



Harding Icefield Trail Impact Monitoring Report 2009



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Abstract:

During the 2009 field season the third year of impact monitoring of the Harding Icefield Trail (HIT) was conducted as a part of the Indicators and Standards Draft Plan from July 13 through July 15th. 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 to existing conditions with photos from the preceding year. New sites were added when deemed appropriate. Each site was evaluated for severity of impact class and condition relative to the previous year.

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Acronyms:

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

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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. New sites are added as they occur and recovered sites are removed. By comparing changes in site conditions from year to year, severity of impact and condition relative to the previous year is evaluated.

Methods

In the summer of 2009, HIT impact monitoring was completed as scheduled during the second week of July on the 13th-15th. Monitoring was conducted from the beginning of the trail to the Top of the Cliffs area, located at about mile 2.4 on the trail. Monitoring has not been conducted beyond this point on the trail.

Monitoring consisted of comparing impacted sites from one year to the next, as well as documenting new sites. Two Biological Technicians conducted the survey with the assistance of two Youth Conservation Corps (YCC) employees. 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

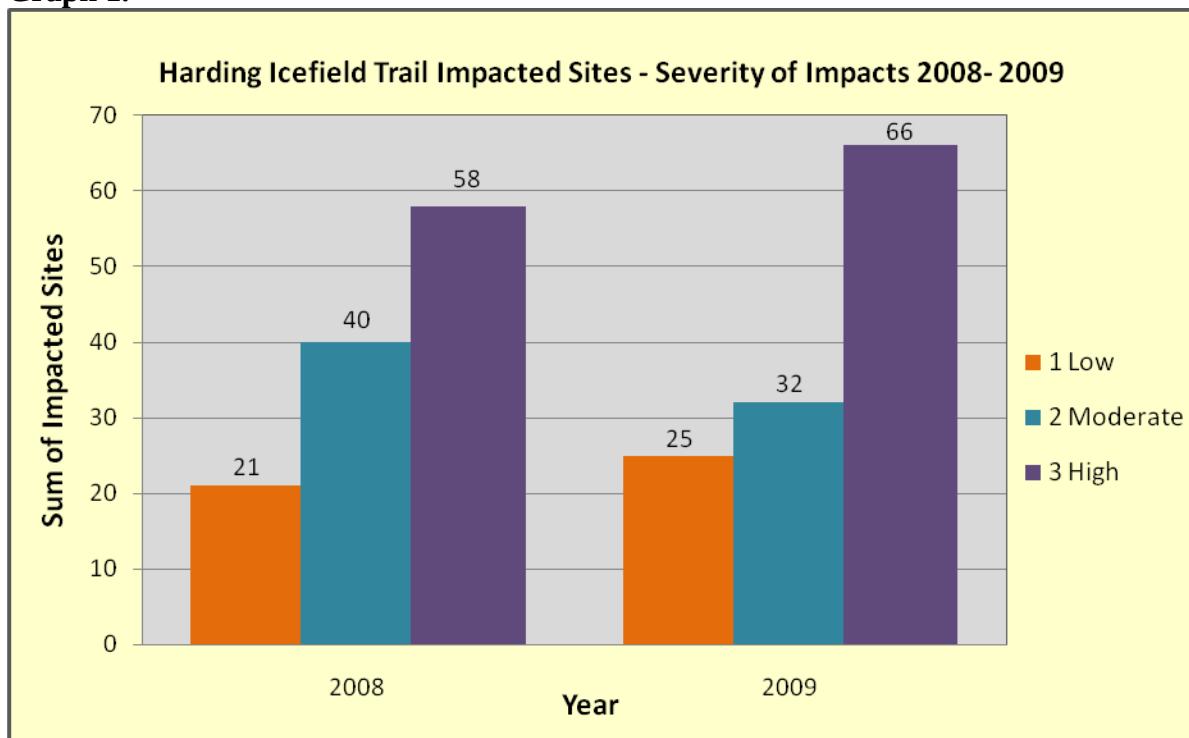
By comparing the site to last year's photo it was then determined what the site condition was, choosing from N= no change, I= improved, or W=worse. Any notes concerning how or why the impact was occurring were documented. Recommendations for future actions to restore sites were also noted. Monitoring is completed at the same time each year so that plant phenology is similar. This makes impact photos more easily comparable from one year to the next. Recommendations were made to improve impacted sites during the survey.

Results

Because of the reroute on the Harding Icefield Trail, ten impacted sites that were in the section of the trail that was bypassed were removed from the 2009 survey. The same sites were removed from 2008 data, so that the 2008 and 2009 datasets could be compared.

The graph below illustrates the number of sites in each impact category comparing changes from 2008 to 2009. Sites with a Low (1) severity of impact have increased slightly from the previous year. The numbers of sites with a Moderate (2) severity of impact decreased slightly, and High (3) severity of impact sites have increased.

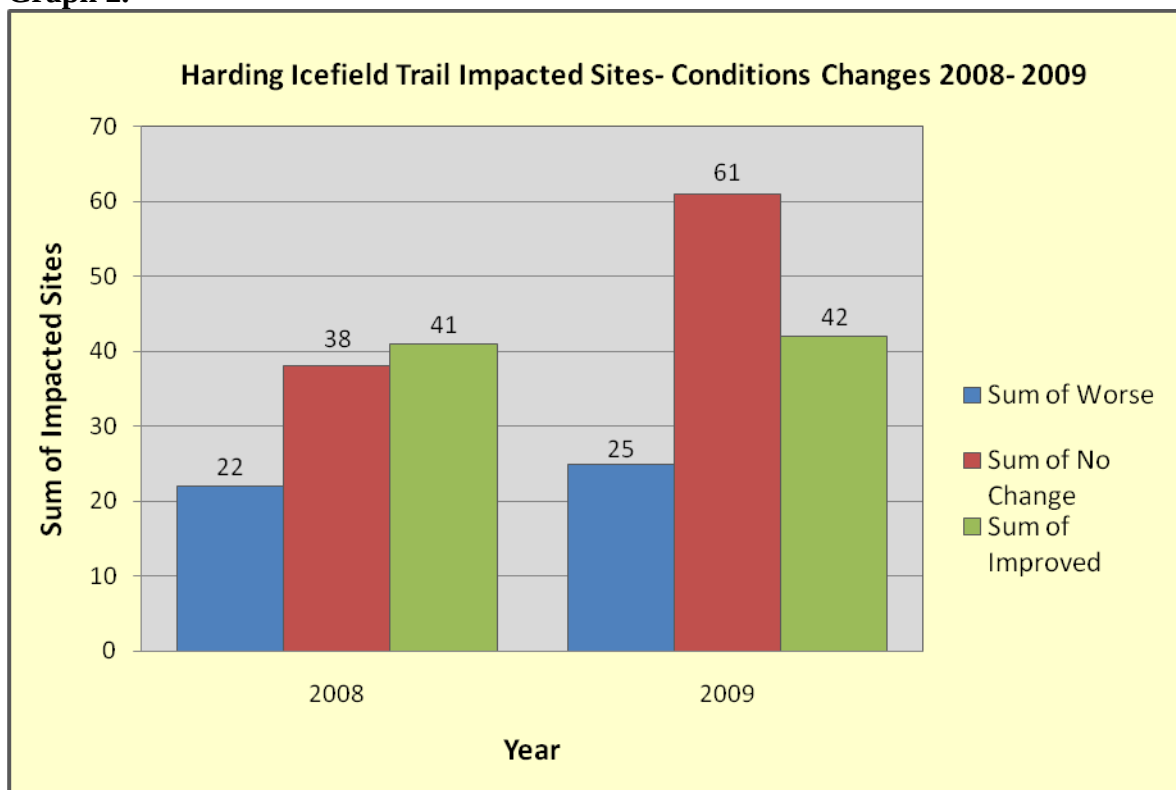
Graph 1.



The increase in highly impacted sites in 2009 may have been associated with the high snow year in 2008. Snow remained on the trail much longer than a typical summer, which caused the trail to be muddier and less desirable for visitors to walk on. This may have caused an increase in impacts along the trail. Some impacted sites in 2008 were still under snow when impact monitoring was conducted and were never evaluated.

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 increased slightly from last year. The sites with no change increased dramatically. The sites that improved have only increased by one site.

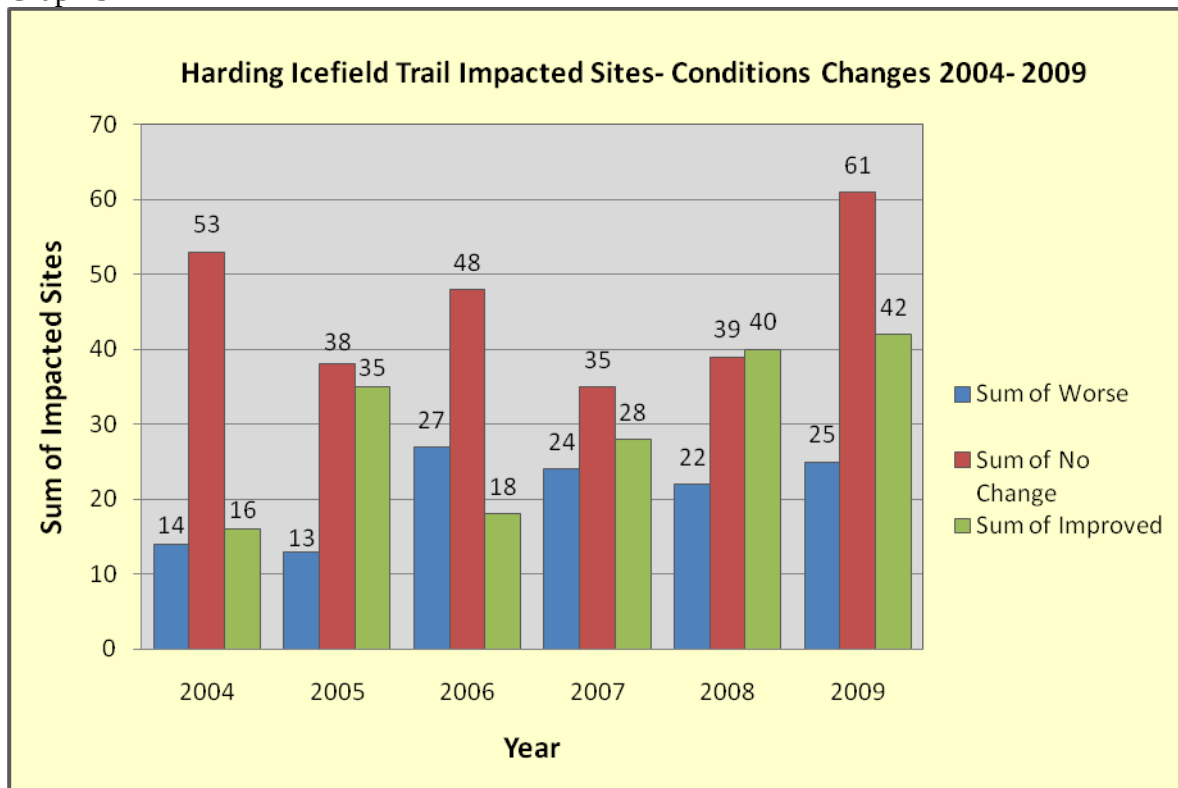
Graph 2.



Again, the trail condition may have been affected by the unusually wet, snowy trails that lasted throughout the summer season in 2008. The high number of sites with No Change in condition may be due to the fact that vegetation on these sites did not have much time to grow or increase cover due to the increased amount of time that vegetation was covered in snow and the poor trail conditions that lead visitors to walk off trail, impacting vegetation and soils.

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. Sites that have been eliminated due to the rerouting of the trail have been removed from the previous years so that the data is more comparable. The Graphs 3 and 4 look at surveys from 2004-2009. Graph 3 looks at condition class changes over time and it looks like sites with no change in their condition are increasing since 2006. Sites that are improving are also on an upward trend. Sites that have a condition class that is worse seems to be pretty stable over time. Graph 4 looks at the severity of impact at a site and there is an upward trend in the number of impacted sites as well as an increase in the number of highly impacted sites. The number of sites that have a low and medium severity of impact have not increased much over time. This could be because as new sites are being added they are lower impacted sites, but many sites are getting worse over time if nothing is being done to improve the trail where hikers are causing impacts and once a site becomes highly impacted it takes much longer for the site to recover.

Graph 3



Graph 4

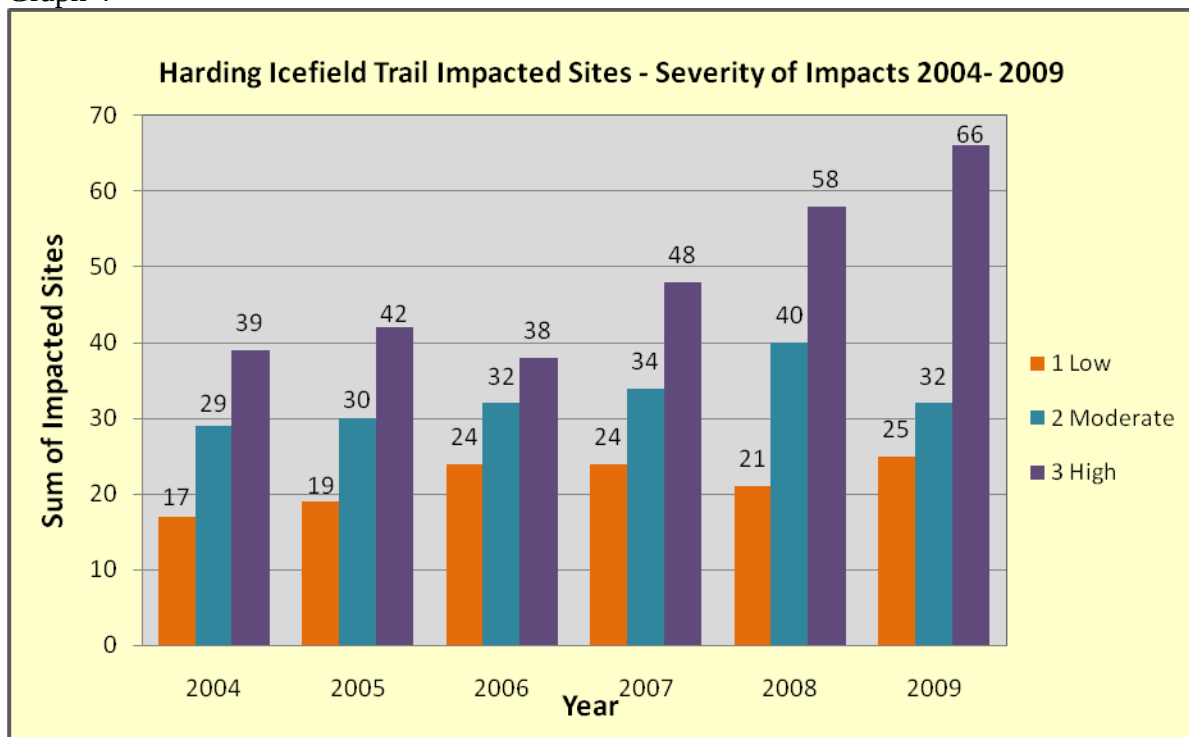


Photo 1 and 2 below show the different trail conditions during the 2008 and 2009 summer surveys. Surveying was delayed in 2008 to allow more time for snow to melt from the trail and to allow plants to reach a more similar phenology to the sites in previous years, but in some areas the snow never melted off the trail. Photo 1 is taken on August 31, 2008 and Photo 2 was taken on July 15, 2009. The conditions captured in Photo 2 are much more typical along the trail in July.

Photo 1.



Top of the Cliffs August 2008. NPS Photo.

Photo 2.



Top of the Cliffs July 2009. NPS Photo.

Future actions were recommended on the survey data sheets for sites that were not improving. Recommendations that require trail work were passed on to the Trail Coordinator for prioritization in the list of sites that need to be repaired.

10 impacted sites were removed because they were located on the portion of the trail that was bypassed by the reroute that opened in 2009. These sites are: 110, 107, 108, 127, 128, 112, 121, 109, 131, and 129.

11 new sites were added this year. Fifteen sites were added last year, so this indicates a slight decrease in the development of impacted areas along the trail. The new sites added in 2009 include: 253, 254, 255, 256 (in the moraine zone) and 372, 373, 374, 375, 376, 377, 378 (in the cliffs zone). Most of the sites added in the moraine zone were a result of people stepping off trail. The sites added in the cliff zone were formed by people stepping off the trail and also trail widening probably caused by hikers avoiding water and mud on the trail due to drainage issues

on the trail.

One site, 124, recovered and was taken off the list. It will remain in the database in case it starts being impacted again at a later date.

There were a total of 127 sites in 2009, and 128 sites in 2008 (after removing the sites that were bypassed by the reroute) and up from 107 sites in 2007.

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. Because sites were removed from the survey because of the trail reroute, these sites were removed from past surveys as well so that years could be compared more accurately.

In 2009, all 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 the trail increased slightly from 9373 in 2008 to 9795 in 2009, an increase of 422 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 as sites that need to be improved with trail work continue to be impacted by hikers avoiding muddy areas or avoiding steps that are difficult to walk on.

The bottom portion of the trail has had the most trail maintenance over the last few years, but upper portions of the trail have not had much maintenance and impacted sites in this area continue to decline. The Facility Manager has applied for multiple funding sources over the next few years and has plans to start working on projects along the trail as money becomes available. Continued trail maintenance should improve or even eliminate some of the impacted sites that have been identified during monitoring.

HIT Condition classes does not reflect any new sites added, and there were 11 sites added this year, down from 15 new sites in 2008.

Intense effort continued to be spent by the Resource Management Team on managing the trail to prevent impacts. If trail flagging was not completed each spring, the number of impacts would most likely increase substantially.

Rehabilitation work was conducted on the trail this year by Resource Management. Jute mesh was installed on impacted sites based on impact monitoring recommendations. It provides a physical barrier on top of impacted sites that can help deter hikers from walking on it, but it is important to install signs that explain the purpose for the jute mesh, so visitors understand its purpose.

Photo 3.



Jute Mesh Installed Along a Parallel Trail. NPS Photo.

Photo 4.



Biotechs Installing Jute Mesh. NPS Photo.

References

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