

REPEAT PHOTOGRAPHY: HOW TO EASILY FIND AND TAKE A REPEAT PHOTO

This document is designed to help you easily find and take a well-matched repeat photograph. Here we provide you with a list of essential equipment as well as instructions on how to 1) locate the general area of the historical photograph and to plan your trip using Google Earth *before* you go into the field, and 2) refine your position once in the field and to take an accurate repeat photograph. **Note** that the last section of this document is aimed at experienced photographers but all are welcome to follow these instructions.

ESSENTIAL EQUIPMENT

1. Smartphone, Digital camera, or Digital Single Lens Reflex (DSLR) camera*
2. GPS device or smartphone with Google Maps
3. Sturdy tripod (extendable to approx. 2 m with pan-tilt head & spirit level)* – if you have one available to you
4. Measuring tape (5 m)*
5. High resolution historical photo (A4 size)
6. Field Datasheet
7. Clipboard for holding A4 high resolution historical photo print & Field Datasheet
8. These instructions

*See instructions for experienced photographers (pgs 5 and 6 below).

1 FINDING THE LOCATION OF A HISTORICAL PHOTO

A. Broad-scale search (using Google Earth on your computer)

The broad-scale search should be done **before** you go into the field. This will save you a lot of time and effort.

Relocating the position of an historical photo is often tricky because many old photos were taken before the advent of Earth-orbiting satellites and GPS devices. Some sleuthing is therefore required to pin down exactly where the original photograph was taken from. Luckily, with the aid of historical metadata and local knowledge, historical photos in the rePhotoSA database have all been pre-assigned to a Quarter Degree Square (an area of approximately 25 x 25 km). This is a useful starting point from which to begin your photographic treasure hunt! Prominent topographical features such as mountains and valleys, watercourses, waterbodies, distinctive vegetation, man-made structures like paths or roads, can all be helpful clues in

further narrowing the search. It is worth bearing in mind here that historical photos are more likely to be located beside - or in the vicinity of - old and current transport routes (e.g. railway lines, old roads and tracks, paths, etc.) as these provided convenient access to early photographers who were carrying bulky photographic equipment.

When searching for an historical photo, some prior knowledge of the landscape is an obvious advantage, but there is often an element of luck in chancing upon a landscape feature that you recognize from the historical image. Google Earth can be a powerful tool for searching 'virtually' within the prescribed area. By tilting the Google Earth view to an oblique angle (similar to what the photographer would have seen) and 'flying' over the terrain, one can sometimes match prominent features, as in the example that follows. This approach is more useful in areas which have some mountainous terrain or obvious defining features.



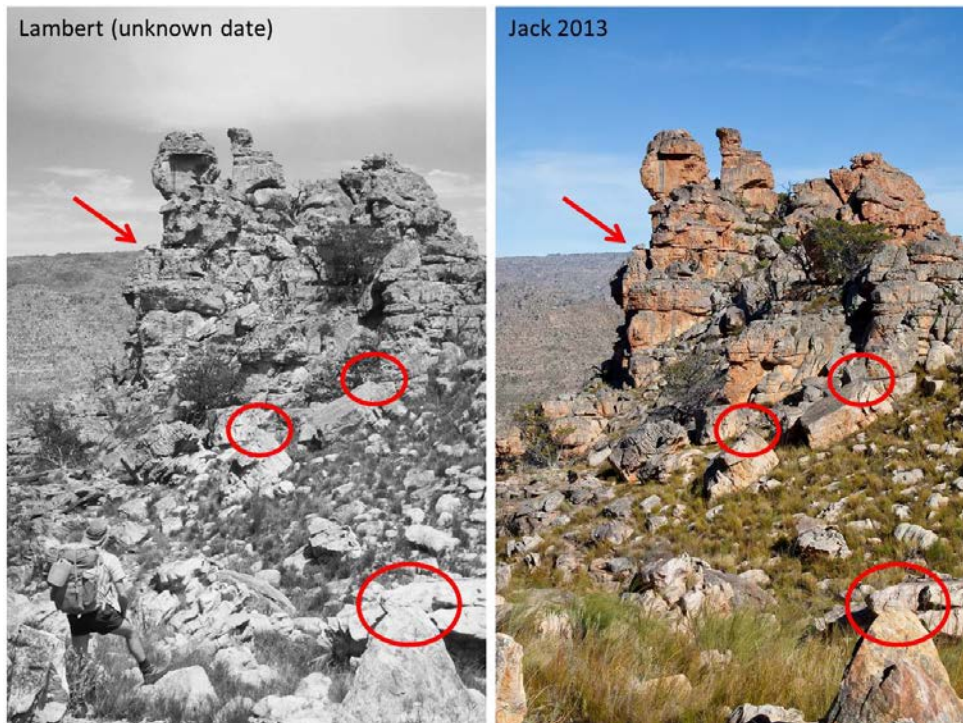
'Matched' historical and Google Earth images. This technique allows one to search 'virtually' for the photo-location and thereby generate rough GPS co-ordinates.

B. Fine-scale positioning (in the field)

You've found some matching features and you're pretty sure you're in the right area...well done! The hard part is over, but the effort you put into the next steps will make a huge difference to the quality of the repeat.

Once you are out in the field and have found the general area, you now need to hone in on ***exactly*** where the original photographer's camera was positioned in space. Patience and careful observation at this stage are critical, so take your time. Start by moving backwards/forwards/side-to-side in order to more closely match the relative position, size, and angle between objects you see in reality, with what you see in the historical image. Rely on ***well-defined fixed features*** such as large rocks, buildings, fence posts, telephone poles, large old trees, jagged mountain silhouettes, etc. Try to avoid using features that might have changed their position/grown in the intervening period.

[Tip: Especially useful are clearly defined objects that overlap each other from the photographer's viewpoint and are separated from each other by some distance (e.g. two large rocks at different depths in the photo). Such objects are easily identified by standing in the position occupied by the original photographer (your best guess at this stage is fine) and moving one's head from side to side. The objects that are most useful are those that move the most relative to one another. It is advisable to select more than one such pair of fixed features (the more the better) to align with each other.]



Paired arrows and ellipses indicate nearer features that overlap with features further away. The relative position of one feature to the other is a useful guide in finding the precise position of the original photographer.

2 TAKING THE REPEAT

You've taken time to match the relative position of several features and you're happy that you're in the same position in space as the original photographer. Great – now you're ready to snap the repeat!

- **Taking the repeat:** Get your camera ready, steady yourself as much as possible, zoom in or out so that your view extent is just a little bit wider than that of the historical photograph... and snap the photo!
- **Double check:** Check to see if you haven't cropped out a side accidentally and that you're generally happy with the picture; it's easier to retake it now than having to return. It might be worth taking a second photo as a back-up, just in case.

[Tip: If you have additional equipment like a tripod and a Digital Single Lens Reflex Camera you can achieve a much higher level of accuracy and photo quality. If you're a more experienced photographer and are interested in more technical detail, please read the instructions below.]

[Tip: Sometimes the original view has been partially or completely obscured by a tree/bush/miscellaneous object that has grown/fallen/been built in front of the original camera position, or a fence has been erected that doesn't allow access to the exact spot. Don't let that stop you from attempting the repeat. Set up a new photo location to the side of the obstruction that allows for an unobstructed view of the previous scene.]

Note: You can also take additional photographs (wide-angle, pan photos, tripod photos) to the main repeat photo. Please see page 6 below.

3 COMPLETING THE CITIZEN SCIENTIST REPEAT PHOTO DATASHEET

- **Complete Field Datasheet:** Fill out the empty fields below the *Original Photograph Metadata* on the Field Datasheet for each repeat photograph. GPS co-ordinates (preferably decimal degrees) are very useful for anyone wanting to find the location of the historical and repeat photo in the future, so if you have a GPS device, please record these details.
- **Record height of camera (cm):** This measurement should be recorded as the distance from the ground to the middle of the camera lens (an approximate distance will suffice if no measuring tape is available).
- **Mark the spot:** If the location allows, build a small rock cairn marking the **exact** spot on which you stood to take the photo. This will act as a precise reference to your location.

4 UPLOAD THE REPEAT PHOTO AND METADATA FROM FIELD DATASHEET

- **Complete metadata online:** Transcribe all your data from your Field Datasheet onto the online form available (http://rephotosa.adu.org.za/upload_repeat.php). You will need to login before doing this.

Note: *If you do not have a GPS, it is possible to pin point the location of where the repeat photo was taken using Google Maps, when you fill in the metadata online*

- **Upload repeat photo:** You now need to upload your repeat photograph(s) as a jpeg. The main repeat photo is the only 'compulsory' repeat photograph that you are required to upload. The additional photos are optional. The size limit for each photo is 10 MB.

Thank you for your contribution. Your repeat photo will now be available on the website for everyone to see.

EXPERIENCED PHOTOGRAPHERS

If you have a little more equipment and experience, you can achieve an even better repeat by following these guidelines.

ESSENTIAL EQUIPMENT

1. Digital Single Lens Reflex (DSLR) camera
2. Sturdy tripod (extendable to approx. 2 m with pan-tilt head & spirit level)
3. GPS device
4. Measuring tape (5 m)
5. Clipboard for holding A4 historical photo print & Field Datasheet

OPTIMAL CAMERA SETTINGS

ISO: 100 – the greatest amount of detail and the least amount of graininess or ‘noise’ in the digital image.

Aperture Priority (Av): f8 – the greatest clarity on modern lenses is found at mid-range apertures. The use of a tripod allows for slower shutter speeds in low light conditions.

PROCEDURE

Assuming you’ve followed the initial steps and have found where to position your camera in space such that you match the original photographer’s field of view.

- **Tripod setup:** Position your tripod up over the spot you’ve chosen and mount your camera on top. Adjust the tripod legs so that the camera mounting plate is as level as possible (so that you can stay on the same plane when taking panoramic shots to the sides). Some readjustment of the camera position will be required so that you’re in exactly the right spot. Take your time here as precision makes a big difference to the quality of the repeat.
- **Taking the repeat photo:** Now zoom to the approximate extent of the historical image and check if the edges of your view correspond to those of the historical photo. When you’re satisfied that the relative position, size and angle between features in the original and repeat match, and the edges of the field of view line up nicely, go ahead and snap the repeat.

[Tip: A useful trick to double-check your position is to fold the historical photo length-ways and width-ways to form a “+” in the centre of the A4 page on which the historical photo is printed. Now orientate your camera so that the centre of your field of view (marked in most SLRs when looking through the viewfinder) corresponds to the centre of the ‘+’ in the historical image.]

- **Additional photos:** Since you've taken the time to set your tripod up in exactly the right location, consider taking some extra photos that will help to contextualizing the original image *and* provide a more complete view of the landscape:
 - *Wide-angle view:* Zoom out to the full extent of your lens and take a wide-angled shot.
 - *Left and right pan view:* Pan 30° left and right to take wide-angled shots to either side of the repeat (15° pan if the photo is in portrait format). Additional landscape information will be captured by panning left or right.
 - *Tripod location (general):* Lastly, carefully de-mount the camera from the tripod head, take a few steps backwards and take a photo of the tripod location. This will help the next photographer to know where to place the tripod.
 - *Tripod location (specific):* Before removing the tripod, take a photo of the area where the legs of the tripod touch the ground. This will help the next photographer to know exactly where and how to position the tripod.

All that remains is to fill out the Field Datasheet (don't forget the GPS co-ordinate and height to the middle of the camera lens!), and then transcribe this information into our electronic online form

(http://rephotosa.adu.org.za/upload_repeat.php) and upload the repeat photos you have taken.

Only the 'main repeat' photo is obligatory to upload – the additional photos are optional.