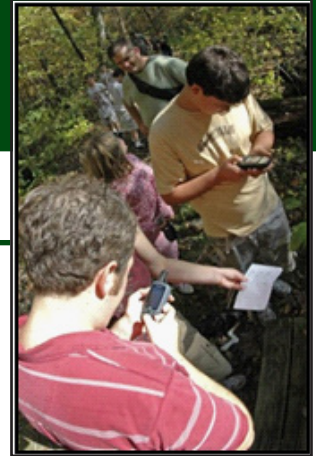




# An Assessment of the Impacts of Geocaching on Natural Resources in Minnesota State Parks

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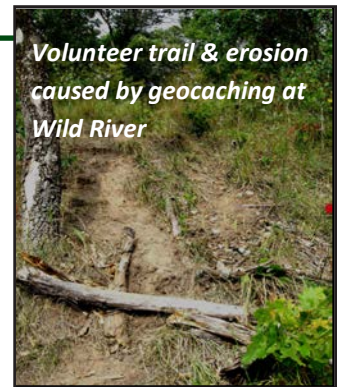


## Geocaching in Minnesota & on Lands Administered by the Division of Parks & Trails (PAT)

- The first geocaches in MN appeared in 2001. By December, 2011, there were > 17,000 geocaches in the state.
- Since 2008 PAT has been conducting large scale geocaching programs consisting of a geocache at all state park and state recreation area locations.
- As of December, 2011, there were approximately 339 approved/active caches in state parks & state recreation areas. About 32 % are owned by private citizens and 68% by PAT.

## Need for Impact Assessment

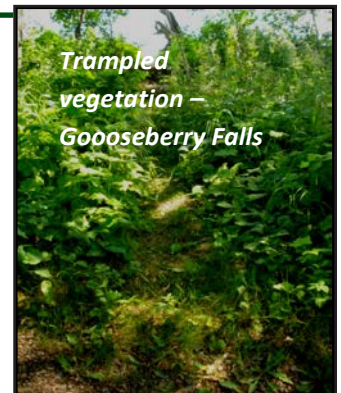
- As early as 2008, anecdotal observations by PAT staff and even some visitors indicated that readily observable natural resource impacts were occurring.
- A study was conducted in 2010-11. 21 parks were selected to visit, based on four criteria: attendance (low-high), geographic distribution (4-6 parks per region), variety of cache types standard, virtual, letterbox, PAT/citizen, etc) and whether the unit was a “demonstration park” (provided free GPS rental and orientation).
- 117 geocaching sites were visited to measure the cumulative amount of trampled vegetation, bare soil, eroded soil and damage to woody vegetation at the waypoints, travelways and geocache locations.



*Volunteer trail & erosion caused by geocaching at Wild River*

## Key Findings of the Study

- Average area of impact per geocache site = 39.3 ft<sup>2</sup>. Total impact (117 sites) = 4,600 ft<sup>2</sup>.
- 38% of the total impact area was trampled vegetation, 55% bare dirt & 7% eroded soil.
- No impacts occurred on hardened surfaces. 89% of geocache sites in natural areas were impacted, with 40% of those ranked as heavy impact (134-324 ft<sup>2</sup>). 21% of geocache sites in use areas exhibited impacts with only 5% in the heavy category.
- Geocache sites managed by PAT were visited five times more often per year than citizen-owned caches (148/30).
- Impacts to natural surfaces begin to occur after approximately 55 visits. This figure varies based on soil type, slope, and other factors.



*Trampled vegetation – Gooseberry Falls*

## Management Recommendations

1. Proposed locations for geocaches, waypoints and travelways need to be reviewed to avoid rare features, archaeological sites, high quality natural communities, insure visitor safety, etc.
2. Incentives for geocachers related to geocaching programs should focus on ways to disperse use, not encourage visitation to the same caches by large numbers of people, OR insure that waypoints, travelways & cache locations are on surfaces capable of withstanding heavy use.
3. It is critical to consider travel routes between waypoints when evaluating proposed multi-caches to insure that geocachers will largely follow existing trails and not go cross-country to reach the cache or next waypoint.
4. Provide boot brush stations or other devices to aid visitors in cleaning boots/equipment as a means of preventing the introduction spread of invasive species.
5. Decide upfront how potential natural/cultural resource impacts will be monitored and addressed.
6. Whenever possible, caches should be placed in disturbed areas such as old fields or low-quality native plant communities. Caches should not be placed in areas where visitors may encounter/transfer invasive species.
7. Cache placement should be carefully assessed to avoid potential damage to historic structures.
8. Consider conducting a suitability analysis if a geocaching program is being developed or it is anticipated that multiple geocaching locations will be requested in order to reduce overall staff review time.