Sizing Images for Projection

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When you want to project images at home, at a camera club or wherever, you need to resize the images to fit the projector. Yes, the projection software will do a good job if you don't bother, but the file sizes might get rather large and the process of resizing "on the fly" can slow things down.

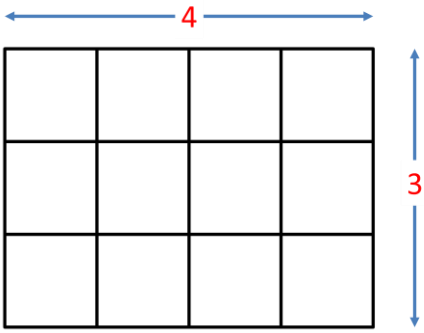
Similar issues arise when attaching images as email attachments or when posting to social media. In both these cases, a file which is too large may not work: the email service or social media software may refuse the file. In both cases, sizing the image as if it was going to be projected will solve the problem.

The sizes used in Thornbury Camera Club and in the Thornbury u3a Photography Group are:

Thornbury Camera Club	Projected Images	1600px x 1200px
	Posts to the Forum	Longest side: 800px
Thornbury u3a Photo Group	Projected Images	1024px x 768px

Aspect Ratio

Most projectors use an aspect ratio of 4:3. Imagine you have twelve squares. Arrange them in a rectangle four across and three high. That is the shape we are talking about.



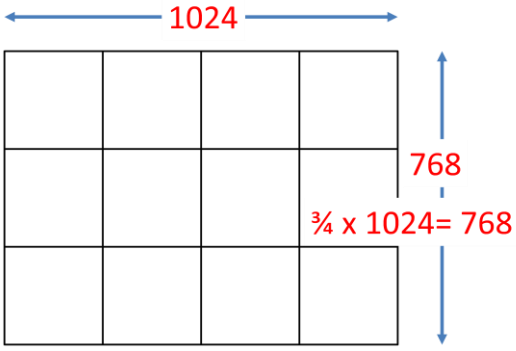
Aspect Ratio of 4:3

This is the same as old cinema screens and old televisions. Things will undoubtedly change eventually but for the moment 4:3 is usually what you get. The actual dimensions vary from one projector to another and, therefore, from one organization to another.

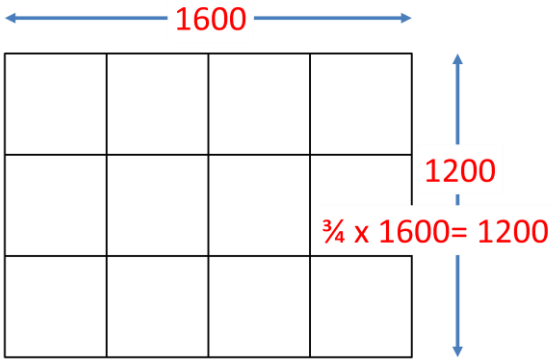
Among the Camera Clubs in Thornbury there are two common projection sizes. In pixels (px) they are:

	Width (px)	**Height (px)**
Thornbury Camera Club	1600	1200
Thornbury U3A	1024	768

Both of these projection sizes have an aspect ratio of4:3. That is, in both cases, the height is three-quarters of the width.



Projection at 1024 x 768



Projection at 1600 x 1200

Fit the Picture to the Format

A portrait will fit in the frame as high as it can go.

If the dimensions of the frame are 1600px x 1200px, for example, the portrait will be 1200px high with gaps at the sides. Just because the format allows for 1600px horizontally does not mean you can make a portrait 1600px high.

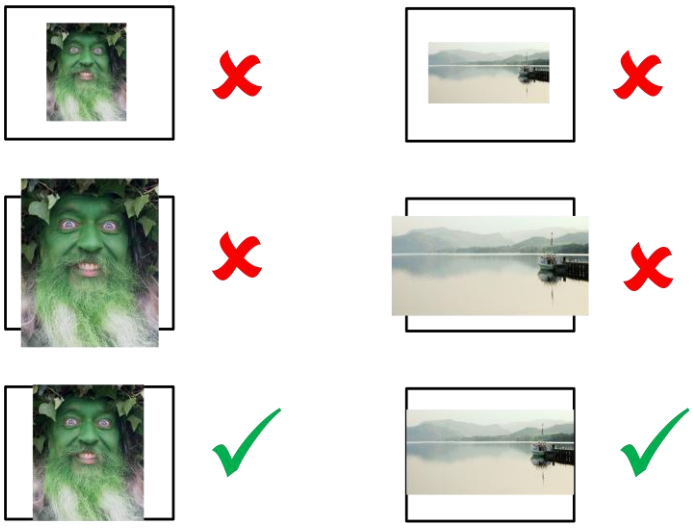
A Portrait in the 4:3 frame

A landscape will fit in the frame as wide as it can go.

If the dimensions of the frame are 1600px x 1200px, for example, the landscape will be 1600px wide with gaps at the top and bottom.

A Landscape in the 4:3 frame

In Summary….



Changing the Image Size

Whatever imaging software you are using, it is likely that there will be a way to resize images. I can't offer to describe every piece of software you are likely to come across. So, here are two pieces of software which I use: "Photoshop" and "XnConvert".

Photoshop

There are several ways to change the image size in Photoshop. There will be similar options in other image editing software.

Image Menu

The easiest way is to simply change the image size. Go to the Image Menu and choose "Image Size".

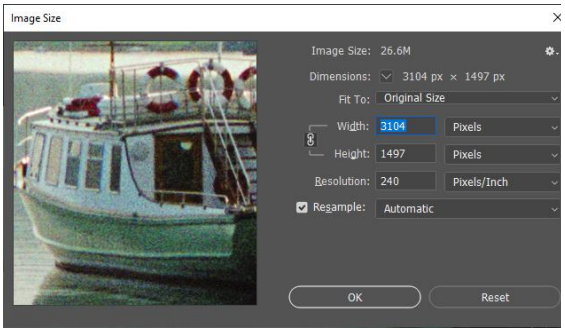
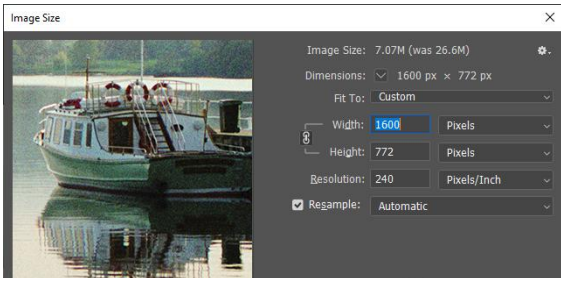


Image before changing the size

In this example, the width is 3104px. Select this and type 1600. Since the height and width are linked, the height is also reduced to 772px to preserve the proportions of the image.

For projection you can ignore the Resolution field in the menu. This only has meaning when printing.

Finally, hit the OK button.

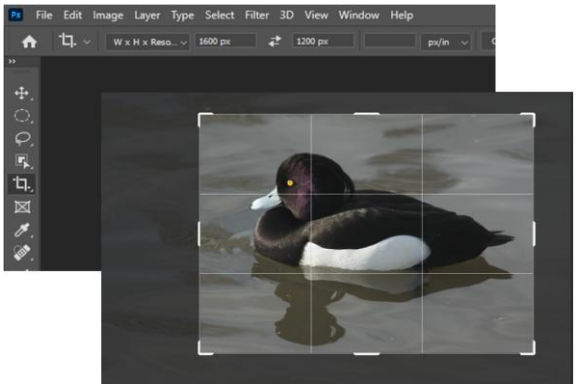


Crop Tool

Alternatively you can use the crop tool.

Set the tool to the size you want. And then crop to the image you want. Photoshop will then interpolate the pixels to produce the correct size.

If you set a width of 1600px and a height of 1200px, that is what you will get. If you only set one of the values, Photoshop will set the other based on your crop.



Set the tool to the size you want and let Photoshop do the rest.

Batch Processing

Photoshop is not good at Batch Processing. It can be done but, in my opinion, is rather clumsy: particularly when there are better options available.

Save as JPG

When you save as a jpg, Photoshop will ask you to specify the image quality in the range 0-12. A value of 9 is about right. A larger value gives you a larger file but (to my eye at least) with no obvious improvement in quality.

XnConvert

This is one of a family of programs which are used for adjusting and displaying images. XnConvert is free for private use: you have to pay if you want to use it commercially.

XnConvert is a Windows program. If you are using a different system (Apple, Linux, Cray-1 etc.) then the description given here will not apply. In that case, you could consider writing a new section to be added to this document to cover your system.

Other similar programs you may come across are:

- Faststone (https://www.faststone.org/)
- Irfanview (https://www.irfanview.com/)

You can download XnConvert from here:

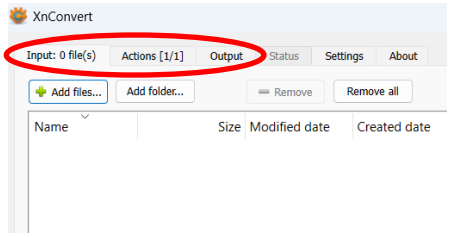
https://www.xnview.com/en/xnconvert/

Unlike Photoshop, XnConvert allows for batch conversions. If you have ten images to convert, XnConvert will convert them all at the same time. What is more; it will not only convert the size but the file type as well. The input can even be a mix of different file types and sizes. They will all be converted in the same batch operation.

The Menu Bar

There are three main tabs in the menu bar. These enable you to choose the files to convert, choose the action to be performed and choose the format of the output.

There is also a ”Settings” tab. If you click on “Save Action List at Exit” then the settings you provide will still be there next time you run the program. This can prevent errors and save time.



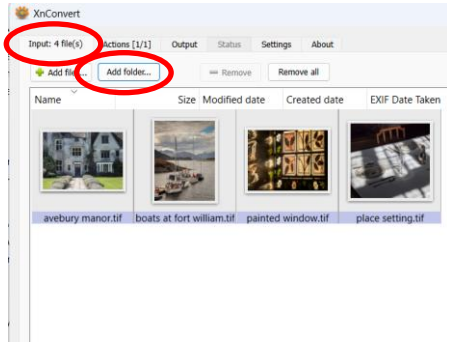
Menu Bar

Select the Images to be Converted

Click on Input (actually this will be open by default when you run the program). You can now choose the files to convert. You can choose them individually or by folder.

> *Personally I prefer to set up a folder in advance containing the files I want to convert. I call the folder “source” and put it on the desktop. That way I can find it easily.*

If you choose a folder containing subfolders, then XnConvert will search the subfolders (and their subfolders) looking for files to convert. When you come to specify the output you can choose to preserve the folder structure.



Choose Files to Convert

The files to convert can be any combination of different graphic file types and sizes.

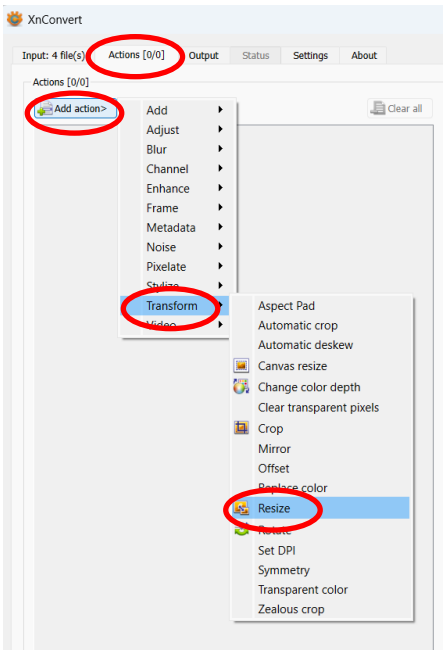
If you choose Photoshop psd files it is a good idea to flatten the layers first.

Once you have made your selection, the chosen files will be displayed in the input window.

Choose the Action Required

Go to the “Action” Menu.

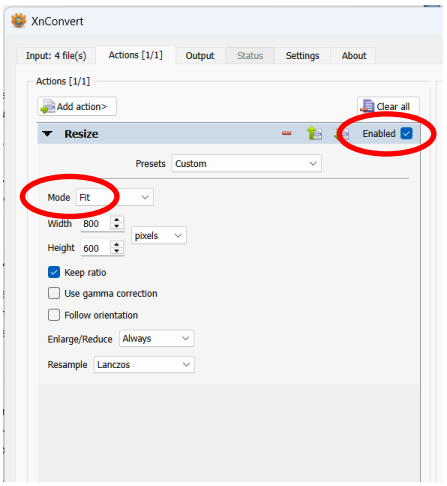
The “Add Action” list provides all sorts of actions such as “Blur” and “Frame” (border). You can spend a merry hour finding out what these all do. In this tutorial, choose “Transform” followed by “Resize”.



Choose Resize

This will bring up the resize menu. At top right is a check box labelled “Enabled”. You can have several actions set up in advance and click or unclick the “Enabled” boxes to choose the one you want on this occasion. To keep it simple this tutorial assumes that you have just one “Resize” action and that it is enabled.

You now have several resize modes to choose from. Again, you could explore what these all do, but for the sake of this tutorial, choose “Fit” from the drop down “Mode” menu. This allows you to specify a height and width in pixels. You can type the numbers you want into the boxes. Alternatively go to the “Preset” box which allows you to select standard values from a list. For Thornbury Camera Club you choose “1600x1200”. For the u3a Photo Group, choose “1024x 768”. The values you choose will be copied into the size boxes.

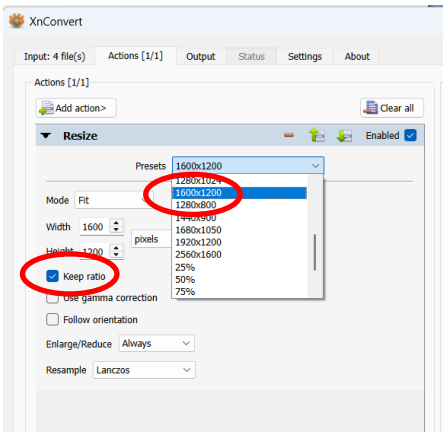


Resize Menu

If you are sizing an image for the Camera Club Forum, there are two options:

- Type both the height and width as 800px
  (there is no standard preset
- Choose mode “Longest side” and type 800px

There is a check box called “Keep Ratio”. If this is unchecked, your images will be stretched vertically and horizontally to fit your chosen size. Portraits will be stretched sideways! Checking the “Keep Ratio” box preserves the proportions of your image. So, keep it checked.

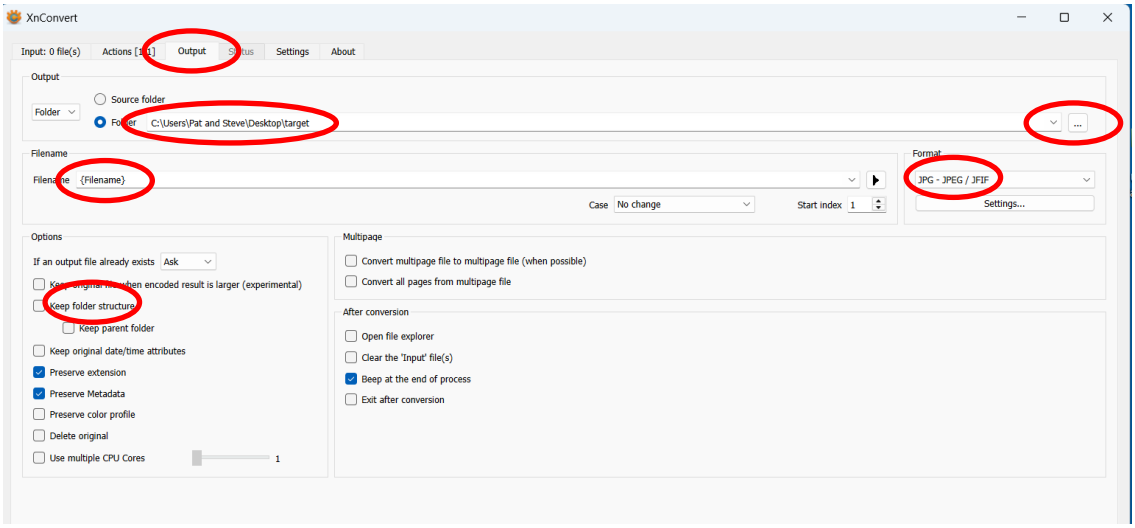


Select the Ratio of Width to Height

You only have to make these selections once. When you come back to the program at a later date these settings will be saved and waiting for you.

Choose the Output

You are now ready to choose the output file format. This is specified in the “Output” Menu.



Specify the output format

Choose “Folder” for your output and enter the path in the box. At the right hand end of this box is a menu containing three dots. This brings up a directory listing so that you can choose the folder to use.

> *I always use a folder called “target” which I put on the desktop. When I return to the program it will remember the path. If the folder no longer exists, it will create it for me.*

Underneath the path is a box for the filename. This defaults to “{Filename}”. This copies the original filename. You can add characters to this so: “scarborough 2024 {filename}”. Bear in mind that this is a Windows filename so the following characters can’t be used:

* " / \ < > : | ?

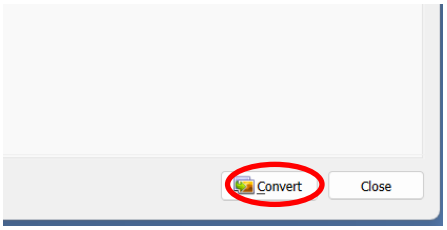
To the right of the Filename box is a field for the output file format. This is a pull-down menu. You will usually select JPG. The settings menu allows you to specify the JPG settings including the compression. A compression of about 80% seems to be about right.

Finally, there is a checkbox under options to allow you to preserve the original folder structure.

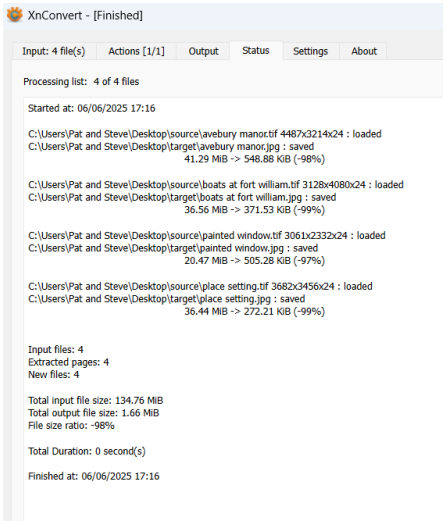
Perform the Conversion

Finally, go to the bottom right of the window and find a button called “Convert”.

As it performs the conversion, the program will produce a list of the files, their names and their new sizes. Meanwhile, your specified destination folder will be populated with your converted files.



The Convert button



Files Converted