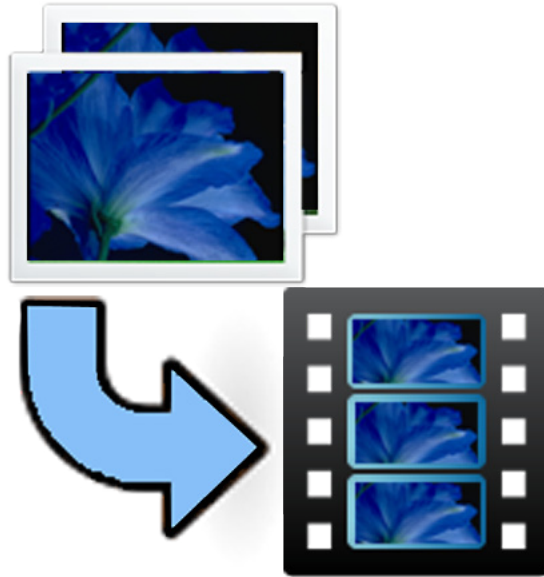# Time-Lapse

This version of Time-Lapse will not run unless version 1.7, purchased from the Mac App Store, has run on this Mac. Time-Lapse is not free.

Apple requires that all new apps and updated versions of previous apps are sandboxed and do not use QuickTime or they can not be listed in the Mac App Store. Time-Lapse can not be sandboxed for several functional reasons and uses QuickTime extensively so new versions can not be uploaded to the Mac AppStore.

Once you have run Time-Lapse version 1.7 on your Mac you can trash it and this updated version will run.

Time-Lapse 1.15

Time-Lapse Panel - Listing Images
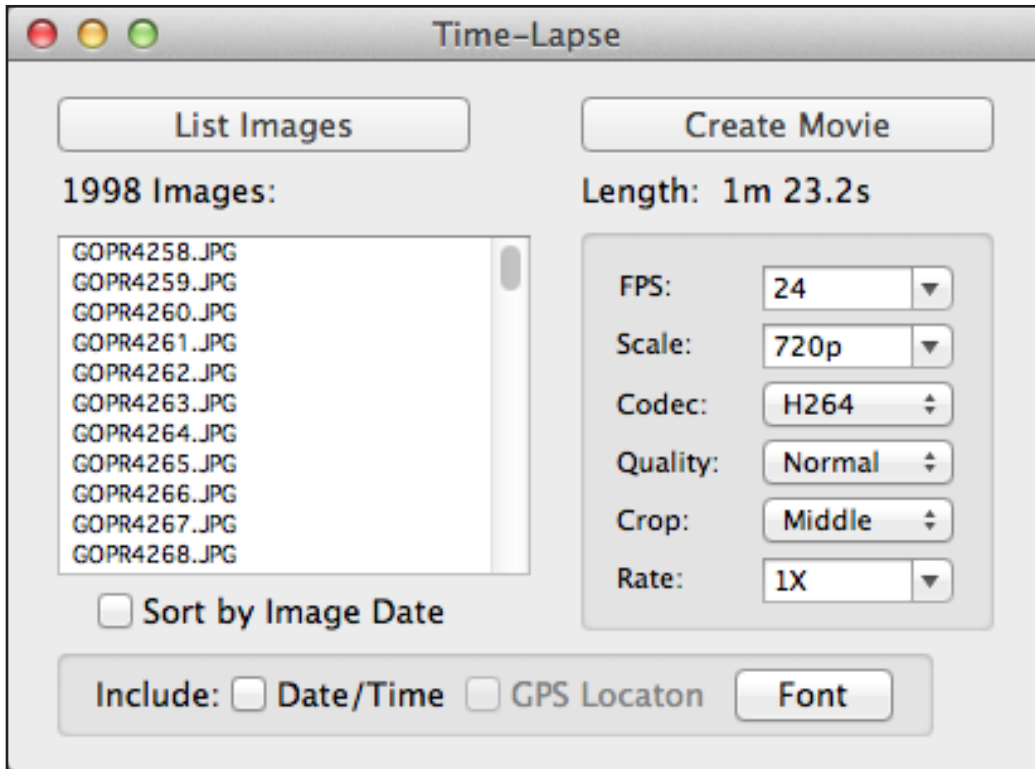
Time-Lapse will turn a sequence of images into a QuickTime movie, each image forming one frame in the movie. All the images must be the same size and should logically form a time lapse sequence. You can select JPEG, TIFF, PNG, Canon CR2 or Nikon NEF images. You can drag all the image files or folders to the image list area or push the List Images button or select the List Images File menu item to select the files or folders from an open files panel. *Note: the drag and drop function is not available when running El Capitan.*

The image files will be listed and processed in alphabetical order and the folder names are included in the sort. If you want to sort the images by their EXIF creation date check the Sort by File Date checkbox. In this case the folder names are not part of the sort. If your images do not have EXIF data the file's creation date is used. You can resort the list by checking and unchecking the Sort checkbox. If your images have long file names you can resize the panel horizontally to see the full name.

When you list images each image is not only sorted by alphabet or time stamp but other data is also checked. These checks verify that each image can be processed and that all the image sizes are the same. EXIF metadata is examined, the creation date for each image is stored and, if the image has GPS data, the recorded latitude and longitude is also stored. This can take a long time! If you have a long list of images, do not need the time stamp or GPS data in your movie and you know all the images are the same size you can skip all the verification checks by selecting the Skip Image Verification checkbox in the Filter panel.

The Include Date/Time and GPS Location checkboxes, if checked, will draw the date and time and/or the latitude and longitude in the bottom left of each movie frame. The Font button allows you to change the displayed font, size, color and opacity. These checkboxes will be disabled if your images do not have this EXIF data.

Time-Lapse Panel - Create Movie
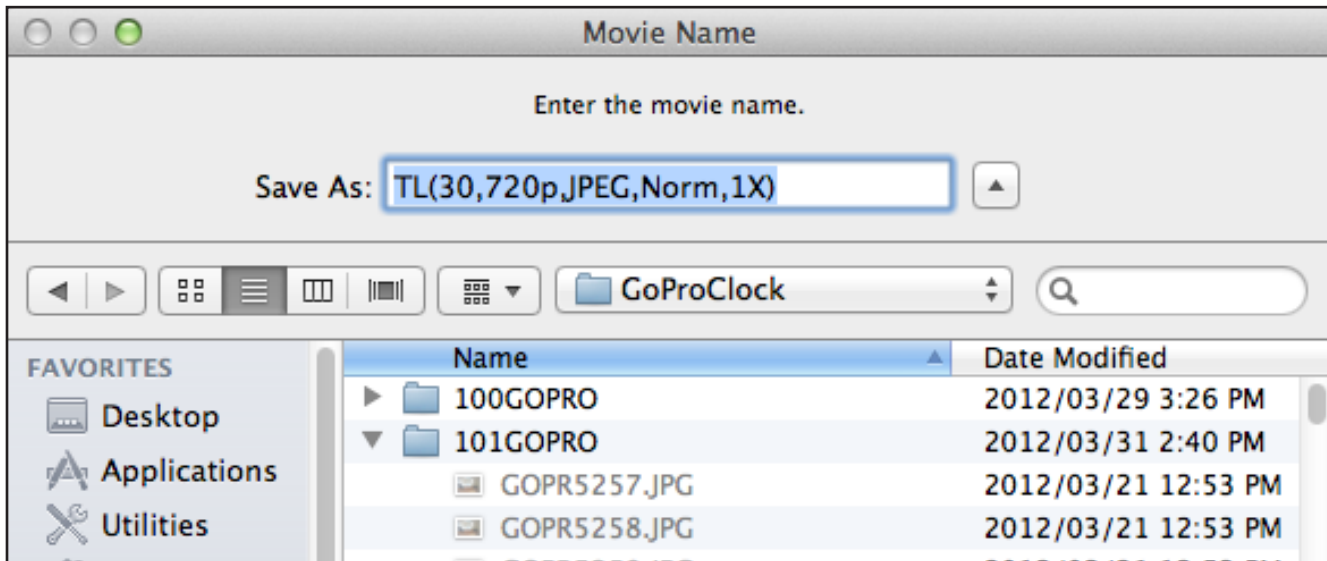
The Create Movie button starts the creation of the movie. You need to list the image files before you create the movie. When you push the Create Movie button or select the Create Movie File menu item a panel will open where you can enter the movie name and where you want the movie file to be saved. If you have previously entered the movie name the movie creation will start without asking for the name again. The movie name will have an index number appended if needed so previous movies with the same name will not be overwritten. If you wish to change an existing name use the Save As File menu item. File names default to the name TL(FPS, Scale,Codec,Quality,Rate). For example: "TL(30,720p,JPEG,Norm,1X)". All movies have a ".mov" extension.

Time-Lapse Panel - Movie Setup

FPS:
The movie will use the frames per second (FPS) value to time each image frame. You can select a standard value from the popup menu or enter a custom value. The FPS range is 0.01 to 600.

Scale:
The Scale value will change the size of the movie frames. A scale of 100% will create a movie the same size as the images. You can select a scale from the popup menu or enter a custom value. The scale value will not alter the aspect ratio of the images.

You can also select HD 1080p (1920X1080) and 720p (1280X720) formats and VGA (640X480), QVGA (320X240), SVGA (800X600), UVGA (1024X768), XVGA (1152X864), WVGA (1280X768), SXGA (1280X1024), 2.7K (2716X1524), 2.7K Cine (2716X1440), 4K (3840X2160) and 4K Cine (4096X2160).

These formats may crop your images. If your images need to be cropped you can use one of the cropping options. If you have vertical images, or just want to crop your images vertically, select the Use Vertical Format checkbox in the Filter panel.

If you have large images and select a scale of 100% with the H264 codec you may encounter an error when you try to create the movie. This is a QuickTime limitation with this codec. Your only option is to select a smaller scale or chose a different codec. This may also happen with some of the other large format sizes.

Codec and Quality:
The Codec selection sets the movie compression format and the Quality value sets the compression quality. Not all codecs can apply all the quality settings.

Crop:
You can select how to crop the images if the movie format does not match the image format. You can keep the middle of the image or crop to include the top or bottom of the image. You can also create a custom crop. Select Custom from the Crop popup menu and the first frame of your selected images will appear in a new window. This window can be resized. The green outline will be in the scale format you have selected. Place the cursor in the center circle and you can drag the outline to the position you want. Once placed select the Create Movie button in the Time-Lapse panel and the movie will be generated.

You can also use the custom crop to change the scale of the crop rectangle. Place the cursor outside of the center circle and drag left or right to change the scale of the outline. If you zoom in past the resolution of the source image the outline will turn red. Again, once the outline is scaled and placed in the image the way that you want it hit the Create Movie button. The custom crop can be used to animate the crop throughout the movie generation. See the Animation section of this manual.

Rate:
If you have a large number of images and need to speed up the time lapse movie you may not want to process every image. This is a good way to preview the movie before you process all your images. The Rate option allows you to jump past some of images in the list as the images are being processed. If the Rate value is 1X you will process every image. If the Rate value is 2X you will process every other image, and so on. You can select a rate from the list or enter your own value. To process all the images in the list make sure the Rate value is 1X.

Export Format:
If you want your movie to play on mobile devices, to be uploaded to YouTube or streamed from a web server QuickTime Player can do all that for you. Usually it is best to select the H264 codec and crop to the eventual size you want for your movie. Create the movie in Time-Lapse (it will be a ".mov" file) and open it in Quick-Time Player. There you will find all the export and editing controls you need. You can also import the movie Time-Lapse creates into iMovie or any other movie editing application.

Time-Lapse Filters
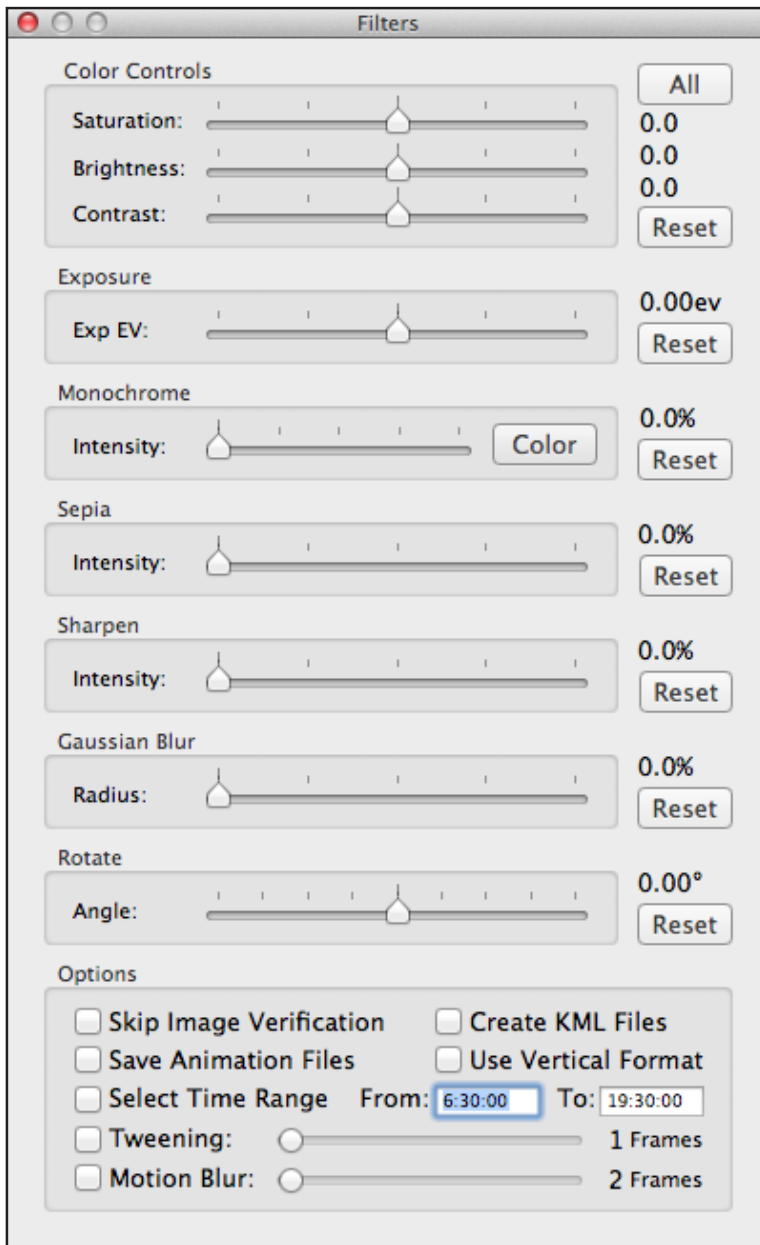
The Filter panel is displayed from the Windows menu. These filters can make corrections to the image and also they can be used for some special effects. For example, the saturation control, if set to -100, will produce a black and white image. The All button will reset all the filters back to their 0 position, but each filter can be reset individually if needed. *The Custom crop window will display the effect of each filter.* Note that the rotate filter will expand the frame so that you do not get black edges.

If you need to make fine adjustments to any of the filter values you can hold down the option key and then click in the slider bar to the left or right side of the slider control.

If you are creating an animation sequence the filter controls transition from the settings at one frame to the settings at the next (except for the sharpen filter, which does not animate). See the Animation section of this manual.

Options:
The Options box contains several checkboxes that let you establish selections for listing images, file creation, cropping format and other selections. These options are saved as preferences so you do not have to select them every time.

Skip Image Verification will list images without doing all the verification checks. Your images will list much faster but no checks are done and EXIF data and GPS location data will not be saved. The verification process during image listing will not add images to the list that fail the checks and those failed images will be identified in a verification log file (you can read the log from the File menu). Checking this box is not recommended.

Save Animation Files will save your animation files when you create a movie that has animation. The file will be named the same as your movie but with a ".txt" extension and saved in the same location. If you want to read in a previously saved animation file with the Read button in the custom crop window make sure this option is checked. See the Animation section of this manual for more information about animation files.

Create KML Files will create a Google Earth KML file from the GPS data in your images. The KML file will be saved when you create the movie with the movie name and in the same location with a ".kml" extension. If your images were taken at different locations a path will be displayed in Google Earth. *You must have this checkbox selected before you list your images or no KML file will be created.*

Use Vertical Format will cause the custom crop rectangle to rotate 90° and your movie will use the scale format you have selected but applied vertically.

Select Time Range allows you to skip images in the list that have a creation time outside of the entered time range. Each image must have EXIF metadata. The From and To times must be in 24 hour format and hours, minutes and seconds must be separated by a colon ":". Minute and second values do not have to be entered ("6" is the same as "6:00:00, "18:30" is the same as "18:30:00"). When you enter a time you must hit the enter key to register that time. The time range you enter is saved as a preference but the state of the selection checkbox is not. As an example, the Time Range option could be used if you have a remote camera that takes images all day and night but you want to create a movie from the images that were only taken in daylight.

Tweening involves adding frames in between the existing frames in an attempt to smooth out jittery time lapse movies. Time-Lapse does this by adding frames blended from the previous image and the next image. If you select a tweening value of 1 then one frame will be added between each actual image frame blended at 50% from the first image and 50% from the next image. A value of 3 will add three frames, blended 75%/25% for the first added frame, 50%/50% for the second added frame and 25%/75% for the third added frame. And so on.

You can add from 1 to 10 tweened frames between existing image frames. Note that because Time-Lapse is adding frames to the movie the movie will appear to run slower unless you increase the frames per second (FPS) value. If you want the apparent speed of the movie to stay the same then you must increase the FPS value by the number of tweened frames plus one times the previous FPS value. For example, if you want your movie speed to be 15 fps but you want to add 2 tweened frames then you need to set the FPS value at 45 (15*(2+1)).

Motion Blur blends two to ten images for each frame. The total number of frames in the movie does not change but each frame becomes a blend of the current image plus a number of previous images. If you select two frames then each frame is an equal blend of the current image and the previous image. Four frames generates a 25% blend of the current image plus the three previous images. And so on. *Note that you can not select Tweening and Motion Blur at the same time*. If you have a jittery time lapse movie you may need to experiment to see if tweening or motion blur gives you the best results.
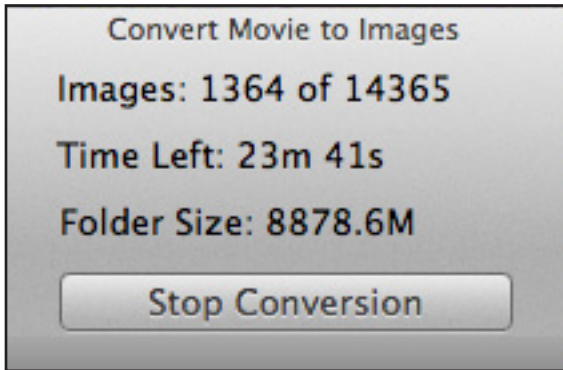
Watermark Panel
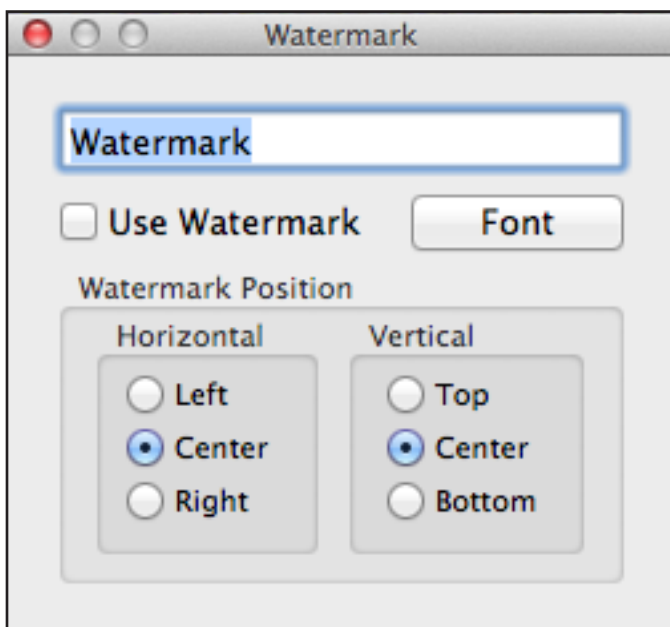
The watermark panel is displayed from the Window menu and allows you to create a watermark text that is overlayed onto each frame of the movie.

Type the text you want to overlay into the edit text panel. The Font button opens the standard font panel where you can select the font, size, color and opacity. The position radio buttons allow you to position the watermark text in the movie frames. All these parameters are saved as preferences. The Use Watermark checkbox must be selected to overlay the watermark in the movie. The watermark text will not appear in tweened frames.

You may need to create small sample movies to see the effect of your selections before you create the main time lapse movie.

File Menu

Convert Movie to Images

Images: 1364 of 14365

Time Left: 23m 41s

Folder Size: 8878.6M

Stop Conversion

In the File menu there is a **Convert Movie** menu item. This function creates a compressed TIFF image from each frame in a QuickTime (.mov), MPEG (.mp4 or .m4v) or AVI movie. You can then list those images for use in Time-Lapse. Once you select your movie, create the destination folder and enter the image name (the frame number is added to each image name automatically) a Convert panel will be displayed. This panel shows how many images will be created, what frame is being converted, the remaining time and an estimated folder size once all the frames have been converted (the folder size will be much larger than the movie). You can stop the conversion with the Stop Conversion button.

The File menu has several other menu items. **List Images** and **Create Movie** do the same actions as the List Images and Create Movie buttons. **Open Animation** opens the current animation file and **Open Verify List** opens the Image List verification error file, if one was created. Select that command with the option key down and the verification file will be deleted. **Close** exits Time-Lapse, the same as Quit. **Save As** allows you to enter a new movie name even if a name has already been entered.

The **Append Movies** item allows you to append several movies into one appended movie. This won't work if the movies are not the same size. If the movies have different fps values their segment within the final movie will play back at their original fps. However, sometimes you can save a lot of time by splitting your images into different folders. Make duplicates of the Time-Lapse app and simultaneously create separate movies with each app instance using a different image folder. Once all the movies are created you can then append them together.

Layer Images

Blend Modes

- ● Lighten
- ○ Darken
- ○ Maximum
- ○ Minimum
- ○ Overlay
- ○ Mask...
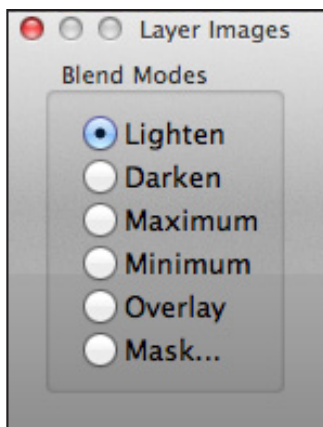
The **Layer Images** item is enabled once you have listed your images. It opens a select images panel so that you can select a second list of images. This second list must contain the same number of images as your primary list and each image must be the same size as the images in the primary list. These layer images will form the background image for a blending of the primary images and these background images. Once you select this second list of images a small layer panel will open that allows you to select one of several different blending modes.

Lighten: Creates blended images by choosing the lighter pixels from either image.
Darken: Creates blended images by choosing the darker pixels from either image.
Maximum: Creates blended images by choosing the pixel with the maximum color value from either image.
**Minimum**: Creates blended images by choosing the pixel with the minimum color value from either image.
Overlay: Creates blended images by blending the pixels from both images.
Mask: For this mode you must also create a grey scale mask image. This mask image must be the same size as all the other images. Black sections of this mask will show the same section of the background layer image. White sections of this mask will show the same section of the primary image. Grey areas will blend the two images accordingly. You can select one mask image and the masking will not vary throughout the entire movie. However, if you create an equal number of mask images you can have the masking effect vary image by image throughout the entire movie.

You can use the Layer Images function to combine two different time lapse movies of the same subject, create a "split screen" effect, or even combine a real time movie and a time lapse movie.

Movie Animation
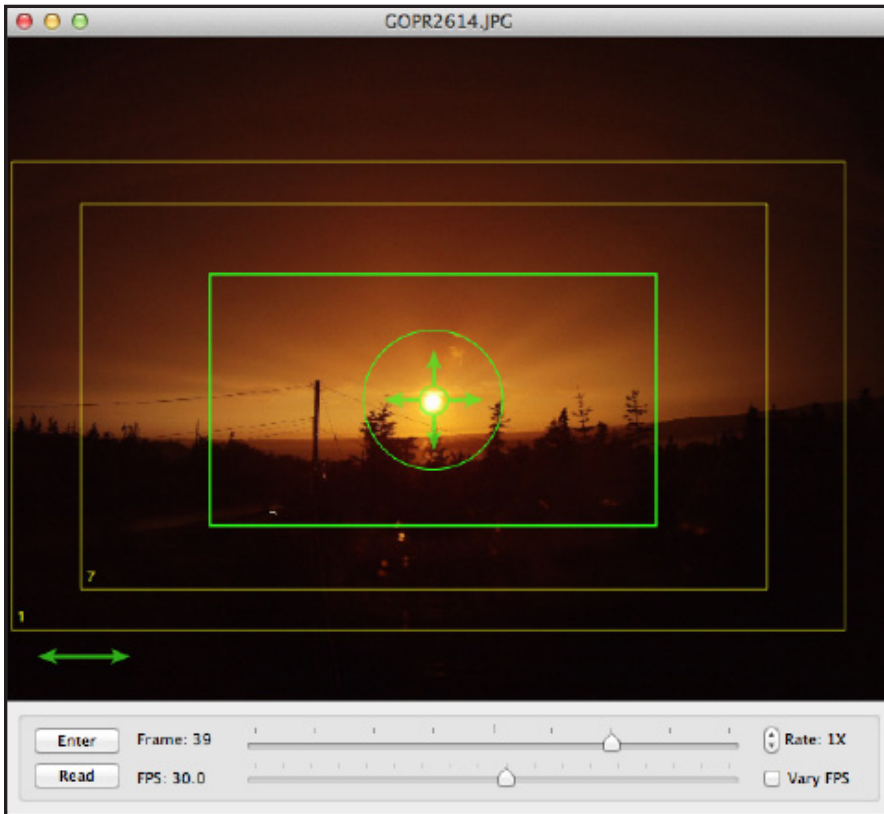
The custom crop window has controls that allow you to animate the crop area and other options throughout the movie generation. To begin an animation sequence form the outline the way that you want to start off the movie, make sure the frame slider at the bottom of the window is at frame one, and hit the Enter button. Now move and/or scale the rectangle, move the frame slider to a new value, and hit the Enter button. The movie generation will smoothly transition the crop from the first crop at frame one to the second crop at the second frame number. You can add as many transitions as you want, just make sure that each change is at a greater frame number and you have hit the Enter button for each transition. Each new crop rectangle is displayed in faint yellow so you can keep track of your animation sequence.

Once you start defining an animation sequence the custom crop window can not be resized.

The frame slider, once placed, will draw that source image in the window. If you need to find an exact frame you can use the keyboard left/right arrow keys to move the frame slider one frame at a time. If you need to start over select Custom from the Crop popup menu again and all your animation settings will be reset and the window can be resized again.

The FPS slider allows you to vary the frames per second rate throughout the animation sequence. You can speed up or slow down the movie playback rate and the fps rate is smoothly transitioned from one setting to the next. The Vary FPS checkbox enables the FPS slider and tells the animation sequence that you want to vary the FPS.

You can also adjust the Rate value for each animation sequence. The stepper control changes the rate by 1X. The up/down arrow keys change the rate by 10X and if you hold down the option button the up/down arrow keys change the rate by 100X. Because the Rate value involves skipping images the transition from one rate value to the next is immediate. So if you set the rate to 1X at frame 1, then set the rate to 5X at frame 100, and then set the rate back to 1X at frame 500, the animated movie will use every image from frame one to frame 99. From frame 100 to frame 499 the movie will use every fifth frame. From frame 500 on the movie will use every image. Also, again because you are skipping images, the frame numbers must be a multiple of the rate value. If your frame setting is not a multiple of the rate the closest frame that is will be automatically selected.

All the filters are available for animation. You can set up filter values for any frame, move on to another frame and change the filter values. The movie will smoothly transition each filter value from one entered frame to the next.

Animation File:

When you create an animation sequence in the custom crop window all of your frame data is saved in a file. You can open this file from the File menu at any time. If you have selected the Save Animation File option in the Filter panel, when you create a movie this animation file will be copied to the location of your movie with the same file name as your movie with a ".txt" extension. This file lists all your setup and animation data. You can create a new movie with this file! List your images, go to the Custom Crop window and hit the Read button. You can select any saved animation file. All your animation sequence data will be loaded into Time-Lapse from this file and you can then create a new movie with this animation sequence. Note, however, that the size and number of images must match what is listed in the animation file.

Not only can you rerun an animation sequence, you can also modify the file. For example, you could change the codec, FPS or quality settings. The individual frame data is a bit more difficult and you need to make changes there with caution.

Animation Example:

Lets say you have listed 100 images. Go to the custom crop window and also open the Filter panel. Move the cropping rectangle to center the frame. Keep the rate at 1X and do not adjust any filters. Hit the enter key. Now move the frame slider to 25, increase the rate to 2X and the Sepia filter slider all the way to the right. Also scale the crop rectangle to a small size centered over some area of the image. Hit the enter key. Next move the frame slider to 75, do not adjust the crop rectangle, change the rate back to 1X and leave the Sepia filter slider where it is. Hit the enter key. Finally move the frame slider all the way to the right (frame 100) and enlarge the crop rectangle to the full width, center it and move the Sepia filter slider all the way to the left (or reset the filter). Hit the enter key. Now hit the Create Movie button.

The generated movie will start off at your first large crop rectangle and transition from frame 1 to frame 25 zooming in to the crop rectangle you set at frame 25 while transitioning from normal color to sepia. From frame 25 to 75 the movie will stay at the same size, sepia color, but will run twice as fast. Finally the movie will zoom back out, run at normal speed and transition from sepia to normal color, at which point the movie ends.