NTS GIS Network- Meeting Minutes
Tuesday, Oct 17, 2017

MEETING AGENDA

1. **Welcome & Introductions** (Peter Bonsall/Kerry Shakarjian/Ryan Cooper)
   Meeting Attendees:
   1. Peter Bonsall (moderator) – NPS, National Trails System, WASO
   2. Brian Riordan (presenter) - Strava
   3. Ryan Cooper (notetaker) – NPS, Lewis and Clark NHT
   4. Greg Matthews – USGS, Rec Aggregator
   5. Jeff Mast - Assistant National Trail Program Manager, Forest Service
   6. Joseph Pantoga
   7. Stu Gregory – USFS, Recreation.gov
   8. Mike Elliott – Cultural Resource Specialist, National Trails Intermountain Region
   9. Guthrie Alexander - Continental Divide Trail Coalition, Conservation Program Manager
   10. Stafford Hazelett – Oregon California Trails Association
   11. David Baker – BLM Outdoor Rec Planner
   12. Tiffany Stram - Ice Age Trail Alliance, GIS Specialist
   13. Roland Duhaime – NPS, NER
   14. Chelsey Walden-Schreiner
   15. Yu-Fai Leung
   16. Cyndi Maki
   17. Don Briggs – NPS, Potomac Heritage NST
   18. Matt Robinson – NPS, Appalachian NST
   19. Lindsey Kiesz – USFS Region 6 (Pacific Northwest)
   20. Rob Aiken - USFS
   21. Jamie

2. **Announcements & Information from Audience**
   a. November meeting has been moved up a week to November 14th to avoid Thanksgiving Holiday travel.
   b. ESRI Federal GIS User Conference: March 20-21, 2018 in Washington D.C.

3. **Discussion Topic**
   Presenters: Brian Riordan, Customer Success Lead, Strava Metro

   Big Data for Monitoring Trails and Recreation

   This is presentation is an exploration of an app-based big data solution to see how groups have been using Strava to gain insights into bike/ped movements on trail networks. It looks at how big data is being used and why it is so key for this data to be used in new ways by groups with large regions of land and trail networks. We will dive into the growth of Strava, Geo functions around the company and how Strava Metro is being used now to monitor trail systems. We will also discuss the future of app technology and explore how to use the information to make the best planning and investment choices. Here is a chance to learn about a 5+ trillion point GPS database and get feedback to the top of Strava. Understand what is available now to help with mapping, editing, elevation and trail use.

   Notes:
   - Forestry Background from Oregon State. Started career in Trails. Appalachian Trail, mountain biking corridor.
   - Creating massive big data products.
   - What is Strava – social network for cyclists and runners. Facebook feel with beacon, facts, comments, etc.
   - No politics. Most positive social network in the world. Free and intuitive.
   - Segment geometry correction – patent granted. Move data into high level of quality.
   - Global reverse geocoding – where are the people?
   - Marketing event analysis – Boston Marathon
   - Heatmap – no temporal scale, point saturation not use saturation, large cropping of ride start and ends, mix of ride types

- What is it good for? – Showing that people ride bikes, start dialogues with city councils, keeping track of where you rode this year, editing your basemap/finding missing geometry
- Strava Metro – data-driven bike and pedestrian planning. Aggregated, anonymized activity data from millions of Strava users. Analyze popular or avoided routes, peak commute times, intersection crossing times, and origin/destination zones.
- Protect user privacy – focused on streets and trails, no individuals. No way to bring a metro record back to strava. Opt out switches on Stava (less than .01%)
- Big Data – 13 million activities uploaded per week, tens of millions of active users, 20 activities loaded per second, 5 Trillion + second-by-second GPS points annually.
- Big Data Umbrella – total ridership/qualitative data/surface quality/crash and near miss data, bike share
- Keep in mind - Isolate what you are looking for, work in percents, point out the bias in the data, look out for population black holes, use local knowledge to sanity check it, blend it with existing data sets.
- Strava Metro Products – streets/trails network, origin/destination, intersections
- Minute by minute tabular data of cycling behavior, preferred route direction, unique bike trips, unique user counts, trip purpose (commute or recreation, time/speed (seconds)
- Starting and ending points of trips, reported by the minute, trip purpose flag, array of intersected polygon IDs
- Crossing times at intersection, congregation of users at intersections, minute by minute with purpose flag
- Trail Analysis – Slaughter Pen Phase 1 & 2, linear vector network. 2,171 unique cyclists; 11, 245 MTB Trips, 245 unique counties, 10 unique countries.
- 3-5% roads and 20-25% mountain bike trails use Strava
- Extrapolated metrics – 32,000 bike trips; 42,000 hours, etc.
- Metro tourism metrics – Bentonville: global results; U.S. results over 660,121 miles traveled to get to Bentonville network
- Example – Bentonville Post IMBA Event View – stats, core trails used
- High Level Network Polygon Analysis – analytical power at a fraction of the cost of linear networks
- Using the wrong polygon provides incorrect results
- Unique User counts to locate primary trails
- Using diversity to locate core trails
- Using digitization direction and time to locate trail flow
- Using intersections to locate education/interpretive spots
- Next level heatmaps – 1.2 billion activities

Questions:
When does next level heatmap come out? Friday this week
Needs to go through Strava to use info in GIS and cannot be used for anything private.

Have govt agencies been using this?
Yes, a number of groups have reached out (NPS). Strava has a great sharing mechanism.

Question from Brian, what do you use now for Big Data?
No response.

Great solution, must make sure you understand what it can and can't do.

Matt R: Strava capacity? How many people are working on this information? It's very impressive.
140 employees, 3 offices.

Lindsey: Thank you so much for this presentation, it's great to see all of the ways this data can be used. On a personal level I love using the heatmap to decide where to run!

4. **Future Meeting Dates & Topics**
   a. **Nov 14, 2017** – TBD (Date changed to avoid Thanksgiving holiday travel)
   b. **Dec 19, 2017** – No call this month, enjoy the holidays!
   c. **Jan 16, 2017** – Happy New Year!

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

NTS GIS Network Email List: ntsgis@webmail.itc.nps.gov
NTS GIS Network Website: http://pnts.org/new/national-trails-system-gis-network/

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.