



NORTH AMERICAN PARK AGENCIES' EVOLVING USE OF TWITTER: A CONTENT ANALYSIS OF 2014 AND 2017 TWEETS

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ABSTRACT

With a goal of improved social media communication by park agencies, the content from seven English-language North American park agencies' Twitter accounts were counted, interpreted, coded and compared. Trends in usage of Twitter by park agencies were examined by comparing tweets from 2014 (n=764) and 2017 (n=1,395). Special attention was directed to how park agencies address natural heritage conservation and park visitation in their Twitter feeds. Findings support a call for increased bottom-up, less controlled forms of information exchange on official park agency Twitter accounts to enhance interactivity, innovation and stakeholder input.

Key words: social media, Twitter, communications, parks, protected areas, engagement, conservation, tourism

INTRODUCTION

Social media (SM) has produced important changes in how users search, assess, produce, purchase and consume information, services and products. One of the most widely used SM is Twitter, with over 328 million monthly active users and more than 500 million tweets being sent every day (Statista.com, 2017; Forbes.com, 2017). Twitter is a microblogging medium that allows users to share 140-character texts accompanied by pictures, video and links to other external content such as other SM feeds or websites. It's a cost-effective way to broadcast one-way communications, and it enables users to interact with each other. Twitter is used as an engagement tool for marketing and building a customer base, and as a daily source for news and emergency updates, entertainment and communication (Ronsensiel et al., 2015; Hoffinan & Novak, 2012).

Government and non-government organisations (NGOs), including conservation agencies, have begun to harness the opportunities afforded by SM (Briones et al., 2011; Fletcher & Lee, 2012; Waters et al., 2009). Some park organisations and agencies have begun incorporating SM into their communications, education, marketing, visitor experience provision and stakeholder outreach efforts. This study highlights variations in this adoption among park agencies and the need for better understanding of how SM such as Twitter are being used, and makes recommendations for improving future use. More specifically, this study examined the Twitter feeds of

seven North American park agencies in 2014 and 2017, analysing and critiquing their content. The lens for this analysis incorporated the key mandates of many protected area agencies, natural heritage conservation and visitor enjoyment. As conservation communications experts Jacobson, McDuff and Monroe (2015) suggest "from wilderness parks to urban refuges, natural resource managers must engage a variety of publics in understanding and practicing conservation actions" (p. 1). SM is an essential tool for reaching these diverse audiences.

LITERATURE REVIEW

Social media is "a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content" (Kaplan & Haenlein, 2010, p.61). Recent research reviews of SM literature suggest SM research priorities. While Zeng and Gerritsen (2014) identified 65 articles related to tourism and SM research, they also suggested that this research topic is still in its infancy, and needs attention due to its significant role in society. Similar observations have been made in other SM-related reviews in tourism (Lee et al., 2015; Leung et al., 2013) and marketing (Alalwan et al., 2017) as well as specific case studies of non-tourism organisations such as NGOs (Briones et al., 2011; Curtis et al., 2010; Seo et al., 2009; Waters et al., 2009), education institutions (Fletcher & Lee, 2012) and government (Lee & Kwak, 2012).

Empirical research exploring the use of SM to advance conservation is elusive and published works appear limited to “how to use” advice (Dosemagen, 2017) or cautionary lists of the pros and cons (Arts et al., 2015) regarding park agencies’ SM use.

As for tourism, North American park agencies are significant tourism providers, hosting over 350,000,000 visits annually (Parks Canada 2016; National Parks Service, 2016), yet no research that documents park agencies’ use of SM to engage visitors could be located. Lessons instead are drawn from other tourism providers. Studies suggest that tourism operators and destination marketing organisations (DMOs) (Sevin, 2013; Hays et al., 2013; Gibbs & Dancs, 2013) have not taken full advantage of the communication opportunities offered by Twitter and other SM tools. For example, Sevin (2013) studied 20 major American city DMOs, and found SM used for five major functions: providing information, questions and answers to and from followers, announcing deals and promotions, retweeting and acting

as an organisational information hub. However, most tweets did not mention or converse with other users (Sevin, 2013).

Use of social media such as Twitter can more readily create interactive relationships among users than can traditional marketing tools or strategies. Engagement via SM can result in an increase in park visitors as well as repeat visits, attracting new park visitors and fostering park advocates. Hvass and Munar (2012) suggest that engaging followers through conversational content can increase customer loyalty and their feeling of connectedness to the organisation. Yang et al. (2010) found that dialogic communication, the “negotiated exchange of ideas and opinions” (Kent & Taylor, 1998, p. 235) in SM campaigns led to more favourable public attitudes toward the organisation.

While engagement and conversation are pillars of Twitter, tone of voice can also influence engagement with users. SM outlets such as Twitter pose a challenge to park



Figure 1: An example of a user-generated tweet

agencies, in that the traditional corporate/government communication tone may conflict with the new informal tone of SM (Hvass & Munar, 2012; Zeng & Garristen, 2014). The tone used in SM communication resembles face-to-face communication and attempts to imitate that of friends or colleagues (Hvass & Munar, 2012).

As SM and related information communication technologies become ubiquitous, it is relevant and timely to study the use of SM best practices by park agencies. To assist protected area agencies in their missions, content analysis of high- and low-activity park agency Twitter accounts was conducted, and compared over time to document trends and evaluate use. Twitter accounts' efficacy was assessed by comparing data with best practice recommendations from SM researchers and practitioners. The goal of this study is to improve park agencies' use of SM as a communication outlet.

METHODS

It is challenging to measure the impact, significance or success of a Twitter feed, as there are multiple influencers and variables that can be analysed (Effing & Spil, 2016; Alboqami et al., 2015; Antoniadis et al., 2015; Aladwani, 2015). This exploratory study engaged in SM-specific mixed methods (Altheide & Schneider, 2013; Hart & Taylor, 2014).

The study sample was determined through a two-step process. First, an inventory of all English-language, official North American park agency Twitter feeds was created and organised by frequency of posts, date of establishment and number of followers. As of April 2014, thirty US state park agencies and two Canadian provincial park agencies had established Twitter accounts. Park agencies that shared an account with sister agencies such as tourism or resource management were excluded. For agencies with multiple Twitter feeds, only the main account was considered (e.g. @NatlParksService and not @PacificNPS). Second, state, provincial and federal agencies were selected for inclusion from two tweet frequency groupings (after Hvass & Munar, 2012). Alberta, Ontario and Vermont were selected from the high Twitter activity group, and California and Utah from the low activity group. Virginia State Parks was excluded as its tweet frequency was extremely high and appeared to be automated, making it an outlier. Parks Canada, characterised by the highest levels of tweet rates, and the US National Parks Service, characterised by moderate to low tweet frequencies, were also included due to their federal status and large potential audiences.

To establish a content analysis protocol, three sources of information were used. First, during Phase 1 of the sampling process, feeds from all North American park agencies' official Twitter sites were monitored for a two-



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month period to determine general categories for coding tweet content. These general categories were then compared with content analysis from the SM literature (Dann, 2010; Gibbs & Dancs, 2013; Hvass & Munar, 2012; Hays et al., 2013; MacKay et al., 2017). Finally, conservation and enjoyment, mandates common to most park agencies, were added as coding categories. Park agency tweets were coded according to the following categories: type of tweet, purpose of tweet, conservation and tourism orientation, audience (local or external park stakeholders), and authorship. Authorship was sub-coded as agency-generated or user-generated (see example Figure 1). Frequency and character of tweets as well as the presence of external links (e.g. web links, pictures, video), mentions and hashtags were also recorded. These latter elements are discussed in a companion paper.

Tweets were gathered for one month (4 June 2014 to 5 July 2014) using NCapture for NVivo (v. 11). A one-month period (after Gibbs & Dancs, 2013) generated a manageable number of tweets, while also capturing tweets typical of both low and high tourist seasons. A national holiday also occurred in each country during the time period. A total of 764 tweets was collected in the 2014 sample. To examine changes in practice, the same park agency Twitter feeds were captured again between 4 June 2017 and 5 July 2017, with 1,395 tweets collected. Deductive analysis of tweets by three coders was compared until inter-coder consensus was achieved; a single analyst then used the refined methodology to complete tweet categorisations (Creswell, 2014). Table 1 presents the final coding categories. Categories were not mutually exclusive and some tweets were assigned to more than one *Type* and *Purpose* category.

RESULTS

Table 2 outlines tweet and follower numbers for the month-long data collection periods in 2014 and 2017, as well as the overall number of tweets for each year. In this

Table 1 Tweet Coding Categories

	Category	Definition	Example tweet
Type	Conversational	Tweet directly addresses another user(s); asks/ answers a question, involves them in the Tweet or uses @_____	@Vermont State Parks: @jayfurr How was the trip to Maidstone?
	Promotional	Tweet markets/promotes an event, activity, contest, website, artist, etc. and urges users to take action	@OntarioParks: Become the outdoorsy person you always wanted to be! #LearntoCamp with #OntarioParks! http://t.co/4AN5QeWckJ
	Information	Tweet presents an update or live discussion of an event, reports news or provides information; does not urge users to take action	@ParksCanada: The Bill to establish #RougeNUP, once passed, establishes a unique type of protected area in Canada http://t.co/iKKcdDETaC #ConservationPlan
	Status	Answers the Twitter question "What are you doing now?"	@AlbertaParks: RT @RonCantiveros: Pitstop at Dinosaur Provincial @Albertaparks on our way to Calgary! Amazing place! #ExploreAB @TravelAlberta http://t.co...
	Phatic	Tweet contains greetings to the Twitter community, text soliloquies/monologues, undirected statements of opinion, or establishes sociability rather than communicating information or ideas	@Parks Canada: Thank you to everyone who visited us this year at the @TOwaterfest – We hope to see you in a national park or historic site soon!
Purpose: Conservation	Education	Tweet outlines the importance of cultural or natural heritage, and/or educates the audience about how preservation and conservation are conducted. Tweets that describe the park's role in conservation efforts fit in this category, but also in the Promotions section	@NatlParkService: Learn about how sea level rise is affecting parks like @AssateagueNPS: http://t.co/GKxq6NanK #ActOnClimate http://t.co/cJYlnKOQLu
	Behaviour	Tweet encourages pro-park, pro-conservation behaviour (e.g. donate to Friends Group, drive carefully on parkway to protect animals, stay on trails) In addition to information about conservation in the park, provides direction from the park or others to behave in a pro-park manner	@UtahStateParks: Please do your part to keep our waterways clean! http://t.co/eqd7FnTyZL
Purpose: Tourism	Promotional	Tweet provides information, enhances visitor experiences or encourages tourism	@ParksCanada: So many fun activities to do this summer! What's first on your list? http://t.co/x0chaGA7fg @RogersTVToronto #daytimeTO
	Tourist info (how to travel)	Tweet provides information or enhances visitor experiences; directed specifically to those who are in the park or planning to visit	@CAStateParks: The holiday weekend brings extra traffic. Be extra cautious esp. if traveling with a trailer. Check conditions at http://t.co/4CqbeL2oEO
Purpose: Local	Local-specific info	Information relevant to anyone located inside or just outside the park	@JasperNP: #rockscaling is underway on #hwy16 East for the next few weeks. Expect 20mins delays/ 7 days a week. Info: http://511.alberta.ca
	Local emergency	Information relevant to anyone located inside or just outside the park, who may be impacted by a current hazardous condition in the park	@AlbertaParks: Advisory: Livingstone Falls PRA is now closed due to road washouts.

period, park agencies' combined tweets and number of followers grew 220 per cent and 235 per cent, respectively. In comparison, Twitter followers worldwide grew 77 per cent between 2014 and 2017 (Statista.com, 2017). From 2015 to 2017, Twitter's growth slowed at first but now appears to be accelerating, particularly the number of users (Oreskovic, 2015; Gallagher, 2017). Park agencies adoption of Twitter appears to be growing at an even faster pace, catching up with other sectors.

The US National Park Service (NPS) had many more followers than both Ontario and Vermont State Parks but not as many tweets. Lower Twitter activity on the US NPS site may be explained, in part, by the existence of multiple specialised NPS Twitter accounts (e.g. @MidwestNPS) that serve as unique communication channels to specific audiences, separate from the main

NPS account. In 2014, Ontario and Vermont, on the other hand, each had one primary Twitter account. Differences may also be explained by variances in how each agency prioritises resources for communication, including policies regarding staff engagement in SM. Cultures in some NGO (Curtis et al., 2010; Munar, 2012) and government organisations (Lee & Kwak, 2012) embrace new communication technologies faster than others. Parks Canada, with the highest tweet and follower growth, appears to be prioritising SM engagement. Likely, higher numbers of followers on the NPS account are also due to its brand recognition, as well as the size of the US population relative to Canada, Ontario and Vermont. According to Linvill et al. (2012) the size and prominence of organisations matters when it comes to SM exposure.

Table 2: Number and growth of agency tweets and followers – 2014 and 2017 (Highest values are highlighted purple)

Park Agency	Member Since	Number of tweets (4 Jun–5 Jul)		Tweets per day (4 Jun–5 Jul)		Total annual tweets		Change in number of tweets	Number of followers		Change in number of followers
		2014	2017	2014	2017	2014	2017		2014	2017	
Alberta Parks @Albertaparks	April 2009	126	109	4.06	3.5	2,402	3,971	65%	2,616	6,758	158%
California State Parks @CAStateParks	May 2009	61	77	1.97	2.4	2,737	5,112	87%	15,403	26,500	72%
NPS @NatlParkService	April 2009	35	129	1.10	4.1	2,103	7,725	267%	123,394	428,000	247%
Ontario Parks @OntarioParks	Feb 2009	145	646	6.68	20.8	3,678	15,900	332%	25,965	51,800	99%
Parks Canada @ParksCanada	August 2009	239	212	7.65	6.8	8,894	68,603	671%	16,100	153,000	850%
Utah State Parks @UtahStateParks	Sept 2008	20	24	0.65	0.8	1,248	2,218	78%	5,620	10,900	94%
Vermont State Parks @VTStateParks	April 2009	138	198	4.45	6.4	5,850	8,328	42%	9,877	22,800	131%

Only four of the seven park agency's Twitter accounts had higher numbers of tweets during the 31-day sample period in 2017 compared with 2014. However, for all park agencies, the number of tweets over 12 months for 2017 was greater than in 2014. Parks Canada led the way in annual number of tweets in both 2014 and 2017; its Twitter account also experienced the greatest growth in tweet rates and followers. The NPS consistently had the greatest number of followers.

The low tweets per day rates for Utah and California during the 30-day sample periods are concerning, as experts suggest frequency is an important factor in maintaining audience interest (Ellering, 2017; Houghes, 2016; Patel, 2017). This could be driven by a lack of staff resources, or it could be a quality over quantity strategy. Conversely, 20 tweets per day from Ontario Parks in 2017 may be excessive, causing followers to unfollow or ignore the agency's messaging. However, high tweet rates may also increase the number of new followers – for every one that unfollows, five new followers could be generated. A tension exists in this approach – high tweet rates may lessen agency messaging impact, but at the same time grow its follower numbers.

In 2014, only 13 per cent of the tweets examined in this study engaged followers in a conversation and 44 per cent focused on sharing information. In 2017, 65 per cent of tweets provided information as one-way communication, and only 7 per cent appeared to be conversational. Similar one-way communication

approaches, characterised by information provision and promotion, were documented by Sevin's (2013) and Gibbs and Dancs' (2013) studies of US and Canadian destination marketing organisations. In Sevin's (2013) study only 20 per cent of all tweets enabled organisations/agencies to engage in direct conversation with Twitter followers. Reduced conversation efforts in 2017 is concerning, as it reflects a lost opportunity for park agencies to engage their Twitter community in dialogic communication. Dialogic communication can build relationships with the public, and shares the quality of an individual's interpersonal dialogues (Pang et al., 2016).

Twitter account content is generated by the park agency or other Twitter users and retweeted by the agency. In general, status and conversational content was more commonly generated by other Twitter users, and retweeted by the respective park agencies (see Table 3). Agency-generated content was most often informational, followed by promotional and phatic. Information provision ranked as the most common type of content in both 2014 and 2017. Twitter is an important vehicle for rapid bursts of time-sensitive information. It is also a good vehicle for reminding. Both the 2014 and 2017 feeds were dominated by tweets that excelled at this. For example: "Next Saturday is National Aboriginal Day and we're celebrating with a special event at #WritingonStone. Don't miss it <http://t.co/gK48jMvGjK>".

Table 3 Twitter Activity Type – Frequency of tweet types and percentage of total agency tweets 4 June–5 July, 2014 and 2017 (Highest values are highlighted purple)

Park Agency	Conversational # (%)*		Promotional # (%)		Information # (%)		Status # (%)		Phatic # (%)	
	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017
Alberta Parks @Albertaparks	30 (24)	17 (16)	17 (13)	26 (24)	85 (67)	65 (59)	5(4)	1 (0.1)	21 (17)	16 (14)
California State Parks @CAStateParks	31 (51)	0	18 (30)	8 (10)	12 (20)	49 (64)	5(8)	0	17 (28)	21 (26)
National Parks Service @NatlParkService	0	0	17 (13)	20 (16)	22 (63)	74 (58)	0	3 (2)	5 (14)	30 (24)
Ontario Parks @OntarioParks	19 (13)	13 (2)	58 (40)	109 (17)	74 (51)	379 (59)	6(4)	16 (2)	28 (19)	154 (24)
Parks Canada @ParksCanada	28 (12)	0	79 (49)	80 (38)	119 (48)	105 (49)	7(3)	0	29 (12)	33 (16)
Utah State Parks @UtahStateParks	0	4 (17)	8 (40)	1 (17)	11 (55)	9 (37)	0	0	3 (5)	10 (42)
Vermont State Parks @VTStateParks	15 (11)	0	29 (21)	8 (8)	81 (59)	53 (55)	0	5 (5)	42 (30)	31 (32)
Total across all tweets	13%	7%	26%	15%	44%	65%	2%	2%	15%	36%

*Percentage of total agency tweets 4 June–5 July. Categories are not mutually exclusive

Table 4: Tweet Purpose (Highest values are highlighted purple)

Park Agency	Tourism (promo info) # (%)*		Tourist (specific 'how to' info) # (%)		Local-specific info # (%)		Local emergency # (%)		Conservation Behaviour # (%)		Conservation Education # (%)	
	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017
Alberta Parks @Albertaparks	13 (10)	50 (46)	30 (24)	26 (24)	4 (3)	18 (16)	26 (21)	13 (12)	1 (0.7)	8 (7)	3 (2)	12 (11)
California State Parks @CAStateParks	3 (5)	16 (21)	1 (2)	1 (1)	0	1 (1)	0	0	7 (12)	4 (5)	0	8 (10)
National Parks Service @NatlParkService	0	16 (12)	0	7 (5)	0	5 (4)	0	0	0	2 (2)	9 (26)	21 (16)
Ontario Parks @OntarioParks	53 (37)	183 (28)	5 (3)	38 (6)	2 (1)	2 (.3)	1 (1)	0	1 (0.6)	32 (5)	1 (0.6)	65 (10)
Parks Canada @ParksCanada	31 (13)	69 (32)	50 (21)	0	11 (5)	0	0	0	12 (5)	3 (1)	31 (13)	9 (4)
Utah State Parks @UtahStateParks	8 (4)	7 (29)	2 (10)	2 (8)	2 (10)	0	0	0	2 (1)	3 (1)	0	0
Vermont State Parks @VTStateParks	29 (21)	20 (20)	1 (1)	5 (5)	1 (1)	4 (4)	0	0	1 (0.7)	2 (2)	0	9 (9)
Total tweets per purpose (%)**	137 (18)	361 (47)	89 (12)	79 (12)	20 (3)	30 (4)	27 (4)	13 (2)	24 (3)	54 (7)	44 (6)	129 (16)

Feedback was an initial coding category to determine if park agencies asked their Twitter followers for feedback on park management performance. The number of tweets that solicited or replied to user-generated feedback was so small that this category was dropped. An example, retweeted by California State Parks, was first posted by California State Parks' advocacy group: "RT @calparks: "The type of feedback you've been providing informs our work and tells us what you need" @CAStateParks director Lisa." Lack of feedback solicitation is a significant failure on the part of park agencies. Experts suggest microblogging and other forms of SM provide an invaluable opportunity for park agencies to have conversations with stakeholders about the agency's performance and improvement (Sotiriadis & Van Zyls, 2015).

Conservation, tourism and local stakeholder messaging

The Twitter accounts for Ontario Parks and Alberta Parks produced the most tourism promotion tweets such as reminders to make campsite reservations online, and tweets intended to facilitate travel such as safe food storage. These agencies have extensive tourism infrastructure including well-established, sophisticated

online camping registration systems that integrate well with an online promotional tool such as Twitter. Tourism plays an important role in generating revenue for these agencies (Eagles, 2014) hence it is not surprising to see tourism promotion and facilitation emphasised. For all agencies, between 2014 and 2017 there appears to have been an overall increase in the number of tweets providing tourism advice and promotion (see Table 4).

Twitter facilitates visits by linking to services such as wayfinding and reservation resources. Visitor satisfaction can be increased through enhanced management of visitors' experiences and expectations. Twitter can also encourage visitors to recall memorable and meaningful park experiences through post-visit dialogue utilising SM (MacKay et al., 2017). This can serve to elevate park loyalty practices such as donations, return visits and positive word-of-mouth.

Twitter excels at broadcasting emergency information; saving lives during wildfire emergencies and related disaster events is well documented (Alexander, 2014; Cooper et al., 2015; Panagiotopoulos et al., 2016). The higher rates of local emergency tweets for Alberta Parks in 2014 were related to a major flood. Reporting time-

sensitive activities such as bear sightings in campgrounds and prescribed burns made up the bulk of content related to local emergencies and location-specific information provision.

Conservation messaging was disappointingly low for park agencies, making up only 4.5 per cent and 12 per cent of combined agency tweets in 2014 and 2017, respectively. Tweets promoting pro-conservation behaviours were especially low; a combined average of 5 per cent pro-park behaviour-related tweets in 2014 and 2017 was documented. Alberta Parks and California State Parks led the way with pro-conservation behaviour tweets such as “News Release: Managing Boat Sewage the Environmental Way: There’s an App for that! <https://t.co/A8WvcNltnN>”. Conservation education tweets, highlighting the importance of cultural or natural heritage values in each park, were also scarce; an average of 11 per cent of tweets in 2014 and 2017 contained this type of information. The NPS led the way in generating and retweeting heritage values education messages, such as “RT @FortPulaskiNPS: Our park protects acres of tidal saltmarsh, a critical ecosystem that filters runoff before it reaches nearby Atlantic...”

Overall, the content of these conservation messages appeared well crafted; it was their lack of frequency that was surprising. SM can provide park visitors with information or access to mobile tools for donating to parks or identifying invasive species. SM can also reinforce park visitors’ awareness of natural and cultural

heritage post-visit with reminders about key conservation facts and how to engage in nature-protective behaviours at home (Bueddefeld & Van Winkle, 2017; Hofman & Hughes, 2017; Wheaton et al., 2016).

Authority, tone and anonymity

A review of the SM literature suggests that organisations communicating with their stakeholders and customers through SM must engage in communication approaches that differ from traditional mediums such as advertising or annual reports. Communication style on SM tends to be more informal, interactive and transparent. This study assessed tweets using three style categories (Hvass & Munar, 2012). *Tone*, coded as formal or informal, refers to the style of language in the tweet. Informal tone resembles face-to-face conversations, and as such can be more engaging. Vermont State Parks excelled at fostering this style of communication through their own tweets and retweeting user-generated content. A decline in informal tweets was documented between 2014 and 2017 (see Table 5).

The second style category, *Authority*, is the level of content control exhibited by the agency. In this study, the majority of tweets were top-down, also known as command-and-control communication style. This style of controlling message is still common in many sectors (DiStaso et al., 2011; Seo et al., 2009). Experts suggest greater interactivity on Twitter feeds is fostered through the use of bottom-up communication style to foster



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follower engagement (Kaplan & Haenlein, 2010). An example of this less authoritative style of Twitter message is provided in Figure 2.

Anonymity, the third style of communication, refers to the level of transparency in the agency's tweet author. When a poster's identity is known, experts suggest he or she can generate loyal followers and create stronger organisational ties (Israel, 2009). Hvass and Munar (2012) caution that a personal connection can be hard to replace if a transparent poster can no longer post. Coded as opaque or transparent, opaque tweets were much more common, and almost always the case for agency-generated tweets. This opacity did not change between 2014 and 2017. Baym (2015) suggests that transparent strategies increase followers' feelings of interacting with an authentic person through virtual communication (cited in Hvass & Munar, 2012). If park agencies wish to evoke more authentic interactions with their followers, they may wish to engage more frequently in transparent authorship.

Limitations

This paper focused on analysis of the tweet content of seven park agency Twitter accounts over time. There are many other factors that shape the effectiveness of a Twitter account. Elements such as links to outside

content (e.g. websites, blogs, video), use of hashtags, mentions and followers' characteristics all combine to increase the influence of a Twitter account and its overall impact in the Twitter universe. All approaches to measuring effectiveness could not be addressed here, however several of these aspects were analysed for the same seven park agency accounts and are reported in a parallel article. Additionally between 2014 and 2017, Twitter introduced new services to its platform such as "Likes" and the function of copying and pasting a link to another tweet and responding to the tweet. The latter option is used by posters who want their response, and the tweet they are responding to, to be more public, rather than a reply thread. As these functions were not offered in 2014, we did not collect and perform an analysis of their use in 2017.

Future SM and parks research efforts should compare the use and effectiveness of different SM platforms. In depth case studies of park agencies' culture, resourcing and practice as they relate to SM and its integration with marketing and business planning efforts would also reveal important insights needed to encourage park agency communication innovation and efficacy. In short, there are many ways to analyse the trends in and effective use of SM tools such as Twitter; identifying organisational priorities, as in this study with a

Table 5 Style of Tweet (Highest values are highlighted purple)

	Tone: Formal # (%)*		Tone: Informal # (%)		Authority: Top Down # (%)		Authority: Bottom Up # (%)		Anonymity: Opaque # (%)		Anonymity: Transparent # (%)	
	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017
Alberta Parks @Albertaparks	63 (50)	67 (61)	63 (50)	42 (38)	102 (81)	105 (96)	24 (19)	4 (4)	102 (81)	105 (96)	24 (19)	4 (4)
California State Parks @CAStateParks	23 (38)	59 (77)	38 (62)	18 (23)	51 (84)	77 (100)	10 (16)	0	51 (84)	77 (100)	10 (16)	0
National Parks Service @NatlParkService	26 (74)	61 (48)	9 (26)	66 (52)	35 (100)	122 (96)	0	4 (3)	34 (97)	122 (96)	1 (3)	4 (3)
Ontario Parks @OntarioParks	54 (37)	276 (43)	91 (63)	370 (57)	143 (99)	586 (91)	2 (1)	60 (9)	143 (99)	586 (91)	2 (1)	60 (9)
Parks Canada @ParksCanada	106 (44)	81 (38)	133 (56)	131 (62)	224 (94)	206 (97)	15 (6)	6 (3)	224 (94)	206 (97)	15 (6)	6 (3)
Utah State Parks @UtahStateParks	13 (65)	14 (58)	7 (35)	10 (42)	20 (100)	20 (83)	0	4 (17)	20 (100)	20 (83)	0	4 (17)
Vermont State Parks @VTStateParks	5 (4)	19 (20)	133 (96)	77 (79)	113 (85)	80 (82)	25 (15)	18 (18)	113 (85)	80 (82)	25 (15)	18 (18)
Total tweets per style (%)**	260 (34)	577 (45)	474 (62)	714 (55)	688 (90)	1196 (93)	76 (10)	96 (7)	687 (90)	1196 (92)	76 (10)	96 (7)

*percentage of total agency tweets

**percentage of total tweets by all agencies 4 June–5 July



Figure 2. Bottom-up tweet shared by Vermont State Parks

specialised focus on conservation and tourism messaging, is an important first step when embarking on assessing SM practice.

CONCLUSION

Conservation communications specialists Jacobson, McDuff and Monroe sum up SM best practice by stating that “resource agencies must determine how they want a message to be received, and understand how the message is spread by SM, encoded by media gatekeepers, or decoded and interpreted by the receiver” (McDuff & Monroe, 2015, p. 1). This study identified the current state-of-the-art in North American park agency tweet content. Six best practice suggestions arise from this paper:

1. Take greater advantage of Twitter’s ability to facilitate two-way communication and relationship building.
2. Increase transparency of authorship or assign a “persona” to interact with Twitter users on a committed basis.
3. Decrease formal tone of communication.
4. Revise communications policies to reduce the dampening effect on SM’s utility for genuine co-creation opportunities with conservation and park tourism stakeholders and partners.
5. Reply promptly to complaints or direct queries, and use these as opportunities to engage in conversation and obtain feedback.
6. Post frequently, but not overwhelmingly; relevancy and timeliness are essential.

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RESUMEN

Con el objetivo de mejorar la comunicación en las redes sociales por parte de las agencias encargadas de la gestión de parques, se contó, interpretó, codificó y comparó el contenido de las cuentas de Twitter en inglés de siete agencias del Servicio de Parques Nacionales de los Estados Unidos. Se examinó las tendencias en el uso de Twitter por parte de las agencias encargadas de los parques mediante la comparación de los *tweets* de 2014 (n=764) y 2017 (n=1,395). Se prestó especial atención a cómo abordan dichas agencias la conservación del patrimonio natural y las visitas a los parques en sus mensajes vía Twitter. Las conclusiones apoyan un llamado para aumentar el uso de formas menos controladas de intercambio de información de abajo hacia arriba en las cuentas de Twitter de las agencias oficiales de parques para mejorar la interactividad, la innovación y las aportaciones de las partes interesadas.

RÉSUMÉ

Dans un but d'améliorer la communication des agences de parcs sur les réseaux sociaux, le contenu des comptes Twitter en langue anglaise de sept agences de parcs nord-américains a été compté, interprété, codé et comparé. Les tendances d'utilisation de Twitter par ces agences ont été examinées en comparant leurs tweets de 2014 (764 tweets) et 2017 (395 tweets). Une attention particulière a été portée à la façon dont les agences de parc abordent la conservation du patrimoine naturel et la fréquentation du parc dans leurs tweets. Les résultats viennent appuyer un appel en faveur de formes d'échange d'information ascendantes et moins contrôlées sur les comptes Twitter officiels des parcs afin d'améliorer l'interactivité, l'innovation et la contribution des intervenants.