

Stawamus Chief Provincial Park:

Monitoring and Protection of Nesting Peregrine Falcons from Impacts of Rock Climbing

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Executive Summary

Since 2010, BC Parks has conducted a Peregrine Falcon Monitoring Program in Stawamus Chief Provincial Park. Working in partnership with BC Parks, this report answers the research question: How can BC Parks improve the monitoring and protection of nesting Peregrine Falcons from the recreational impacts of rock climbing on the Stawamus Chief?

This final report was completed through literature review, examining a case study of the Colorado plateau, and two expert interviews. The expert interviews were with Pinnacles National Park Raptor Biologist, Gavin Emmons, and a former monitoring program volunteer who wishes to remain anonymous. Please refer to the below table for the three main components of this project, their descriptions, and my recommendations to BC Parks.

Project Components	Description	Recommendation
Peregrine Falcon Monitoring Program	<p>The monitoring program runs between March 1st and July 31st, twice a week, for three to four hours a shift</p> <p>The goal of the program is to locate as many nesting falcon pairs as possible so that adjacent climbing routes can be closed</p>	<p>Increasing monitoring in March and April may result in more sightings</p> <p>More engagement with the rock climbing community will generate more awareness of the program and hopefully more sympathy for the cause which may result in respecting closures and more reports of falcon sightings to Parks BC</p>
Volunteers	<p>Parks BC's has struggled to recruit and retain volunteers for the falcon monitoring program since the position is very time consuming and has low reward</p>	<p>Reaching out to local bird watching societies, university students, and rock climbers and outdoor enthusiasts with a wildlife biology or conservation background</p>

Signage	Climbing route closure notices are posted in Stawamus Chief Provincial Park, BC Parks website, Stawamus Chief Provincial Park webpage, and local climbing websites	Creating more informative signs that state both where and why closures are happening may invoke more sympathy in the climbing community, thus incentivizing more climbers to follow closures
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While this study has been comprehensive, there is still more research that could be done. Specifically, BC Parks may wish to conduct a survey aimed towards local climbing communities to see how knowledgeable climbers are about Peregrine Falcons and how rock climbing affects their nesting areas. In turn, these surveys could help raise awareness for the monitoring program, which may result in more volunteers from the climbing community and an increased understanding of why it is important to follow climbing closures.

Introduction

In 2010 BC Parks initiated its first Peregrine Falcon monitoring program in Stawamus Chief Provincial Park (SCPP) to help protect nesting areas from recreational rock climbing routes. This report answers the research question: how can BC Parks improve the monitoring and protection of nesting Peregrine Falcons from the recreational impacts of rock climbing on the Stawamus Chief?

This project was accomplished by collecting research on how other parks are monitoring and protecting Peregrine Falcons, how to more effectively attract and retain monitoring program volunteers, developing a strategy to further engage the Stawamus

Chief's rock climbing community, and how to create effective signage for appropriate climbing route closures.

In order to aid in the understanding of this report, it is necessary to provide some background information on Stawamus Chief Provincial Park and Peregrine falcons. Thus, some important facts will be provided below.

Stawamus Chief Provincial Park is located in Southern Squamish, British Columbia, just off of the Sea to Sky Highway. The park covers 530 hectares of land and includes 700-meter tall massive granite cliffs more popularly known as the Stawamus Chief¹. The Chief is one of the world's top rock climbing destinations (Harshaw et. al 2006). Each year, the Chief attracts thousands of visitors to attempt to scale its giant granite cliff faces (Harshaw et. al 2006). Native to the Chief's cliff faces, however, are Peregrine Falcons.

Peregrine Falcons, *Falco peregrinus*, are a type of raptor² found all over the world. The falcons are roughly the size of a common crow and are the fastest animal in the animal kingdom, with a record speed of 300 miles per hour. A historic population decline of Peregrine Falcons occurred in the 1950s and 1960s due to DDT (Beauchesne and Cooper 2004, Daw et al 2006). Since then, Peregrine Falcon populations have increased, however they are still listed as threatened on schedule one of the Species at Risk Act (SARA) and thus are of special importance to BC Parks (Beauchesne and Cooper 2004).

¹ More simply, the Stawamus Chief is often referred to as The Chief

² Raptors are any type of bird of prey

Methods

Literature Review

The main evidence searched for in the literature review was confirmation that rock climbing does in fact pose a negative threat on Peregrine Falcon nesting areas. The literature review also aimed to ascertain more accurate monitoring techniques, which could be implemented by BC Parks. For the past five years, Parks BC has conducted their monitoring program to help protect nesting Peregrine Falcons. This program works under the assumption that rock climbing has detrimental effects on Peregrine populations due to disturbances to the nesting areas caused by rock climbers and their equipment.

Ample evidence to support this claim was found in Camp and Knight's article, *Rock Climbing and Cliff Bird Communities at Joshua Tree National Park, California*, which argues that rock climbing has the potential to alter cliff bird communities since both birds and climbers desire the same type of cliff faces (Camp and Knight 892, Berrens et al. 90). The authors' methods to support their argument included monitoring a variety of bird species from sunrise to sunset over the course of three months. They specifically watched for breeding, feeding, and flight patterns on both unclimbed cliffs and climbed cliffs. Furthermore, Camp and Knight documented human activities at the cliff sites, the number of people present, and the duration of their stay. By comparing the information they gathered from observing birds and humans, they came to the conclusion that there is a connection between areas that are popular for climbers and areas where fewer birds are able to reside (Camp and Knight 893). Camp and Knight found that there is a direct correlation between the group size and duration of human

activity and the number of birds able to nest successfully in the same area. Thus, Camp and Knight's research can be used as evidence to support the importance of rock climbing route closures in Peregrine Falcon nesting areas. Furthermore, it supports the duration of the closures currently set out by Parks BC, which is three months.

Also beneficial to this report were literature findings that pertain to the actual process of monitoring Peregrine Falcons. A case study completed in the Colorado Plateau outlined a monitoring plan which included, looking at historical data to see which areas Peregrines continue to nest in, and observing areas that have the potential to be nested in, in addition to known nesting sites (Daw et al. 16). Many papers also state that there is sufficient evidence to suggest that Peregrine Falcons tend to nest in the same areas over multiple years (Daw et al. 17, Fabrizio et al. 190, Fleming et al 163). Thus, BC Parks can use their detailed monitoring documents to help predict where nests will be found.

This is by no means the full result of the literature review. Please note that findings from the extensive literature review have been used throughout this report to help support ideas and recommendations.

Expert Interviews

In addition to the literary research, expert interviews were conducted with a representative from Pinnacles National Park (Pinnacles). Pinnacles also enforce rock-climbing closures due to the presences of nesting Peregrine Falcon on popular climbing routes. Thus, important information was gained from talking to a representative. An expert interview was also conducted with a former Peregrine Falcon monitoring program

volunteer to gain further insight into the program and what improvements can be made.

Key findings, which will be revisited later on in this report, include:

- Peregrine Falcon pairs seem to return to the same nesting sites each year
- The most important months for monitoring Peregrine Falcons is between March and April
- It is importance to maintain a close and open relationship with the local rock climbing community
- Falcons were hard to see from where BC Parks sets up their monitoring station
- More people monitoring during a shift could be beneficial

Current Protocol and Barriers

Currently, BC Parks' monitoring program runs from March 1st and July 31st. The monitoring shift procedures state that at least one person is required per shift, and shifts are ideally filled twice a week lasting from three to four hours (BC Parks 2010). If a nest is located, adjacent climbing routes are closed until monitoring suggests that all chicks have left the nest.³ Closure notices are posted on the BC Parks website, Stawamus Chief Provincial Park webpage, as well as other local climbing websites.

While the program has had successes, BC Parks is looking to overcome the following barriers:

- Monitoring is time consuming and can be low reward for the program's volunteers
- The availability of BC Parks staff to fill monitoring shifts not taken by volunteers is very low
- Monitoring requires binoculars and ideally a spotting scope, which volunteers often do not have
- Over the past three years it has been reports from climbers, not the on-the-ground monitoring program, that have primarily led to identification of nest sites

These barriers are addressed and answered in the subsequent sections of this report.

³ This is usually around mid-July

Expert Interviews

Arguably, the most useful information for this project occurred from two expert interviews. The first interview was conducted via phone call on March 19, 2015 with Gavin Emmons. Gavin is a raptor biologist at Pinnacles National Park in California. He has worked at Pinnacles for 12 years and is the leading biologist for the longest-running falcon monitoring program in the United States; Pinnacle's program has been running since 1985. Gavin not only monitors the cliff dwelling falcons, but also works closely with the local climbing community.

The second interviewee was a former volunteer for BC Park's falcon monitoring program. The interview was conducted over the phone on March 28, 2015. The volunteer wishes to remain anonymous, so for the purposes of this report, they will be referred to as 'former volunteer'. They have allowed me to disclose, however, that they were a student at Quest University in Squamish, BC. Please refer the detail findings from the two interviews in the subsequent sections.

Gavin Emmons

In addition to having 12 years experience running a falcon monitoring program in Pinnacles National Park, Gavin Emmons has also aided falcon monitoring in other American National Parks such as Joshua Tree and Yosemite. Due to his extensive knowledge and experience with cliff dwelling birds and rock climbing, Gavin provided copious amounts of extremely useful information to this project.

According to Gavin, for the most part, Peregrine Falcon pairs seem to return to the same nesting sites each year. The most important months for monitoring Peregrine

Falcons is between March and April, because that is when they are most active outside of the nest. If a falcon pair is spotted on a cliff face, Gavin will start by closing a larger area, then sometimes open some of that area up after the falcon tolerance has been determined. Like BC Parks, Gavin works closely with the rock climbing community to decide how large closures should be. A point of particular interest to this report is that Gavin specifically recruits rock climbers with a background in biology as volunteers. He has been able to find many volunteers through this method.

Gavin's most stressed message during the interview was the importance of maintaining a close and open relationship with the local rock climbing community. Gavin believes that most of the success from Pinnacle's falcon monitoring program comes from his positive relationship with the climbers. Although longevity plays a role in the successful relationship, so does Gavin's constant communication with the climbing community. To keep the lines of communication open, Gavin sends out press releases to local newspapers, hands out brochures to local rock climbing gyms, as well as participates in online climbing forums to help make sure all of information of nest sightings and climbing closures are being brought to the climbing community's attention. Furthermore, Gavin sends out monthly updates to members of the climbing community as well as other park staff to help make everyone feel apart of a team.

Former Volunteer

This interviewee was a former volunteer for the BC Park's monitoring program in the spring of 2012. At the time, they had been looking for a way to gain volunteer experience, specifically pertaining to wildlife biology and conservation. Former Volunteer

found out about the falcon monitoring position through a BC Parks recruiting event, which was held for students at Quest University.

Former Volunteer began the monitoring position shortly after signing up, however, due to transportation restrictions⁴ was only able to attend six monitoring shifts throughout the season. During those six monitoring shifts, Former Volunteer stated that they were often unable to spot any Peregrine Falcons. Former Volunteer said that falcons were hard to see from where BC Parks sets up their monitoring station,⁵ however, they recognize that the monitoring station is set up in the best location possible. Former Volunteer suggested that more people monitoring during a shift could be beneficial since there would be more eyes observing the cliff face.

Overall, Former Volunteer's outlook on the program was positive. Former Volunteer enjoyed being outside while trying to look for the falcons and stated that they would be interested in volunteering again. The main interest, however, behind Former Volunteer's desire to volunteer again is due to their knowledge of how important the falcon monitoring program is to the falcons and Stawamus Chief Provincial Park.

Recommendations

While the monitoring program faces certain obstacles that are difficult to overcome due to natural causes, such as the positioning of the Chief's cliff face, or financial barriers, such as the inability to hire a full time biologist to work the monitoring program year round, this report will provide feasible recommendations to help improve

⁴ Former Volunteer lived on Quest campus and did not always have access to a car, thus, had a difficult time getting to the Stawamus Chief for monitoring shifts

⁵ Currently, BC Parks sets up their monitoring station across the Sea to Sky highway because that is the only place that provides a clear view of the entire Stawamus Chief cliff face (BC Parks 2010)

BC Park's Peregrine Falcon monitoring program, volunteer recruitment and retention, and signage. All of the following recommendations have resulted from extensive literature review, a case study, and two expert interviews.

Monitoring Program

The Peregrine Falcon monitoring program is the aspect of this project for which is it most difficult to provide recommendations. Although this report will only offer a few suggestions, these recommendations should help improve the program substantially.

First, Peregrine Falcon monitoring should be increased in March and April to help maximize results (Emmons 2015). Both the literature review and expert interview with Gavin Emmons support this finding. Peregrine Falcons are more active in flight during these two months, making them easier to spot while monitoring (Emmons 2014, Daw et. al 2006, Richardson 2006). Thus, if more focus is placed on making sure monitoring shifts are filled in these two months more sightings may be possible.

Second, there needs to be more engagement with the rock climbing community. The success of Pinnacles National Park's monitoring program can be used as evidence towards the importance of proper communication with the climbing community. Besides more open and frequent communication with the rock climbing community, it may be advantageous for BC Parks to conduct a survey aimed towards local rock climbers. These surveys could assess how knowledgeable rock climbers are about Peregrine Falcons and how rock climbing affects the birds' nesting areas. The survey could also ask why or why not climbers choose to follow closures, if they would be interested in volunteering for the monitoring program, and if there are certain areas of the Chief that

affect them more when closed compared to others. The end of the survey could then provide the climbers with useful information on Peregrine Falcons and why it is important to protect their nests from the effects of rock climbing. This in turn, could help raise awareness, which may result in more monitoring volunteers from the climbing community and an increased understanding of why it is important to follow climbing closures.

Recruiting Volunteers

It would be beneficial for BC Parks to reach out to bird watching societies in Squamish and surrounding areas, such as the Squamish Environment Society. Bird watching societies will have the knowledge, desire, and monitoring tools required to run a successful Peregrine Falcon monitor program. A suggestion received during the expert interview with Gavin Emmons is to run an annual bird watching event to help generate interest in the cause (Emmons 2014). For example, Pinnacles conducts an annual Christmas bird counting event which has not only been successful, but has also influenced local bird watching communities to help with volunteer programs in the summer (Emmons 2014). An event such as the one at Pinnacles could be low cost to run, and produce very favourable results.

Other useful venues for recruiting volunteers could be engaging with students from Quest University, UBC, Langara, SFU, and other nearby post secondary institutes with communities of students who have an interest in wildlife biology and conservation. Furthermore, BC Parks may want to recruit rock climbers with a background in wildlife biology (Emmons 2014). Since the majority of sightings of Peregrine Falcons have

come from rock climbers, not the on-the-ground monitors over the past few years (BC Parks 2014), it may be beneficial to recruit climbers who already frequent the Chief and may have an interest in the program.

Signage

Creating more informative signage which clearly states why the closures are happening beyond 'falcon nesting sites' may invoke more of a sympathetic response in climbers, thus, causing more climbers to follow the closures (Emmons 2014).

Furthermore, since BC Parks does not have enough staff to enforce the climbing closures, perhaps they can take on Pinnacle Park's idea of 'suggested closures'.

Suggested closures places the responsibility on the climbing community (Emmons 2014). Pinnacles has found that rock climbers police each other as a result, and it is more successful than when they had unmonitored mandatory closures in place (Emmons 2014).

Another aspect of signage is making sure that the signs can be seen. Beyond placing signs in Stawamus Chief Provincial Park, perhaps presenting the information in brochures would allow rock climbers to become more informed and aware of what kind of signs and notices to look out for. The brochures can then be distributed online and in person to local rock climbing communities and outdoor equipment stores.

Conclusion

This report has provided sufficient evidence to support the protection of nesting Peregrine Falcons from rock climbing routes as a means to help the falcons'

reproduction rates. However, it is also important to argue why it is imperative to protect Peregrine Falcons based their importance to the Squamish ecosystem and the larger biosphere. Although this report does not supply any research on fore mentioned subject, it is definitely worth investigating in the future. Related information could in turn be used to help strengthen signage regarding the rock climbing closures due to Peregrine Falcon nests.

Further research that may be done to strengthen this report include the rock climbing survey mentioned in the 'Recommendation – Monitoring Program' section of this paper. Conducting this survey would also appease my recommendation to build a stronger connection with the rock climbing community.

BC Parks has been working hard to help protect Peregrine Falcons in Stawamus Chief Provincial Parks. This report has hopefully provided helpful recommendations on how improve the program so that the safety of the Peregrine Falcons on the Stawamus Chief can be assured for years to come.

Appendix

Interview Questions

Gavin Emmons interview questions:

1. How long have you been dealing with your falcon and recreational rock climbing issue?
2. Do you find that your falcons are nesting in the same areas every year?
3. What are you doing to mitigate potential conflicts between falcons and rock climbing?
4. Do you have volunteers that help to monitor the nesting areas?
5. If yes, how do you attract and retain volunteers?
6. If you are shutting down a climbing route to protect a nesting area, how large of an area do you shut down? How do you determine how large an area to shut down (i.e. what information is this decision based on)?
7. How have you gotten the rock climbing community involved?
8. How do you encourage climbers to follow these closures? How do you enforce closures?
9. Have you found signage helpful in mitigating this problem?
10. What kind of signage has worked best for you?

Former Volunteer interview questions:

1. When did you volunteer for the monitoring program?
2. Did you volunteer for the whole monitoring season? How many shifts did you do?
3. What attracted you to the monitoring program?
4. What was the best part of the monitoring program?
5. Which parts of the program needed improvement?
6. Would you volunteer again? Why or why not?
7. Do you have any recommendations that would help improve the monitoring program?
8. Are your academic interests in line with wildlife biology and conservation?
9. Are you a rock climber?

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