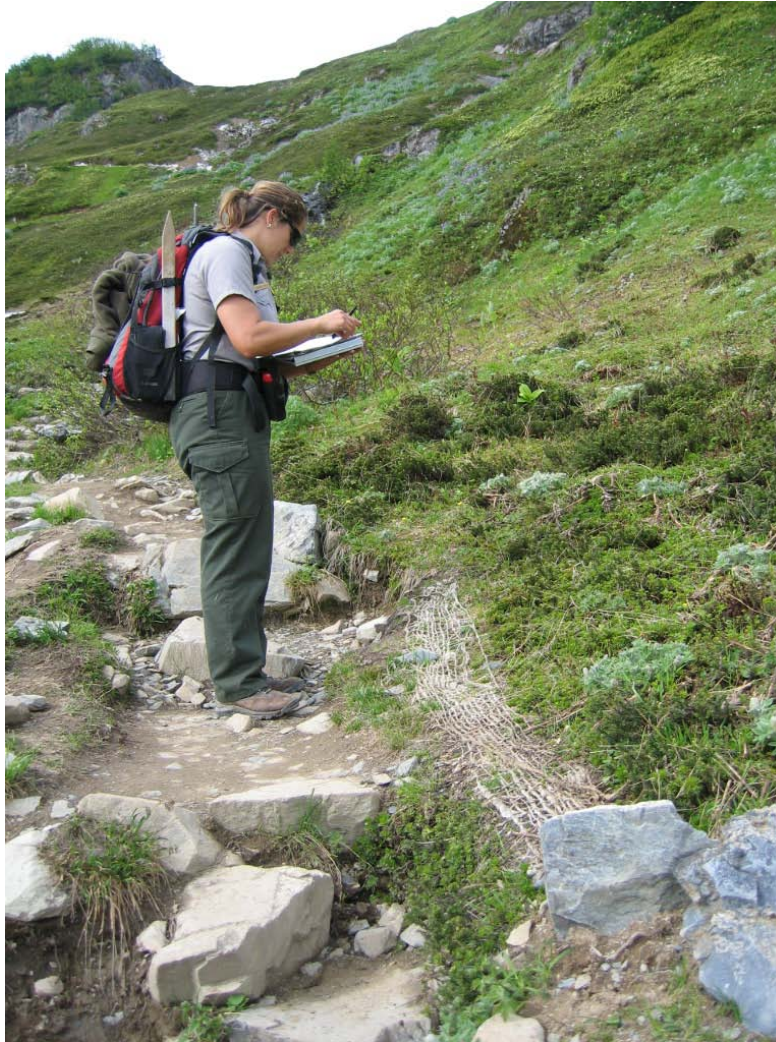




Harding Icefield Trail Impact Monitoring Report 2008



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Abstract:

During the 2008 field season; August 4, 6, 7, 12, 19, Harding Icefield Trail monitoring was conducted as a part of the Indicators and Standards Draft Plan for the third year. HIT impact monitoring was identified as a resource indicator in the Visitor Experience Resource Protection (VERP) planning process for the Exit Glacier Area Plan. Previously identified sites were compared with photos from the preceding year. New sites were added. Each site was evaluated for severity of impact class and condition relative to the previous year.

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KEFJ	Kenai Fjords National Park
NPS	National Park Service
HIT	Harding Icefield Trail
RM	Resource Management
GIS	Geographic Information System

Table of Contents

Introduction_____	5
Methods_____	5-6
Results_____	6- 9
Discussion_____	9-10
Literature Cited_____	11

Tables and Figures

Table 1. _____ 5

Graph 1. _____ 6

Graph 2. _____ 7

Photo 1. _____ 8

Photo 2. _____ 8

Photo 3. _____ 10

Introduction

Harding Icefield Trail (HIT) Impact Monitoring has been conducted since 1989 and was included as part of the Indicators and Standards Draft Plan since 2006. HIT impact monitoring was identified as a resource indicator in the Visitor Experience Resource Protection (VERP) planning process for the Exit Glacier Area Plan. Although the Indicators and Standards monitoring program has not been fully implemented yet, the HIT Impact Monitoring is being conducted to test and finalize indicators and standards identified in the draft plan.

HIT Impact Monitoring compares changes in the conditions of human-impacted sites along the trail from one year to the next and adds new ones as they occur. By comparing changes in site conditions from year to year, overall improvement or worsening of site conditions can be identified.

Methods

In the summer of 2008, Harding Icefield Trail (HIT) impact monitoring was completed on August 4, 6, 7, 12, 19. Monitoring usually occurs in the second week of July, but because winter snow levels were high, the summer was 1-5 degrees cooler and less-than-normal rainfall, snow remained on the trail late into the season. Monitoring was conducted from the beginning of the trail to the Top of the Cliffs, located at about mile 2.2 on the trail. Monitoring has not been conducted beyond this point on the trail. Because snow stayed on the trail most of the summer, plant phenology was very far behind or completely covered in snow. This is why the survey was conducted a month later than usual and still two impacted sites were still covered in snow.

Monitoring consisted of comparing impacted sites from one year to the next, as well as documenting new sites. Three Biological Technicians conducted the survey. No other divisions were involved in the survey. When an existing impact site was located, photos taken the previous year were compared to the current condition of the trail. A new photo, taken from the same perspective as the previous year's photo, was taken of the site. The site was given a severity of impact number of 1, 2 or 3 depending on the amount of vegetation and organic material intact (Table 1.)

Severity	Vegetation	Organic Layer
1 Low	75-100% intact	100% intact
2 Moderate	25-75% intact	75-100% intact
3 High	less than 25% intact	less than 75% intact

Table 1 Severity of Impact Condition Description

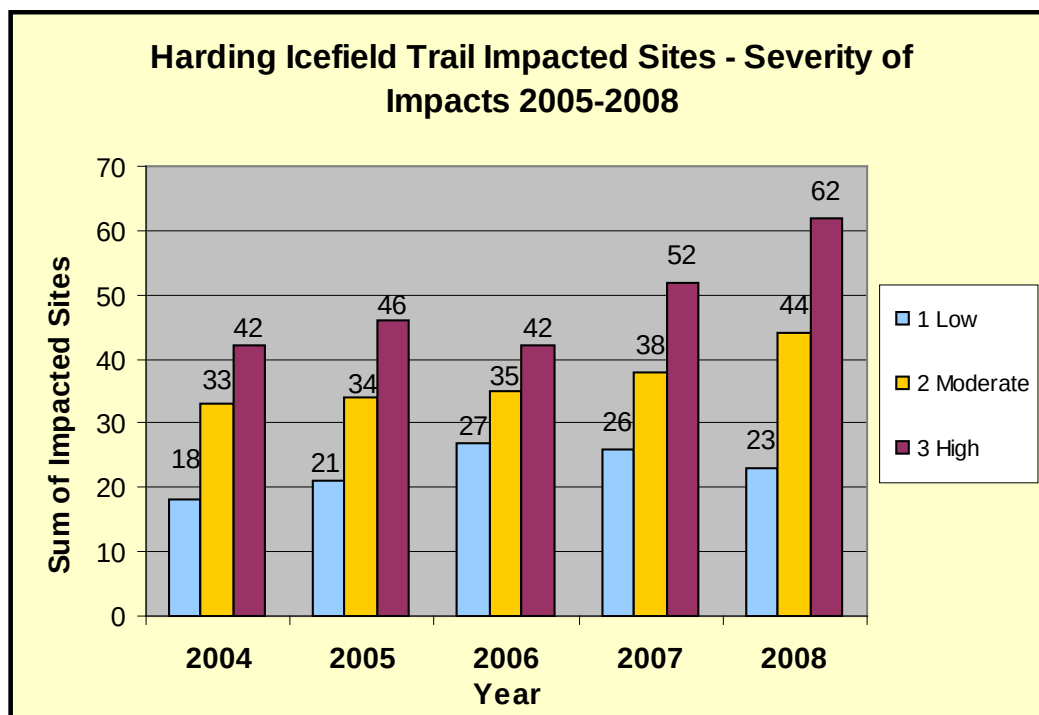
By comparing the site to last year's photo it was then determined what the site condition was, choosing from N= no change, I= improved, or W=worse. Any notes concerning how or why the

impact was occurring were documented. Recommendations for future actions to restore sites were also noted. Monitoring is completed at the same time each year so that plant phenology is similar, or when the phenology is at a similar stage as was done in 2008. This makes impact photos more easily comparable from one year to the next. Recommendations were made to improve impacted sites during the survey. Recommendations are usually carried out by Resource Management, but since the survey had to be conducted so late in the season, there was not enough time left. Recommendations that involved trail improvements will be passed along to the Maintenance trail division.

Results

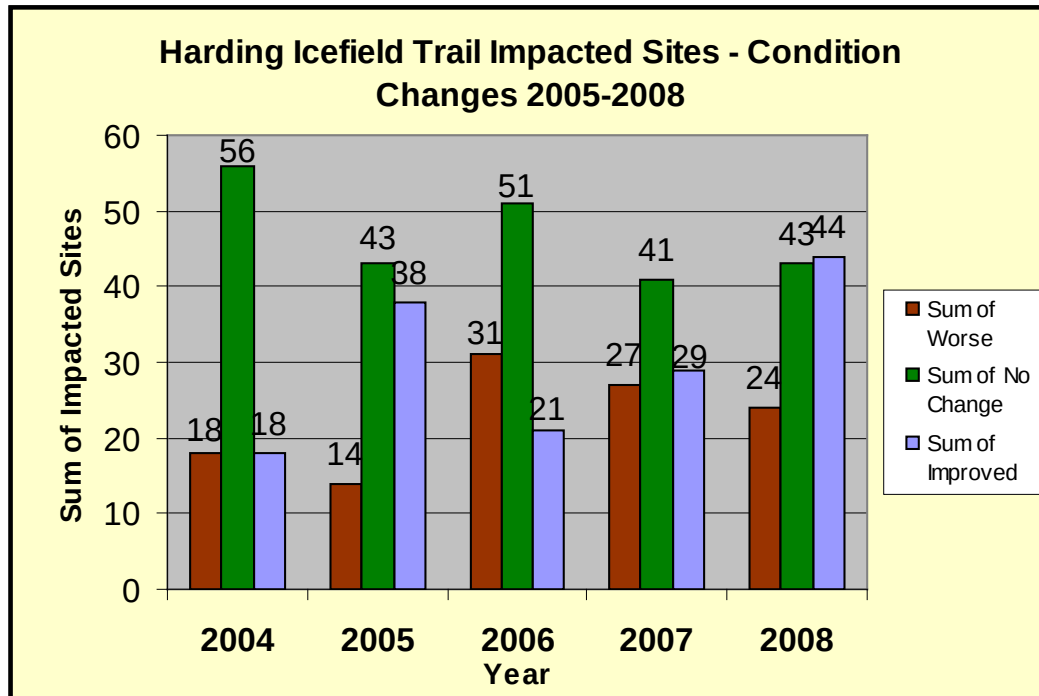
The graph below illustrates the number of sites in each impact category comparing changes from 2004 to 2007. Sites with a Low (1) severity of impact have decreased slightly from the previous years. The numbers of sites with a Moderate (2) severity of impact and High (3) severity of impact have both increased over time.

Graph. 1



The change in condition (worse, no change or improved) of the impacted sites from the previous year is illustrated in Graph 2. The number of sites that are in worse condition decreased slightly over the last three years. The sites with no change increased very slightly. The sites that improved have been increasing over the last three years.

Graph 2.



As mentioned previously, snow stayed on the trail later than usual, and plant phenology was very far behind or completely covered in snow. This is why the survey was conducted a month later than usual, and two impacted sites were still covered in snow. The cool summer and late snow melt caused the vegetation to be far behind its usual stage of development. This made it difficult to compare the severity of impact and any changes that occurred from photos taken the previous year. The sites could appear more impacted than they really were, because less vegetation was visible and was at an earlier stage of growth. The survey had to be completed with these less than ideal circumstances since the summer season was coming to a close and field work needed to be completed before vegetation was wilted by frost or covered in new snow.

Photo 1.



Photo 2.



Snow covering a monitoring site August 21, 2008 Snow on the trail below the shelter Sept 22, 2008

Because the survey was conducted so late in the season, there was not enough time to repair impacted sites with a 2 or 3 impact rating as was done in previous years. Future actions were recommended on the survey data sheets for sites that were not improving, but most will have to be carried out in the summer of 2009. The only actions taken to repair impacts on the trail were at site 247. Hikers step off the trail at this site and have trampled the vegetation at this corner. Biotechs covered the site with large branches to keep hikers from walking on the area. Recommendations that needed trail work will be passed on to the Trail Coordinator.

15 new sites were added this year, most of which were trail widening probably caused by hikers avoiding water and mud on the trail because of snow late into the summer. Only six sites were added last year, so this is a substantial increase in new sites.

These sites included 135, 136, 247, 248, 249, 250, 251, 252, 253, 366, 367, 368, 369, 370, and 371.

Three sites recovered and were taken off the list. These included 356, 204 and 336. They will remain in the database in case they start being impacted again at a later date.

Sites 339 and 403 were still snow covered during the survey and could not be evaluated. They will have to be evaluated in 2009 using photos from 2007.

There were a total of 129 sites in 2008, up from 116 sites in 2007. An 11 % increase in the number of sites.

Discussion

Indicators and Standards that can identify when there are too many impacts and recommend management actions will be a helpful guide in future management of the trail. Specific indicators and standards are still being developed, but in 2007 it was suggested that impacts should be compared over more than two consecutive years to judge trends in impact changes over a longer period of time. Multiple years are included in the 2008 graphs and possible trends will be evaluated.

In 2008, most impacted sites which had been drawn into ArcGIS, and all new sites were mapped using the Trimble GeoXT GPS unit. This provided spatial data for each site in GIS. In future years the mapped sites in GIS can be used with the Trimble GPS unit to locate impacted sites from previous years along the trail more easily than primarily using photos.

Hiker numbers on trail decreased slightly from 9957 in 2007 to 9371 in 2008, a decrease of 586 hikers. The jump in hiker numbers from 6038 in 2006 to 9957 in 2007 was the biggest change in hiker use that has been documented. A difference of 3919 hikers! The increase in hikers over the years could correlate with the increased number of sites with an impact level of high (3) over the last two years.

HIT Condition does not reflect any new sites added, and there were quite a few added this year.

Intense effort continued to be spent by the Resource Management Team on managing the trail to prevent impacts. Trail flagging efforts extended into September and snow on some portions of the trail never melted this year. Having more hikers on the trail while snow was melting and the trail was wet created more impact issues than in previous years. If trail flagging was not completed each spring, the number of impacts would most likely increase substantially.

Rehabilitation work was not conducted on the trail this year by Resource Management because the snow was on the trail so late into the season. Flagging is usually finished by August, but this year work continued through September, so there was never time for any revegetation work or to install jute mesh as we have in previous years. Work on the trail to restore vegetation and mitigate impacts will continue in 2009.

I sent photos of the snow that never melted along the HIT to Mike Tetreau, a long time employee at Kenai Fjords National Park, and he commented that there hasn't been any significant snow left in that basin below the shelter at the end of summer for at least a decade; maybe even back to the early 1990's (see Photo 3 below). He said that the whole basin was filled with snow (maybe 100 ft. deep) up until 1990-91 or so, when the ash from Redoubt volcano had a significant affect on the perennial snow along the trail. It will be interesting to see if the snow continues to remain in the area or melts in the coming summer.

Photo 3.



Maintenance finished the reroute on the lower part of the trail. Impacted sites on the portion of the trail that will no longer be used will be eliminated next year, but it is unclear how to account for the loss of sites when comparing impacts from year to year. The eliminated sites may be subtracted from the previous year's data to make the comparison of impacts between years more accurate.

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