# GATC Blowdown Reporting System

Hikers can report the exact location of blowdowns on the AT and other trails maintained by the GATC by taking a few images with a smart phone and sending them as ***attachments*** to Blowdown@georgia-atclub.org. (The actual email address, GATCBlowdown@gmail.com, will continue to work.) Add this email address to contacts on your phone contacts list to make it easy to send blowdown reports. You can attach multiple images, up to 25 MB in total (3 or 4 images), to one email. If you don't have a GPS enabled phone, GPS coordinates, in decimal format (Lat/Lon order, spacing, same line/different line doesn't matter), obtained from a GPS can be typed into the text of the message. This system works for locations on or near the AT, Approach, Hike Inn, Duncan Ridge, shelter trails, water trails, and all other trails which are maintained by the GATC and connect to the AT.

The Blowdown Reporting System runs once an hour, on the hour, and scans any received email for images. Digital Images contain EXIF data which includes GPS location as well as camera f-stop, shutter speed, etc. EXIF GPS location data in the image will be used to determine the location within a GATC trail District/Section as well as trail miles from Springer. Using that information, a new email including the location information, any descriptive text from your email, image files and a GPX file containing blowdown locations will be sent to the sender of the email, Trail Supervisor, District Leader, Section Overseers, and Sawyers Committee Chair. If an email is sent from an email address not in our member database, they receive only a simple thank you reply. This is done to avoid the sender from being included in the Reply All emails sent coordinating the blowdown removal. The attached GPX file can be loaded into mapping software and GPS apps or GPS units. The images are renamed to ensure each one has a unique name. The name consists of year, month, report number, image number. Below are examples of location reports for two images.

> Image: 2019-11_99_02  Date: 2019:11:14 12:12:59  Make: Apple, Model: iPhone XR
> Estimated GPS location error 15'
> Trail: Freeman Trail
> Geo: 34.732219, -83.938461  3620'  Distance from nearest trail point: 5' Bearing: WSW
> Section 6.10  0.94 mi from Flatrock Gap,  0.94 mi before Bird Gap
> Wilderness Status: Blood Mountain Wilderness
> Maintainer(s): Eden Scott <leopoldeden@gmail.com>
>
> Image: 2019-09_99_01  Date: 2019:09:10 10:47:47  Make: samsung, Model: SM-G950U
> Trail: Appalachian National Scenic Trail Mile: 22.13
> Geo: 34.693638, -83.991377  3446'  Distance from nearest trail point: 3' Bearing: NW
> Section 5.2  0.52 mi north of Preaching Rock,  0.83 mi south of Dan Gap
> Wilderness Status: Blood Mountain Wilderness
> Maintainer(s): Lawson Herron <lawson144@charter.net>

The basic requirements for taking and sending images are:

- Location is enabled on the phone.
- Phone camera access to GPS Location is enabled.
- After opening the camera app, delay for 15 to 30 seconds to give the GPS time to get location. Take a few pictures, leaving the camera open.

- Pictures must be JPEG images attached to an email, not sent from an upload to a web site. Such sites likely strip location information to protect privacy. (See Improving GPS Accuracy, below.)
- Send pictures as “Actual Size” if given option.
- Send images from phone as **attachments** to email, **not inserted** in email to Blowdown@georgia-atclub.org.

Images downloaded from social media or processed by other apps may have location removed. Google Photos does not remove location. Gmail doesn’t alter attached images. Images sent with Apple Mail will have location removed from the image by default. To avoid that, options must be selected for each image file which is attached. See *How to Attach Pictures to the Email,* below for details.

A brief description of the location or trail miles from the Far Out Guide is extremely useful in case the GPS does not have valid location data. Sometimes location data is missing from images when everything is set correctly. The last section of this document, *Improving GPS Accuracy,* gives some advice on how to avoid this problem.

Having an object in the picture such as a hiking pole or pack helps show the size of tree. You can add a subject to the email and text, if you want to convey any additional information such as estimate of size and how difficult it is to get over, under, or around. Multiple views are helpful. A wide view showing most of the blowdown and root ball is helpful for the sawyers to bring the right equipment.

## How to Verify Location Data in an Image

A recent feature of the Blowdown Reporting System allows testing of an image without sending it to the sawyers. You can attach an image and send it to the blowdown system with a subject containing **only the 4 characters “test”** and it will send you the same report that would have gone out to everyone listed above if the subject had not been “test”. The image can be one you took on the AT or of your dog in your front yard. Anything will work for the test. Remember that the submissions are processed on the hour, so there will be some delay depending on the time you submit it. If you send an image taken near a trail, you will get a full report. If the image was not near a trail and it had location data, the coordinates will appear in the email you receive as confirmation. If there are no coordinates, the received email will indicate that.

The remainder of this document covers checking if your phone is configured to include location data in images and what to do if it isn’t. There are also sections on understanding the location report and improving GPS accuracy.

## How to Enable Location in Pictures

If no location data is in your pictures, the camera may not have permission to access location. On some older iPhones (older than iPhone SE, 7…), Airplane Mode will disable the GPS. To ensure the camera has GPS permission do the following steps.

### iPhone

- Launch the Settings app from your iPhone Home screen.
- Tap on Privacy.
- Tap on Location Services.
- Tap on Camera.
- Choose "While Using the App".

### Android

- Launch the Settings app from pull-down at the top of screen.
- Tap on Apps
- Tap on Camera
- Tap on Permissions
- Tap Location to On

## How to Attach Pictures to the Email

In order for location data to be available, the entire image file must be **attached** to the email. If an image is inserted into an email, the picture in placed in line with the text of the email and the EXIF metadata including location is not included.

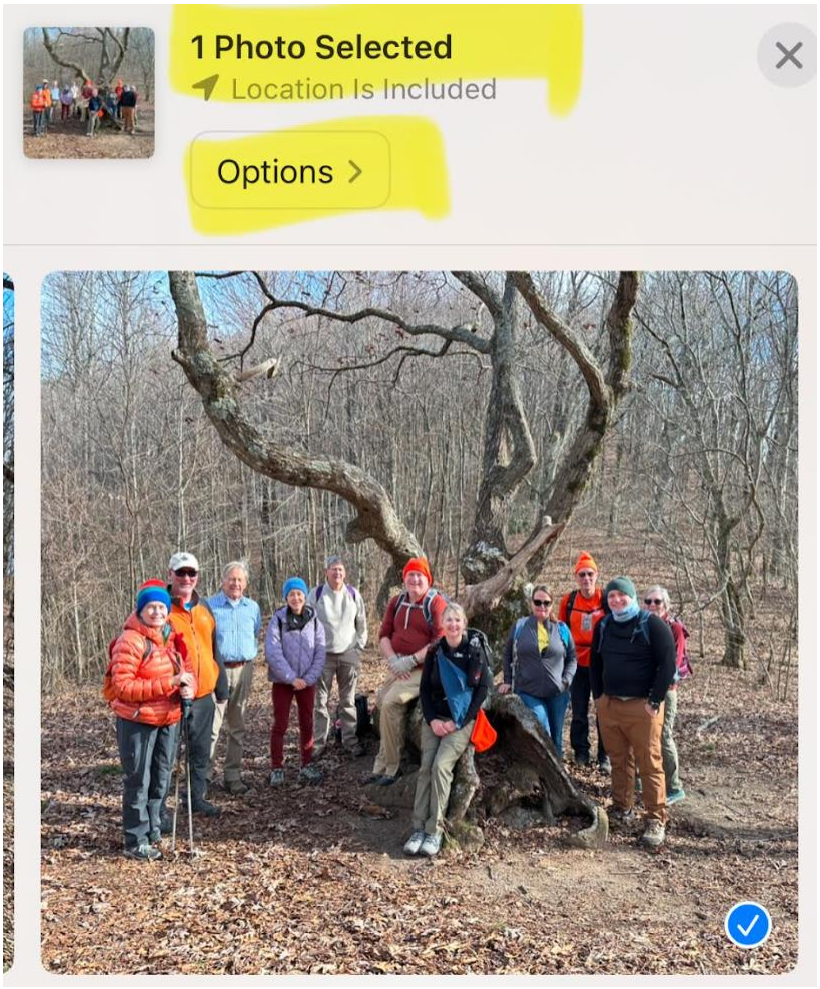
### Android

- Open Google Photos or Gallery
- Locate first picture and long press it until a check mark appears.
- Tap additional pictures to select
- Tap on “Share” at top of screen.
- Tap on your email program (Gmail).
- Select option “Actual Size”, if given option.
- Enter email address: Blowdown@georgia-atclub.org
- Tap the Send icon.

### iPhone

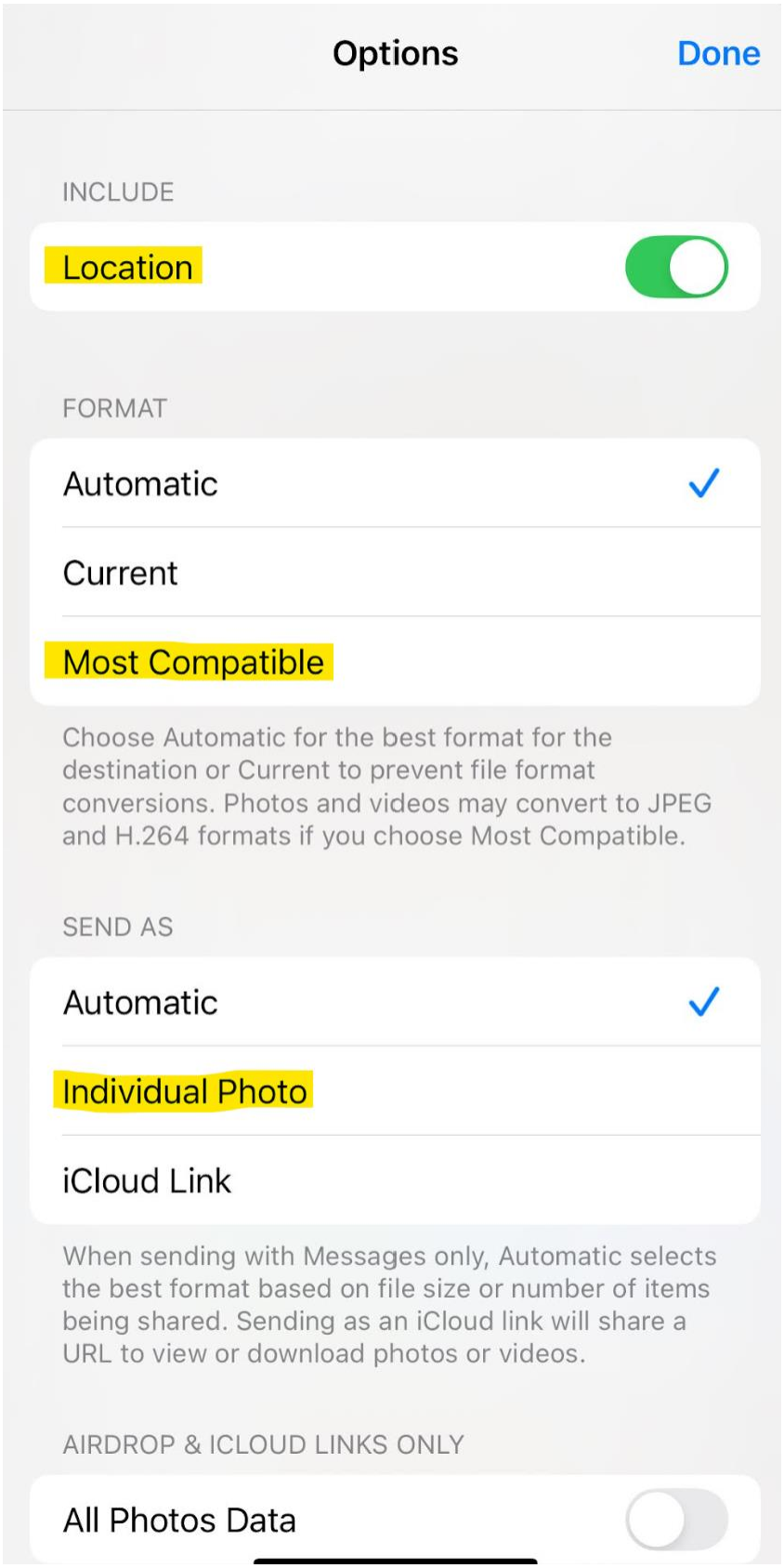
- Open Photos
- Select Albums
- Select the first one named "All Photos"
- Tap "Select" in the top right corner of screen
- Find and select the images by tapping on each
- Tap on the icon at bottom left which looks like a box with up arrow.
- Tap on your mail program.
- Enter email address: Blowdown@georgia-atclub.org
- Tap the send icon.

Apparently, the simplest action to send a photo from an iPhone will not attach the file but inserts the image into the body of the email. This is convenient for many purposes but does not include the EXIF data with location from the image file. On an iPhone, mail sent with Google's Gmail app will always include location, if present, in attached photos. If you use Apple Mail, even with a Gmail address, some extra steps must be taken to include location in photos. Apple has changed the default in Apple Mail from including location if present in photos to removing it. Some owners of iPhones have them set to produce camera images in HEIC format instead of JPEG. The blowdown system handles HEIC with no problem, but the receivers of the reports cannot see the images on a PC. To include photo location and a more compatible image format in Apple Mail, tap the Options button after you select the picture. (In this example, location was already selected.)




Nice looking group of people!

Next, select Location, if not already selected. Click *Most Compatible* and *Individual Photo* as well, then *Done*.


Options
Done
INCLUDE
Location
FORMAT
Automatic
Current
Most Compatible
Choose Automatic for the best format for the destination or Current to prevent file format conversions. Photos and videos may convert to JPEG and H.264 formats if you choose Most Compatible.
SEND AS
Automatic
Individual Photo
iCloud Link
When sending with Messages only, Automatic selects the best format based on file size or number of items being shared. Sending as an iCloud link will share a URL to view or download photos or videos.
AIRDROP & ICLOUD LINKS ONLY
All Photos Data

### How to Turn the GPS On

It is likely that your phone's GPS is already on but both iPhone and Android phones have settings to disable it. The directions for turning the GPS on and off will probably vary with the version of the phone's OS, but here is a general guide. You can Google this subject for your exact phone if necessary. On older iPhones (6 and older), Airplane Mode will disable the GPS.

### iPhone

- On the phone's home screen, tap the settings icon.
- Tap "Privacy".
- Tap "Location Services"
- Tap to turn on.

### Android

You may have Location set to be one of the options on the pull-down menu. If not, you will need to use the settings app.

- Open the Settings app.
- Tap Location.
- It should be set on.

## About Airplane Mode

Airplane Mode does not disable the GPS on Android phones or Apple iPhones running iOS 8.3 or later, which includes iPhone SE, 7, 8, X and later.

## Understanding Location Data

Mountainous terrain can be difficult for GPS reception, but a smart phone can usually give results accurate enough for our purpose of locating blowdowns. If the GPS reception is poor enough, an Android phone picture will have no location data. An iPhone may also do the same under some conditions, but we have seen several cases where iPhone coordinates were off by several thousand feet and in one case, miles. Fortunately, the iPhone gives an estimated error and it was very large in the case of highly inaccurate locations. If that error is over a few hundred feet, consider the possibility that it is actually much larger. When the location seems questionable, a warning is given in the location report. In that case the sawyer team should get more information from the reporter.

On the line with the coordinates the distance to the nearest trail point is given as well as the bearing to the blowdown from the nearest trail point. Trail points are about 20' apart on average but sometimes as much as 100' on straight sections and the expected phone GPS error is 10 to 30 feet, so this distance can be larger than the examples below. If the distance to the nearest trail point is a few hundred feet, it could be that the picture was taken from a water trail or other side trail that does not yet have GPS data in the database.

Image: 2019-11_99_02  Date: 2019:11:14 12:12:59  Make: Apple, Model: iPhone XR
Estimated GPS location error 15'
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Geo: 34.732219, -83.938461  3620'  Distance from nearest trail point: 5' Bearing: WSW
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The location for the AT is given in terms of the distance from each end of the trail section including the names of the end points. The Trail Mile is the distance from Springer Mountain for the AT. This distance is based on both wheel measurements and GPS data, so it might vary a little from the distances shown in the *Far Out* application. Finally, the wilderness status is given. The program checks to see if the blowdown location is within wilderness boundaries. If so, the name of the wilderness is given.

## Improving GPS Accuracy

**The simplest step to improving GPS accuracy is to turn on the phone camera for a few minutes before taking the first picture at a blowdown location.** Since we began the blowdown reporting system, there have been some cases of highly inaccurate or missing location data. In the early days of smart phones with GPS, keeping the GPS enabled drained the battery quickly. Improvements have been made which greatly reduce the battery drain. The GPS while enabled is not continually calculating position. When an app needs location, the GPS goes fully active and returns the location. For a mapping application, it doesn't matter if the first obtained location is inaccurate, it will continually get updates. The camera on the other hand gets the first location after starting the GPS.

If nothing on your phone has requested location data within the last few hours, it might take your phone a while to get a GPS location fix. This is because it must receive orbital data for each satellite to be used in the location calculation and the data is valid for only 4 hours. This data takes 2.45 minutes to receive and in mountains, it may take longer. This difficulty would be made worse if you normally keep Location off on your phone and turned it on at a blowdown.