

# **HikeTracker App**

## **Getting Started**

**2021-06-30**

# Why another tracking app?

## Accuracy

GPS systems were designed primarily for relatively fast moving objects (automobiles, airplanes, cruise missiles, etc.) operating in the open (cities, freeways, deserts, etc.)

Because of limited accuracy of commercial GPS versions, the strategies they use are not very appropriate for very slow moving critters such as hikers slogging up a trail in rain and heavy tree cover, surrounded by microwave-blocking hills and mountains. Most are set up to record a position every second; errors that are tiny in comparison to the distance traveled by a vehicle on a highway in a second are quite large in comparison to the one meter or so traveled by a walker in that second. Worse, these errors do not tend to cancel out but rather accumulate - the more positions you save, the worse the total error.

This app uses some fairly sophisticated but efficient methods to combine and curate the points, only saving as many as are necessary to give an accurate picture of the user's track and accurate totals for distance traveled and elevation gained and lost.

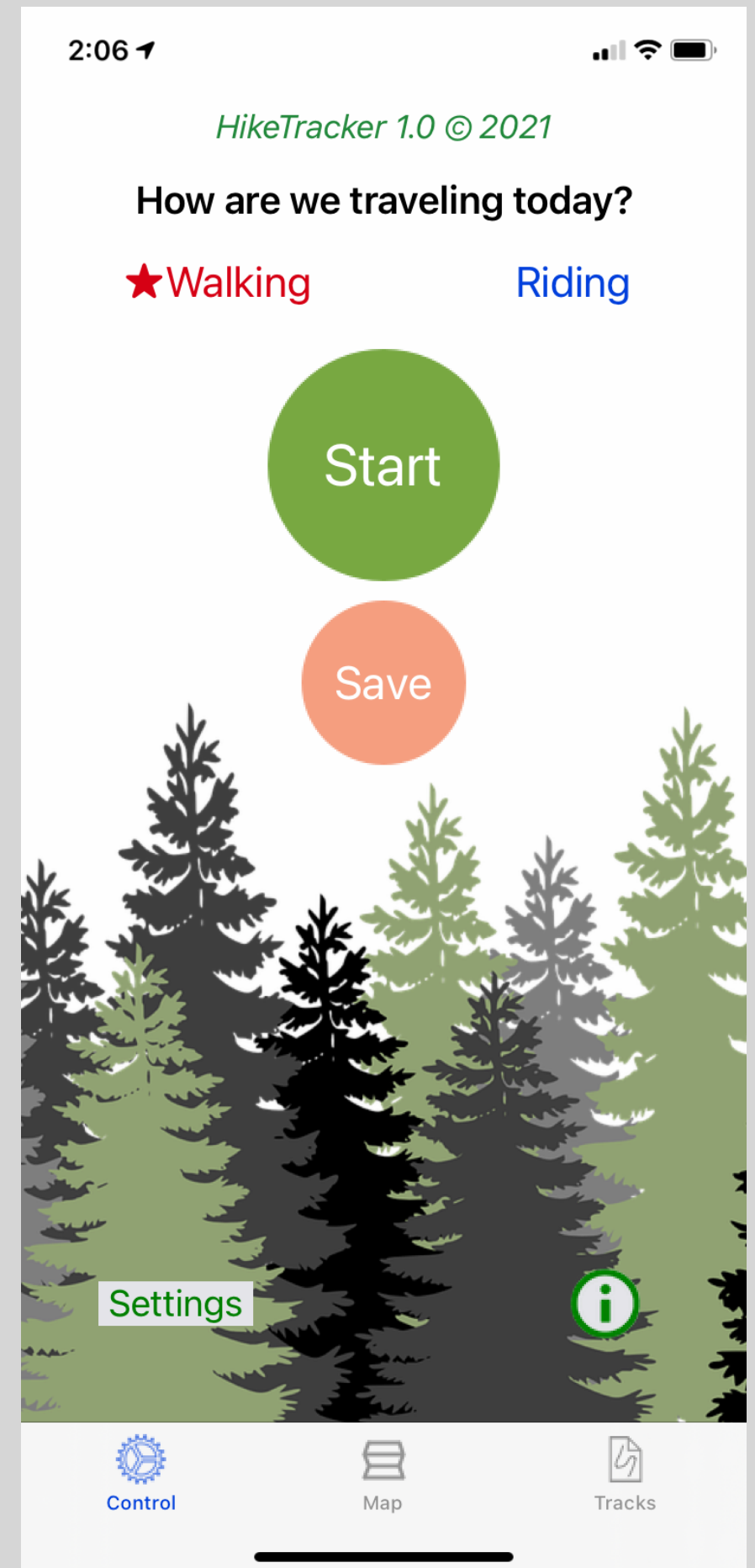
## Simplicity

The app is set up to work well “out of the box” for a hiker or walker - just tap “Start” and go!

There are various settings that permit its use for other activities and special situations but those things are generally held out of sight where they won't get in the way or confuse a beginning user. It is also pretty hard to accidentally lose your tracking data - the app makes you work at it to mess things up 😊

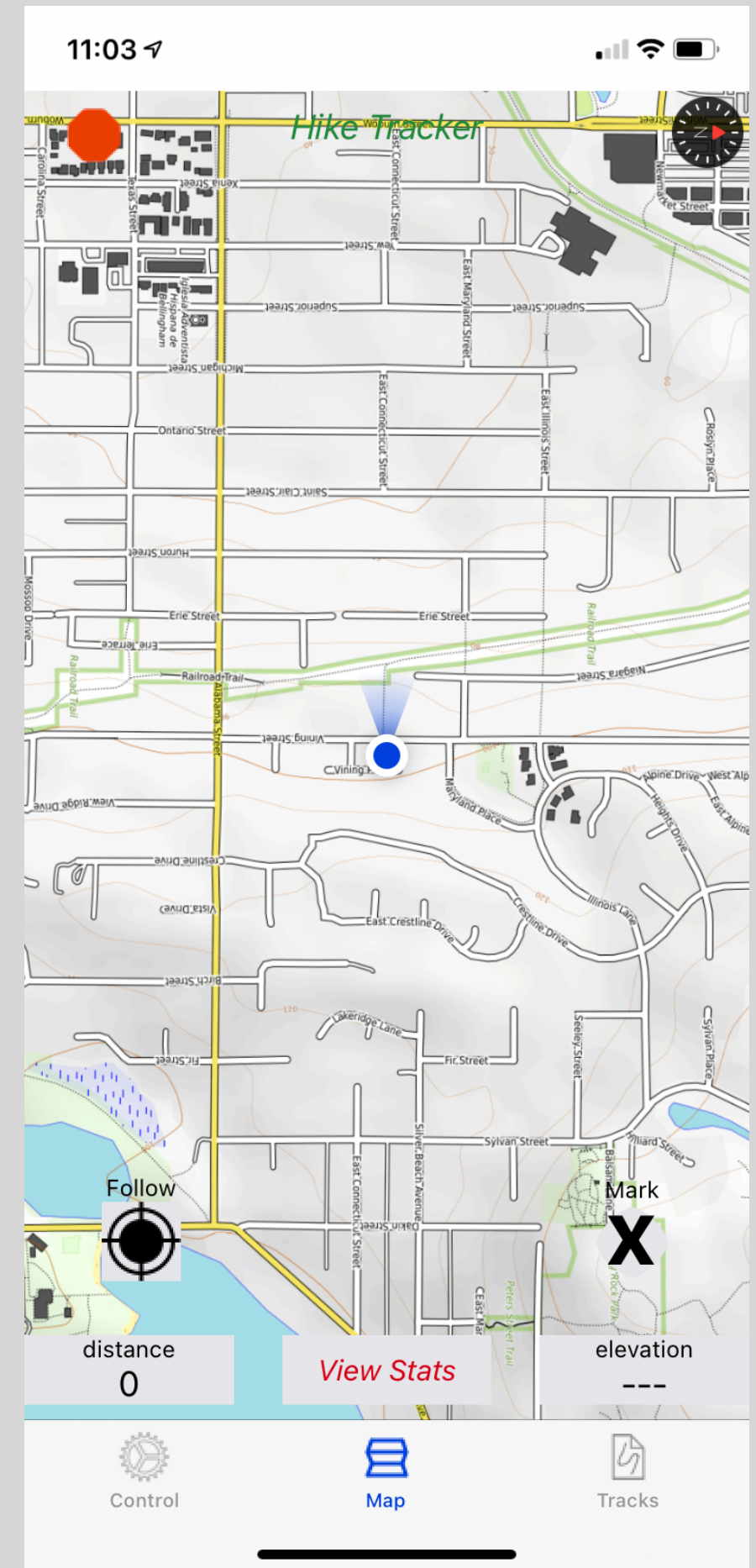
# Start

- When the app starts you'll see the Control screen
- The only thing you have to choose before you start is whether you will be taking steps (walking / running) or riding a bike or other vehicle
- Tap Walking or Riding
- Tap Start to begin logging your trip
- The Info button in the lower right will display some basic information about this app and give a link to the Support Website



# Logging

- There is a short delay while the GPS gets its act together, whereupon you will be taken to the Map screen and you are ready to go
- All of the gadgets on the Map screen are optional.
- So put the phone to sleep, stick it in your pocket or pack, and go!
- P.S. There are readouts of your distance traveled so far and current elevation near the lower corners - you can see other info by tapping *View Stats* - more on this later...



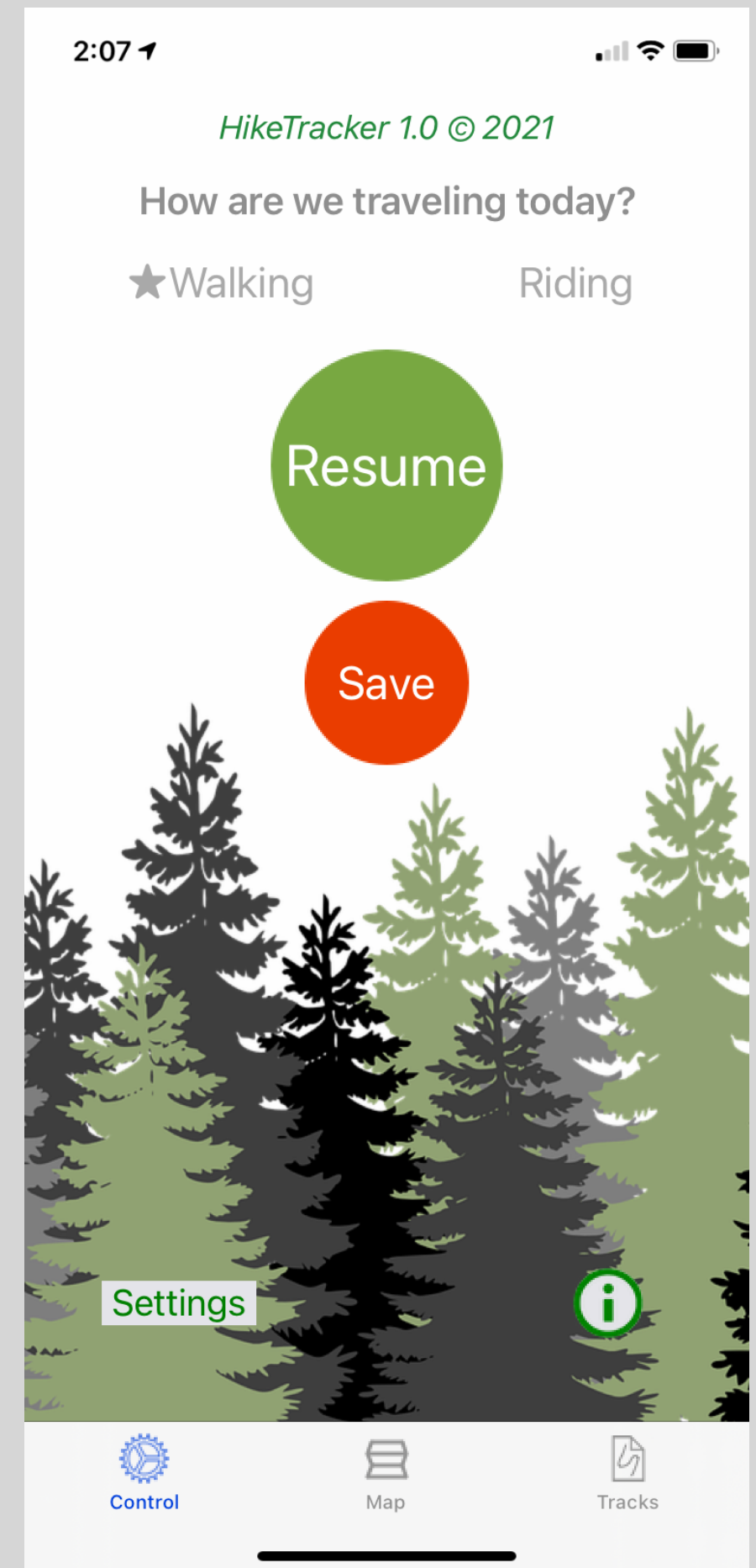
# Pausing

- When you complete your trip, move back to the Control screen by tapping the Control tab in the lower left corner
- Note that the big button has changed from Start to Stop/Pause
- And at this point, tapping that big button is just about the only useful thing to do
- When you do, the Save button will become active



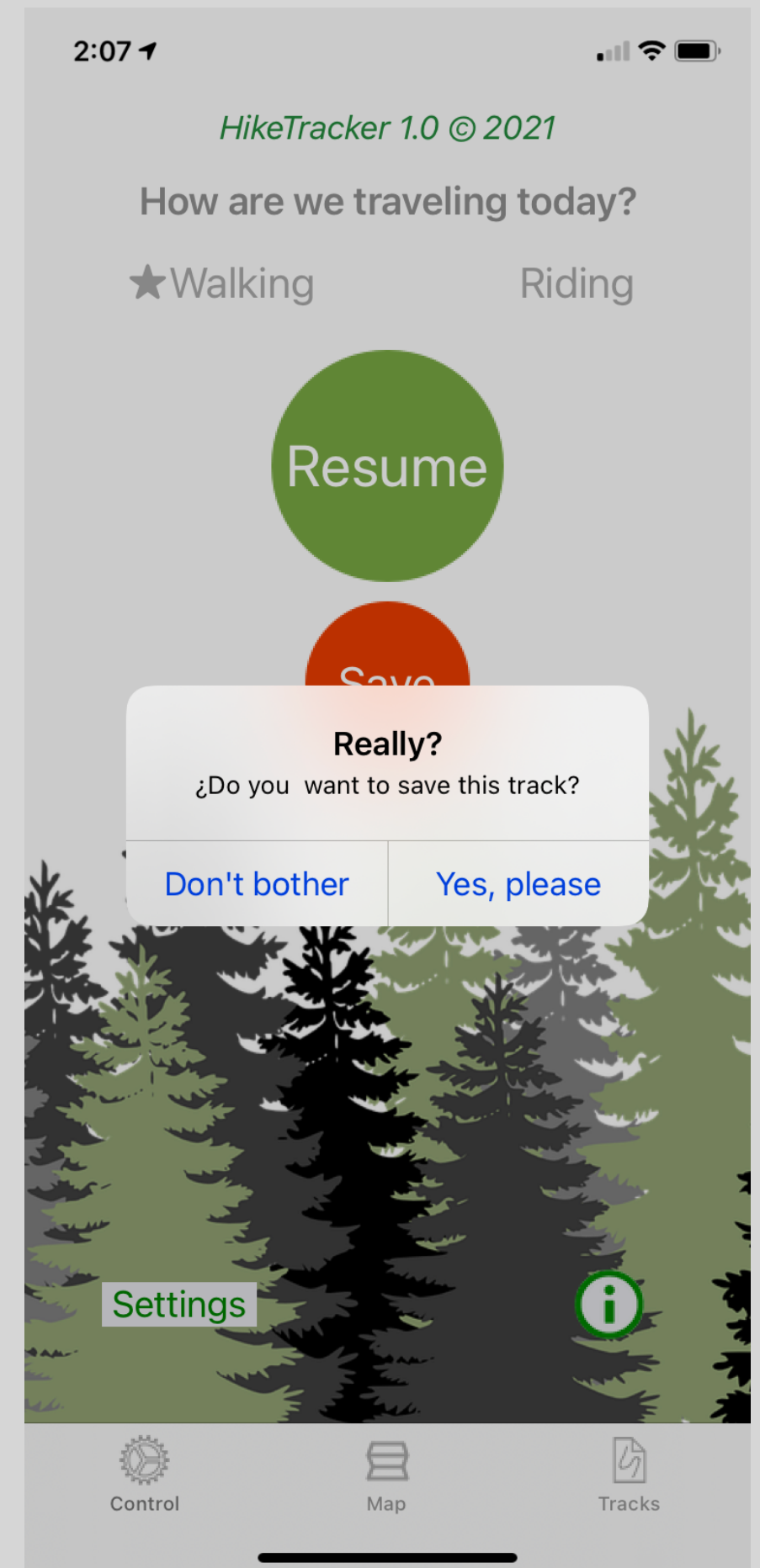
# Saving

- Now there are two(2) big buttons to pick from
- Resume will restart the GPS, take you back to the map screen and continue logging your trip
- Save will start a sequence of dialogs that allow you to save securely a copy of your track as it stands at this moment.



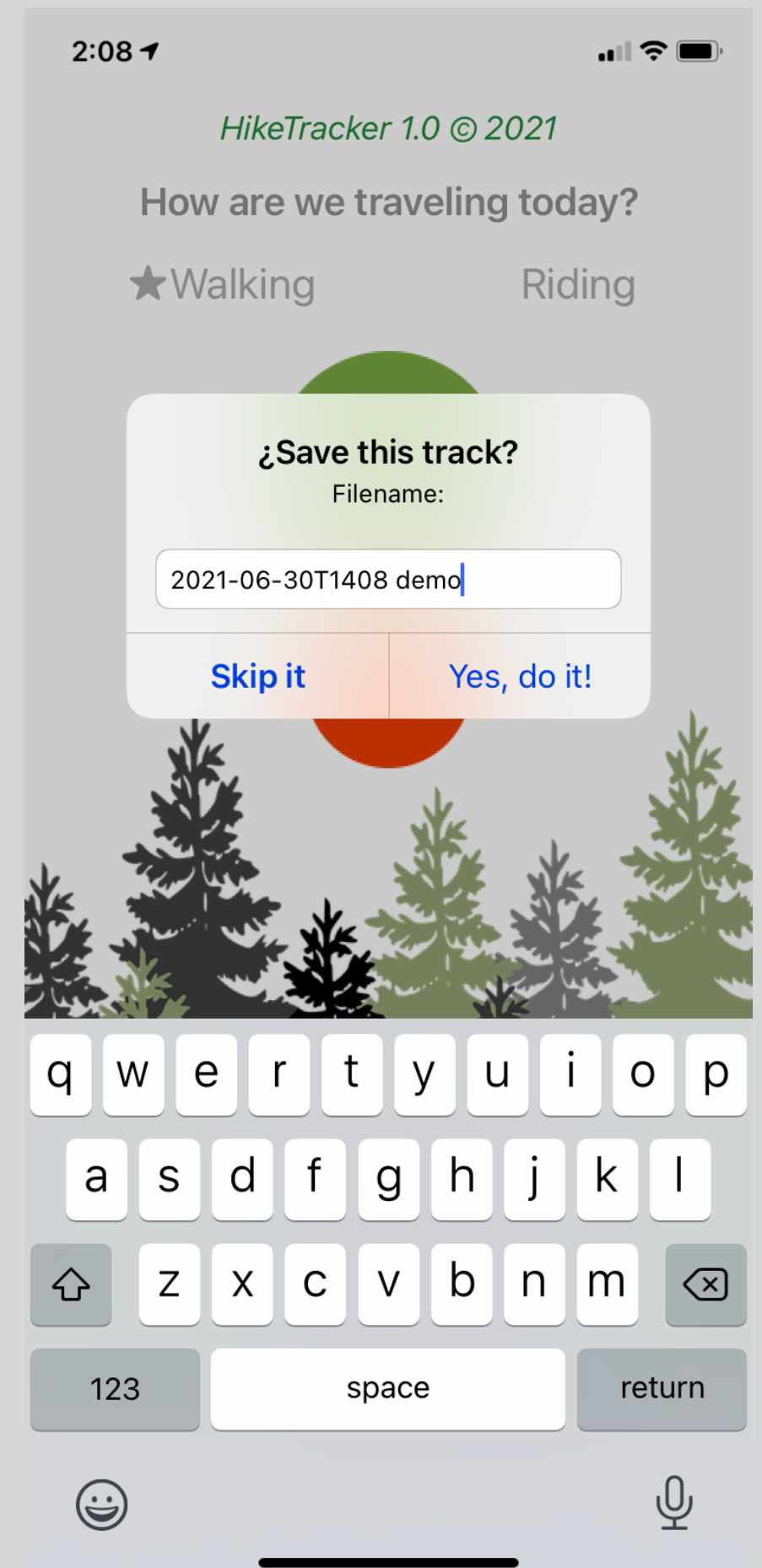
# Really?

- The first screen just allows you to recover gracefully from an accidental tap on the Save button
- Next we'll name our track



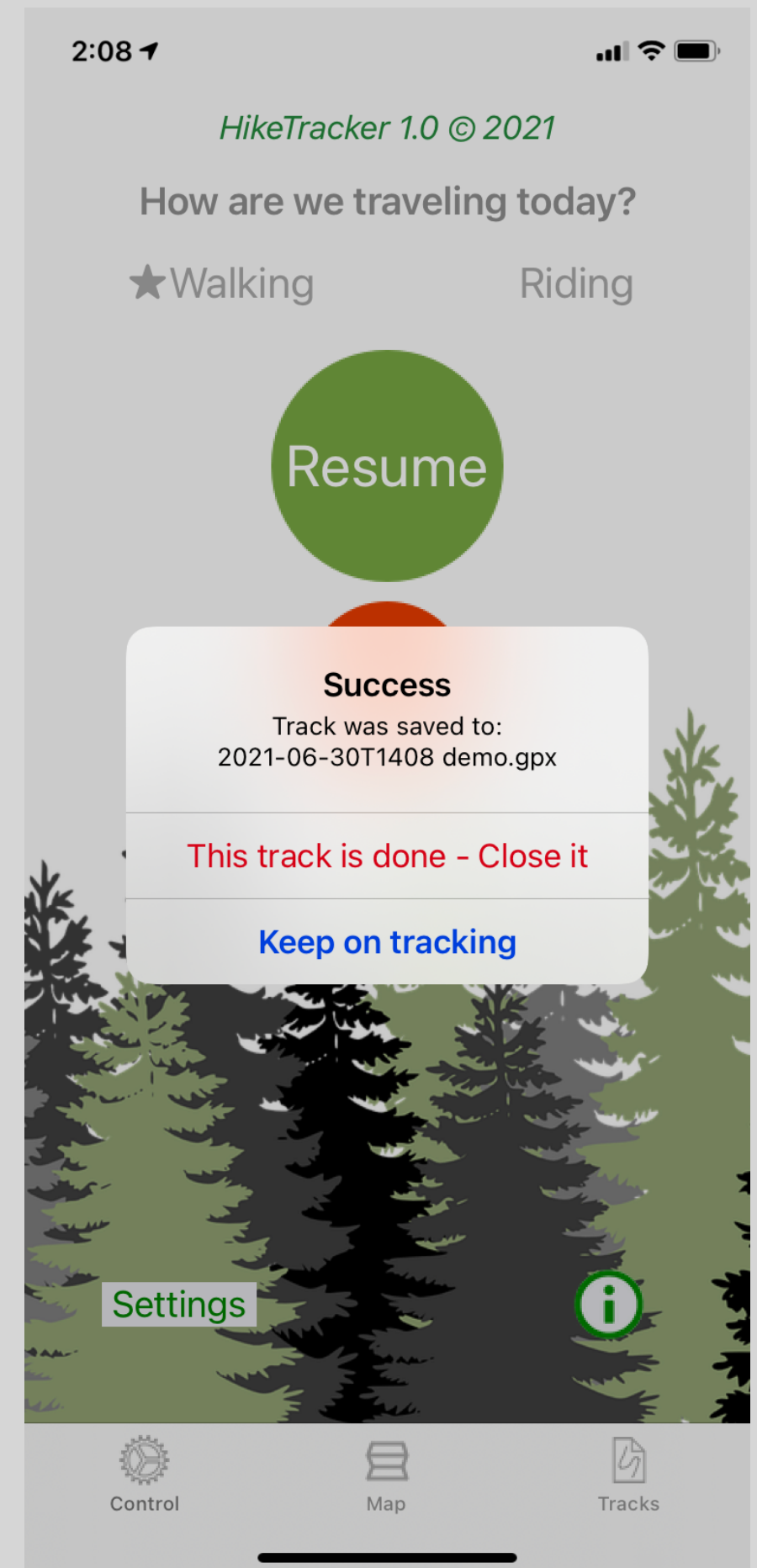
# File Name

- The default file name is just the current date and time in ISO standard format, e.g., 2020-12-14T1551
- This format starts with the most significant datum (year) and trails down to the least (minutes)
- This makes alphabetical order the same as temporal order
- You can replace that default name or add to it



# Saved

- If your track is not complete (say, you are stopped for lunch) you can choose to continue tracking
- Otherwise, we will go back to square one - the Start screen

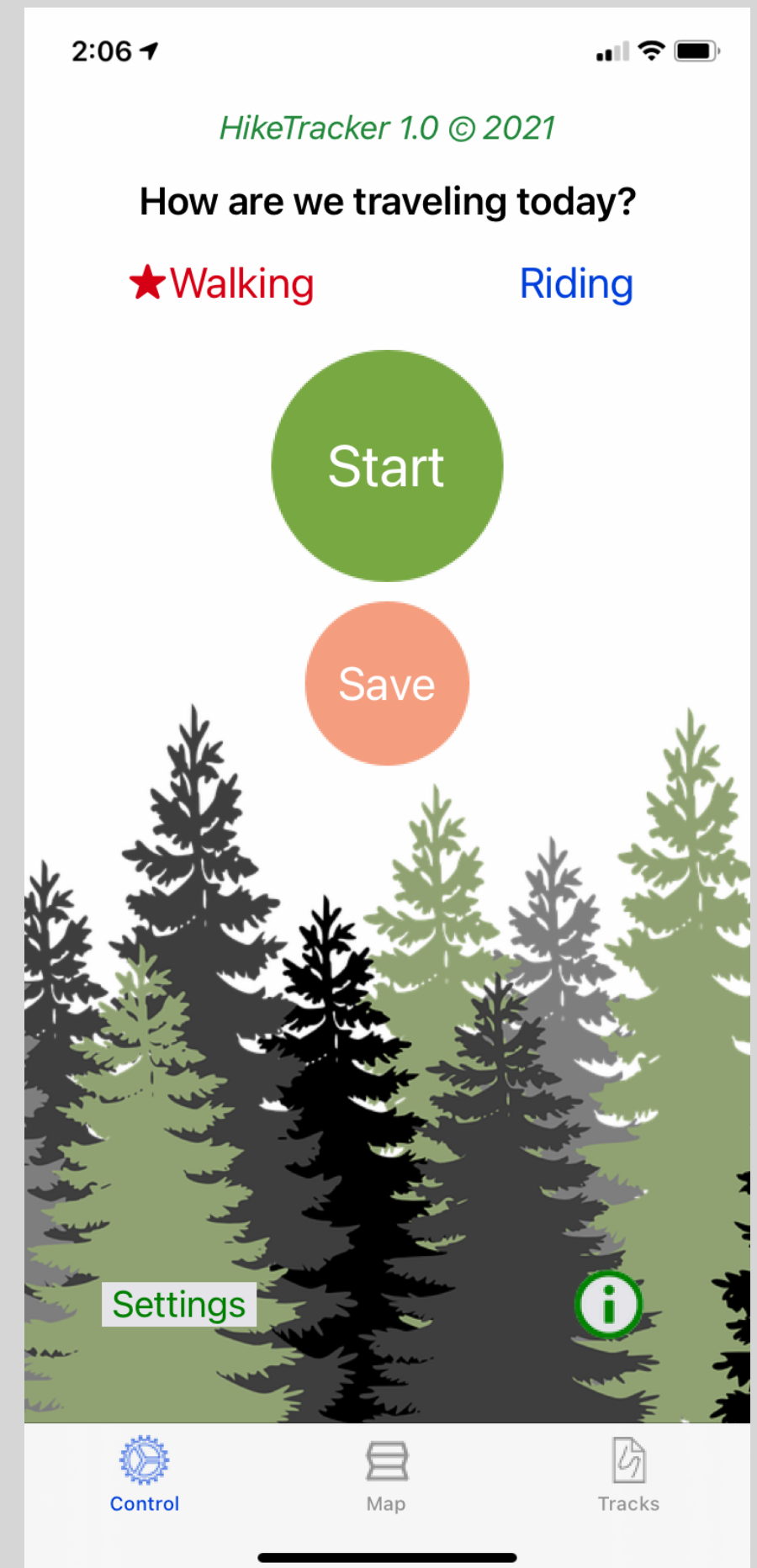


# A Deeper Dive

- At the bottom of the screen are three Tabs: Control - Map - Tracks
- These choose among the three main pages at any time - they do not affect the track recording process, just the display

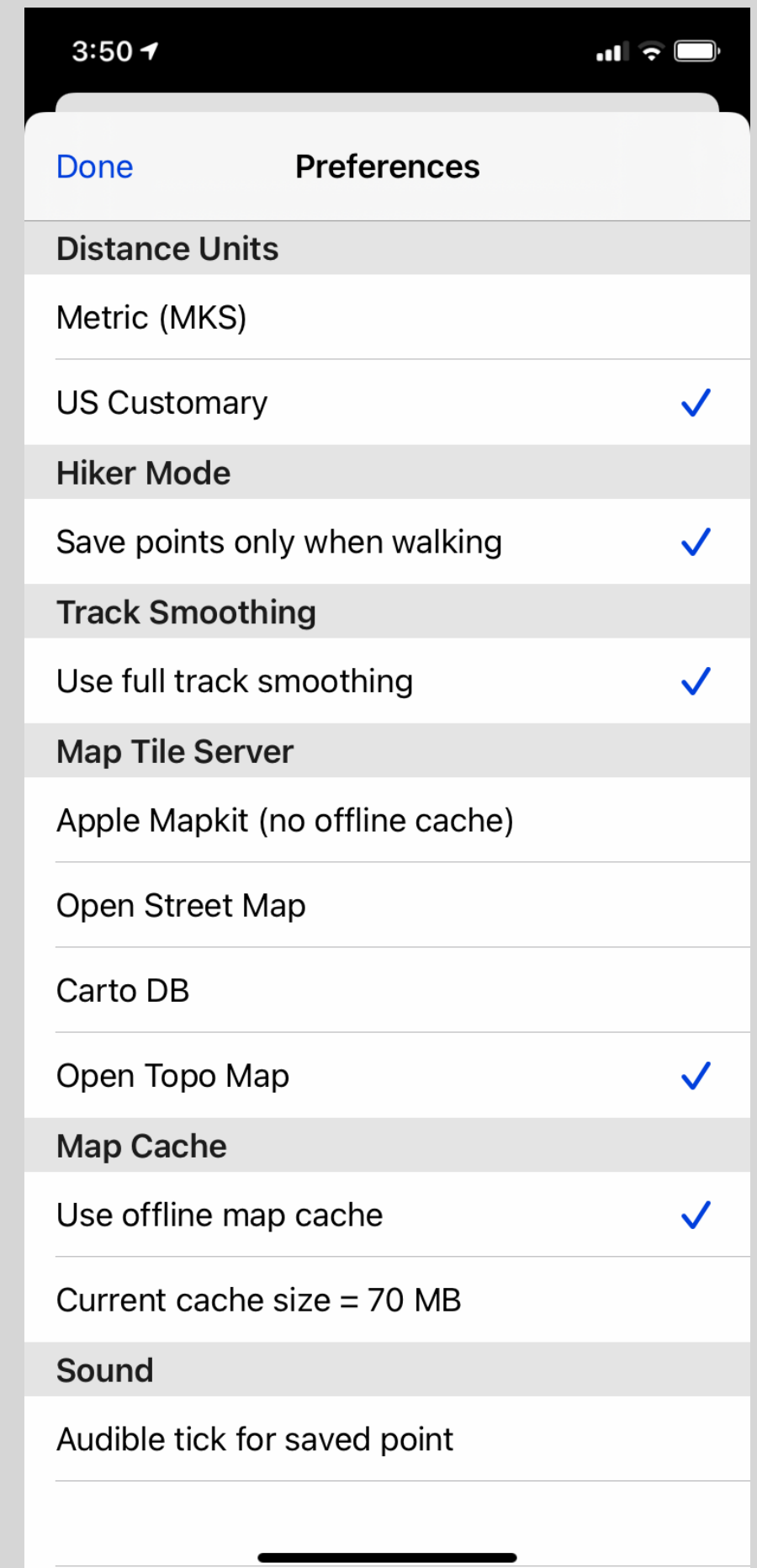
## Optional Features

- The only thing on this Control page that we haven't seen yet is the Settings button near the lower left corner - tap it and we go to the...



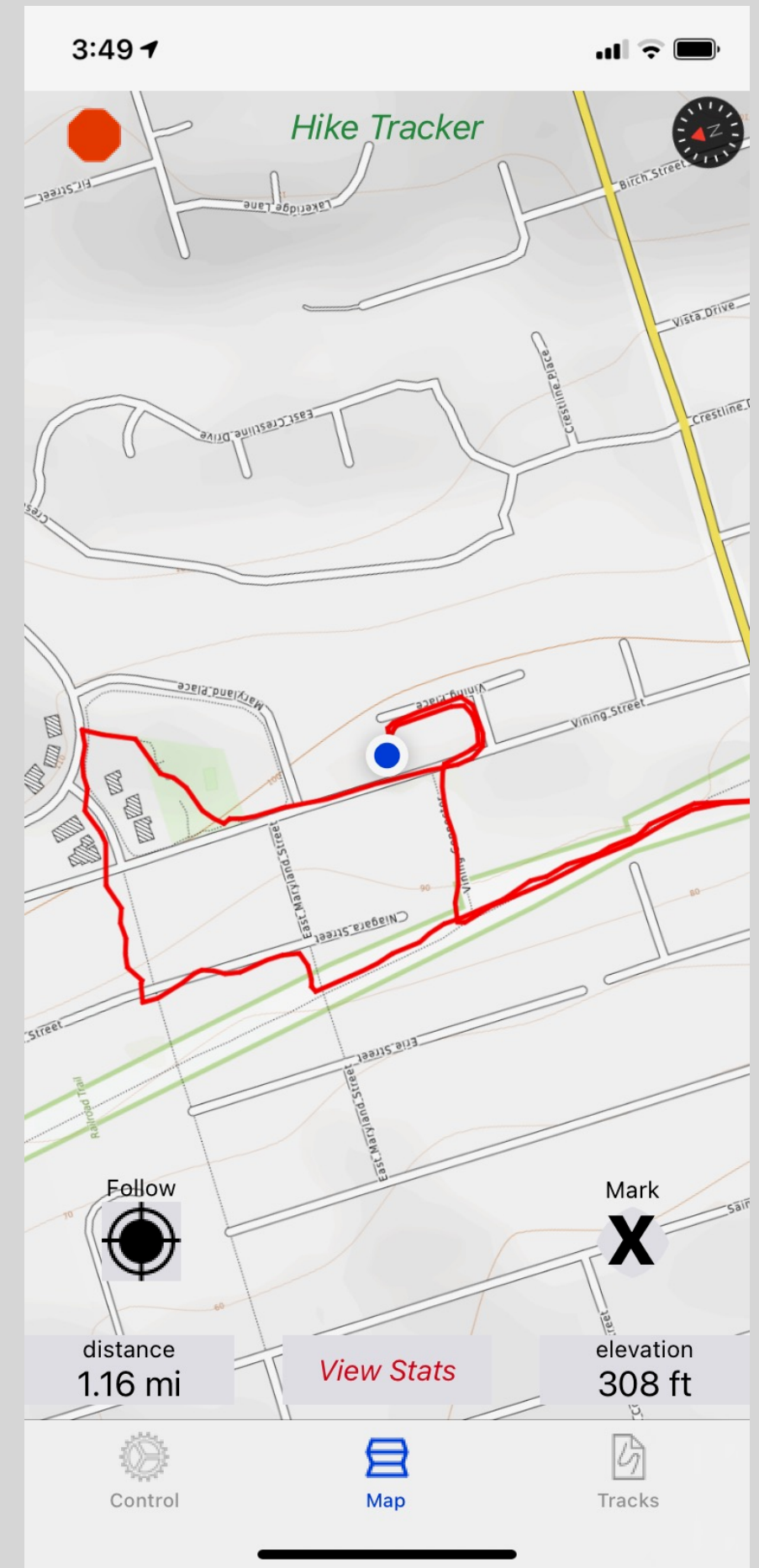
# Settings Page

- An item is On if it has a check mark
- Distance Units - choose Metric or US
- Hiker Mode - Use pedometer to detect motion
  - Turn Off when not walking
- Track Smoothing - Turn Off for bike riding or to save battery
- Map Tile Server - Choose a map source
- Map Cache - Save map sections locally for offline use - more on this later
- Sound - an audible click when a point is recorded to a track
- Most of these can be changed at any time, except Track Smoothing and Hiker Mode which only take effect at the start of a new track



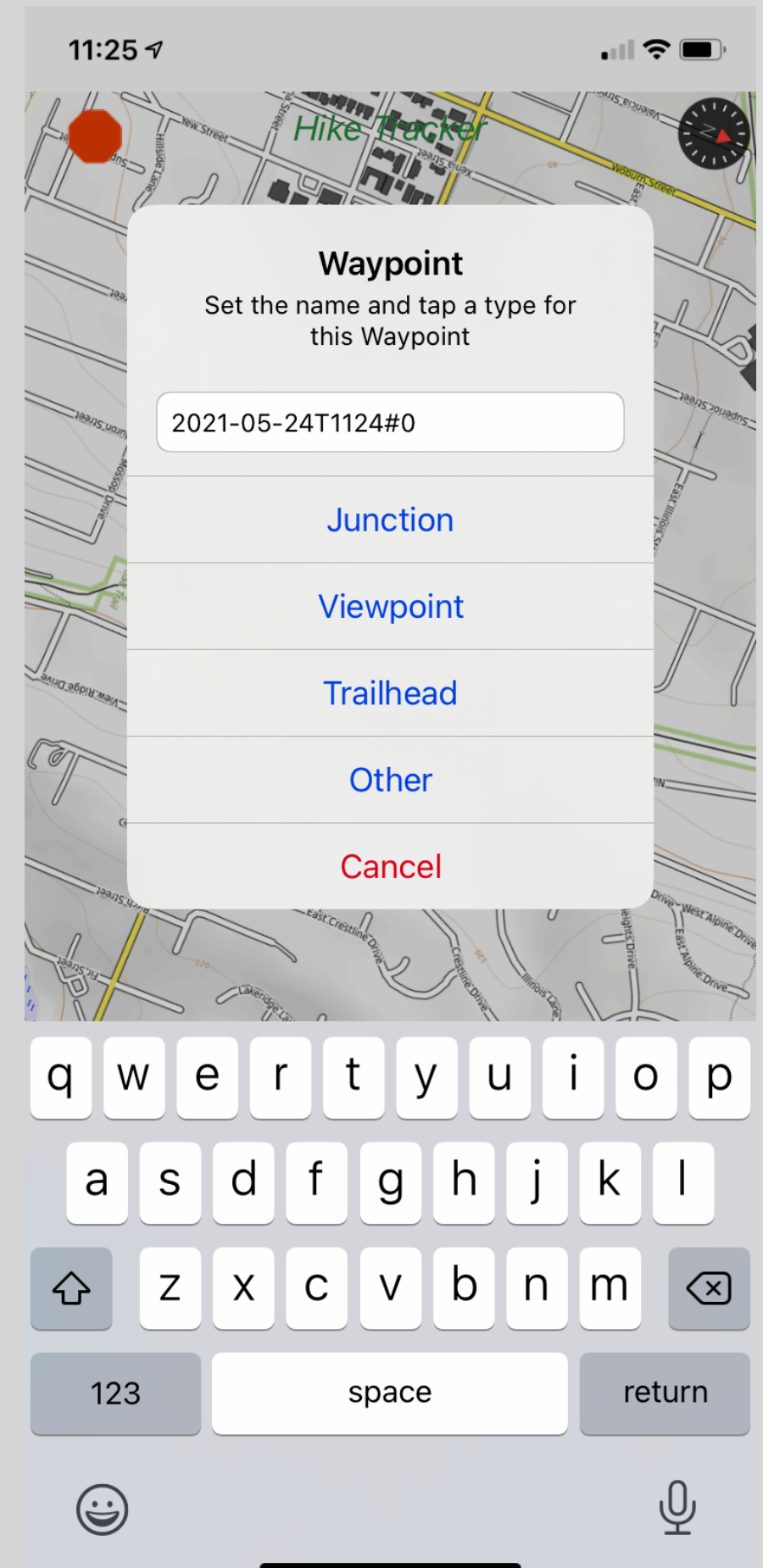
# Map Page

- Gestures - you can pinch and rotate the map as usual
- Stop Sign - indicator that the iOS pedometer believes that we are standing still (Hiker Mode)
- Compass Pointer - indicates true north - tap to turn the map north
- Follow Button - controls whether the map keeps the user centered
- X Marks the Spot - tap to force the app to save to the track the very next point that is provided by the GPS - also blinks whenever a point is saved, forced or not (It is also used to save a waypoint)
- Distance and Elevation displays
- View Stats Button - opens Track Stats window



# Waypoints

- Holding the “X Marks the Spot” button for more than a second or so (a “long press”) will save the current location as a waypoint
- You can give it a name and a style if desired
- The waypoints will be marked on the map page and saved in the GPX file



# Track Stats Page

- Distance - A new track segment is started whenever the user pauses the track with the Stop/Pause button
- Elevation - GPS elevations can be crazily inaccurate and the app tries to smooth them out - a work in progress
- Pedometer - The built-in pedometer works quite well: it seems to pick up the walking motion whether the phone is in your hand or in your pocket or even in your backpack. It also gives a weirdly accurate distance estimate, better than most GPS trackers (except this one, of course 😊)
- Elapsed Time - Total time since Start of a track - moving time and stopped time are future possibilities
- Accuracy & Precision - geeky

[illegible]

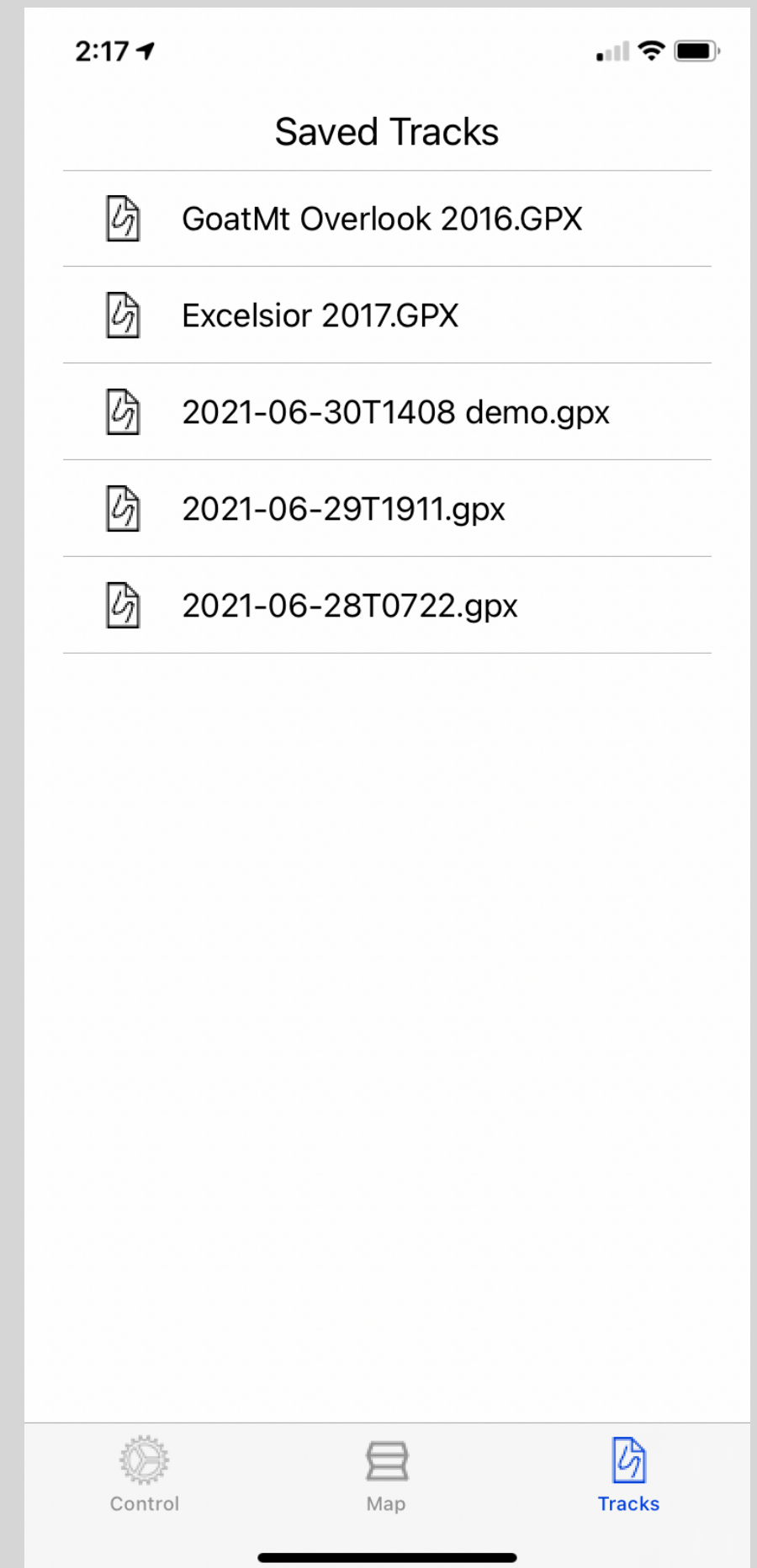
# Saving Track Info

- A good way to save this information is by taking a snapshot of the screen (aka screenshot)
- When you save the GPX file, this data is also saved and can be viewed from the Tracks page

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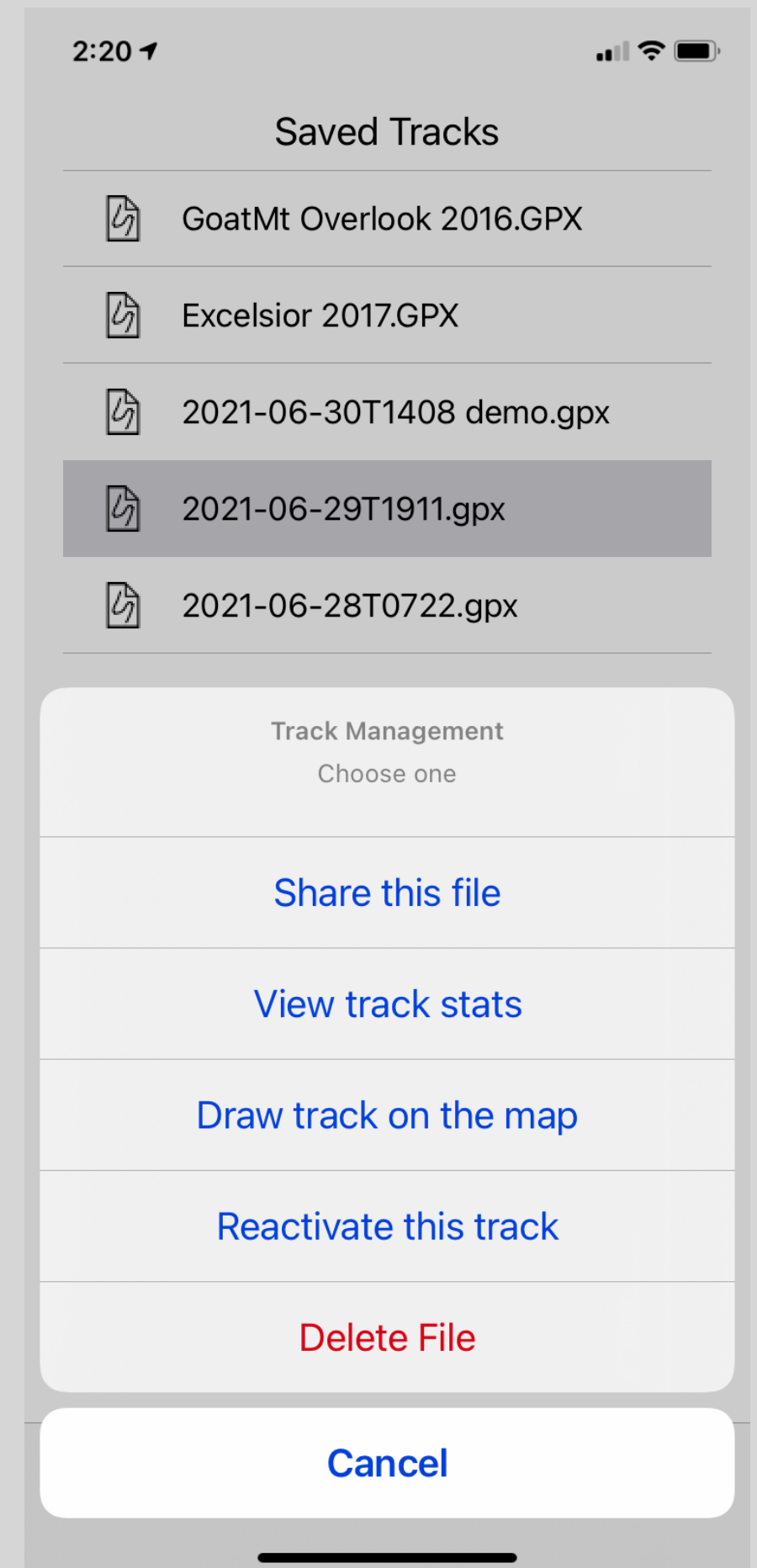
# Tracks Page

- This page shows all the saved tracks in descending alphabetical order
- This will place the most recent saved track at the top of the list (assuming that you did not mess with the date portion of the suggested file name when saving)
- Tapping on a track will bring up a menu of possibilities...



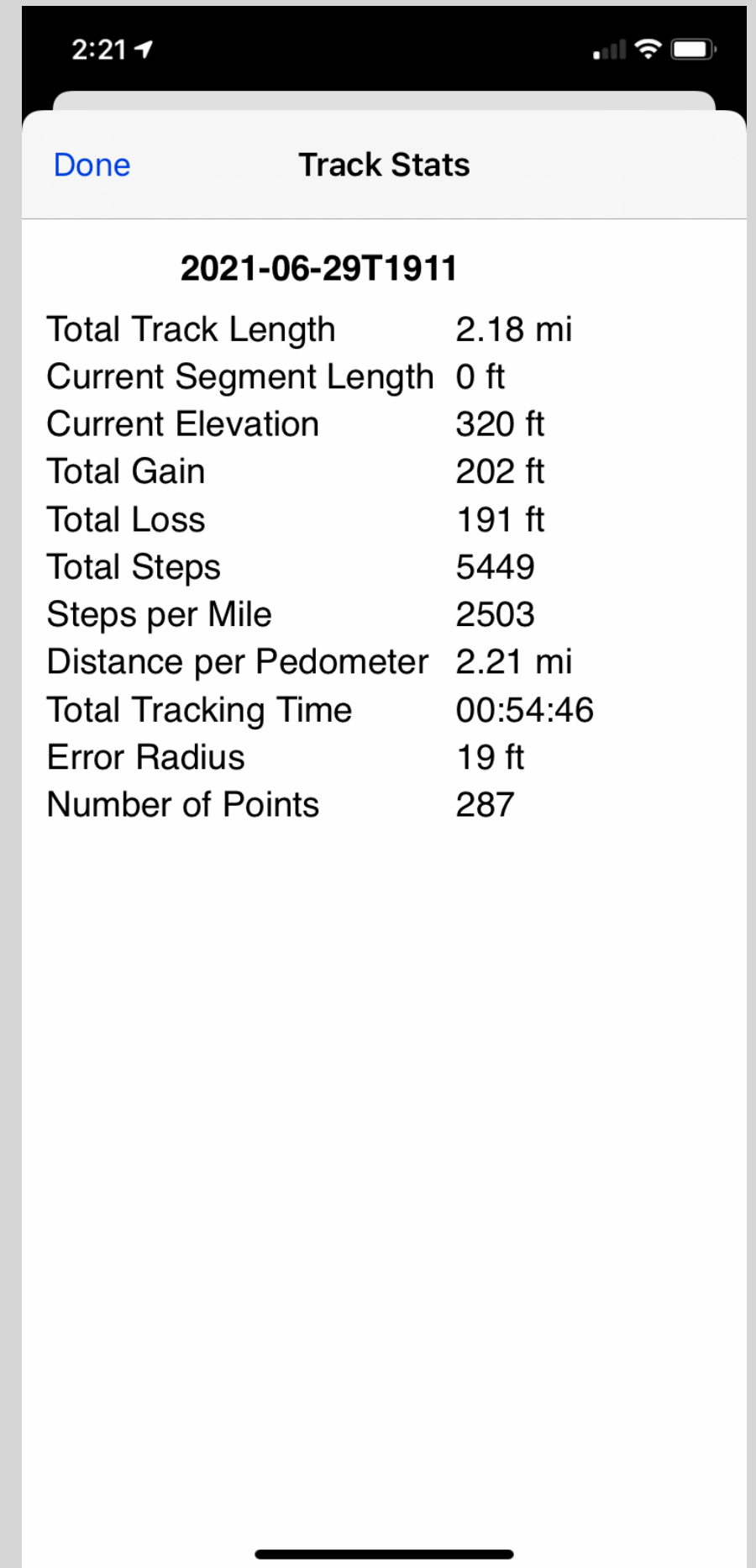
# Tracks Options

- Draw - simply draws the chosen track on the map, perhaps to serve as a guide for a future hike
- Reactivate - Draws the track but also reinstates it as the active track so that you can add to it (if, for instance, you accidentally closed the app without saving)
- Share - opens the standard Apple file sharing menu...
- Delete - flagged in red because it cannot be undone



# View track Stats

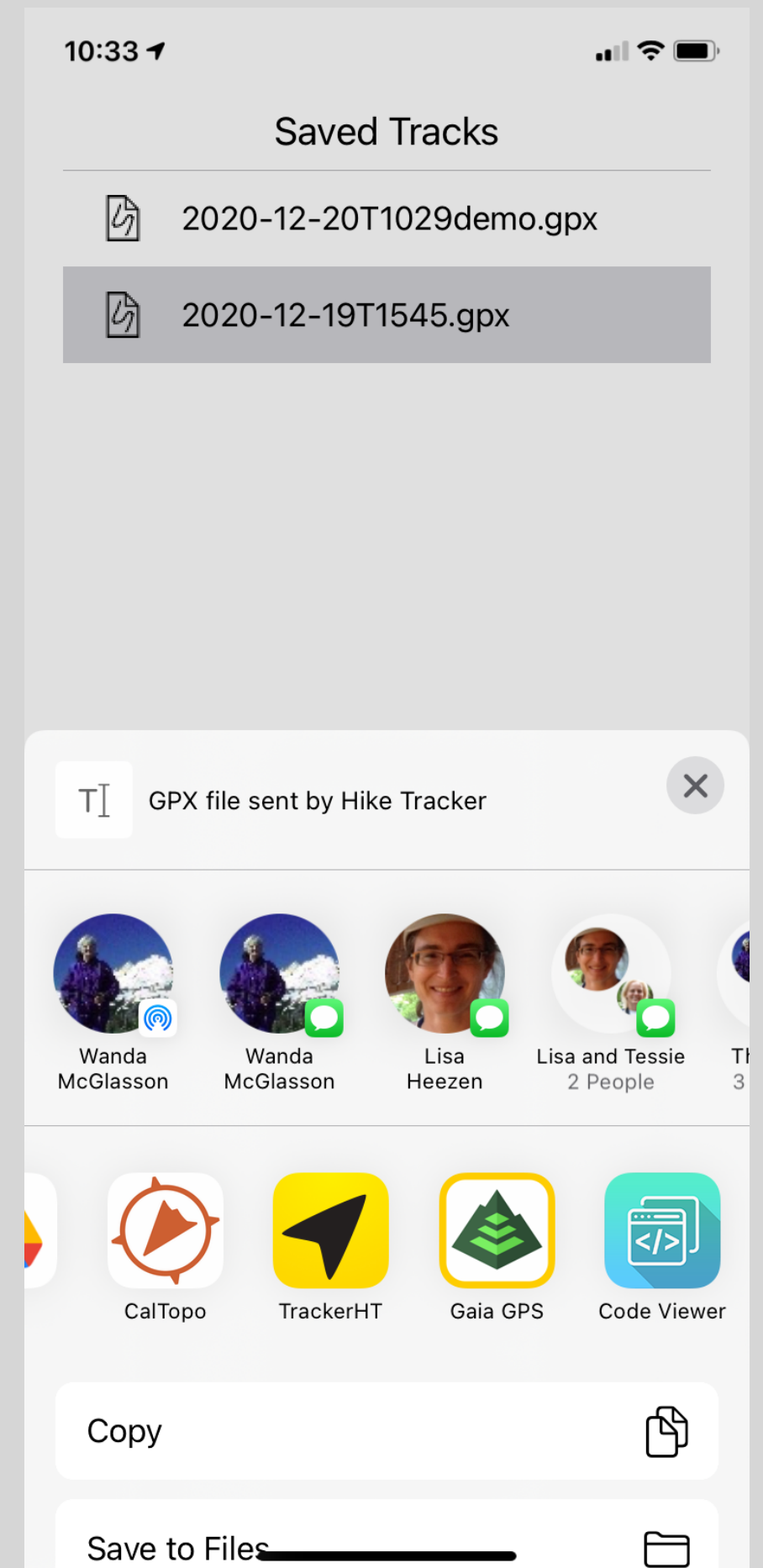
- HikeTracker saves some track statistics in its GPX file
- This options simply displays the stats from such a saved track
- Only works with files made by HikeTracker
- They can also be viewed on your computer by opening the GPX file in a plain text editor like TextEdit on a Mac or WordPad on Windows



| 2021-06-29T1911        |          |
|------------------------|----------|
| Total Track Length     | 2.18 mi  |
| Current Segment Length | 0 ft     |
| Current Elevation      | 320 ft   |
| Total Gain             | 202 ft   |
| Total Loss             | 191 ft   |
| Total Steps            | 5449     |
| Steps per Mile         | 2503     |
| Distance per Pedometer | 2.21 mi  |
| Total Tracking Time    | 00:54:46 |
| Error Radius           | 19 ft    |
| Number of Points       | 287      |

# Share Menu

- As usual, this allows you to:
- Attach the GPX track file to an email or text message (to yourself or someone else)
- Use Airdrop to send it to a nearby iPhone
- Save it to iCloud via the Files app
- Send it to another app on your own phone - any app that has registered itself as being capable of doing something intelligent with a GPX file will be listed. I've tested it with Gaia GPS, CalTopo and Open GPX Tracker
- BTW The authors of the open source app Open GPX Tracker, Vincent Neo and Juan Merlos, were very generous with help to get me started. They also provided software packages that I use to read and write the GPX format (CoreGPX) and to cache the map tiles for offline use (MapCache)



**Now get outta here  
and go hiking!**

P.S. Don't forget your phone



# Appendix: The Map Cache

- Map tiles are downloaded as needed from the Internet and saved in a cache. There are separate tiles for different zoom levels and the app will pull them from the cache as needed
- When space is exhausted in the cache, the oldest tiles will be jettisoned - first in, first out (FIFO)
- If you plan to be hiking in a new area anywhere in the world out of cell and wi-fi range, you should open this app while you still have an Internet connection and use the map page to “visit” the area at various zoom levels