

NTS GIS Network- Meeting Minutes

Tuesday, January 17, 2016

1. Welcome & Introductions (Matt Jagunic)

Meeting Participants:

1. (presenter) Ryan Abrahamsen, Terrain 360, Richmond, VA
2. (moderator) Matt Jagunic, NPS, Outdoor Recreation Planner, Captain John Smith NHT, Annapolis, MD
3. (note taker) Derek Nelson, NPS, GIS Specialist, 9 National Historic Trails and Route 66, Santa Fe, NM
4. (note taker) Ryan Cooper, NPS, Geographer, Lewis & Clark NHT, Omaha, NE
5. Andrew Orr, Argonne National Laboratories, Lemont, IL
6. Angelica Sanchez-Clark, NPS, Historian, National Trails Intermountain Region, Albuquerque, NM
7. Angie Tornes, NPS Rivers, Trails and Conservation Assistance program, Wisconsin Field Office, Milwaukee, WI
8. Betsy Byrne, NPS Rivers, Trails and Conservation Assistance program, Utah Field Office, Salt Lake City, UT
9. Bob Sullivan, Argonne National Laboratories, Lemont, IL
10. Brandon (no additional name information given)
11. Brett English NPS, River Raisin National Battlefield Park, Monroe, MI
12. Candace Bogart, USFS Region 3 (Southwestern), Regional GIS Program Manager, Albuquerque, NM
13. Carol Clark, NPS, Interpretive Specialist, National Trails Intermountain Region, Santa Fe, NM
14. Charlyne Smith, North Carolina State University, Overmountain Victory NHT, Raleigh, NC
15. Corita Waters, NPS, National Water Trails System, Washington, DC
16. Dan Wiley, NPS, Chief of Integrated Resources Stewardship, Lewis & Clark NHT, Omaha, NE
17. Dave Johnson (no additional name information given)
18. David Fothergill, USFS Region 1 (Northern), Forest Landscape Architect/Pacific Northwest NST, North Fork of the Flathead, Hay Creek, Townsend, MT
19. Diane Priebe BLM, Spokane District, Pacific Northwest NST, Wenatchee, WA
20. Don Briggs, NPS Superintendent, Potomac Heritage NST Harpers Ferry, WV
21. Don Owen, Partnership for the National Trail System, Washington, DC
22. Elizabeth Riggs, Huron River Water Trail, Deputy Director, Ann Arbor, MI
23. Emily Zvolanek, Argonne National Laboratory, GIS Analyst, Lemont, IL
24. Erik Wrede, Minnesota Department of Natural Resources, Water Trails Coordinator, St. Paul, MN
25. Greg Matthews, USGS, Cartographer, Denver, CO
26. Guthrie Alexander, Continental Divide Trail Coalition, Golden, CO
27. Helen Scully, NPS Washington Office, Program Specialist, National Trails System, Washington, DC
28. Hugh Osborne, NPS Rivers, Trails, and Conservation Assistance program, Denver, CO
29. Jennifer Stein, NPS Rivers, Trails, and Conservation Assistance program, Denver, CO
30. Jill Jensen, NPS, Archeologist, National Trails Intermountain Region, Salt Lake City, UT
31. Jim Kuiper, Argonne National Laboratory, Lemont, IL
32. John Lawton, Minnesota Department of Natural Resources, GIS Analyst, St. Paul, MN
33. Julie Molzahn, USFS Region 1 (Northern) Natural Resource Specialist, Nez Perce NHT/Arizona NST, Plains, MT
34. Katie Szoldatits, Argonne National Laboratories, Lemont, IL
35. Kerry Shakarjian, Continental Divide Trail Coalition GIS Program Manager (NPS/FS affiliate)
36. Konnie Westcott, Argonne National Laboratories, Lemont, IL
37. Kristin Van Fleet, NPS, Landscape Architect, National Trails Intermountain Region, Santa Fe, NM
38. Laura White, USFS Region 3 (Southwest), Trail Administrator, Tucson, AZ
39. Lindsey Kiesz, USFS Region 6 (Pacific Northwest), Pacific Northwest NST, Wenatchee, WA

40. Lori J. Eschenburg, Island Loop National Water Trail, Trail Manager, Port Huron, MI
41. Mary Greenwood, USFS Region 2 (Rocky Mountain), Recreation Planner, Bridger-Teton National Forest, Kemmerer, WY
42. Matt Colwin, NPS GIS Specialist, Midwest Region Geospatial Support Center, Omaha, NE
43. Matt Rowbotham NCTA (North Country Trail) - Traverse City, MI
44. Mike Elliott, NPS, Cultrual Resource Specialist, National Trails Intermountain Region, Santa Fe, NM
45. Mike Taylor, NPS, Cultural Resource Specialist, National Trails Intermountain Region, Santa Fe, NM
46. Nathan Teats, USFS, Region 1 (Northern Region), South Zone GIS Anaylst, Missoula, MT
47. Nigel Shaw, NPS Northeast Regional Office (NERO), Boston, MA
48. Peter Bonsall, NPS GIS Specialist, Conservation and Outdoor Recreation, Washington, DC
49. Roland Duhamel, Environmental Contractor with Data Center at University of Rhode Island, Washington-Rochambeaux Revolutionary Route NHT, Kingston, RI
50. Shaonna Chase, Yurok Tribe, GIS Coordinator, Klamath Office, Klamath, CA
51. Shelley Moore, BLM, Oregon/Washington
52. Stafford Hazelett, Oregon-California Trails Association (OCTA), Portland, OR
53. Stu Gregory, USFS Region 4 (Intermountain), RIDB Program Manager, Salt Lake City, UT
54. Sue Abbott, NPS Rivers, Trails, and Conservation Assistance program, Seattle, WA
55. Susan (no additional information given)
56. Tiffany Stram, Ice Age Trail Alliance, GIS Specialist, Cross Plains, WI
57. Togan Capozza, USFS Region 5 (Pacific Southwest), Recreation Officer, Klamath National Forest, Yreka, CA
58. Yuki Hamada, Argonne National Laboratories, (Environmental Science Division), Lemont IL

2. Announcements & Info. from Audience

- a. Network Announcements
 - i. Happy New Year! We are looking forward to your participation in 2017!
 - ii. Update on distribution of meeting notes, PDF's of presentations, collaboration with PTNS.
 - iii. Update on meeting/discussion sequencing for calls. Schedule on tentative and presentations topics to come.
 - iv. Outreach to BLM and USFS folks
- b. National Trail Announcements
 - i. American Trails International Trails Symposium, May 7-10, 2017. Dayton, Ohio

3. Discussion Topic

Ryan Abrahamsen, Terrain 360

Virtually Touring the National Trails - Providing 360° Imagery and Interactive Panoramic Maps along National Trails and Waterways

Terrain360 has been commissioned to map the waterways of the Captain John Smith National Scenic Trail. We will discuss our process, data management, challenges for large scale projects and ways to use and incorporate and disseminate this data. We will also discuss other projects including using machine learning, object detection in our imagery, crowd sourcing imagery and GIS data for hiking trails and possible partnership with REI (adventure projects) to map National scenic trails and national parks.

<https://www.terrain360.com>
<https://coordinates.terrain360.com>

Presentation Notes:

(See PDF of Powerpoint Presentation)

Questions/Discussion:

Q: Do you do any processing to blur faces or other scene elements for privacy concerns? Second, any especially memorable shots captured or situations during data gathering?

A: (1) Currently the process is to avoid people, vehicles and addresses to the best extent during data collection in the field. When necessary, Ryan and his team go in and manually edit images and info to take care of this though working on automating that aspect is something he is working toward. (2) As for memorable shots or moments it relates to folks photo-bombing collection efforts. This includes being “moon-ed”, “flipped off”, or visits with Border Patrol and Department of Homeland Security.

Q: Can you give a rough cost estimate per mile for something like undeveloped land trails (i.e. most of our NHTs). I'm interested in using this as mitigation. Questions about the lower threshold of accepting a project...are there “minimum distance or financial requirements” to forming a project? What happens to data if company were to bankrupt?

A: (1) It has ranged from \$25-\$100 a mile. Ryan comments that he is only typically asking for travel/lodging type expenses to be covered so it can vary based on location and distance of trail or related work. Gave an estimate of a couple thousand dollars for 60-75 miles worth of trail he is currently working on an agreement with. (2) Since he currently only asks for expenses to cover travel there was no set lower limit for determining which projects he would take (Don't completely remember response but this is what I seem to remember). (3) For those funding data collection efforts all of the information can be provided on external hard drive if requested, nobody has asked for this yet but he would be happy to supply.

Q: For waterways, can you move from launch to launch, or on land, trailhead to trailhead?

A: Yes, the web application (www.terrain360.com) allows for various ways of traveling between sites including things like trailheads and launches. Ryan showed an example of doing this during his response.

Q: Of course, you have to stay away from critical infrastructure like power plants...any issues there?

A: This is where Ryan mentioned his encounters with Border Patrol and DHS. Said that his team does the best they can to adhere to maritime maps showing where they can and can't go to collect images and data.

Q: The crowdsourcing idea with REI - would you give a few 360 cameras to Adventure Projects volunteers to use or envisioning some other image collection method?

A: He said that he would absolutely collaborate in similar type efforts and may already be doing so. He also talked about the idea of creating mobile applications for the collection of images and data understanding that the resolution of the images wouldn't be ideal.

Q: What is the weight again of the backpack unit, we did some work with the street view trekker this year and the weight was a significant issue on the Continental Divide. Would the equipment be available to rent or does your staff do all of the collecting?

A: (1) The weight is about 22 pounds for the backpack setup they use. Ryan says he wouldn't recommend using it for long distance trails just for ease of use issues. He also mentions that there can be errors or discrepancies in the consistency of the image and data collection when tilt and things are introduced by a hiker with the rig on leaning forward for example. He says the setup has about 28 hours of battery life so something like a 2 day hike or similar trail would be feasible but recommends using their tripod setup instead. Says it weighs about 4 pounds with camera and all and collecting data is fairly simple and much easier with the same resolution of images and data. (2) Ryan made the comment that his goal is to just get out there and have folks using his methods, devices and tools to collect images/data. Said he would be willing to let folks use it for free, no renting required.

Q: So have you done any work in wilderness areas? If so, are you under permit to do so through National Park Service? We have lots of National Scenic Trail mileage in National Forest wilderness so using this technology is something we are internally discussing right now in the FS.

A: Said he has done a lot of work in federal areas and has always been able to get proper paperwork on file and authorization from superintendents and the like. Made the point that he isn't doing drones or anything illegal and that the entire process is very low-key and low-impact on visitors/resources.

Q: If data/images are collected by crowd-sourcing rather than your staff - if that's possible - what is the cost to use your platform to develop the map and host the images?

A: *Said it was a great question and something that would take more thought. Said he could easily start gathering/storing a million images a month without the need for any big changes to his current set up. Said there is definitely a cost to storing the data and information but couldn't really wrap his head around a figure without further research.*

Q: Can we see some of the experimental LiDAR data you have collected?

A: *Doesn't have anything up and ready to go. He mentioned he would take screenshots and provide examples of the LiDAR in follow-up along with presentation PDF. Has some good examples of tree lines and things along trails or waterways.*

Ryan Abrahamsen's contact information: ryan@terrain360.com

4. Future Meeting Dates & Topics

- a. **February 21, 2017 – TBD (Group Discussion)**
- b. **March 21, 2017 – TBD (Formal Presentation)**
- c. **April 18, 2017 – TBD (Group Discussion)**

We always welcome suggestions for additional topics for discussion or presentations. Please contact Matt Jagunic, Ryan Cooper and Derek Nelson with your suggestions!

NTS GIS Network Email List: ntsgis@webmail.itc.nps.gov

NTS GIS Network SharePoint: <https://portal.doi.net/nps/DNT/NTS%20GIS%20Network/default.aspx>

NTS GIS Network Mission:

We established the NTS GIS Network as a way to connect the diverse array of National Trails System staff and partners who use GIS systems and products in their work. One of our goals is to facilitate the sharing of information and tools that help us do our jobs more efficiently and innovatively. Because the national trails system is managed as a collaboration of agencies and partner organizations, the NTS GIS Network is open to anyone.