

## Notes on Using DPP4 and PSE14. Part 2: PSE14 - Ian Wilson PhD(optics)

Photoshop Elements (PSE) is a cut-down version of the flagship Photoshop CC. The basic features and underlying computer code are identical; however, PS CC has many more bells and whistles that are used in producing creative art, graphics and special effects that are not relevant to bird photography. The workflow we use is relatively simple and can be easily handled by PSE versions going back to at least PSE7. So although this note is for PSE14, most of the important details will be the same if you are using an earlier version of PSE.

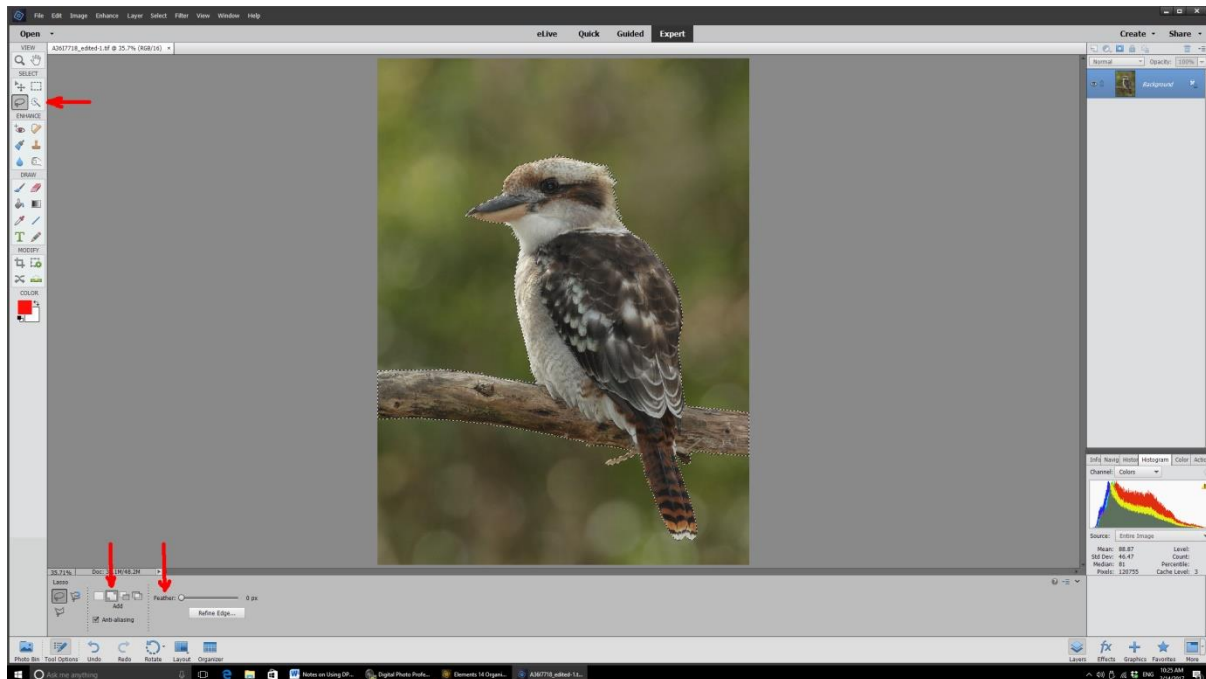
We begin by importing the 16-bit TIFF file prepared using DPP4 (see Part 1 of this article, in the December 2017 Newsletter). The file can be imported using **Import | From Files and Folders** on the **PSE Organizer** front page (button top left). Alternatively, you can use the **Watch Folders** option also found on the Organizer front page under File. Set this up to automatically import any new picture files appearing in nominated folders on the hard drive. When the files are imported to the Organizer, they will pop up on a new page where you can delete any you don't want to import, and attach catalogue tags to those you want to keep. My catalogue is the simplest kind with Australian birds listed alphabetically by species name and you can also use another tag for bird location. Note that with later versions of PSE there is a RAW converter (a version of Adobe Camera Raw) plugged in so you can also open CR2 files (not recommended as DPP4 does a better job) and you can include CR2 files in the catalogue. So if you wish, you can create a version set that includes the CR2 file, the imported TIFF and TIFFs saved at various stages in the PSE workflow, and the final output JPEG that you post to the BLP gallery. *The Catalogue is essential for keeping track of your images and is a nice feature of PSE.* I am assuming you have already set up a catalogue and have figured out how to tag an image so I will move on to the image processing workflow.

Once you have your TIFF imported and catalogued you open it in the **PSE Editor** using the appropriate button in the bottom tool-bar of the Organizer page. This will open up your TIFF in the editor workspace shown in the screen grab Fig. 1. Notice that I have the histogram window open; it is very useful for keeping an eye on the lighting and colour. You will find it using the top tool-bar **Window | Histogram**; there are several options, I like to see the colours. You should also check for blown highlights in the individual colour channels. You do this using the Levels adjustment window which you will find on the top tool-bar under **Enhance | Adjust Lighting | Levels**. Hold down the Alt-key on your keyboard and click your cursor on the 255 arrow-head mark on the horizontal axis of the histogram. This will turn on a black threshold screen; any coloured patches indicate areas of blown highlight. If it is a serious blow-out you will need to go back to DPP4 and fine tune the lighting adjustment. One other little point I will mention is the file name at top left of the image window which ends with (RGB/16) indicating that this image is 16-bits per colour channel as we would expect for a 16-bit TIFF file. I mention this because later we will change it to an 8-bit TIFF (RGB/8) and it is important to always know what kind of file you are working on.

### Step 1. Select the Bird

The first important step in the workflow is to select the bird. I have already done this in the image shown in Fig. 1, as you can see by the dotted outline around the bird. If you have a bird on a perch, then you should also select the perch at the bird's feet that is sharply in focus. On a live screen the selection looks a bit like a line of marching ants. The selection needs to be accurate and as this is most tedious and time-consuming, you should only do it for your best images. There

is no easy way that I am aware of to make an accurate selection. I start with the **Quick Selection Tool** which you will find in the Select tool-box near the top left of screen. The typical brush size I use is 10–30 px. Don't be too fussy at this stage of the selection. To accurately finish off the selection you need to zoom up the image about 300% and use the **Lasso Tool** with the Feather set to 0 px. Switch between **Add** and **Subtract** in the Lasso control space near the bottom left of the screen. When you have completed the selection to your satisfaction, you must immediately save all this hard work by going to the top tool-bar and **Select | Save Selection** and then go to File and **File | Save As**. This will save the image and selection with a file-name extension that is called edited\_1.tif. I hope you can see all the details just discussed in the screen grab Fig. 1.



*Fig. 1. Selecting the bird and perch. The Lasso tool with Feather = 0 px is used to make an accurate selection while the image is zoomed up about 300%. The histogram is for the selection only (bird and perch).*

## Step 2. Background Noise Reduction

Nearly all images need some background noise reduction, especially if they are used to make large prints or are displayed on high-resolution screens. I usually process my images with these possibilities in mind even though most images are downsized for web display. Downsizing introduces beneficial noise reduction, improves the dynamic range and colour depth so for web display you may not need to do any background noise reduction. There are many NR options ranging from relatively simple tools that are part of PSE to heavy duty plug-ins that one can buy from small high-tech companies that specialize in developing state-of-the-art processing software. For novices, I recommend you learn to use what you have in PSE and later on try one of the more advanced NR plug-ins.

So what are the options in PSE14? You will find two NR options under **Filter | Noise** called Median and Reduce Noise. **Reduce Noise** works well on the fine-grain noise one finds in the background of well exposed images captured with a fairly low ISO. The **Median** filter works well on coarse grainy noise like you find in images captured with a high ISO or when you try to crop too much. All NR results in some loss of detail (sharpness) so you must make a trade-off between sharpness and noise and be aware that some NR software can introduce undesirable artefacts.

My Kookaburra image was captured with a Canon 1DxII at ISO 800 and has very little background noise but I will still apply some NR. First, I need to *select the background* using **Select | Inverse** and check that the ‘marching ants’ have jumped to the outside frame. When the Reduce Noise window is opened there is a slider to **Reduce Color Noise** (chrominance noise); set this to zero as we have already taken care of chrominance noise in DPP4. That leaves the Strength and Preserve Detail sliders. Backgrounds are usually out of focus so preserving detail is not an issue and the **Preserve Detail** slider can be set to 0–10%. Adjust the **Strength** slider until the noise is acceptably low; usually Strength 8–10 is about right. If you need stronger NR choose the Median filter and set the **Radius** slider in the range 1–5 px; be aware that a lot of detail will be lost with radius 5 px and you may start to see artefacts around the edge of the bird.

Of the third-party NR plug-ins, **Dfine**, part of the **NIK Color Efex Pro** suite, does a good job and is a free download from Google. The same package contains a Detail Extractor which is used by some serious bird photographers. My preferred NR software is the **Neat Image** plug-in which is available as 32- and 64-bit versions suitable for use with PSE. After installing the Neat Image software, it can be found in the PSE drop-down menu under the Filter tab and can be applied to selected areas of the image, such as the background, as shown in Fig. 2. Neat Image is believed to be an advanced form of Wavelet Theory, generally regarded as the best NR available. It is very effective and preserves detail remarkably well and also provides sophisticated sharpening options including for out of focus selections. Fig. 3 shows the result of using Neat Image for background noise reduction viewed at a magnification of 200%.

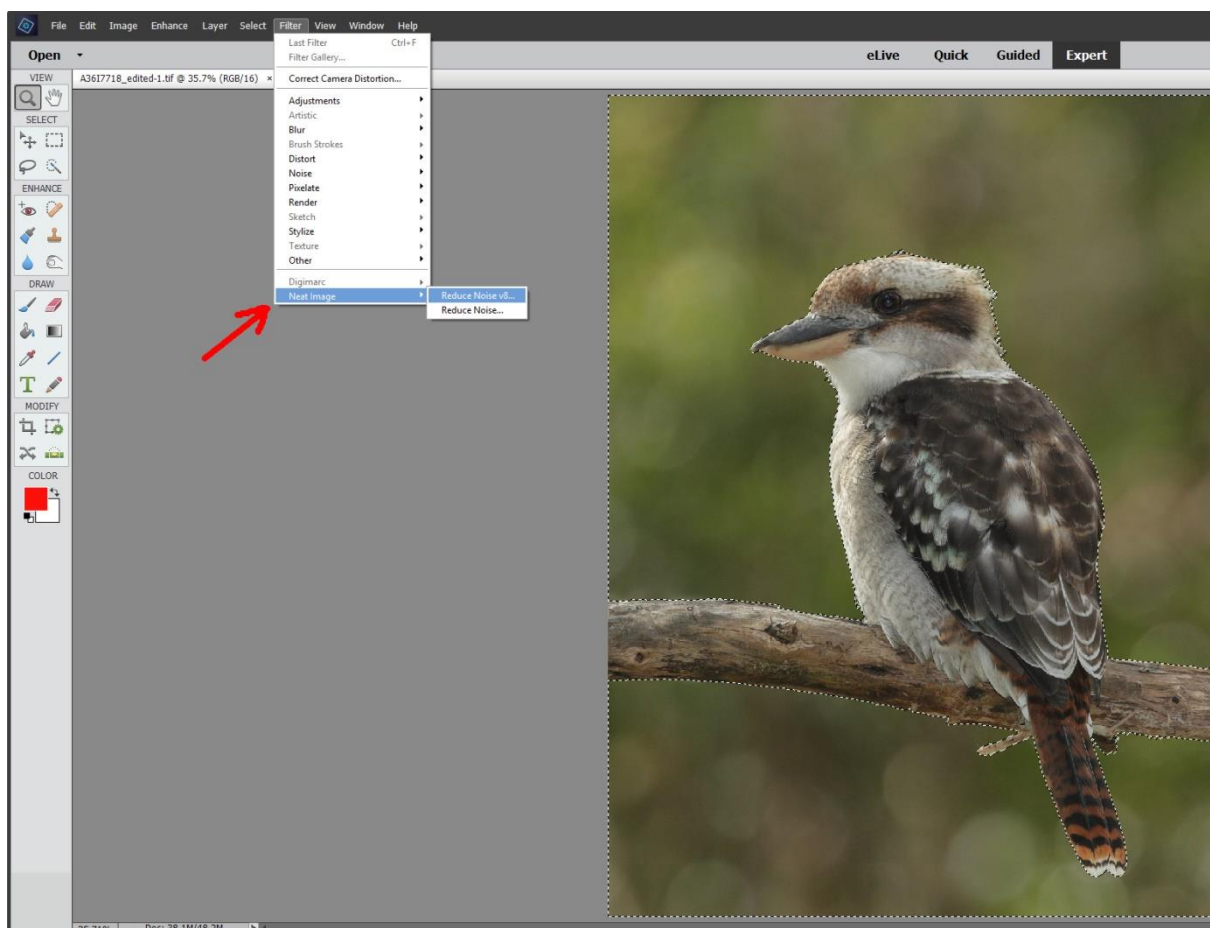
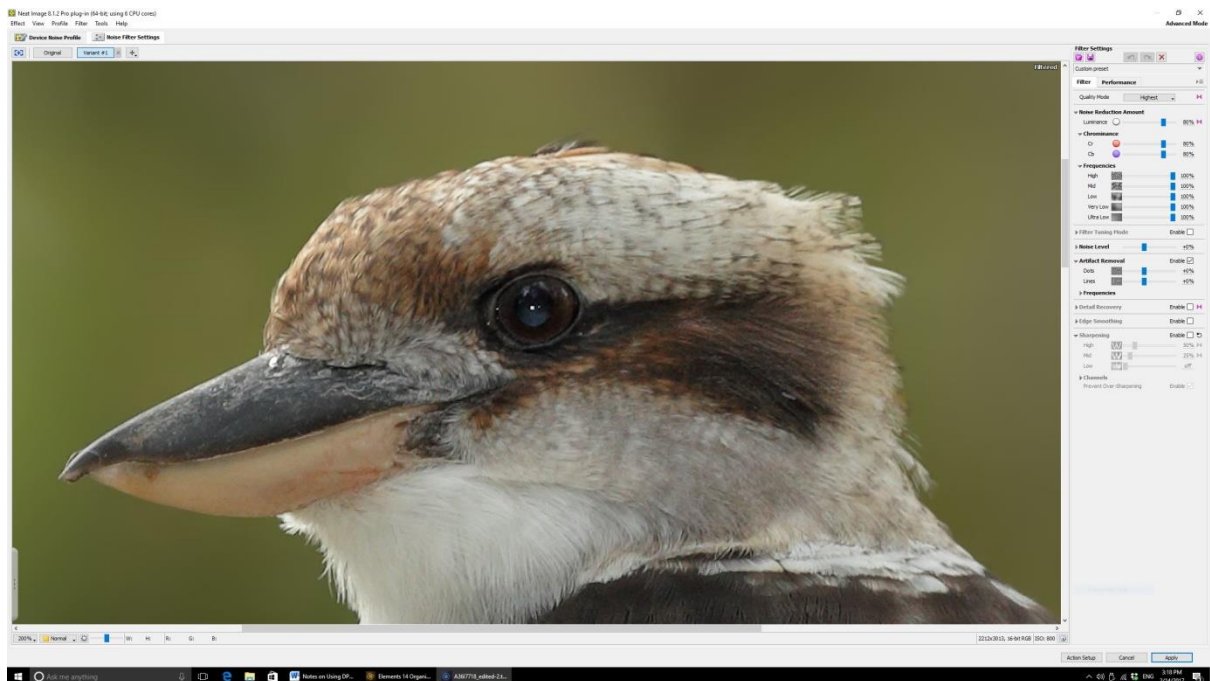


Fig. 2. The background selection is shown by the “marching ants”, which here include most of the image border. The Neat Image version 8 plug-in is found in the PSE14 dropdown menu under the Filter tab.



*Fig. 3. Image displayed at 200% after applying Neat Image noise reduction to the background.*

It will usually not be necessary to apply any NR to the bird. This is because noise is more difficult to see in those parts of the image that are sharply in focus and contain a lot of detail. However, if part of the bird has unattractive noise you can use the Lasso tool to select the noisy area and apply NR using one of the options discussed. Similarly, if you find a part of the bird is 'soft' because it is out of focus, you can apply some selective area sharpening. This situation often arises when there is not enough depth of field to get all the bird in sharp focus. In this situation the finest detail will be lost but there will usually be some medium scale detail that can be sharpened enough to hide the fact that the selected area is slightly out of focus. The sharpening tool required in this case is **UnSharp Mask (USM)** as it can be adjusted to favour the medium scale detail. The USM radius required to sharpen medium scale detail is usually in the range 1–3 px. The Amount needed will be less than 100% and the Threshold can be used to reduce noise that may be introduced. If you have Neat Image you can use the out of focus sharpening option with a little luminance noise reduction if required. I am going to do this with my Kookaburra image because the area from behind the bill to the back of the head is slightly out of focus and it is critical to have this part of the bird, especially the eye, looking good.

### Step 3. Fine Tune Lighting and Colour

With the bird selected it is also possible to separately fine tune the lighting of the bird and the background using adjustments from the **Enhance** menu. This is not always necessary but can sometimes make a good picture look even better. The histogram you see in the bottom right corner of Fig. 1 is the histogram of the selection, that is, the bird and perch. As we suspected back at the RAW adjustment stage, the flash has left the Kookaburra looking a little bit warm and the mid-tones look like they could do with a boost. This is an ideal situation in which to use the **Auto Levels** adjustment with the output brightness limited to 245–250 DN using the Output Levels slider in the **Levels** dialogue box. This will have the effect of bringing the RGB channels into better tonal balance and increasing the brightness of the mid-tones a little.

To make the bird stand out even more, we can reduce the brightness of the background. The background can be darkened using the mid-tone point in **Levels** or the mid-tone slider in

**Shadows/Highlights.** As it is the background, we are not too particular about whether the blacks start to block up (0 DN) so we could also darken it using the normal **Brightness** slider. While the background is selected you can also make it 'warmer' or 'cooler' if required. For the Kookaburra, I decided to lower the brightness of the background by 15 units; I also selected the bird's face with the Lasso tool, Feather = 8, and brightened the face by 15 units.

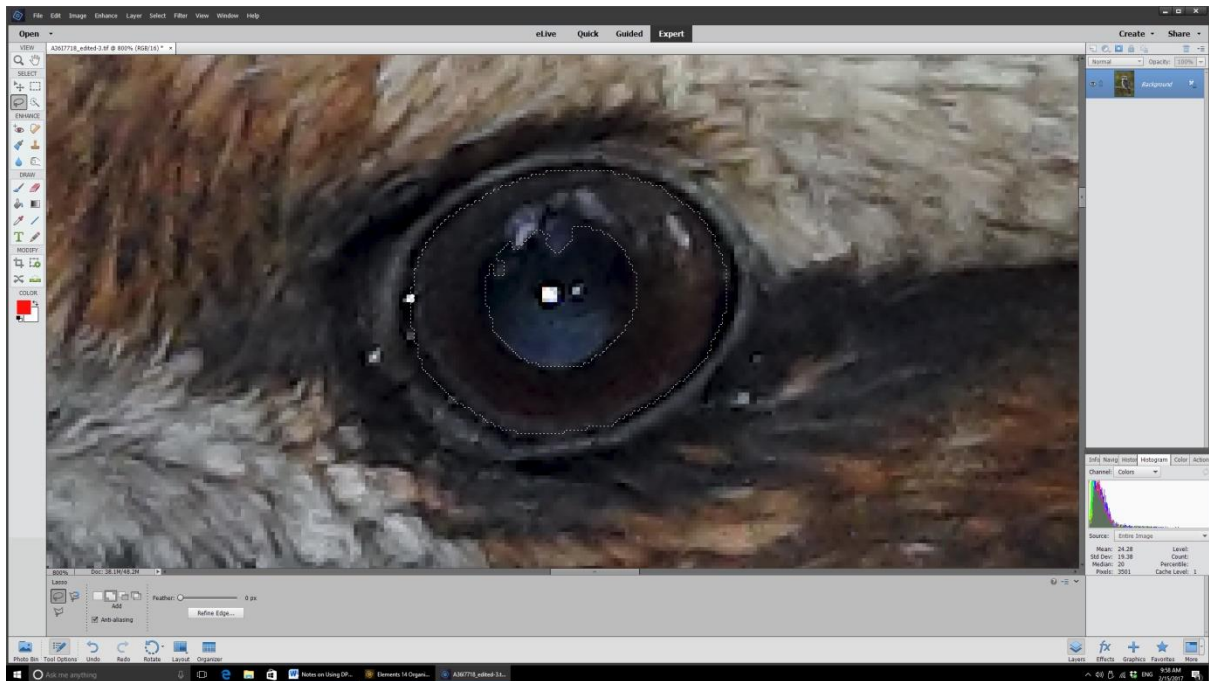
This is also the time to adjust the **Saturation** of the colours of the bird if needed. It may be necessary if you are processing a high ISO shot because the colour dynamic range will be reduced and the colours may look a bit washed out. Once again, you need to load the bird selection and then go to the top tool-bar to **Enhance | Adjust Color | Adjust Hue/Saturation**. Boost the saturation by about 10 units; more than this will risk giving the bird an un-natural garish look. You can also adjust the saturation in individual RGB colour channels or in CMY, for example, you may want to desaturate a green colour tint reflected from green vegetation up onto a bird with a white belly. The blue patches in the wing feathers of the Kookaburra looked a bit washed out to my eye so I made a rough selection around the wing area and increased the saturation of the blue and cyan, just enough to put a little colour back into the patches.

After applying background NR and any of the other adjustments I have mentioned, it is a good idea to save the resulting image as an intermediate step in the workflow. This is so that you can back-track if you do something later on that you regret. I would usually Save As at this stage and PSE will put the saved file in a version set with earlier versions of the image.

#### Step 4. 8-bit TIFF Adjustments

So far, all the adjustments we have made have been on 16-bit TIFF versions of the image. However, PSE has limited support for 16-bit processing and some of the tools we need are only available as 8-bit TIFF applications. The most import is the **Clone Stamp** which we nearly always need to clean up the image. To change from 16-bits to 8-bit go to the top tool-bar: **Image | Mode | 8 Bits/Channel**. Now there are more tools available including **Layers** which you may want to use for a canvas extension, with the **Healing Brush**, or with other special tools. If you have clone stamp work to do on the background, you must 'defend and protect' the bird from any action of the clone stamp. To defend and protect, all you need do is load the bird selection and select the inverse as above. Similarly, if you need to do any clone stamp work on the bird, select the bird only so that no cloning artefacts turn up in the background. It takes quite a bit of practice before one becomes proficient at using the Clone Stamp and the related Healing Brush on the bird; it is difficult to achieve a really convincing result. The first clone stamp work I will do on the Kookaburra image is to remove the splinter of wood that is sticking out from the perch below the under-tail feathers; I find this little piece of wood catches my eye and is distracting.

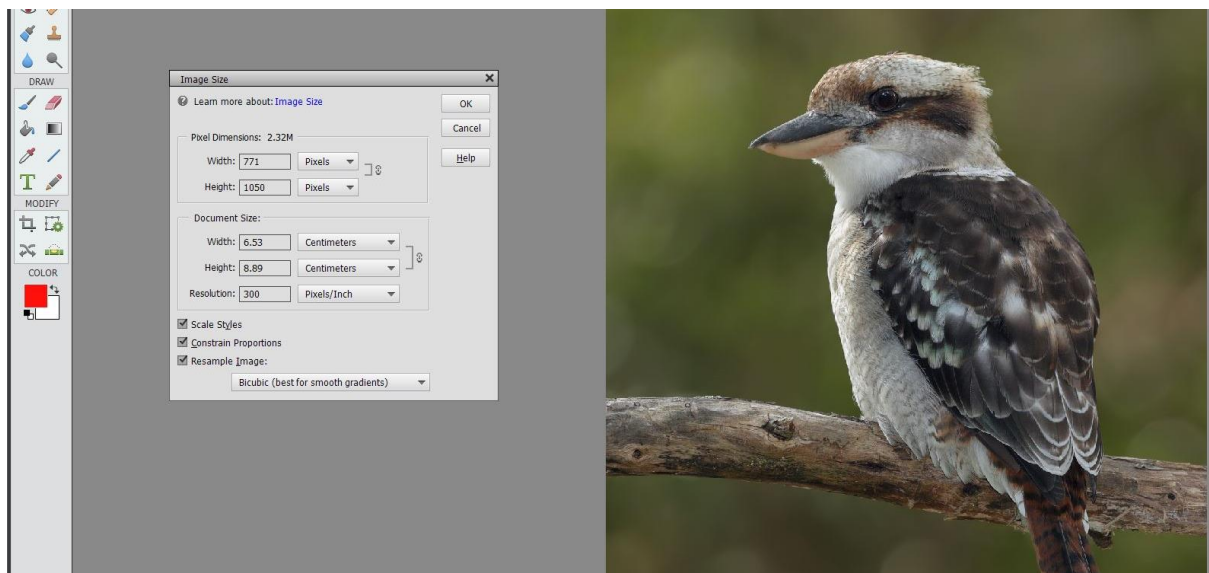
If you use a camera-mounted flash it will almost invariable result in the bird having some 'steel-eye' or 'red-eye' which will need to be fixed. Even without flash you may want to adjust the brightness of the eye or highlights from the surroundings reflected off the surface of the eye. The best way to make these adjustments is to select the iris with the Lasso tool (Feather = 0) and raise the brightness if required (see Fig. 4). Then select the inverse, that is the pupil, and use the clone stamp tool to darken the pupil using a dark part of the image as the clone source. You can use the **Burn** tool to fine tune the darkness of the pupil and the **Dodge** tool to adjust the brightness of the highlights reflected off the eye. Sometimes there are no highlights from the surrounds but there will be one or more highlights from the flash; in this case retain the main flash highlight and clone out any others.



*Fig. 4. Showing the iris selection using the Lasso tool. The subsequent adjustment will raise the brightness of the iris by about 30 units and brighten the reflections from the surroundings using the Dodge tool. Then the inverse selection will allow the steel-eye and flash highlight in the pupil to be removed by cloning from a dark source somewhere else in the image.*

## Step 5. Downsize

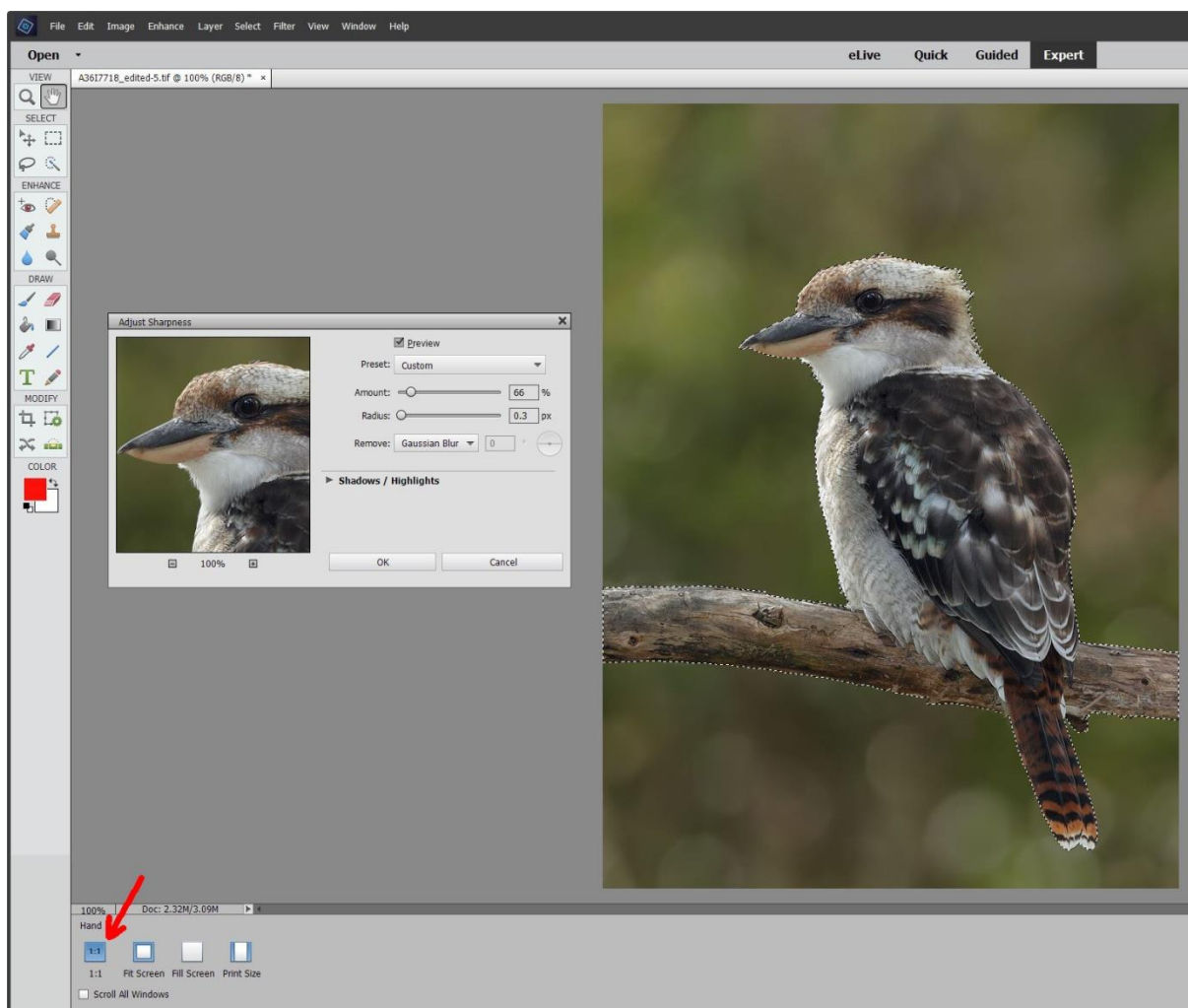
You will need to downsize your processed image to a size acceptable for our gallery, that is, maximum width 1400 px and maximum height 1050 px. In general, your image will not finish up 1400 × 1050 px because you used the Free cropping tool without restrictions on the image proportions. That's perfectly OK as long as you make one of the downsize dimensions 1400 px or 1050 px. You can make the image smaller if you wish but I advise against that because you want maximum impact with a nice big image. To resize the image go to the top tool-bar and **Image | Resize | Image Size** which will open up the Image Size window shown in Fig. 5.



*Fig. 5. Showing the Image Size window. For the BLP gallery images should have width 1400 px or height 1050 px as in this illustration.*

The first things you need to check are the tick-boxes down the bottom of the window. Then, at the very bottom, you need to select 'Bicubic (best for smooth gradients)'. There are some other options including one called 'Bicubic Sharper (best for reduction)'; do not choose this one even though it seems relevant. Then check that the Resolution is 300 pixels/inch and go up to the Width and Height boxes. I have set the height to 1050 px and the width was automatically adjusted to keep the original proportions and turns out to be 771 px so all's well for later posting to our gallery. Click OK and the downsize is done; we have a TIFF of dimensions 771 × 1050 px.

The downsizing involves using a bicubic approximation to resample the large, high-resolution image to form a smaller, lower resolution image with fewer pixels. When an image is resampled in this way there is some beneficial noise reduction, improved dynamic range and more colour depth, but because an approximation is involved a mild blur is introduced which we need to remove to show the image at its best. The blur is like Gaussian blur and can be removed using one of the tools in PSE. To do this we first display the small downsized image on the screen at 1:1, so we can better see what we are doing, and then re-load the bird selection. We then go to the top tool-bar to **Enhance | Adjust Sharpness** and in the Adjust Sharpness window select **Remove: Gaussian Blur**. The optimum parameters are Amount 30–75% and Radius 0.3–0.5 px. Fig. 6 shows the Adjust Sharpness window where I have set the Amount to 66% and Radius 0.3 px.

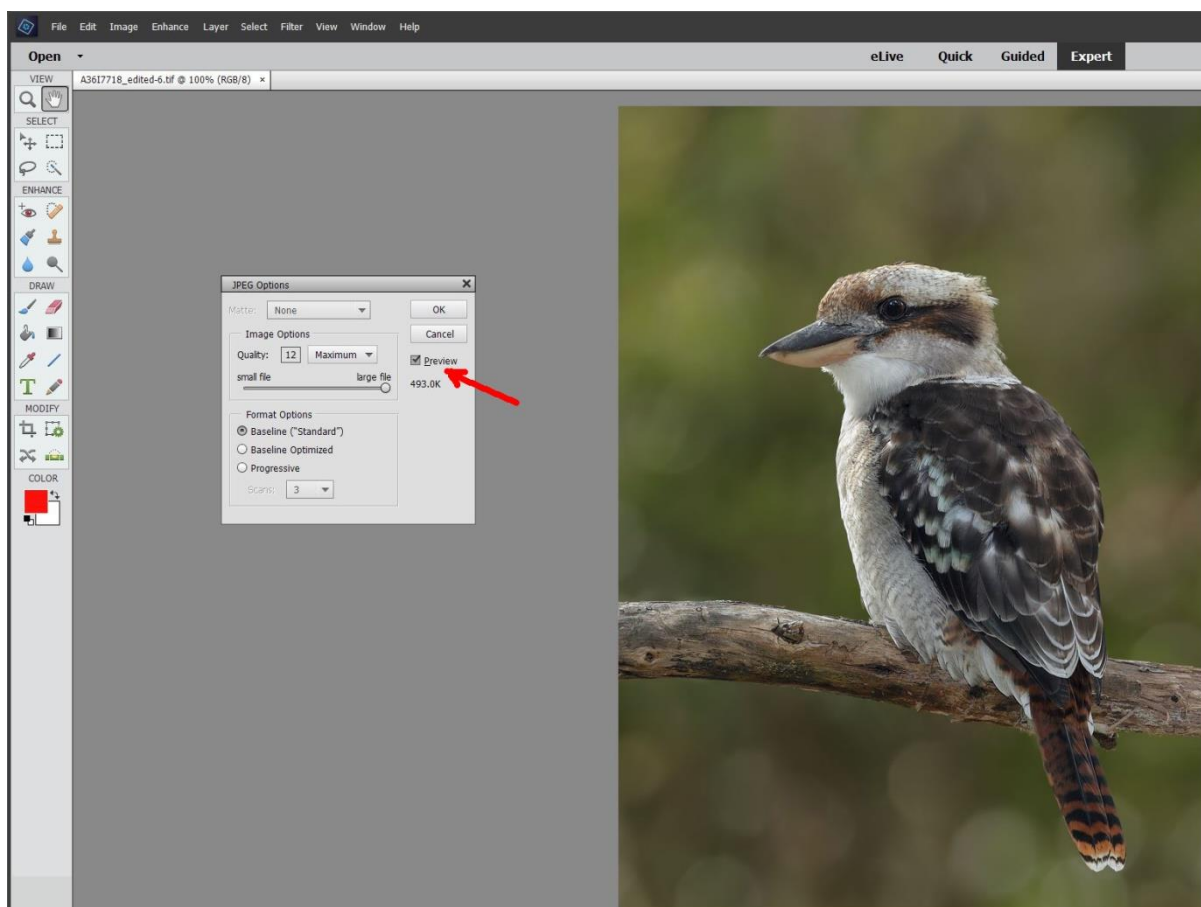


*Fig. 6. Showing the Adjust Sharpness window. For output sharpening we recommend the Remove: Gaussian Blur option with Amount 30–75% and Radius 0.3–0.5 px. Be sure to view the actual pixels using the 1:1 button.*

Now that the image is downsized and output sharpened it should be saved using Save As in the version set with earlier versions of the image. It only remains to convert this file to a JPEG suitable for the BLP gallery.

## Step 6. Convert to JPEG for Gallery Display

The best way to prepare your output JPEG is to use the **File | Save As** option with JPEG as the saved file type. It will convert your small TIFF into a JPEG and the only thing you need to check is that the JPEG image is the correct file size to suit our gallery, that is, a file size less than 1024 kB. Fig. 7 shows my Kookaburra with the JPEG Options window open and the Preview box ticked to show the image file size is 493 kB. If the file size is too big for the BLP gallery then it can be reduced using the Quality adjustment slider. This can be an issue if the image has a lot of background detail or noise un-necessarily increasing the file size.



*Fig. 7. Showing the options for saving a JPEG. Tick the Preview box to see the file size and if necessary reduce it to suit the BLP gallery using the Quality adjustment slider.*

Before clicking the Save button which opens the JPEG Options window, make sure you have the Embed Color Profile (ICC profile) box ticked as this will ensure that everyone who views the image will see the same colour rendering if they have a reasonably well calibrated monitor. The EXIF data will also be saved and attached to the JPEG. It only remains to press OK and save the JPEG in the PSE version set or your preferred folder. When you post an image to the BLP gallery it is helpful if you record in the equipment field of the gallery upload screen the most important EXIF data. This includes the camera model, lens type, aperture, exposure time, ISO, flash details and mention whether the image was captured hand-held or using a tripod and that you used DPP4 and PSE to process your image. If you would like a critique of your image it will also be helpful to outline the post-processing adjustments you have made to the image.

## Summary of PS Elements Workflow

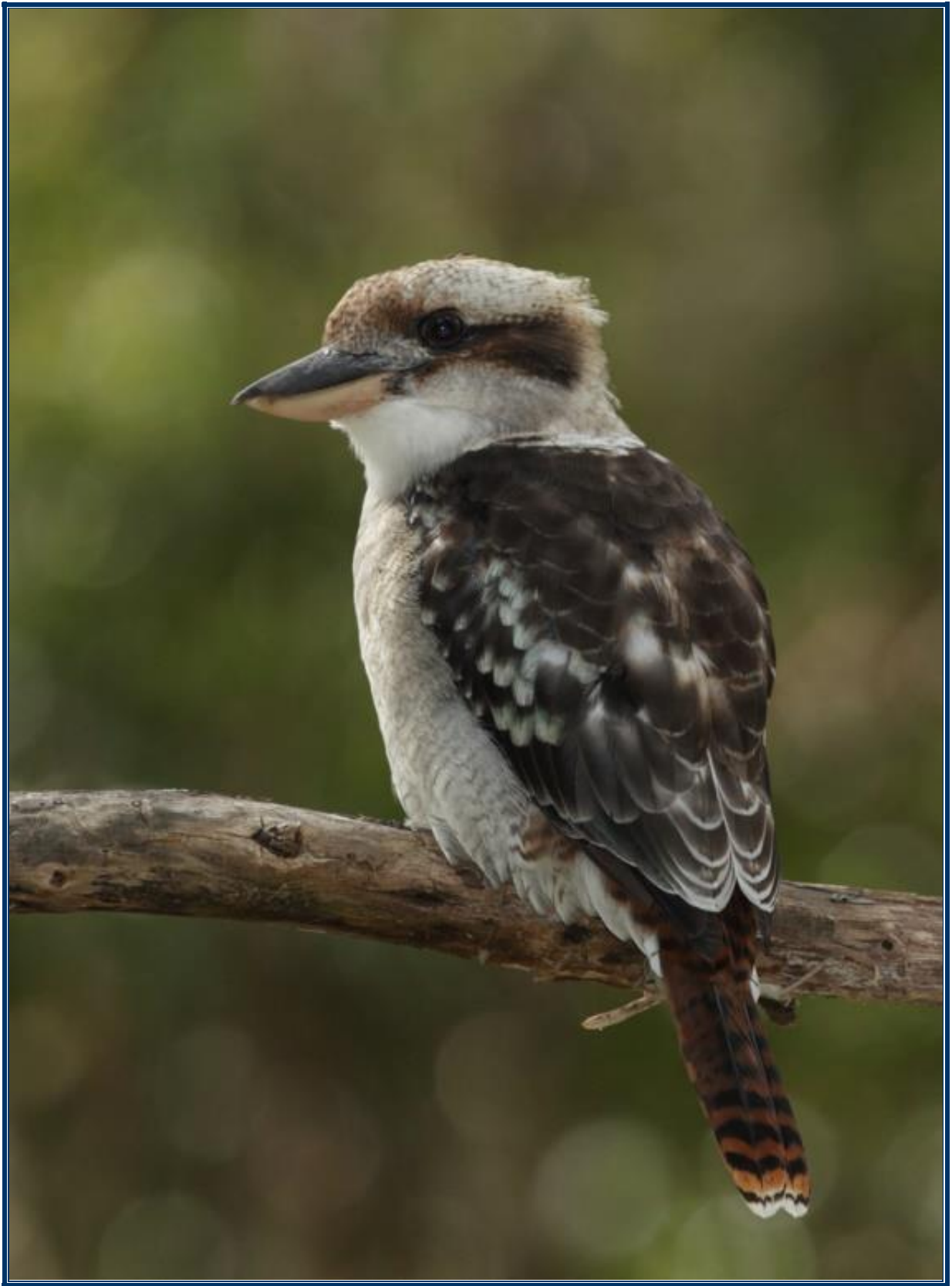
1. Import and catalogue 16-bit TIFF file.
2. Select the bird and perch.
3. Apply background noise reduction.
4. Apply selective area noise reduction and/or sharpening to bird if required.
5. Fine-tune lighting and colour of bird and/or background if required.
6. Convert to 8-bit TIFF for layers, clone stamp, dodge and burn tools, etc.
7. Adjust bird's eye if necessary.
8. Use bicubic downsize with width 1400 px or height 1050 px.
9. Output sharpen using remove Gaussian blur option.
10. Convert and save as JPEG less than 1024 kB file size.

An after-thought that has occurred to me is that you should turn off the Face Recognition feature in PSE. This is very resource intensive and will have your computer slowed down and labouring for hours while it searches for human faces amongst your bird photos. To disable it you open the **Organizer** and go to **Edit | Preferences | Media Analysis** and un-tick both Run Face Recognition Automatically and Analyze Media for Visual Search Automatically.

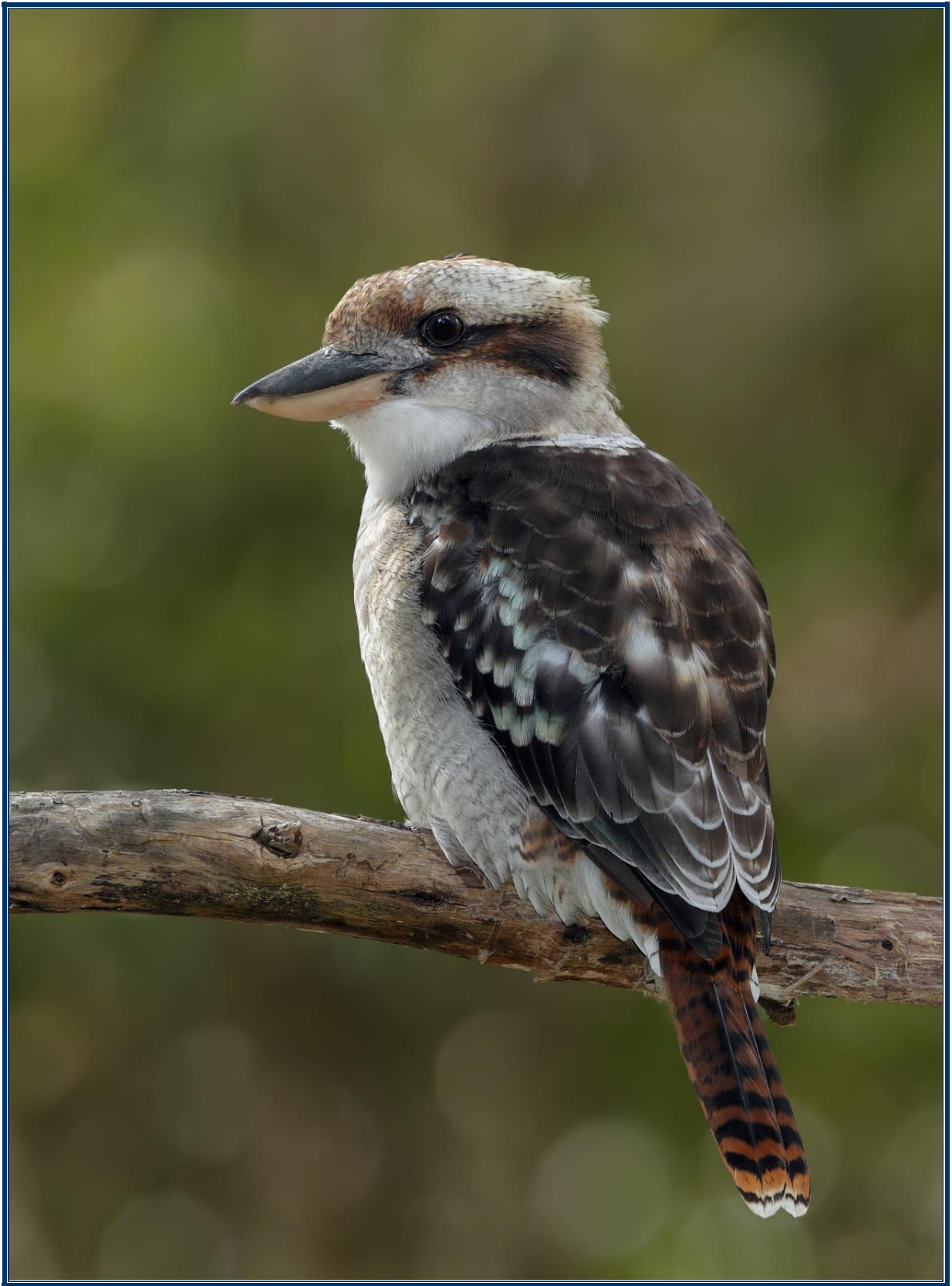
That's about it; you should now be able to match the work of the best photographers. There are many little details I have not mentioned but which you will learn along the way or if you get stuck just shoot off an [email to me](#) and I will try to answer your questions. If you are curious to see how my Kookaburra image turned out, look below where it is shown as a JPEG ready for the gallery. Not a great picture but it served a useful purpose as an illustration for these notes.

## Acknowledgement

I thank Dr Glenn Pure who kindly shared his experience using DPP4 and PSE, made time to critically read these notes, and offered helpful suggestions on how to improve them. I also thank Rob Parker whose finely honed editorial skills always add some welcome polish to my *Newsletter* contributions.



*Before ...*



*... and after.*