capital exists in communities adjacent to the park, some parks suffer from a lack of integration with these gateway communities to foster environmental stewardship among local residents (Vaugois et al., 2007). Similarly, gateway communities can be partners in promoting park values and conveying conservation messages to park visitors (Knapp & Benton, 2004).

Another major barrier to compliance behaviour is convenience (Mackenzie-Mohr, 2011). Providing an alternative area in the park or in close proximity, where dogs can be set free and where habitual behaviour can be continued, may make it easier for visitors and their dogs to comply with park regulations.

These approaches argue for more sophisticated approaches for addressing entrenched visitor behaviours, such as keeping dogs off leash. Educational strategies derived from TPB may be effective for many visitors, particularly new visitors to a park, but these approaches are less likely to be effective with frequent visitors who have a history of keeping their dog off leash. For these visitors, direct approaches such as more frequent patrolling may be more effective. However, two additional approaches are suggested here for exploration: (1) community-based social marketing; and (2) addressing visitor needs by providing an off-leash area in the park or nearby.

### ACKNOWLEDGEMENTS

This research was supported in part by the Clayoquot Biosphere Trust, Protected Area and Poverty Reduction program, and Parks Canada.

### ABOUT THE AUTHORS

**Matthew Bowes** is a Professor of Geography at Vancouver Island University.

**Peter Keller** is a Professor of Geography and the Vice-President Academic and Provost at Simon Fraser University.

**Rick Rollins** is a Professor Emeritus of Recreation and Tourism Management at Vancouver Island University.

**Robert Gifford** is a Professor of Psychology and Environmental Studies at University of Victoria

## REFERENCES

- Aarts, H., & Dijksterhuis, A. (2000). Habits as Knowledge Structures: Automaticity in Goal Directed Behaviour. *Journal of Personality and Psychology*, 28, 53-63. DOI: 10.1037//0022-3514.78.1.53
- Ajzen, I. (1991). The Theory of Planned Behaviour. *Organizational Behaviour and Human Decision Processes*, 50, 179-211. DOI: 10.1080/08870446.2011.613995
- Ajzen, I., & Fishbein, M. (2005). The Influence of Attitudes on Behaviour. In D. Albarracín, B. Johnson, & M. Zanna (eds.), *The Handbook of Attitudes* (pp.173-221). Mahwah, NJ: Erlbaum.
- Albarracín, D., Johnson, B., Fishbein, M., & Muellerleile, P. (2001). Theories of Reasoned Action and Planned Behaviour as Models of Condom Use: A Meta-Analysis. *Psychological Bulletin*, 127, 142-161. DOI: 10.1037//0033-2909.127.1.142
- Ballantyne, R. & Hughes, K. (2006). Using Front-end and Formative Evaluation to Design and Test Persuasive Bird Feeding Warning Signs. *Tourism Management*, 27, 235-246. DOI: 10.1016/j.tourman.2004.09.005
- Beeton, S., Weiler, B., & Ham, S. H. (2005). Contextual Analysis for Applying Persuasive Communication Theory to Managing Visitor Behaviour: A Scoping Study at Port Campbell National Park. Gold Coast: Sustainable Tourism Cooperative Research Centre.
- Bowes, M. (2015). Influences of Social Norms, Habit and Ambivalence on Park Visitors' Dog Leash Compliance for Protecting Wildlife (Doctoral dissertation), Department of Geography, University of Victoria, Victoria, Canada.
- Bradford, L. E. A., & McIntyre, N. (2007). Off the Beaten Track: Messages as a Means of Reducing Social Trail Use at St. Lawrence Islands National Park. *Journal of Park and Recreation Administration*, 25, 1-21.
- Brown, T., Ham, S., & Hughes, M. (2010). Picking up Litter: An Application of Theory-Based Communication to Influence Tourist Behaviour in Protected Areas. *Journal of Sustainable Tourism*, 18, 879-900. DOI: 10.1080/09669581003721281
- Coglan, A., & Kim, A. K. (2012). Interpretive Layering in Nature-Based Tourism: A Simple Approach for Complex Attractions. *Journal of Ecotourism*, 11, 173-187. DOI: 10.1080/14724049.2012.712135
- Conner, M., & Armitage, C. (1998). Extending the Theory of Planned Behaviour: A Review and Avenues for Further Research. *Journal of Applied Social Psychology*, 28, 1429-1464. DOI: 10.1111/j.1559-1816.1998.tb01685.x
- Dawson, C. P., & Hendee, J. C. (2009). Wilderness visitor management: Stewardship and Protection of Resources and Values. Golden, CO: Fulcrum.
- Esrom, J. (2004). Dogs, shorebirds, and conflict management: Recreation and ecological integrity at Long Beach, Pacific Rim National Park Reserve British Columbia. (Master's Thesis), York University, Toronto, Canada.
- Fishbein, M. & Ajzen, I. (2010). *Predicting and Changing Behaviour: The Reasoned Action Approach*. New York, NY: Taylor and Francis.
- Hughes, M., Ham, S., & Brown, T. (2009). Influencing Park Visitor Behaviour: A Belief Based Approach. *Journal of Park and Recreation Administration*, 27(4), 38-53.
- Hughes, M., & Morrison-Saunders, A. (2005). Influence of On-Site Interpretation Intensity on Visitors to Natural Areas. *Journal of Ecotourism*, 4, 161-177. DOI: 10.1080/jJET.v4.i3.pg161
- Knapp, D., & Benton, G. M. (2004). Elements to Successful Interpretation: A Multiple Case Study of Five National Parks. *Journal of Interpretation Research*, 9(2), 9-25.
- Krumpe, E., & Davis, P. J. (1982). Redistributing Backcountry Use Through Information Related to Recreation Experiences. *Journal of Forestry*, 80, 360-362.
- Lackey, B. K., & Ham, S. H. (2003). Contextual Analysis of Interpretation Focused on Human-Black Bear Conflicts in Yosemite National Park. *Applied Environmental Education and Communication*, 2, 11-21. DOI: 10.1080/15330150301343
- Mackenzie-Mohr, M. (2011). *Fostering Sustainable Behaviour*. Gabriola, BC: New Society Publishers.
- Manfredo, M. J., & Bright, A. D. (1991). A Model for Assessing the Effects of Communications on Recreationists. *Journal of Leisure Research*, 23, 1-20.
- Marion, J. L., & Reid, S. E. (2007). Minimizing Visitor Impacts to Protected Areas: The Efficacy of Low Impact Education Programs. *Journal of Sustainable Tourism*, 15, 5-26. DOI: 10.2167/jost593.0
- Middlestadt, S. E., Bhattacharyya, K., Rosenbaum, J., Fishbein, M., & Shepherd, M. (1996). The Use of Theory Based Semi Structured Elicitation Questionnaires: Formative Research for CDC's Prevention Marketing Initiative. *Public Health Reports*, 111, 18-27.
- Ouellette, J., & Wood, W. (1998). Habit and Intention in Everyday Life: The Multiple Processes by Which Past Behaviour Predicts Future Behaviour. *Psychological Bulletin*, 124, 54-74. DOI: 10.1037/0033-2909.124.1.54
- Roggenbuck, J. (1992). Use of Persuasion to Reduce Resource Impacts and Visitor Conflicts. In M.J. Manfredo (ed) *Influencing Human Behaviour: Theory and Applications in Recreation, Tourism, and Natural Resource Management* (pp. 149-208). Champaign, IL: Sagamore Publishing Inc.
- Roggenbuck, J., & Berrier, D. L. (1982). A Comparison of the Effectiveness of two Communication Strategies in Dispersing Wilderness Campers. *Journal of Leisure Research*, 14, 77-89. DOI: 10.1177/004728758302100441



Vaske, J. J. (2008). *Survey Research and Analysis: Applications in Parks, Recreation, and Human Dimensions*. State College, PA: Venture.

Vaugois, N., Rollins, R., & McDonald, D. (2007). *Rural Tourism Development in Central British Columbia: Observation Report from the Tourism Research Innovation Project (TRIP)*. Retrieved from [web.mala.bc.ca/vaugois/default.html](http://web.mala.bc.ca/vaugois/default.html)

Weiler, B., & Smith, L. (2009). Does More Interpretation Lead to Greater Outcomes? An Assessment of the Impacts of Multiple Layers of Interpretation in a Zoo Context. *Journal of Sustainable Tourism*, 17, 91-105. DOI: 10.1080/09669580802359319

Zharikov, Y. (2011). Towards mitigating migratory shorebird displacement on Long Beach: A case study and a discussion paper. Pacific Rim National Park Reserve.

## RESUMEN

Las áreas protegidas son importantes tanto para la conservación de los recursos naturales como para brindar experiencias a los visitantes, pero estos dos objetivos a veces se ven comprometidos cuando los visitantes no cumplen con las normas. Esto fue examinado en un estudio realizado en la Reserva del Parque Nacional de la Cuenca del Pacífico de Canadá, donde el incumplimiento de la normativa para perros sin correa ha tenido un impacto negativo en los lobos, las aves playeras y las experiencias de los visitantes. Se aplicó la teoría del comportamiento planificado (TPB, por sus siglas en inglés) para estudiar los factores que influyen en el incumplimiento de las normativas sobre perros sin correa. Este estudio encontró relaciones de moderadas a fuertes entre las intenciones de comportamiento de los visitantes hacia el cumplimiento y los tres conceptos asociados con la TPB que pueden definir las intenciones: actitud, normas subjetivas y control percibido del comportamiento. Se encontraron relaciones más débiles entre estos conceptos y las nociones que se cree influyen en cada concepto. La relación entre las intenciones de cumplir y el cumplimiento real fue más débil, pero estas predicciones cobraron fuerza cuando se consideró el comportamiento anterior en relación con los perros con correa en el parque (hábito). El presente artículo examina cómo el caminar habitual sin correa afecta la capacidad de la TPB para predecir el comportamiento futuro de los paseadores de perros, y cómo las estrategias de gestión dirigidas a proporcionar argumentos convincentes para atar con correa a los perros tienen poca probabilidad de éxito, a menos que se combinen con otros enfoques descritos en el documento.

## RÉSUMÉ

Les aires protégées sont importantes à la fois pour la conservation des ressources naturelles et pour l'expérience offerte aux visiteurs, mais ces deux objectifs sont parfois compromis lorsque les visiteurs ne se conforment pas aux réglementations. Ce problème a été examiné lors d'une étude menée dans la Réserve du parc national Pacific Rim au Canada, où la non-conformité aux règlements sur la circulation des chiens sans laisse a eu des répercussions négatives sur les loups et les oiseaux de rivage, ainsi que sur l'expérience des visiteurs. La Théorie du Comportement Planifié (TCP) a été appliquée pour explorer les facteurs qui influencent le non-respect des règlements concernant les chiens. Cette étude a révélé un rapport modéré à fort entre les intentions comportementales des visiteurs vis-à-vis de la conformité aux règlements et les trois concepts associés au TCP (l'attitude, les normes subjectives et le contrôle comportemental perçu) qui peuvent façonner leurs intentions. Une relation plus faible a été constatée entre ces concepts et les croyances susceptibles d'influencer chaque concept. Le rapport entre l'intention de se conformer et le comportement d'acquiescement réel était faible. Mais ces prédictions sont devenues plus fortes lorsque l'on a tenu compte des comportements passés (les habitudes) concernant la tenue en laisse des chiens. Cet article examine comment l'habitude de circuler avec un chien sans laisse peut influencer la capacité du TCP à prédire le comportement futur du promeneur de chien dans le parc, et comment les stratégies de gestion visant à fournir des arguments convaincants en faveur de la tenue en laisse ne sont susceptibles de réussir que si elles sont associées à d'autres approches décrites dans le document.