

PhotoTrove User Manual

Theodore B. Ruegsegger

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1 PhotoTrove Overview

1.1 About this document

Copyright © 2018, 2019, 2020, 2022, 2023, 2024 Theodore B. Ruegsegger. The source components of this document are written in `asciidoc` markup and used to generate a finished manual in HTML, PDF or other formats as needed.

1.2 The Problem

Now that we all have digital cameras that never run out of film, more and more of us are finding it difficult to keep track of all our photos and videos. It's easy to accumulate tens of thousands of photos in a short time, and sticking them into labeled folders on our computers works about as well as when we kept our prints and negatives in shoeboxes. Why not use all this computer power to do the housekeeping for us?

1.3 What Is PhotoTrove?

PhotoTrove uses an industrial-quality database management system to keep track of every photo and video in a large collection, with detailed descriptions, timestamps and locations so you can find them easily, edit them, group them, compare them, arrange them and conveniently publish them. It includes a comprehensive search tool as well as easy handoff to your favorite photo-editing tools.

PhotoTrove runs as a web application on your local network, so multiple users can work independently and simultaneously. Anyone whose browser can see the PhotoTrove server¹ can view photo sets and albums, carry out searches and download individual photos, but only authorized users can change anything. Since all the data is in one place, it's easy to set up automatic backups so you can be confident your valued photos are safe.

1.4 What Isn't It?

PhotoTrove is designed to serve clients on an internal network (or a single machine), not the open Internet.

While PhotoTrove does let you assemble photos and videos from anywhere in your collection into albums for publishing, the resulting albums are nothing fancy, just a series of linked pages containing your photos, videos and captions that can be burned to a CD or DVD, copied to a thumbdrive or uploaded to a static website. There are many applications as well as web services available that let you arrange a set of photos into a visually stunning album. If that's what you want, use PhotoTrove to find and collect the particular photos you want and then hand them off to an album-finishing tool or service.

1.5 Features

With PhotoTrove and your favorite web browser, you can:

- Keep track of *all* your photos and videos, with descriptions, timestamps and locations.
- Edit the images and videos using your favorite tools, with special support for stitching panoramas.
- Make up descriptive tags and attach them to any photos you wish, to enable complex searches and group actions.
- Locate photos in your collection, searching by pretty much anything: date range, location, text in descriptions and captions, tags, etc. and then carry out group operations on all matching photos.
- Assemble albums by selecting images from multiple photo sets and adding layout and captions.
- Publish albums as collections of static HTML documents that you can copy to a CD, DVD or thumbdrive or upload to a website. Yes, they'll still play videos² in the browser, either way.

¹Server: Don't be put off by the word *server*; PhotoTrove can easily run on the same machine as your browser, perhaps as a virtual machine running on your laptop.

²Playing videos: At this writing, some browser/platform combinations (Microsoft Edge, most browsers on smartphones) still can't play Theora videos directly in the browser, but they can download the original format video and play it in a different application.

1.6 Sample Albums

[Here](#) and [here](#) are some sample albums produced using PhotoTrove and its predecessor the Photo Album Manager. Note that they make little use of style sheets, but that can easily be added. I welcome suggestions for a nice default style, or perhaps a set of user-selectable styles. Naturally, I also welcome URLs for sample albums to add to this section.

1.7 System Requirements

PhotoTrove is a web application written mainly in PHP using the Apache web server and the PostgreSQL database management system. It also makes use of the GraphicsMagick graphic tool collection, the ffmpeg video converter and the oggvideotools set, the MPlayer video player/analyzer, the ExifTool metadata reader, and traditional Unix tools like Bourne shell, cat, grep, sort, tr and sed.

For more details, see the [Architecture and Design](#) appendix.

1. To run the Trovester “appliance” you need only a computer with sufficient speed, memory and disk space running any of the more common operating systems. More specifics in the [Trovester](#) chapter.
2. To run your own PhotoTrove directly on a machine (real or virtual):
 - That machine must run some version of Debian or Ubuntu GNU/Linux if you’re going to use [EasyPhotoTrove](#) to set it up, because that’s what EasyPhotoTrove knows how to use. If you want to set up the whole thing yourself, any recent version of GNU or Unix that supports the required packages should do.

Tip

Another advantage of EasyPhotoTrove, which also applies to Trovester since it’s built with EasyPhotoTrove, is that you can [upgrade automatically](#) to the latest version of PhotoTrove.

- You’ll need sufficient disk space for all the images in your collection; this can vary widely depending how many photos and videos you take and at what resolution. Say a few tens of gigabytes to get going. Be sure to allow for backups!

1.8 License

This collection of program code and documentation is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 3 of the License, or (at your option) any later version.

This collection is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the [GNU General Public License](#) for more details.

You should have received a [copy](#) of the GNU General Public License along with this collection; if not, write to the Free Software Foundation, 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.

2 Photo Management Overview

Tip

The instructional sections of this manual use certain terms in very specific ways. To avoid confusion, refer to the [Glossary](#). For a pictorial representation, have a look at the [Data Model](#).

AS YOU ACQUIRE NEW PHOTOS (INCLUDING VIDEOS):

1. Get them into PhotoTrove:
 - a. By hook or by crook, upload the photos from the camera to the **originalphotos** area.
 - b. In your web browser, open PhotoTrove and log in³.
 - c. Import the photos as a photo set.
2. Edit the new photo set:
 - a. Look the photos over, rotate as needed, cull obvious rejects.
 - b. Set locations, enter descriptions.
 - c. Compare similar pictures, cull some more.
 - d. Edit individual photos offline, as needed.
 - e. Annotate the whole photo set.

FINDING PHOTOS:

- Browse photo sets
- Browse albums
- Search

ORGANIZING YOUR PHOTOS:

- Assemble a photo album:
 - a. Add photos to the album from thumbnail galleries of photo sets or search results.
 - b. Edit the photo album.
- Tag photos

SHARING PHOTOS:

- Share individual photos
- Publish an album:
 - a. Generate a publishable copy of the album.
 - b. “Burn” the copy to a CD or DVD or to a thumbdrive.
 - c. Upload the copy to a website.
 - d. Make your own Internet website.

SAFEGUARDING YOUR PHOTO COLLECTION:

- Set up backups:
 - a. Choose a backup strategy.
 - b. Set up automatic backups.
 - c. Test your backups.

³ Browser login: Unless otherwise noted, assume the user account has the required privileges to edit photos and albums and/or to publish albums, as the case may be. Your browser must allow Javascript and accept cookies from the PhotoTrove server and, if prompted, accept the self-signed security certificate.

3 Getting Photos into PhotoTrove

More and more devices can take pictures these days, and they store those pictures in many different ways, so we need to be flexible and resourceful in transferring those pictures to the PhotoTrove server. All that matters is the result:

1. The photos should be uploaded to the server in their own folder under the **originalphotos** folder (`/home/public/photos`
2. Each individual photo folder must have a name⁴ that
 - is a legal file name, that is, without spaces or special characters;
 - is unique;
 - sorts usefully among the other folders.

In order to upload photos to the PhotoTrove server, you must either:

- wrap the photos in a single archive file (zip or tar), which you can upload directly on the **Import a photo set** page, or
- have a user login account on the server and use some file transfer method (e.g., scp or one of the scripts below), or.

3.1 Accessing the Images on the Camera

Depending on the camera and client computer (the one from which you're connecting to PhotoTrove, not the server⁵) platform, there are several ways to access the photos. Most cameras have a folder named `dcim` or `DCIM`, per the **Digital Camera Images specification**, containing one or more subfolders with images.

- You can remove the flash memory from your camera (typically an SD or micro-SD card) and connect it to your client computer via a USB adapter or directly into a memory card socket, if your computer has one.
- You can connect your camera to your client computer via a USB cable; some cameras will connect immediately, some need to be turned on.
- Some cameras or smart phones may connect via Bluetooth or even directly to a wireless network.

Whatever you do, verify that your computer sees a `dcim` folder, preferably as the top of the mounted flash drive.

Tip

Some phones won't make their filesystems visible to a computer, so you'll need to use some other method to transfer the photos. For iPhones there are several file transfer apps that let you download the photos, typically as a zipped archive, to your regular workstation.

For what it's worth, I've been happy with the file transfer app actually named "File Transfer App" by Evgenii Shcherbinin. The app zips up the images and sets up a simple web server on the local network. I download the zip file to my desktop via a web browser, then upload it directly into PhotoTrove.



Caution

Newer iPhones store images in the **HEIC format** rather than the familiar **JPEG**. Alas, the rest of the world, including the tools underlying PhotoTrove, doesn't yet support HEIC, so you'll need to convert the files to JPEG. Somewhere in the settings you can tell the phone to do this automatically when transferring files, so you don't have to rely on your file transfer app to get it right.

⁴ Appropriate folder name: I recommend a timestamp, either the time when uploaded or that of the most recent photo, e.g., `20220614-180204`, so the folders sort nicely in the menu. Whatever format you choose, be consistent. Avoid spaces in folder and file names.

⁵Client: As noted previously, the client and server could be the same machine.

3.2 Transferring the Images to `originalphotos`

This also depends on server configuration, client platform and camera.

- **Upload as a zip or tar file:** This is probably the simplest since there's no need to log in directly to the server, and every platform can create such files easily (and smartphone apps like the File Transfer App mentioned above will do it for you). If you have a zip or tar file, you can skip the rest of this section and go directly to [Importing the Photos as a Photo Set](#), below.
- **`fotoxfer.sh` on GNU or Unix client:** If the `dcim` folder is the top folder and your client computer is running some version of GNU or Unix, you can run the `fotoxfer.sh` script. If it's not already installed, you can find it in the PhotoTrove distribution as `scripts/fotoxfer.sh`; copy it to the execution path (typically in `/usr/local/bin/`). The script will mount the flash drive, copy the images to the server under a folder with a unique (timestamped) name, verify that the copy succeeded, ask if you wish to erase the flash drive and, finally, unmount the flash drive so it's safe to remove it. For details, type: `fotoxfer.sh -h`

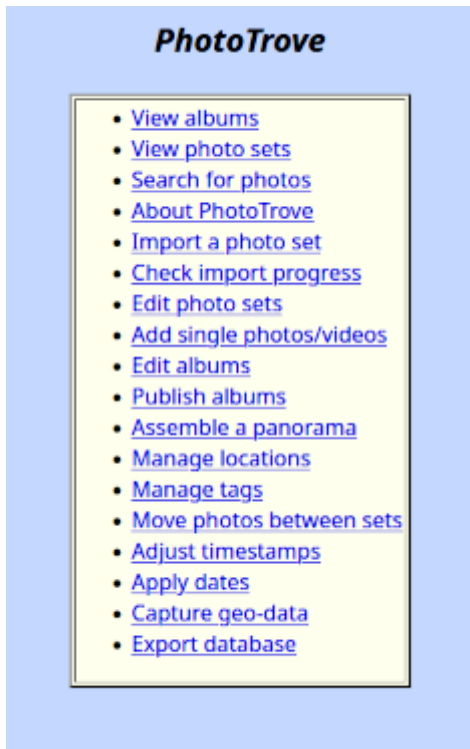
Tip

If, like me, you carry both a smart phone and a dedicated camera, you very likely will be making two photo sets over the same time period, covering the same subjects. After you import them, it may make sense to merge them, using the **Move photos between sets** option from the menu. Since both cameras and phones number images sequentially up to 9999 and then start over at 0001 (and many use the same prefix, typically `IMG_`, for the filenames), it can sometimes happen that the two photo sets contain images with the same filenames. I avoid name conflicts by using the `-l` option in the `fotoxfer.sh` script (Force filenames to lowercase) when importing camera images, and leaving phone images uppercase.

- **`fotoupload.sh` on server:** If the `dcim` folder is the top folder and your server is conveniently accessible, you can connect the camera's memory to the server's card socket or USB port, log in to the server and then run the `fotoupload.sh` script, which does exactly the same as `fotoxfer.sh` but locally. For details, type: `fotoupload.sh -h`
 - **MobaXterm on Windows client:** This [GPL](#) tool will take care of everything, including file transfers, logging in to the server, even displaying X11 applications. To transfer photos:
 1. Launch MobaXterm and start an SFTP session to the PhotoTrove server with initial directory `/home/public/photos`.
 2. In the remote window, make a new folder with an appropriate name⁴.
 3. Still in the remote window, open the new folder.
 4. Using your Windows file manager, navigate to the new photos and drag them into the remote window. MobaXterm will transfer the images over the network.
 5. Optionally, erase your camera's `dcim` folder.
 6. Release and remove the flash memory or camera.
 - **Other tools on Windows client:** There are numerous ssh and file transfer tools for Windows, for example, [PuTTY](#), [FileZilla](#), [WinSCP](#), and [Cyberduck](#), to name a few. If you're accustomed to a particular tool, use that to:
 1. Create a new folder under `/home/public/photos/` on the PhotoTrove server with an appropriate name⁴.
 2. Transfer the images from the `dcim` folder to the new folder.
 3. Optionally, erase your camera's `dcim` folder.
 4. Release and remove the flash memory or camera.
 - **MacOS X client:** SSH and file transfer tools include [Fugu](#) and [Cyberduck](#). If you're accustomed to a particular tool, use that to:
 1. Create a new folder under `/home/public/photos/` on the PhotoTrove server with an appropriate name⁴.
 2. Transfer the images from the `dcim` folder to the new folder.
 3. Optionally, erase your camera's `dcim` folder.
 4. Release and remove the flash memory or camera.
-

3.3 Importing the Photos as a Photo Set

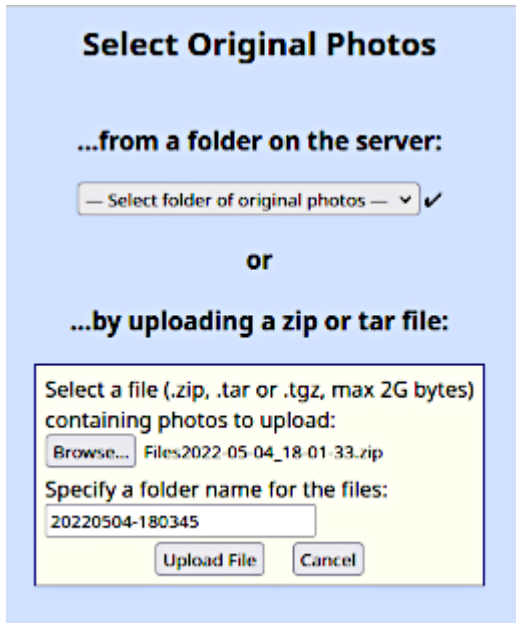
1. In your web browser, open PhotoTrove and log in³.



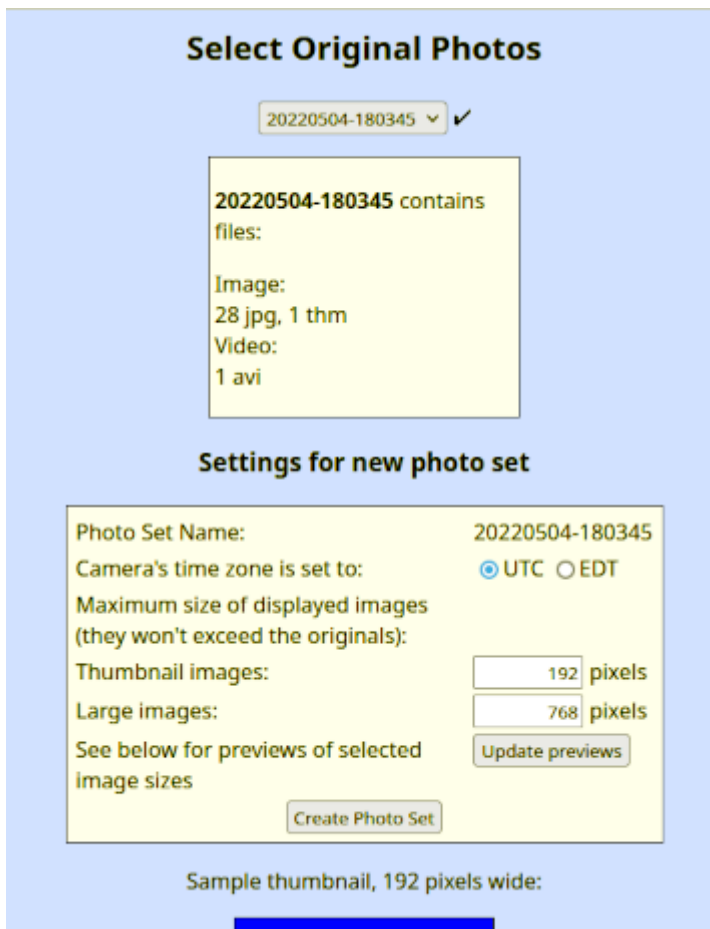
Tip

Take advantage of your browser's tab capability. Once you've logged in, open menu items in a separate tab. Not only does this leave the main menu available at any time, it allows you to recover from session time-outs by reloading the first tab, thereby repeating the login.

2. From the main menu, select **Import a photo set**.
 3. Select the desired folder from the menu, or select a zip or tar file to upload. If the latter, accept the suggested folder name or edit to suit. Once uploaded, the folder will appear in the folder menu. At that point there's no further need for the zip file, so you can delete it from your client.
-



- 4. Review the settings. In particular, if your camera's clock is set to local time rather than UTC (Coordinated Universal Time, aka Greenwich Mean Time), select the local time zone. If your camera is using some different time zone, don't worry: you can adjust times and timezones later. Unless you never travel, I recommend setting your camera to use UTC/GMT without adjusting for daylight saving. This isn't an option for smart phones, which always use the local time zone wherever they are.



Tip

PhotoTrove comes “out of the box” with the default time zone set to UTC. You can change this by editing the file `/home/web/webroot-ssl/trove/local/loc_env.php` and changing:

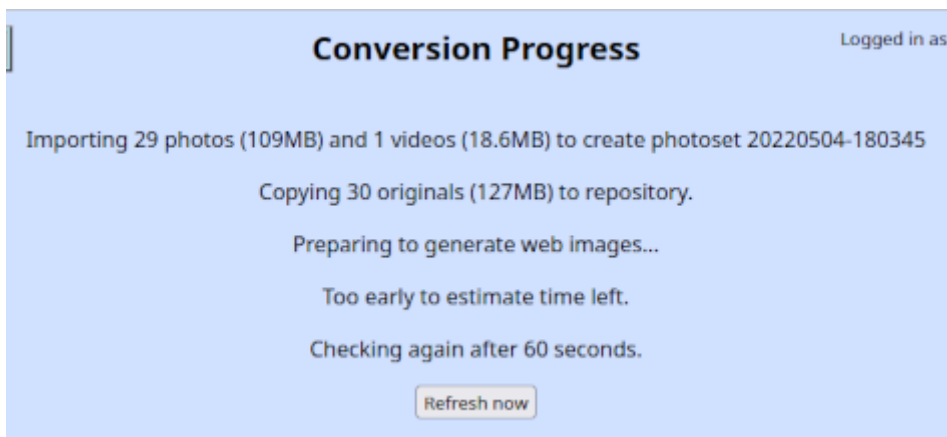
```
define ("DefaultCameraTimeZone", "UTC");  
//define ("DefaultCameraTimeZone", LocalTimeZone);
```

to:

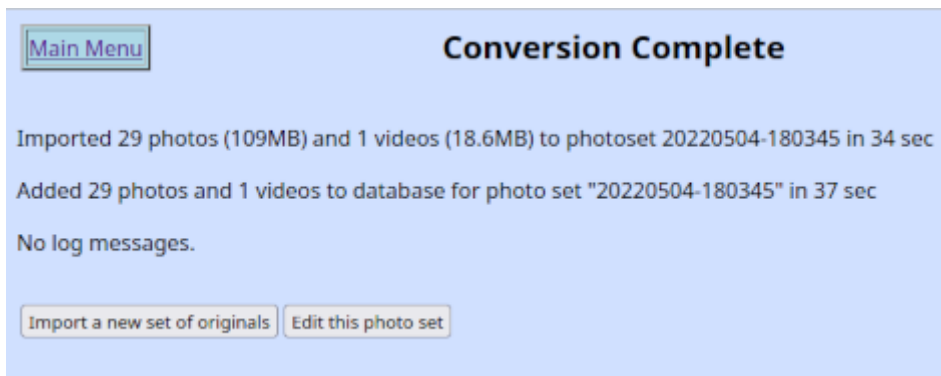
```
//define ("DefaultCameraTimeZone", "UTC");  
define ("DefaultCameraTimeZone", LocalTimeZone);
```

(the double-slash makes the line a comment).

5. Click **Create Photo Set**. It will cook for a while, depending how many photos or videos are in the set, how large they are, and how fast your server is.



6. When it finishes, you can edit the new photo set or import another one.



4 Editing a Photo Set

Open the Photo Set Worksheet page, either by clicking **Edit this photo set** after importing it or by selecting **Edit photo sets** from the main menu and selecting the desired set.

4.1 Editing Many Photos

The screenshot shows the 'Photo Set Worksheet' interface. At the top, there is a 'Main Menu' button and a user login status 'Logged in as xyzzy. Log out'. The main heading is 'Photo Set Worksheet'. Below this, it states 'Selected 4 photos in 1 specified range.' There are two dropdown menus: 'Select photo set:' with the value '20220504-180345' and 'Sort photos:' with radio buttons for 'by time' (selected) and 'by place and time'. A section titled '29 photos' includes a checkbox for 'Hide photos with' and several sub-checkboxes for 'location', 'description', 'date/time', and 'any tag' already set. Below this are three buttons: 'Select All', 'Select Range', and 'Clear Selections'. The interface is divided into several editing sections, each with a label on the left and a form on the right: 'Assign this location to selected photos:' with a 'Where taken:' dropdown (set to '(unknown)') and a text input for 'If "other", specify:' containing 'Boston MA'; 'Assign this description to selected photos:' with a 'Description:' text area; 'Add selected photos to this album:' with an 'Album:' dropdown (set to '— Select album —') and a 'New Album name:' input; 'Tag selected photos:' with a 'Tag name:' dropdown (set to '— Select tag —') and a 'New tag name:' input; 'Turn selected photos:' with radio buttons for '90° Right', '90° Left', and '180°'; and 'Delete selected photos:' with a warning message 'This is final, and can't be undone. Be sure!' and a 'Delete' button. At the bottom, there is a thumbnail gallery of photos and videos. The first row shows four thumbnails, each with a checked checkbox and a filename: 'LDT sta_8693.jpg', 'LDT stb_8694.jpg', 'LDT stc_8695.jpg', and 'LDT std_8696.jpg'. The second row shows four thumbnails, each with an unchecked checkbox and a filename: 'LDT img_5498.jpg', 'LDT img_5499.jpg', 'LDT img_5500.jpg', and 'LDT mvi_7228.thm'. The third row shows four thumbnails, each with an unchecked checkbox and a filename: 'LDT img_8178.jpg', 'LDT img_8179.jpg', 'LDT img_8180.jpg', and 'LDT img_8181.jpg'.

Below the action widgets you'll see a thumbnail gallery of all the photos and videos in the set. Things you can do here:

- **Select photos:** You can click the checkboxes (or the filenames) of individual thumbnails, or you can select one or more sequential ranges of thumbnails by selecting the first and last of each range, then clicking **Select Range**, or you can click **Select All**.



Caution

Before carrying out any actions, scroll down and verify that you really did select the pictures you intended.

- Clear all selections by clicking **Clear Selections**.

Tip

This is the safest way to reload the page.

- Carry out actions on all selected photos. Assigning locations and descriptions, turning and deleting photos are self-explanatory. Albums and tags are discussed in more detail later.

The screenshot shows a light blue interface for editing 29 photos. At the top, there are three buttons: "Select All", "Select Range", and "Clear Selections". To the right, a checkbox is checked for "Hide photos with" followed by options for "location", "description", "date/time", and "any tag" already set.

The editing options are organized into several sections:


- Assign this location to selected photos:** A dropdown menu shows "(unknown)". Below it, a text input field contains "Boston MA" and an "Apply" button.
- Assign this description to selected photos:** A "Description:" label is followed by a large text area and an "Apply" button.
- Add selected photos to this album:** A dropdown menu shows "-- Select album --". Below it, a "New Album name:" text input field is followed by an "Append" button.
- Tag selected photos:** A dropdown menu shows "-- Select tag --". Below it, a "New tag name:" text input field is followed by an "Apply" button.
- Turn selected photos:** Three buttons are shown: "90° Right", "90° Left", and "180°".
- Delete selected photos:** A yellow warning box contains the text "This is final, and can't be undone. Be sure!" and a red-bordered "Delete" button.

Tip

For convenience when assigning locations, descriptions or tags, you can hide from the gallery all the thumbnails that already have them assigned.

4.2 Editing Individual Photos

Clicking any individual thumbnail opens the webpic view in a separate tab.



What:

When:

Where:
[N 42° 18.816' W 072° 39.313' / 72.4m](#)

If "other," specify:

Things you can do here:

- Assign location and description, rotate, and delete, just as in the thumbnail gallery.

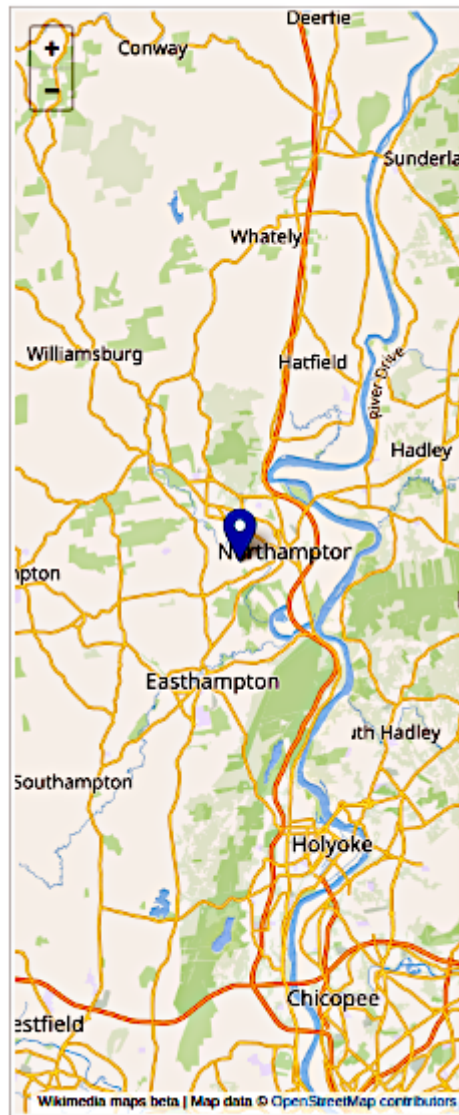
Tip

Many cameras and smart phones now use the Global Positioning System (GPS) to include location information (latitude, longitude, altitude) in each photo's metadata ("geotagging"). If the image includes geolocation data, the latitude, longitude and altitude will appear under the location line as an active link. Clicking it will open a web application called GeoHack which lets you see the coordinates in your choice of dozens of mapping services:

Global/Trans-national services

Wikimedia maps

Service	Map	Satellite	More
ACME Mapper	Map	Satellite	Topo, Terrain, Mapnik
Apple Maps (Apple devices only)	Map	Satellite	
Bing Maps	Map	Aerial	Bird's Eye
Blue Marble Navigator		Satellite	Night Lights
Copernix	Map	Satellite	
Fourmilab		Satellite	
GeoBios		Satellite	
GeoNames		Satellite	Text (XML)
Google Earthnote		Open	w/ meta data
Google Maps	Map	Satellite	Terrain, Street View, Earth Timelapse
GPS Visualizer	Map	Satellite	Topo, Drawing Utility
HERE WeGo	Map	Satellite	Terrain
MapQuest	Map	Satellite	
NASA WorldWind		Open	
OpenHistorical Map	Map		Nominatim (reverse geocoding)
OpenStreet Map	Map		more maps, Nominatim (reverse geocoding), OpenStreetBrowser
Sentinel-2		Open	
maps.vlasenko.net			Old Soviet Map
Waze	Map		Editor, App: Open, Navigate
Wikimapia	Map	Satellite	+ old places
WikiMiniAtlas	Map		
Yandex Maps	Map	Satellite	

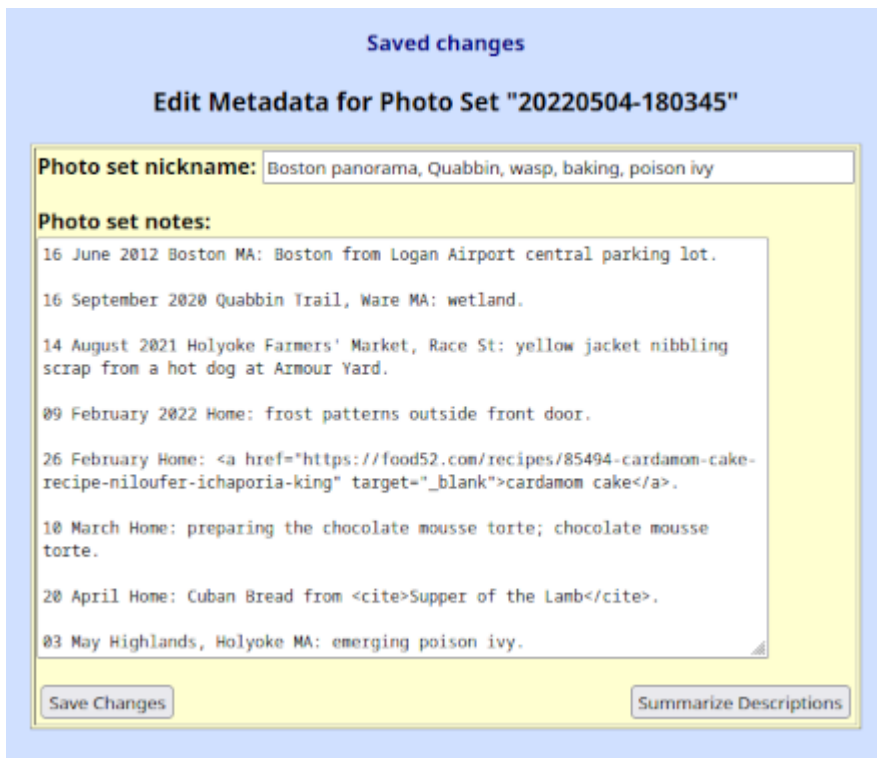


- Assign a timestamp. Normally the import process extracts the timestamp from the photo's EXIF data, but some photos won't have that. If you need to adjust the time for many photos because the camera's clock or time zone was off, use the **Adjust Timestamps** tool from the main menu. If you need to assign a date to a lot of photos, for example, scanned slides, use the **Apply Dates** tool.
- Download the full-size image, for example, to edit it.
- Replace the image with a new version.

Note that in the webpic view, clicking on the right or left margin of the image moves forward or backward through the photo set. For videos, small navigation arrows below the video server the same purpose.

Finally, back on the Photo Set Worksheet page, you can click the **Edit Notes** button to annotate the photo set as a whole. You can enter a nickname, which is any descriptive text that helps you identify the set. You can also enter any notes you wish. If you've

entered locations and descriptions for all the photos, the **Summarize Descriptions** button will be a good start. Be sure to save changes.



The screenshot shows a web interface titled "Saved changes" and "Edit Metadata for Photo Set '20220504-180345'". It features a form with the following fields:

- Photo set nickname:** Boston panorama, Quabbin, wasp, baking, poison ivy
- Photo set notes:** A text area containing several entries:
 - 16 June 2012 Boston MA: Boston from Logan Airport central parking lot.
 - 16 September 2020 Quabbin Trail, Ware MA: wetland.
 - 14 August 2021 Holyoke Farmers' Market, Race St: yellow jacket nibbling scrap from a hot dog at Armour Yard.
 - 09 February 2022 Home: frost patterns outside front door.
 - 26 February Home: [cardamon cake](https://food52.com/recipes/85494-cardamon-cake-recipe-niloufer-ichaporria-king).
 - 10 March Home: preparing the chocolate mousse torte; chocolate mousse torte.
 - 20 April Home: Cuban Bread from *Supper of the Lamb*.
 - 03 May Highlands, Holyoke MA: emerging poison ivy.

At the bottom of the form are two buttons: "Save Changes" and "Summarize Descriptions".

4.3 Checklist for a New Photo Set

1. Select and rotate any images that need it.
2. Look the photos over and cull obvious rejects.
3. Set the locations, selecting from the menu or creating new ones as needed.
4. Enter the descriptions.
5. Compare similar pictures, select the best, delete the others.
6. Download, edit and replace individual photos as needed.
7. When all are done, annotate the photo set with nickname and notes.
8. Search for similar images in other photo sets, compare and cull.

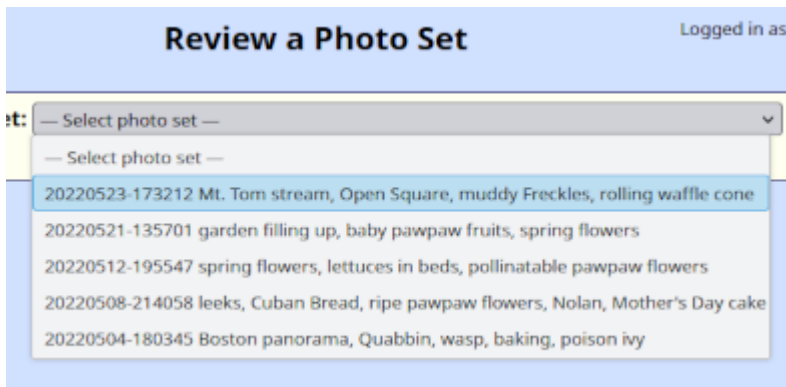
5 Finding Photos

Anyone whose web browser can see PhotoTrove can look through the entire collection, no login required.

5.1 Browsing Photo Sets

Much of the time, we look for photos taken around the same time, in photo sets. If we've named the sets with timestamps and given them helpful nicknames, they're easy to find.

From the main menu, select **View photo sets** and scroll through the menu.



When you select a set, you'll see the notes followed by the thumbnail gallery.

[Main Menu](#) **Review Photo Set "20220523-173212"** Logged in as [xyzyy](#). [Log out](#)

Select photo set: 20220523-173212 Mt. Tom stream, Open Square, muddy Freckles, rolling waffle cone ▾

Sort photos: by time by place and time

10 photos in set

13 July 2021 Mt. Tom, Holyoke MA: cascading stream at start of Lake Bray trail just above parking lot.

30 July Open Square, Holyoke MA: generator atop the "D wheel" turbine.


13 March 2022 Farmington NH: Beach at Baxter Lake, iPhone panorama.

27 March Northampton Dog Park: puffballs.

06 April Northampton Dog Park: papillon Freckles after wallowing in mudhole.

22 May Batch Ice Cream, Longmeadow MA: brown sugar, bourbon and pecan ice cream in waffle cone; how the freshly-baked waffle gets rolled into a cone.

[Edit Set](#)

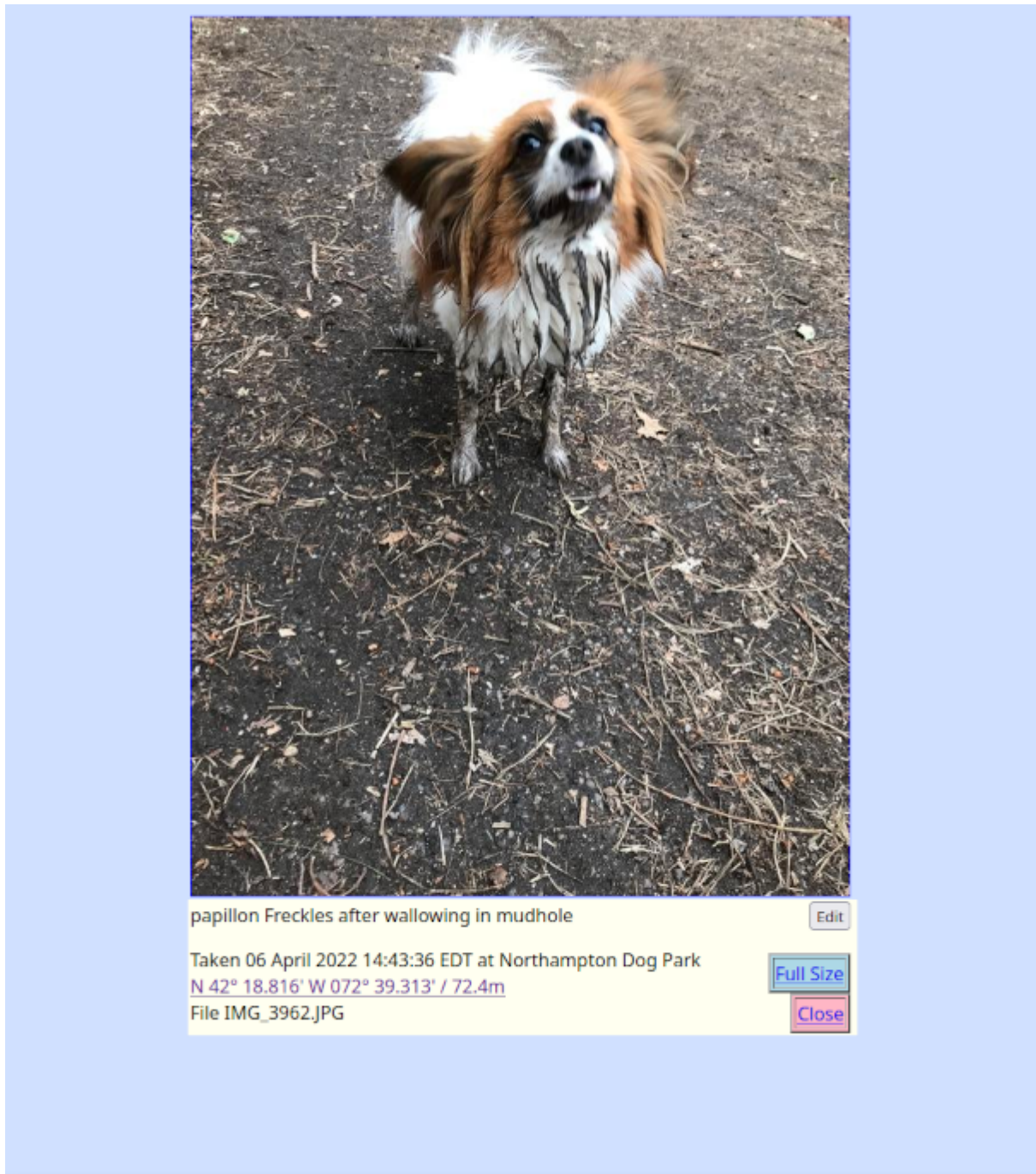


IMG_1671.jpg IMG_1944.jpg IMG_3829.JPG IMG_3920.JPG

IMG_3923.JPG IMG_3957.JPG IMG_3961.JPG IMG_3962.JPG

If you're logged in, you'll see an **Edit Set** button to the right of the notes. Clicking that will open the familiar Photo Set Worksheet page.

Clicking on an individual thumbnail opens the webpic view (but without the editing widgets).



5.2 Browsing Photo Albums

To show off our photos, we look through our photo albums. From the main menu, select **View albums** and scroll through the menu. When you select a photo album, you see the finished product.

Creating and editing photo albums is covered below.

5.3 Searching

The real power of PhotoTrove is the search screen, **Search for photos** in the main menu. You can specify just about any criteria and find all photos that match.

Logged in

Search for Photos

When taken: between and

Where:

Text:

In: description caption in any album Match case

Tagged with: any of: all of: none of: **and tagged with:** any of: all of: none of:

— Select one or more tags —

- component
- greatest hits
- panorama
- panorama-to-do
- possible purchase?
- private
- published
- recipe
- record

— Select one or more tags —

- component
- greatest hits
- panorama
- panorama-to-do
- possible purchase?
- private
- published
- recipe
- record

Is video: yes no either

Is in any album: yes no either

File name: (partial ok) Match case

Description is: blank nonblank either

Date/Time is: unset set either

Limit results: to matches Display only first and last matches

Sort photos: by time by place and time

After you press **Search** you'll see the familiar thumbnail gallery of matching photos. If you're logged in, you'll see the selection buttons and action options above the gallery.

If your search finds more matches than the specified limit (**Limit results** near the bottom) PhotoTrove automatically checks the box **Display only first and last matches** which not only does precisely that but, if you're logged in, automatically selects *all* matching photos for action.

6 Organizing Photos

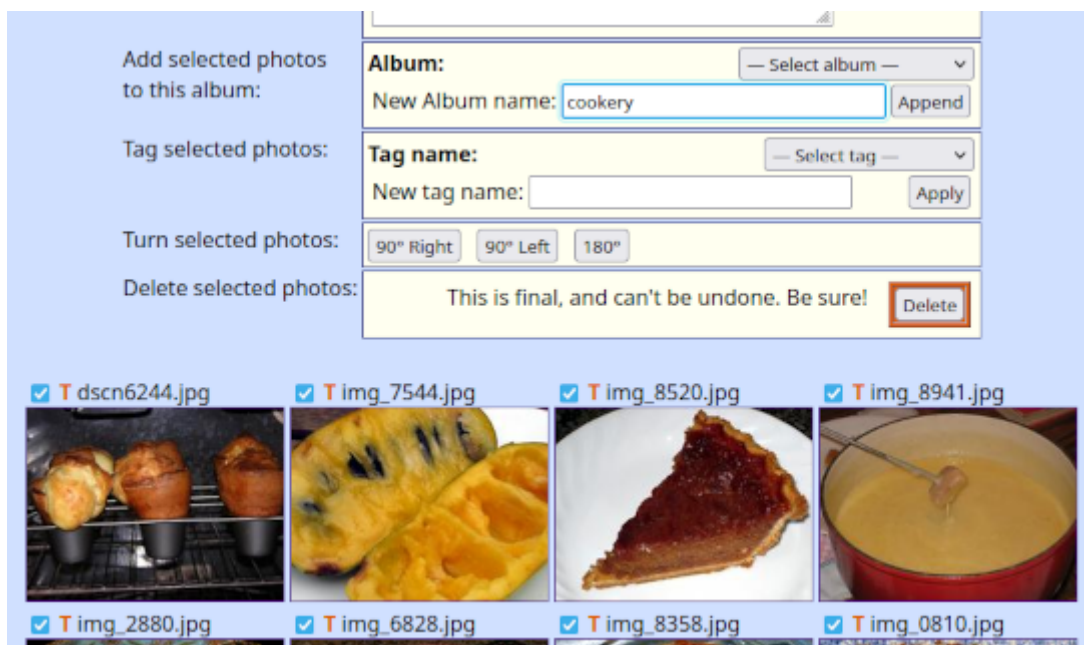
6.1 Assembling a Photo Album

Having all your photos neatly annotated and accounted for is better than having a shoebox full of prints, but it doesn't offer much flexibility when you want to display them. For that, you'll want to organize your best photos into albums. Your audience can browse albums directly in PhotoTrove, or you can upload them to a static website, or you can burn them to a CD, DVD or thumbdrive, viewable on any computer.

All album operations (except just viewing one) assume you're logged in to PhotoTrove.

To create an album: You could just select **Edit albums** from the main menu, type an album name⁶ into the field at the top and click **Create**, but most often you'll just create an album on the fly as you add photos to it:

1. Open a thumbnail gallery, either a photoset worksheet page or search results;
2. Select one or more photos;
3. In the **Album:** action option above the gallery, enter the album's name⁶ in the field labeled **New Album name**. This is just convenient identifier for the album, not to be confused with its title.



4. Click **Append**.

Appended 23 photos to page 0 of album "cookery": dscn6244.jpg, img_7544.jpg, img_8520.jpg, img_8941.jpg, img_2880.jpg, img_6828.jpg, img_8358.jpg, img_0810.jpg, img_3339-crop.jpg, img_3343-crop.jpg, img_0708.jpg, img_4559.jpg, img_6976.jpg, img_0807crop.jpg, img_1383.jpg, img_5531.jpg, img_6333.jpg, img_1581.jpg, img_1586.jpg, img_1516.jpg, img_3861.jpg, IMG_6735.JPG, img_5954.jpg

Adding photos to an already-existing album works exactly the same way, except that you choose the album from the menu.

Editing an album:

From the main menu, open the **Edit albums** tool and select the desired album. The Album Worksheet page displays all the photos on Page 0.

⁶ Album name: An album name must be a legal file name, an alphanumeric followed by alphanumerics, underscores or hyphens, with no embedded spaces or "weird" characters. Not to be confused with the album's title, which can be pretty much anything.

[Main Menu](#)

Album Worksheet

Logged in as [xyzyz](#). [Log out](#)

2022-Jun-26: cookery ▾

or

Enter name for new album

Create

or

Delete Album "cookery"

Sort: most recent first by name

Show **archived** albums in menu

Album is archived

cookery

Rename

[Edit Page Text and Format](#)

Browse a photo set in a separate window to add new photos to the album ▾

[View Album](#) **23 photos** 24 Jul 2005–19 Feb 2021 Display pages: 0 All Pages No Pages All Photos

For all selected photos:
[Select All](#) [Select Range](#) [Clear Selections](#)

Assign this caption: **Caption:** [Apply](#)

Revert caption: (to original description) [Revert](#)

Append to caption:

Day Sun Sunday

Date 26 Jun 2022 Jun 26, 2022 06/26/2022 2022-06-26

Time 08:30pm 20:30

Time Zone: local UTC

Location Include lat/lon/alt (if present)
[Append](#)

Move to: end of page [Move](#)


Drop from album:

[Drop](#)

Staging Area ("Page 0"): 23 photos


1 ▾
24 July 2005

dscn6244.jpg




2 ▾
22 September 2009

img_7544.jpg




3 ▾
19 October 2009

img_8520.jpg




4 ▾
1 November 2009

img_8941.jpg




5 ▾
10 June 2010

img_2880.jpg




6 ▾
26 February 2011

img_6828.jpg




7 ▾
22 April 2011

img_8358.jpg



8 ▾
2 August 2011

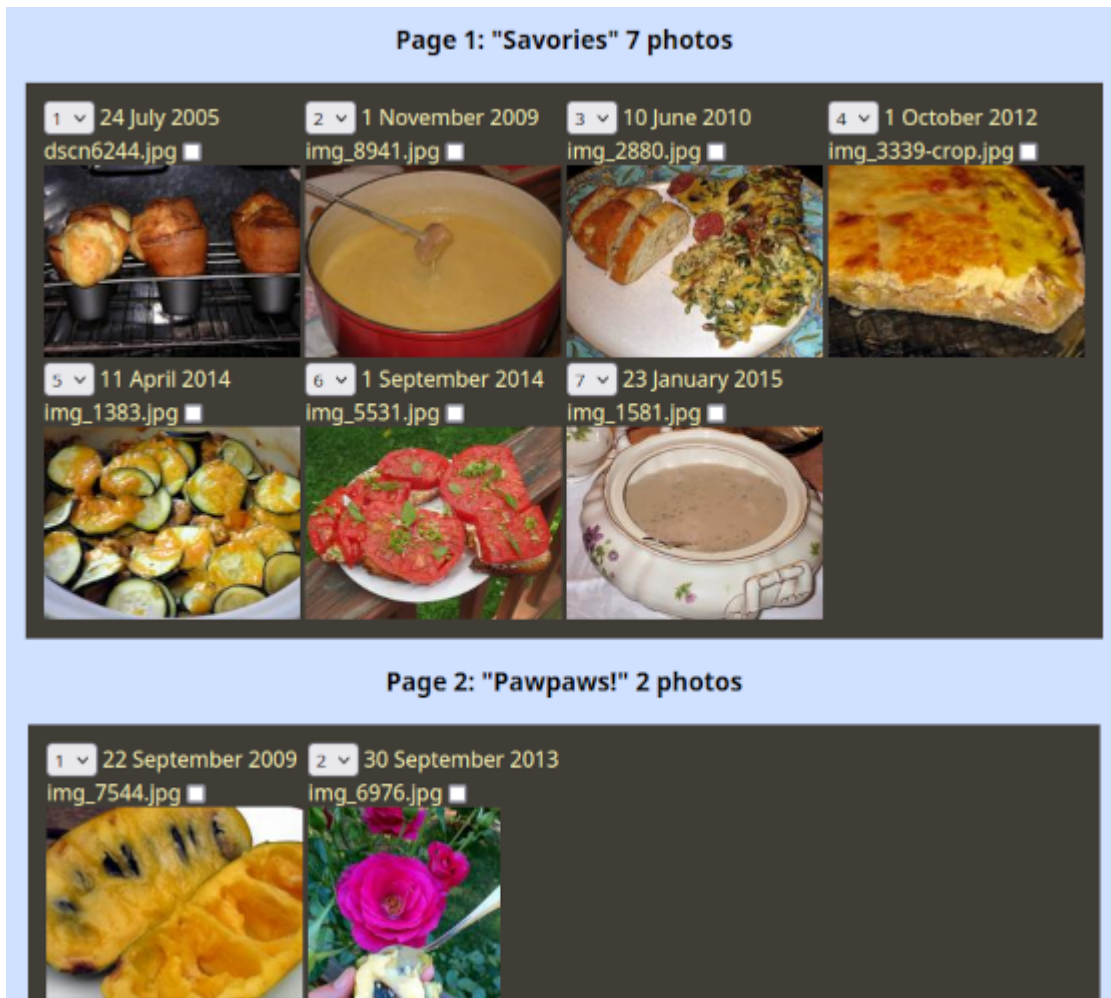
img_0810.jpg



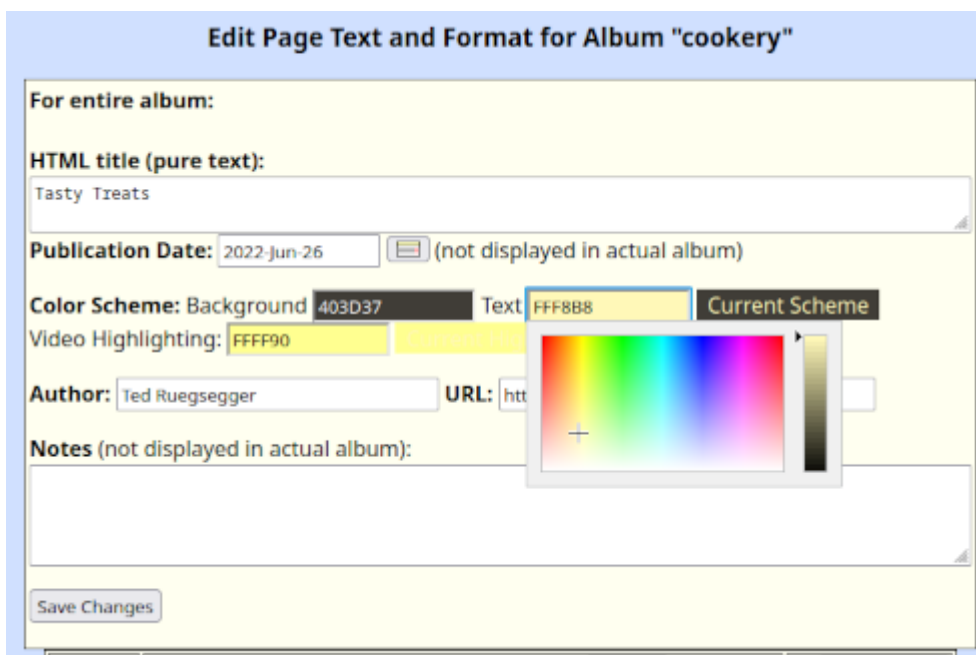
Page 0 serves two purposes:





- It's a convenient holding area for photos appended to the album, so you can move them to other pages.
- It serves as the front, or title, page for the album, displaying no photos except an optional title picture.

You create album pages by moving photos to them. You can rearrange the photos on a particular page using the drop-down position numbers in the corner of each thumbnail.

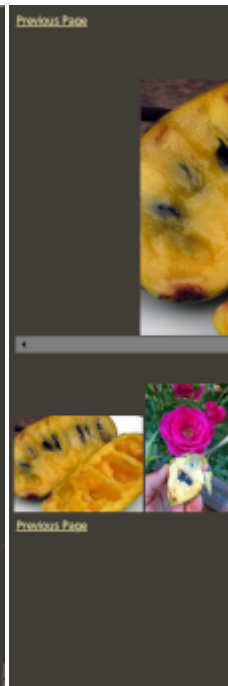


Of particular interest is the **Edit Page Text and Format** button, which opens a separate tab where you can set the color scheme for the entire album and heading, text, and title picture for each page.



Page 0	1 Pictures on page. Title picture is number <input type="text" value="1"/>	<input type="button" value="Save Changes"/>
Title Picture Caption:	pastelitos de guayaba y de aceituna de otoño (puff-pastries with cream cheese and either guava paste or autumn-olive jam)	
Page Heading (markup ok):	Tasty Treats	
Page Text:	A Selection of Favorites from the Kitchen	
Page 1	7 Pictures on page. Title picture is number <input type="text" value="2"/>	<input type="button" value="Save Changes"/>
Title Picture Caption:	fondue Neuchâteloise	
Page Heading (markup ok):	Savories	
Page Text:		
Page 2	2 Pictures on page. Title picture is number <input type="text" value="1"/>	<input type="button" value="Save Changes"/>
Title Picture Caption:	ripe, tasty pawpaw flesh	
Page Heading (markup ok):	Pawpaws!	
Page Text:		
Page 3	14 Pictures on page. Title picture is number <input type="text" value="9"/>	<input type="button" value="Save Changes"/>
Title Picture Caption:	autumn olive bars	
Page Heading (markup ok):	Sweets	
Page Text:		

You can, at any time, see how the album will appear to others by clicking **View Album**.



6.2 Tagging Photos

There are innumerable ways to group photos, some temporary:

- Candidates for an upcoming contest;
- Timestamps to adjust;
- Panorama segments to stitch together;

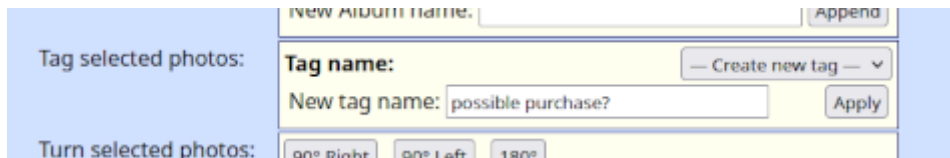
Some long-term:

- Legal records;

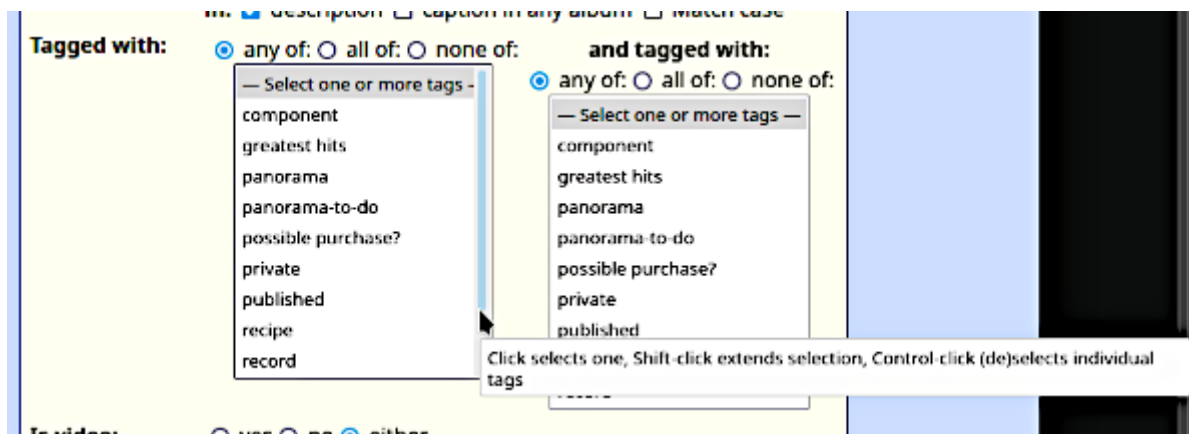
- Recipes;
- Menus of favorite restaurants;
- Favorites.

PhotoTrove lets you make up any number of descriptive tags, attach them to any photos you wish, and then treat the tagged photos as a group:

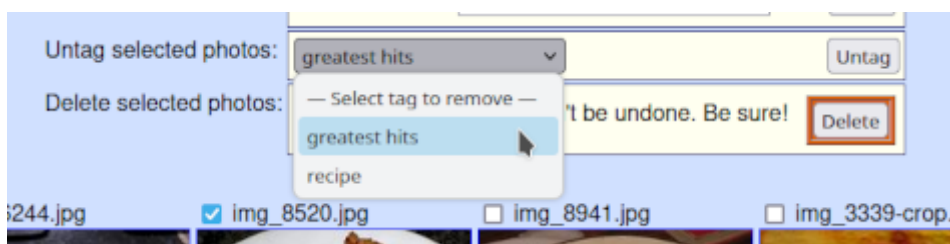
- Like albums, you create tags on the fly in the **Tag name** action option above any thumbnail gallery.



- Some tools, like **Move photos between sets**, **Adjust timestamps**, **Apply dates**, and **Capture geo-data** use tags to identify the photos in question.
- The **Assemble a panorama** tool looks for the predefined tag “panorama-to-do”.
- The **Search for photos** tool lets you combine tags and logical operators to make complex queries. It has two drop-down menus of tags, and in each one you can select “any of”, “all of”, or “none of” multiple tags (just hold down the Control key to select more than one from the menu). All the other search criteria are still available, as well.



- To remove a tag from one or more photos, use the **Search for photos** tool to select them. The action options above the thumbnail gallery will include an option to “Untag selected photos”.



7 Sharing Photos



Caution

Many cameras and smart phones now use the Global Positioning System (GPS) to include location information (latitude, longitude, altitude) in each photo's metadata ("geotagging"). This is a valuable capability but also poses a risk: When you share photos on social media or publish albums, be advised that anyone can extract this information and determine, for example, exactly where you live. There are various tools available to strip geotagging, or all metadata, from photos; details depend on your platform and the specifics of your photos and videos.

Tip

Recent versions of PhotoTrove can automatically strip geotagging metadata from photos and videos, as described in **Publishing a Photo Album**, below.

7.1 Sharing Individual Photos

It's easy to download an individual photo from PhotoTrove to your client machine, whence you can email it, upload it to a website, or post it to your favorite social media site. You need not be logged in to do it.

In any thumbnail gallery, click on the desired image to open the webpic view. You now have a choice:

- For many uses, the webpic-sized image you're seeing in front of you is perfectly adequate; since it's usually much smaller than the full-size image, it saves on space and network bandwidth. To download the webpic, just click right in the middle of the image and follow your browser's instructions.
- Sometimes only the full-size image will do. To fetch that, click the **Full Size** link and follow your browser's instructions.

For videos, there's a similar choice, not of size, but of the video/audio encoding scheme (or "codec").

- The webpic view is in the Ogg Theora format, one of the few currently playable directly in browsers that support HTML5². To download that, right-click in the middle of the video window, select something like "Save video as..." and follow your browser's instructions.
- You can also download the video in the original codec recorded by the camera. To fetch that, click the **Original-Format Video** link and follow your browser's instructions.

7.2 Publishing a Photo Album

Once you have an album built, you can view it at any time; the separate pages will be generated on demand. You can also use PhotoTrove to write all the data to its own folder as a set of static web pages, which you can then upload to a static website or burn to a CD, DVD or thumbdrive. And yes, everything will still work, including the video player.

Note

Since the album is just a set of relations in the database, it takes up negligible disk space. Even if you make a static album, all the images are links, rather than copies of the image files, so there's still no significant burden on your resources. On the other hand, when you copy the static album elsewhere, none of this applies, and it will take up more space.

To publish an album:

1. Log in³ to PhotoTrove, open the **Publish albums** tool and select the desired album.

Write Photo Album "cookery" to a Folder

2022-Jun-27: cookery ▾
Sort: most recent first by name

[View album "cookery" in separate window](#)

Include Full-Size Images
 Remove Geotagging Metadata

[View index of xyzy's written albums, in separate window](#)

Tip

PhotoTrove can automatically strip geotagging metadata from photos and videos and does so by default unless you uncheck the box. This affects only the published copies of the images; the original photos and videos in the photo sets are unchanged, retaining geotagging if present.

I've tested this with iPhone and Android photos and videos as well as the internally generated .ogg videos, but can't guarantee it will work with all formats. If you find a photo or video whose geotagging PhotoTrove can't remove, please give me a sample so I can find a way to handle it.

2. Click the link to view the album in a separate window or tab.
3. If space is short at the final destination, you can opt to omit the full-size images.
4. Click **Write**.

Write Photo Album "cookery" to a Folder

**Wrote all files for album cookery in folder albums/xyzy/cookery/,
included full-size images, removed geotagging metadata, if any.**

2022-Jun-27: cookery ▾
Sort: most recent first by name

[View album "cookery" in separate window](#)

Include Full-Size Images
 Remove Geotagging Metadata

[View index of xyzy's written albums, in separate window](#)

5. Click the link to view the written album and verify that it looks identical to the regular generated one.

You can write more than one album, in which case PhotoTrove automatically updates the `index.html` file with links to each one.

To retrieve a written album from PhotoTrove server, select the one you want from the **Download ZIP file of an album** menu, then click **Download**.

Note

If you're downloading more than one album, be sure to copy the `index.html` file as well.

**Important**

Written albums can get pretty big, especially if they contain videos. Even in these days of abundant memory and fast networks, they can take up significant time and space. Don't be surprised if PhotoTrove takes several minutes building the ZIP file and another several minutes once you've said where to download it.

At this point you can unzip the file and

- Transfer the files to a website;
- Burn the album(s) to a CD or DVD;
- Copy the album(s) to a flash drive.

Tip

When you've copied the album files where you want them, there's no particular reason to keep the written album files on the server, since you can regenerate them whenever you wish. The **Publish albums** page has a convenient feature that deletes selected written albums and adjusts the `index.html` file accordingly.

If you'd like to display the album on the web but don't have access to a website, you have some options:

- Various organizations offer free web hosting. One I like is sdf.org aka freeshell.org aka paunix.org, which offers much more and is worth a look in any case.
- Paid web hosting is getting less and less expensive, but is still a bit much just to display photos occasionally.
- If you know what you're doing, you can run your own webserver and make it visible to the Internet by tweaking your firewall settings for port-forwarding. Be careful; if possible, set up a "DMZ" with no access to your internal network.
- Thanks to a recently-released program called ngrok, you can run a webserver on your own local network, behind your firewall, and still make it visible to the internet, without the tricky and risky business of tweaking your firewall for port-forwarding. Since web service doesn't call for much processor horsepower, you can use any spare machine for this, or a virtual machine, or something like the credit-card-sized [Raspberry Pi](http://raspberrypi.org). Like the PhotoTrove server, the web server won't need a monitor, keyboard or mouse, at least not after you've finished setting it up.

**Warning**

These options are for displaying published albums on the web, *not* your PhotoTrove server itself.

8 Safeguarding the Collection

Be sure to have some reliable method of backup and recovery for your photo collection that doesn't depend on conscientious, repeated actions by human beings; it should be as fully automated as possible.

And don't forget to include database dumps (the data exported to a structured text file) in the backups.

8.1 Dumping the Database

When you're logged in, it's a good idea to click the **Export database** tool in the main menu every so often, and certainly before you log out at the end of a session. This saves the entire database as a specially-formatted text file from which the database management system can rebuild everything. Database dumps will accumulate under `/home/public/dumps/` but don't worry; older ones get purged so there will never be more than 8 dump files.

8.2 Backup Strategies

You need a place to save the photos and database dumps.

- The simplest solution is to attach an external disk drive. A nightly `cron` script should dump the database, mount the drive, mirror all the relevant files on it and then unmount the drive.
- If you have another computer with adequate disk space, you could use it as your backup server (or you could dedicate a machine for this purpose). Again, a nightly `cron` script should dump the database and then mirror the files over the network using `rsync` or something similar. You'll need some ssh key-management system, like `keychain`, to allow unattended yet secure transfers.
- As long as you're doing your backups over a network, you may as well use a computer that's geographically separated, like a friend's house. `rsync` uses `ssh` to transfer the files over an encrypted tunnel. Of course, file transfers over the Internet are a lot slower than over a local network, so you should probably have a local backup for speed and then replicate that one to the remote site.

Whatever method you use:

- Ensure that it happens automatically (but allow *ad hoc* backups by users at any time).
 - Verify that the automatic backup actually took place, perhaps by having it leave a log in a user's home directory.
 - Test the backups from time to time to ensure you can restore from them; otherwise, what's the point?
-

9 Assembling Panoramic Photos

A panorama is an assembly of multiple overlapping images to create a single image with an extra-large field of view. Typically, you create a panorama with these steps:

9.1 Taking Panoramic Photos

The general idea is to take a series of shots, either left-to-right or right-to-left, with some overlap (say a third) between each photo and the next. Keeping the whole series level is tricky, and a tripod can help here.

Many cameras offer features (“panorama assist” or “stitch assist”) to help align successive images with consistent focus and exposure. Moreover, they identify photos that are panorama components with distinctive filenames or even separate folders, as well as including some indicator in each image’s EXIF caption.

Some cameras and smartphones let you create a panorama on-the-fly, carefully rotating the camera in place. Again the image’s EXIF caption will contain some indicator.

But if your camera lacks those features, don’t despair; a little practice will do the job well enough that the increasingly-smarter panorama stitching software can take care of the rest.

Whenever you import a photo set containing panorama segments, be sure to tag them with “panorama-to-do”. PhotoTrove will do this automatically whenever the EXIF caption so indicates.

9.2 Stitching the Panorama

1. Log in³ to PhotoTrove and open the **Assemble a panorama** tool.

Assemble a Panorama from Component Images Logged in

A panorama is an assembly of multiple overlapping images to create a single image with an extra-large field of view. Typically, you create a panorama with these steps:

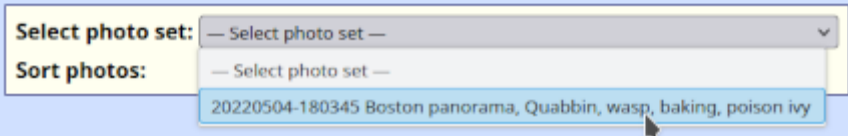
1. Record the component images, rotating the camera in place to each position, ideally using a tripod. Many cameras offer features to help align successive images with consistent focus and exposure.
2. Identify the panorama components within the photo set; they may be segregated from the rest in a separate folder (Nikon) or with distinctive filenames (Canon).
3. Assign each component the tag "panorama-to-do" to keep track as they accumulate.
4. Download the tagged components from the PhotoTrove server to your personal computer.
5. Using a tool like [Hugin](http://hugin.sourceforge.net/) (<http://hugin.sourceforge.net/>), stitch the components together into a single continuous view.
6. Using a photo editor like [Gimp](http://www.gimp.org/) (<http://www.gimp.org/>), crop, adjust color levels and adjust as necessary.
7. Upload the finished panorama to the photo set, scaling the webpic to the default height and referring to the last component in the series for the location, description and timestamp.
8. Assign each finished panorama the tag "panorama" for future retrieval and replace the "panorama-to-do" tag with the "component" tag for each of its components.

This tool can help with the highlighted steps.

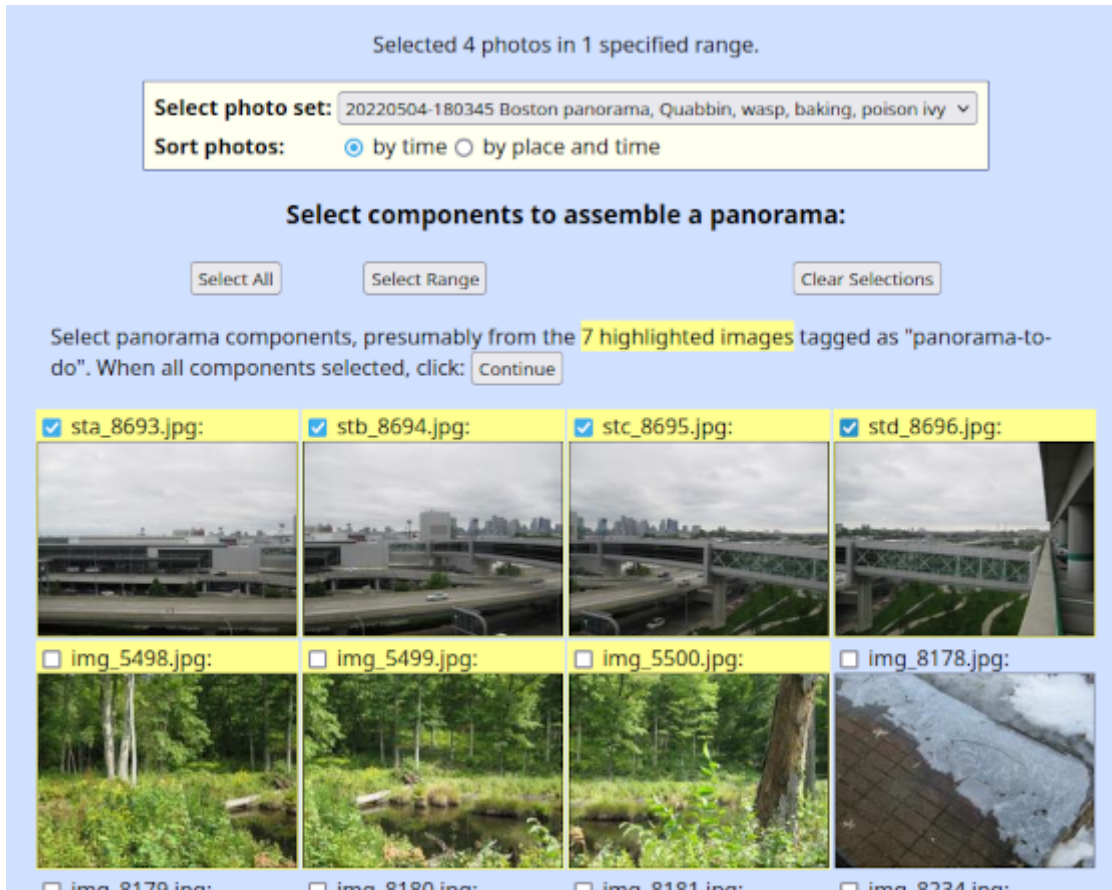
Select photo set:

Sort photos:

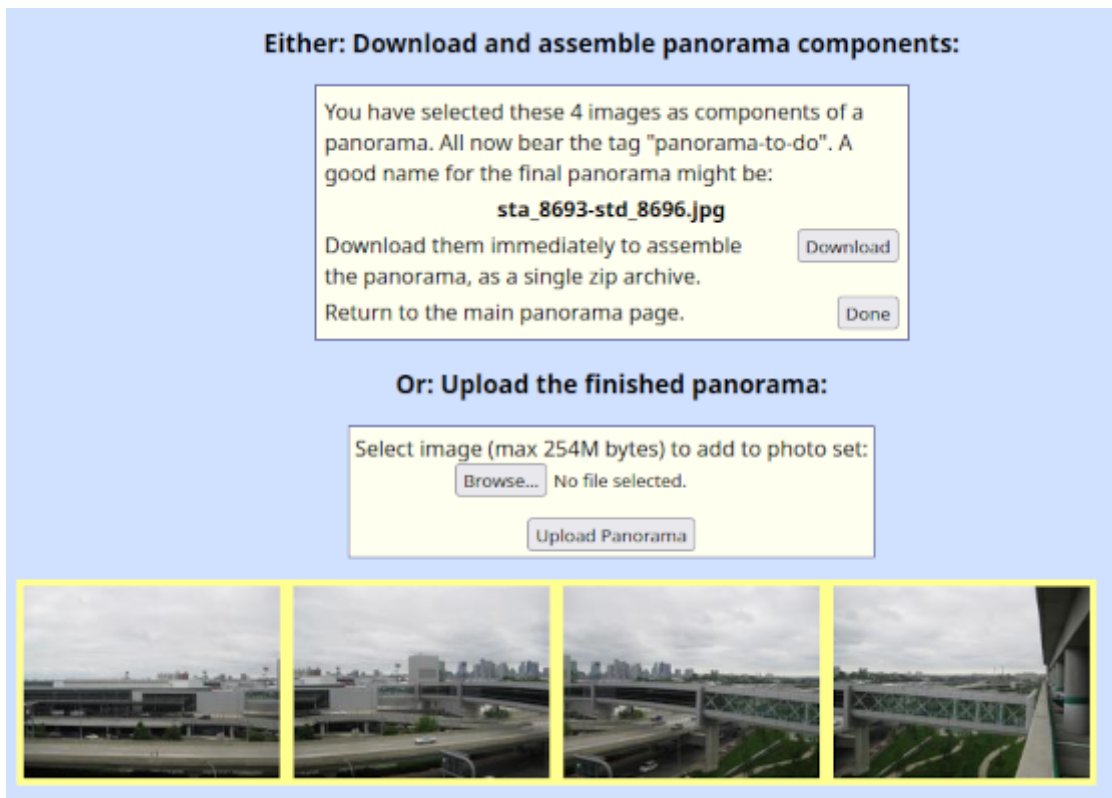
20220504-180345 Boston panorama, Quabbin, wasp, baking, poison ivy



2. It will offer a menu of all photo sets containing panorama segments. Select one.
3. You'll see a thumbnail gallery for the photo set, with panorama components highlighted. Select the ones you wish to assemble, typically using **Select Range**.



4. When the complete series is selected, click **Continue**.



5. Verify that these are the photos you want and click **Download**. The images will be downloaded to your client wrapped up

in a single ZIP file.

6. On your client computer, unpack the ZIP file. Voilà! Here are the files. At this point you can delete the ZIP file if you wish.
7. Use your favorite panorama-stitching tool to assemble the components into a final large image. I strongly recommend Hugin (<http://hugin.sourceforge.net/>). The days of stitching panoramas by hand are fortunately behind us, except for some unusual cases.
8. You might wish to edit the panorama further, in which case use your favorite photo editor.
9. When done, return to PhotoTrove's panorama page (you may have timed out and need to reload the tab where you logged in) and upload the finished panorama. After a while you'll see the thumbnail gallery again, with a button at the top that will display the finished panorama for your review.

Added panorama `sta_8693-std_8696.jpg` to photo set 20220504-180345, tagged it "panorama" and removed tag "panorama-to-do" from its components.

Select photo set: 20220504-180345 Boston panorama, Quabbin, wasp, baking, poison ivy ▾

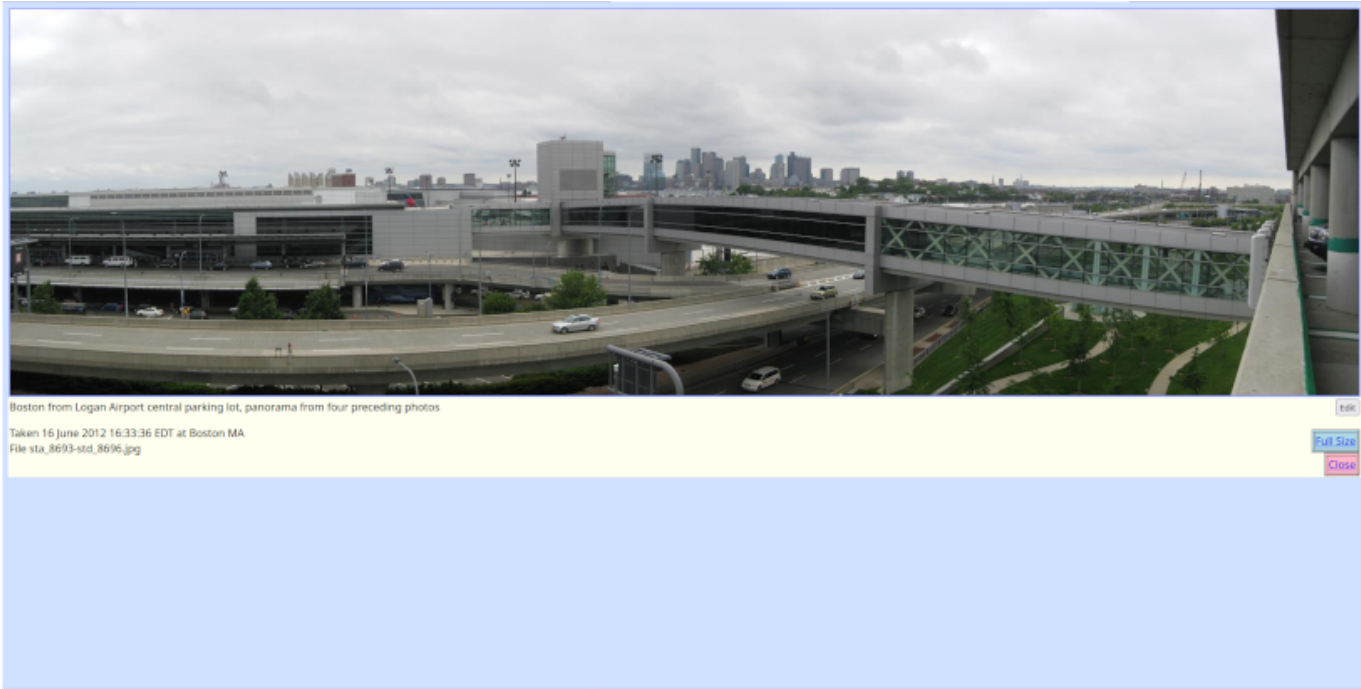
Sort photos: by time by place and time

Select components to assemble a panorama:

Select All Select Range Clear Selections

Select panorama components, presumably from the 3 highlighted images tagged as "panorama-to-do". When all components selected, click: Continue

<input type="checkbox"/> sta_8693.jpg: 	<input type="checkbox"/> stb_8694.jpg: 	<input type="checkbox"/> stc_8695.jpg: 	<input type="checkbox"/> std_8696.jpg:
<input type="checkbox"/> sta_8693-std_8696.jpg: 	<input checked="" type="checkbox"/> img_5498.jpg: 	<input checked="" type="checkbox"/> img_5499.jpg: 	<input checked="" type="checkbox"/> img_5500.jpg:



10. PhotoTrove will assign each finished panorama the tag “panorama” for future retrieval and replace the “panorama-to-do” tag with the “component” tag for each of its components.

10 Tips and Tricks

Some handy ways to use PhotoTrove more efficiently and enjoyably:

- PhotoTrove uses certain terms in very specific ways. To avoid confusion, refer to the [Glossary](#). For a pictorial representation, have a look at the [Data Model](#).
- Take advantage of your browser's tab capability. Once you've logged in, open menu items in a separate tab. Not only does this leave the main menu available at any time, it allows you to recover from session time-outs by reloading the first tab, thereby repeating the login.
- If you need to refresh a thumbnail gallery to see changes you made in other tabs, **don't reload the page!** Your last action on that page may have been, say, "rotate images" and reloading the page will repeat that action while you gnash your teeth in annoyance.

The best way to refresh any thumbnail gallery is to click **Clear Selections**. For similar reasons, don't use the browser's Back button.

- The single exception to that rule applies when you need to perform more than one action on a range of images. For example, you have four panorama segments, and you want to tag them *and* assign a location *and* assign a description:
 1. Select the range;
 2. Apply the tag "panorama-to-do";
 3. Hit the browser's Back button to re-select the range;
 4. Assign a location;
 5. Hit the browser's Back button to re-select the range;
 6. Assign a description.
- When searching by date/time:
 - Note that PhotoTrove is pretty smart about interpreting dates. You can enter things like "yesterday" or "last Wednesday". If you specify a date without a year, it will assume the current year.
 - Specifying a date but no time means the midnight that begins that day, in the local time zone of the server.
 - Specifying a start date but no end date means "on or after the start date". Similarly, specifying an end date but no start date means "before the end date".
- When searching, it's tempting to erase the criteria for a previous search and enter new ones, yet sometimes the results come out wrong because you overlooked some field. Solution: when starting another search after completing one, use the **Reset** button to clear everything.
- Clicking **Search** with no criteria set will find all photos in your collection. Since you probably have more than the default limit of 400, it will display only the first and last, but it's a quick way to get a count of all your photos. It'll also tell you how many are missing timestamps and locations.

11 Other Photo Set Operations

11.1 Adding Individual Photos

The **Add single photos/videos** does just that. First select the target photo set, then browse for the photo or video you want to add. Click **Upload File**, enter the appropriate metadata and add the new image.

11.2 Moving Photos Between Photo Sets

A photo set is the most basic grouping for photos and videos. Analogous to rolls of film, photo sets contain sequences of images taken during a single time period or at a single location. Photo sets can be fragmented: vigorous culling of similar photos can leave a photo set all but empty; a trip may start in the middle of one set and go on to span several later ones; some cameras start a fresh folder after a set number of shots or for every panoramic sequence. In such cases, some housekeeping can help organize photo sets more logically and efficiently.

1. Use the “Tag selected photos” feature in any thumbnail gallery to assign a particular tag to those photos, and only those, that you want to move to a particular target photo set;
2. Select **Move photos between sets** from the main menu;
3. Select the appropriate tag;
4. Specify the desired photo set;
5. Click the **Move tagged photos...** button to move the photos;
6. When the photos are where you want them, click **Untag All**.

11.3 Deleting an Empty Photo Set

When a photo set contains no more photos, perhaps because you’ve deleted the last one or moved it elsewhere, you’ll see a button offering to delete it.

Of course, this won’t affect the original folder under `originalphotos`, but don’t worry, PhotoTrove remembers the folder names of deleted photo sets so they don’t reappear in the menu of folders to import!

11.4 Adjusting Timestamps

Photo Trove saves photo timestamps in Coordinated Universal Time (UTC) and displays them in the current local time⁷. Sometimes photo timestamps are incorrect by a fixed amount, perhaps because the camera’s clock was set to a different time zone or because the clock was simply wrong. The **Adjust timestamps** tool adjusts the timestamps for any number of photos in a single action.

1. Use the “Tag selected photos” feature in any thumbnail gallery to assign a particular tag to those photos, and only those, whose timestamps you wish to adjust by the same amount;
2. Select **Adjust timestamps** from the main menu;
3. Select the appropriate tag;
4. Enter the desired time adjustment and direction and click Set;
5. When the timestamps are correct, click **Untag All**.

⁷Local time: this means the time zone of the PhotoTrove server (just in case you’re using PhotoTrove from far away!)

11.5 Applying Dates

Sometimes photos have no timestamps, for example, digital scans of slides, negatives or prints. In such cases, the approximate date may be known, though not the precise time. The **Apply dates** tool applies a date (with time 00:00:00 local) to selected photos.

1. Identify all photos for which you want to set the dates.

Tip

The **Search for photos** tool can find photos whose date/time is unset.

2. Use the “Tag selected photos” feature to assign a particular tag to those photos.
3. Select **Apply dates** from the main menu;
4. Select the appropriate tag to display a thumbnail gallery;
5. For each date you wish to set:
 - a. Use the **Select Range** feature to select the individual photos to which it applies;
 - b. Use the calendar to specify a date, or enter the date as text;
 - c. Click **Apply**.
PhotoTrove will apply the date to all the selected photos and remove the tag, so they disappear from the thumbnail gallery.
6. Repeat for every date you wish to apply.

Tip

For convenience, the date in the calendar box remains set between operations, since the next date is likely to be closer to that one than to today's date.

11.6 Capturing Geo-Data

Many cameras and smart phones now use the Global Positioning System (GPS) to tag photos and videos with latitude, longitude, and altitude (“geotagging”). PhotoTrove captures this information from any photos or videos newly added to the collection, records it in the database, and displays it along with the named location as a hyperlink to geohack.toolforge.org so that you can see the location on your choice of map.

If your collection contains photos and videos added before PhotoTrove acquired this capability but which might be geotagged, you can use the “capture geo-data” tool to extract and record whatever geo-data they contain. The tool accomplishes this by examining the metadata in the actual image or video; this can take some time for a large number of them, so try it with small batches first.

1. Use the “Tag selected photos” feature to assign a particular tag to the photos and videos you want to check for geotagging;
 2. Select **Capture geo-data** from the main menu;
 3. Select the appropriate tag to display a table of the tagged photos, including any geo-data already recorded;
 4. Click **Capture geo-data for tagged photos**.
Some time will elapse, then the table will regenerate; with luck there will be more geo-data displayed.
 5. For convenience, click **Untag All** to remove the tag, since it's no longer needed on these photos.
-

12 Housekeeping

As the collection grows, you'll accumulate lots of metadata, including locations, tags and albums. Sometimes you'll need to make changes. Sometimes you'll find that your menus are cluttered with items you aren't using much lately.

PhotoTrove has features to help manage menus and keep up with changes.

12.1 Managing Locations

The **Manage locations** tool lets you:

- Change a location's name;

Tip

This is particularly handy for the location "Home" since most of us reside in more than one place during our lives. Use just plain "Home" for your current address, and add a bit more detail, like the town, for previous addresses. When you move, edit the current "Home" to add a town and create a new Home for your new address. The full address and any other information of interest goes into the Notes field.

- Add notes about a location, like full address or why it's significant;
- Designate a location as "archived" (or not). All this means is that archived locations don't appear in menus.

12.2 Managing Tags

The **Manage tags** tool lets you:

- Change a tag's name;
- Add notes about a tag, explaining what it represents;
- Designate a tag as "archived" (or not). All this means is that archived tags don't appear in menus.

12.3 Managing Albums

In addition to the regular [album-editing operations](#), the **Edit albums** tool offers some occasionally-used housekeeping features. You can:

- Change an album's name⁶;
 - Designate an album as "archived" (or not). All this means is that archived albums don't appear in menus, handy for albums commemorating events from long ago;
 - Delete an album, though you'll almost never want to do this, since an album takes up very little in the way of resources but typically represents a fair amount of effort. More likely, archiving is a better solution.
 - Add notes about an album for your personal reference, invisible to all but you. This feature is at the head of the **Edit Page Text and Format** page.
-

13 Playing with Matches

If you're comfortable running shell scripts, you'll find some useful tools in the `scripts/` subdirectory. They handle tasks that most of us will rarely need; indeed, if you find you need any of them more than rarely, let me know and I'll make a web-based version as a regular tool under PhotoTrove. I'll describe them here.



Caution

Be sure you know what you're doing. Running these scripts requires logging into a shell account on the PhotoTrove server. Consider reading over any script you're planning to use so you understand how it works.



Warning

Don't experiment with scripts other than those described here! Most of those scripts are development scaffolding, installation components, or temporary solutions to tricky issues. Many of them were written for older versions of PhotoTrove and its predecessor, and will yield unpredictable, possibly destructive, results. You have been warned.

13.1 Taking PhotoTrove on the Road

If you carry a laptop with you when you travel, you could install PhotoTrove on it—either directly or inside a virtual machine like [Trovester](#)—and then while away your evenings uploading photos and editing photo sets. But how do you get all that into your regular PhotoTrove server when you return home?

The answer is to configure your laptop PhotoTrove as a “travel version”, set up exactly like the regular server except that the root is one directory down, that is:

```
/home/web/webroot-ssl/trove/tvl/  
instead of  
/home/web/webroot-ssl/trove/
```

To set it up:



Caution

If you already have photos and data on the machine, dump the database and back it up together with the photos, because the following procedure will blow it all away.

1. On your travel server, log into a terminal as a user with sufficient `sudo` privilege to become the webserver user “`www-data`”, in order to write to the `fullsize` and `webpics` subfolders (if you're using [Trovester](#) out of the box, that user is `xyzy` with password `xyZZy!42`).
2. Create the `tv1` directory and move the whole service root into it:

```
cd /home/web/webroot-ssl/trove  
sudo mkdir tv1  
sudo mv * tv1/  
[It will warn that it can't move the tv1 directory into itself.]
```
3. Fetch, from the regular PhotoTrove server, a dump (gzipped is ok) of the latest version of the production `trove` database.
4. On the travel server, run the script:

```
sh resettvl.sh dumpfile
```

where *dumpfile* is the path to the `trove` database dump.

This will erase any photos from the travel environment and reinitialize the `trove_tv1` database, preserving the production environment's locations, tags and user accounts (with passwords and privileges).

5. You're ready to use the travel version; just browse to `.../trove/tv1/` and log in as usual.

When you return from your travels:

1. Run the script with the help option:
`sh integrate.sh -h`
to display the detailed, step-by-step instructions. Note that you'll need to move the image files manually.
2. Transfer the zipped images and the `trove_tv1` dumpfile to the PhotoTrove server and unzip the images into the file tree, all as described in the instructions.
3. On the PhotoTrove server, run the script:
`sh integrate.sh trove dumpfile`
where *dumpfile* is the path to the `trove_tv1` database dump.
4. Copy any uploaded camera folders in `home/public/photos/` to the PhotoTrove server for archival purposes.
5. Delete the leftover zip files on both hosts.

13.2 Cloning a Photo Album

Occasionally you might wish to make several similar albums, perhaps with a slightly different mix of photos, or a different text or page arrangement, but otherwise the same. The simplest way to accomplish this is to build an album as a “baseline” or “template”, make copies of it, and then modify the copies as needed.

Since an album is entirely a database construct, a script can do this.

Run the script:

```
sh clonealbum.sh database albumname newalbumname
```

where:

database is the name of the database, normally `trove`

albumname is the name of the original album to be cloned

newalbumname is the name for the new album to be created.

13.3 Copying a Page from One Album to Another

Sometimes you don't need to clone a whole album but you might want to copy or move a page or two from one album to another.

Run the script:

```
sh copypagebetweenalbums.sh database album1 page album2
```

where:

database is the name of the database, normally `trove`

album1 is the name of the album that has the page

page is the number of the page to be copied

album2 is the name of the album to receive the copied page.

PhotoTrove appends the desired page as the last page of *album2*. Use **Edit albums** to move the page where you want it.

14 Glossary

The instructional sections of this manual use certain terms in very specific ways. To avoid confusion, this section explains their meanings and how they are related.

album

An ordered set of **album pages**, with a **title page**.

album page

An ordered set of any number of **album photos** with its own title, **title picture** and text, associated with a particular album.

album photo

An association of a **photo** with an **album page**, with a distinct caption and display order. More than one album photo may refer to a single photo, even on the same album page.

title picture

An optional designation for each **album page**, identifying one of the **album photos** on the page to be displayed at the top of the page in an intermediate size.

title page

A special “page zero” **album page** with a table of contents linking to the other **album pages**.

original

A digital image or video, as recorded by the camera or other external source, uploaded to the **originalphotos** area, copied to the PhotoTrove image repository (as the **full-size** master image) and thereafter maintained in the archive for backup purposes.

photo

An aggregate entity comprising a **full-size image**, a **web-sized image**, a **thumbnail image** and associated metadata. Identified by a foldername (corresponding to the containing **photo set**) and a filename.

full-size image

A full-sized digital image, initially copied directly from the uploaded **original** and thereafter maintained as the master image for editing.

web-sized image, webpic

A reduced-size image suitable for viewing in a web browser or transmitting over a network. The exact dimensions of web-sized images are configurable (default and per-**photo set**).

thumbnail image, thumbnail

A much-reduced image suitable for quick browsing and selection; generally multiple thumbnails will appear on a single screen as a “thumbnail gallery”.

photo metadata

The PhotoTrove database retains information about the photo, including timestamp, location, description and geometry, some extracted from the image’s EXIF data, some derived automatically and some entered by the user.

photo set

A set of **photos** and/or **videos** taken sequentially, in one or more sessions, but not necessarily otherwise related. Conceptually equivalent to a roll of film or the contents of the camera’s flash memory. Identified by a foldername.

video

An aggregate entity comprising an **original-format video**, an **oggfile**, an associated **still image** and metadata.

original-format video

A single file that comprises many images and, usually, a sound track, in the format recorded by the camera. Videos are handled the same as **photos** to the extent that makes sense.

oggfile

A version of the video converted to the Ogg Theora format for convenient playback in HTML5-capable web browsers.

still image

A **photo** that represents a video in the various “gallery” views of **photo sets** and **albums**. If the camera hasn’t automatically generated one, PhotoTrove will automatically extract a still from the **oggfile** for a newly-imported video.

video metadata

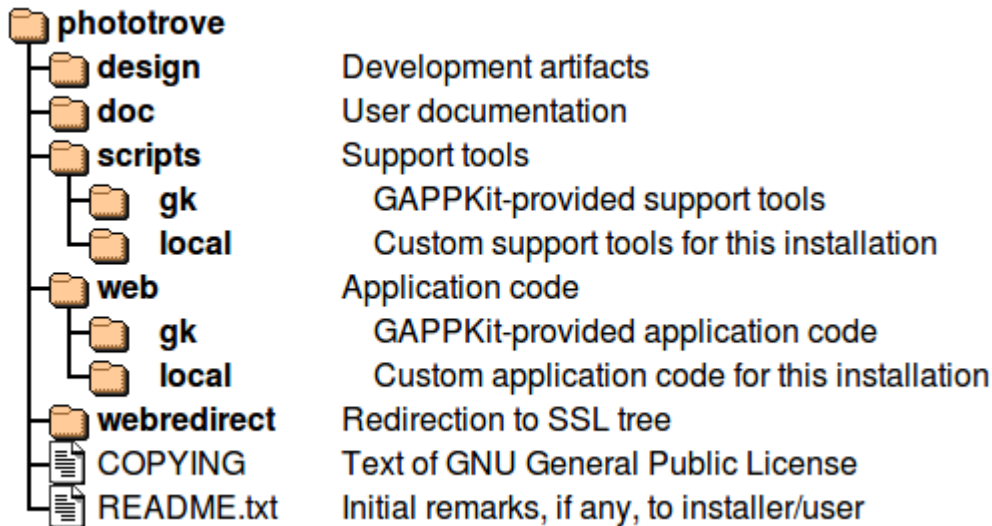
Since the still image is a photo, most of the metadata is contained therein, but the database also tracks the video’s geometry.

A Architecture and Design

PhotoTrove is built upon the **GAPKit**, a framework for constructing web applications using **GNU/Linux**, the **Apache** web server, the **PostgreSQL** relational database management system and the **PHP** language.

A.1 Distribution

PhotoTrove comes as a zip file; when unpacked, it contains a tree of the following folders:



A.2 Application Code

The PHP code (under `web/` in the distribution) resides under Apache's SSL service (`https://`) document root. My recommended location for PhotoTrove's code (and where **EasyPhotoTrove** puts it) is `/home/web/webroot-ssl/trove/`. The "regular" service (`http://`) tree contains, at `/home/web/webroot/trove/index.php`, a redirector page that switches to the SSL tree.

Four data subfolders are added within PhotoTrove's code folder `/home/web/webroot-ssl/trove/` at installation:

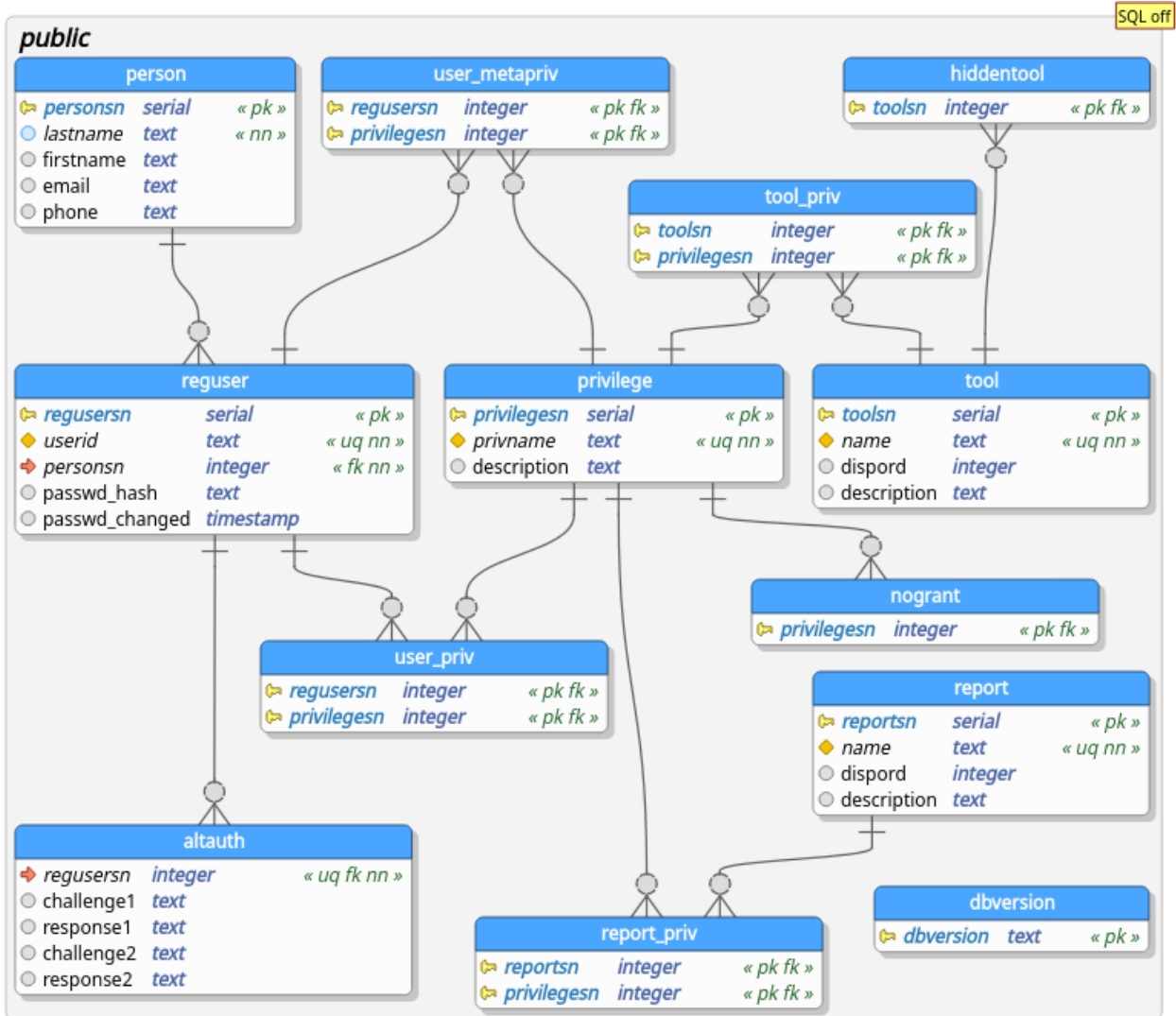
fullsize/ and **webpics/** contain the full- and reduced-size images, respectively.

originalphotos/ is where PhotoTrove looks for new photos to import; typically this is a symbolic link to somewhere more convenient like `/home/public/photos/` or, in the case of the Trovester virtual appliance, a shared folder. PhotoTrove reads `originalphotos/` (to copy photos to `fullsize/` when importing) but doesn't write to it; it serves as an archive for unedited originals.

albums/ is where PhotoTrove places published albums (trees of static webpages) so they can be burned to a CD or uploaded to a website. Each user gets an individual subfolder for published albums. In the Trovester virtual appliance this is a symbolic link to a shared folder. In a regular installation, it may or may not be a link depending on convenience (users need only read access).

A.3 Data Model

I maintain the data model using **pgModeler**, which automatically generates the schema-building SQL scripts and ERA diagrams:



B Installation Options

There are three ways to run your own PhotoTrove:

1. The very easiest is to download the [Trovester](#) “appliance”, a self-contained virtual machine that will run on most recent computers. All you need to give it is disk space for your photos and albums.
2. The next easiest is to build your own PhotoTrove machine using [EasyPhotoTrove](#), a set of scripts and configuration files that automates the installation. It makes good sense to dedicate a computer as a photo server so the members of your household can all use it. I build each release of [Trovester](#) by creating a virtual machine running Debian GNU/Linux, installing EasyPhotoTrove and then exporting the virtual machine as an appliance.

Tip

Another advantage of EasyPhotoTrove, which also applies to Trovester since it's built with EasyPhotoTrove, is that you can [upgrade automatically](#) to the latest version of PhotoTrove.

3. Finally, you can install PhotoTrove on an existing machine that you also use for other purposes. Depending what's on your machine and how you've configured it, you might be able to use EasyPhotoTrove to automate the installation. If you'd rather do the whole thing yourself and have the requisite system administration skills:
 - a. Start by downloading the entire EasyPhotoTrove and PhotoTrove packages:

```
wget http://toyru.s.ngrok.io/~ted/easyphototrove/easyphototrove-latest.zip
wget http://toyru.s.ngrok.io/~ted/phototrove/phototrove-latest.zip
```
 - b. Look over the scripts, beginning with `install.sh` and continuing with the ones in the respective `scripts/` directories.
 - c. Adjust as needed for your situation.
 - d. Email me if you need assistance, within reason.

C Trovester, the PhotoTrove “Toaster” — a Virtual Appliance

An easy way to try PhotoTrove is as an “appliance”, a self-contained virtual machine complete with its own operating system, supporting packages and the PhotoTrove software. All interaction is via your web browser and shared folders⁸. Of course, since the Trovester virtual machine has its own network presence, other users on your local network can use it at the same time.

If you decide you like PhotoTrove, you can either install it directly or simply continue using Trovester as your permanent photo server.

C.1 System Requirements

If your computer is of relatively recent vintage, you can probably run Trovester, but check this list just to be sure:

- A computer running any platform that can run [VirtualBox](#)⁹ (GNU/Linux, Solaris, Mac OSX, Windows).
- At least 1 GB memory; Trovester uses 0.5 GB¹⁰ and you still need to run your host.
- Disk space adequate to hold your entire photo collection twice (since PhotoTrove lets you keep a separate archive of original photos unaffected by subsequent editing). All data, namely the photos and database dumps, are in a shared folder on the physical host (which can even be on an external hard disk). In addition, reserve ca. 4GB separately for the appliance (it probably uses about half that but could grow depending what you do with it). A few tens of gigabytes should do it until your collection grows huge.
- A web browser running on your physical host, since PhotoTrove is a web application and Trovester is a server.
- Whatever photo-editing software you prefer; I recommend GIMP for images and Avidemux for videos.



Warning

Make sure the host machine and the disk(s) where you plan to store your data are reliable. In particular, check the settings for suspending/hibernating/sleeping to make sure the host doesn't go to sleep while Trovester is processing photos.

C.2 Installation and Configuration

This boils down to installing VirtualBox, importing Trovester as an appliance, setting its network address, and defining the shared folder:

1. Install VirtualBox from virtualbox.org. The appliance was developed under the Free edition and uses none of the non-Free features. For some platforms, it may be difficult to obtain installable binaries of the Free edition, but the proprietary edition will work, too.
2. Download the Trovester OVA file, either the [64-bit version](#) or the [32-bit version](#).
3. Using the VirtualBox Manager GUI, import Trovester (*File/Import Appliance*). Trovester will appear in the virtual machine list.
4. Select Trovester and then open the *Network* settings; verify that it's using a bridged adapter.
5. Edit Trovester's *Shared folders* settings to create a shared folder. This can be anywhere on the physical host, including an external or removable drive.

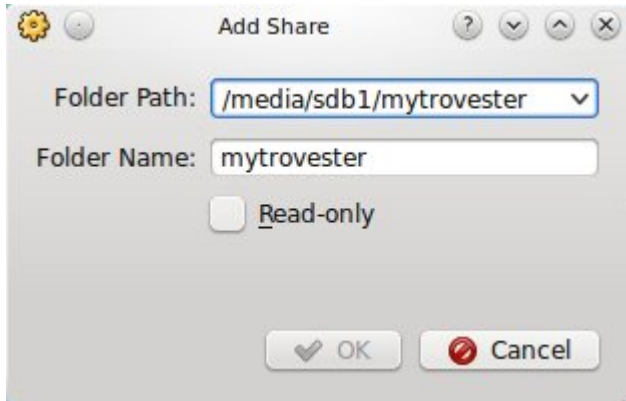
⁸A shared folder is accessible to both the host system and the virtual machine without the need for networking.

⁹VirtualBox: The appliance is distributed in the Open Virtualization Format, which I understand can run under other virtualization packages like VMware, but I haven't tried that and don't know if all the features will work.

¹⁰Memory: Of course, if you have enough memory, you can allocate more to Trovester and it will run faster.

**Important**

Be sure to name it `mytrovester`, since that's the name Trovester will look for.



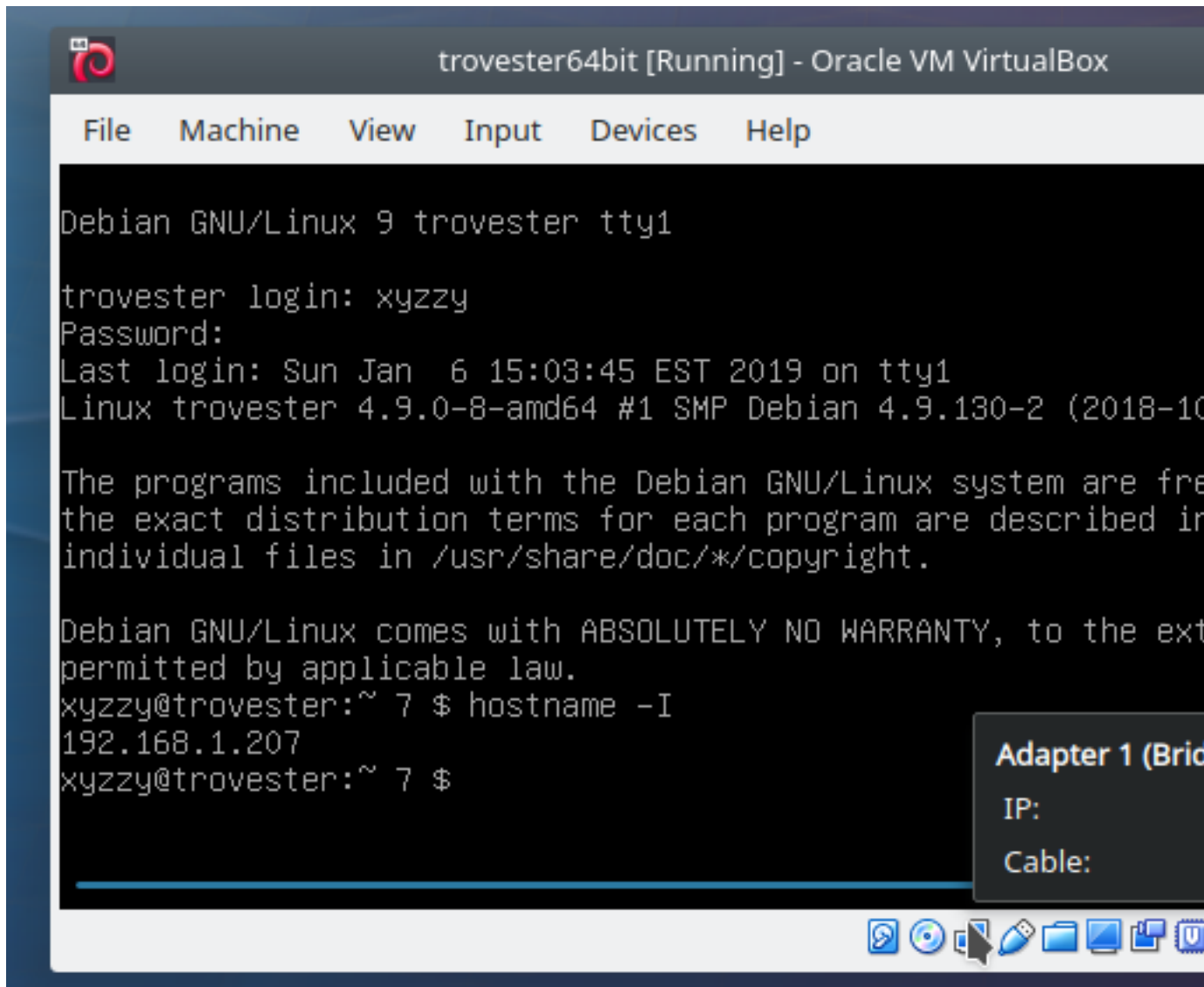
C.3 Operation

1. If your shared folder is on a removable device, make sure it's attached and mounted.

**Warning**

This bears repeating: **Make sure the shared folder is attached and mounted!**

2. Start Trovester. A console window will open and you'll see the boot sequence while each process starts up and reports its status. At some point it will complain about failing to mount the external drive; don't worry about that, it will mount it later in the sequence. It will finish with a **login:** prompt. If you move your mouse over the network icon at the bottom of the window, it should display the IP address, although this doesn't seem to work with all versions of VirtualBox. Alternatively, log in as `xyzzy` with password `xyzzy!42`, then type `hostname -I` to display the IP address. Here's a screenshot showing both:



Note

As built, Trovester gets its network address from the local DHCP server. Unless you've explicitly set up a separate DHCP server, it's probably your router or wireless access point.

Typical home routers give out addresses with long lease times so Trovester's IP address is unlikely to change often, unless you have lots of machines coming and going on your network.

If you want to ensure that Trovester's IP address never changes, you'll need to log in to your router via your browser to reserve an IP address for Trovester's MAC address (which you can see in the VirtualBox network settings). Once you've done that, you can modify your client machine's `hosts` file⁴ so you can access Trovester by name.

⁴**hosts** file: for GNU/Unix, `/etc/hosts`. For Windows, `C:\Windows\System32\drivers\etc\hosts`.

3. Since all regular PhotoTrove actions are accomplished through the web browser, there's no need to log in at the Trovester console window. Minimize this window¹¹ to get it out of your way, but don't close it, or you'll shut Trovester down!

If you ever wish to log in, say, to update the PhotoTrove code or run scripts, the user id is `xyzzzy` with password `xyZZy!42`. Feel free to change the password using the `passwd` command. Note that you need not use the console, since you can log in remotely with your favorite secure shell client. To log out, type `logout` or `exit`.

¹¹Trovester window: Since you don't usually need the Trovester console window, you can start Trovester in "headless" mode. In the VirtualBox Manager GUI, right-click on Trovester, then select *Start/Headless Start*. Also, once you've started Trovester, it's safe to close the VirtualBox Manager GUI until you need it again.

4. In your web browser, open `https://address/trove/` where *address* is the Trovester IP address.

Tip

You'll need to allow Javascript and accept cookies from PhotoTrove and, if prompted, accept the self-signed security certificate.

5. At the main screen, log in as *xyzy* with the one-time password `phototrove`. Change your password when prompted. The two built-in accounts, *admin* and *useradmin* use the same default password `phototrove`. Log out, then log in as each one and change those passwords as well.
 6. If you wish to add different user accounts, log in as *useradmin* and do so (**Manage User Accounts**). Users will need the `edit` and `walbum` privileges in order to make changes to the database (**Grant Privileges to Users**).
 7. All PhotoTrove operations are carried out using a regular user account like the default *xyzy* or one you've added. You will never need the *admin* account unless you're modifying the PhotoTrove code.
 8. To import photos into Trovester, copy them into uniquely-named folders⁴ inside the `mytrovester/public/originalphoto` folder. A good way to ensure unique names is to use date and time, for example `20150105-232013`. When you select **Import a photo set** from the main menu, the folders will be there to select. If you upload your photos as a zip or tar file, PhotoTrove will create a timestamped folder name for them (editable).
 9. Use the various tools to import and edit photosets and assemble photos into albums. When you complete an album to your satisfaction, use **Publish albums** to write it out as a set of static webpages. You'll find the album in the shared folder under `public/albums/userid/` (where *userid* is your PhotoTrove user name). You can burn this to a CD or DVD or upload it to a website; it will be viewable in a browser without needing PhotoTrove.
 10. When you've done what you wish with the published album, you might consider deleting the written copy to save disk space; the **Publish albums** tool has an option for this purpose. You can, of course, generate a fresh copy at any time.
 11. When you finish your session with PhotoTrove, and any time you've made significant changes, it's a good idea to export a copy of the database using the **Export database** tool in the main menu. Database dumps will accumulate in the shared folder under `public/dumps/` but don't worry; older ones get purged so there will never be more than 8 dump files.
 12. To shut down Trovester, open the VirtualBox Manager GUI, right-click on Trovester, then select either:
 - *Close/ACPI Shutdown* to initiate an orderly shutdown of all running services and finally the virtual machine itself, or
 - *Close/Save State* to freeze the virtual machine by completely saving its state to your local disk, similar to suspending a laptop computer by closing its lid. This takes only a few seconds. Starting it again later also takes seconds, and Trovester continues exactly where it left off.
 13. When Trovester is fully shut down (VirtualBox's list will indicate "Powered Off" or "Saved"), you can safely remove the device with the shared folder (if it happens to be a removable device).
-