Challenge Image: Cage Removal

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In this lesson, we're going to work on s challenge image that was submitted by a Masters Academy member. The image features a bird, perched in front of the wall of a cage. Our challenge will be to remove the cage bars, leaving a clean background.

Before removing the cage, we'll start by optimizing the image. The image is a JPEG, so we won't be starting in Lightroom or Adobe Camera Raw. We'll open the image directly in Photoshop. I would still like to have access to the adjustments offered by Lightroom and Camera Raw, so we'll open the Camera Raw filter, which can be found under the Filter menu at the top of the screen.

Note that whenever you are adjusting a JPEG, you won't be able to push the image as far as you would be able to if the image were a raw file. That's because a JPEG contains so much less information than a raw file.

In this challenge image, we are going to remove the bars of the cage in the background.

We'll use the sliders in the Camera Raw filter to make the following adjustments:

Correct beak: I feel that the bird's beak is a too bright and it would be nice to darken it a bit, therefore bringing back some more detail to the area. This can be done by lowering the Highlights slider.

Brighten the whites: By lowering the Highlights slider, we are darkening all of the bright tones in the image, including the whites. You can see if that is happening by looking at the histogram. The bars in the histogram represent the various tones in the image. If there are no bars on the far right side of the histogram, it means that there are no white tones in the image.

Before removing the cage in the background, we are making some initial image adjustments using the Camera Raw filter in Photoshop.

To compensate for that brightening, we can increase the Whites slider. The Whites slider controls the very brightest areas of the image, or what you might call the white point. We'll move this slider up until the histogram bars reach the right side of the histogram again.

Brighten shadows: Bring just a touch of detail back into the dark feathers by increasing the Shadows slider. (subtle adjustment)

Texture: Increase Texture slider to enhance the fine details in the feathers.

Color: Increase Vibrance slider to make the image more colorful. We use Vibrance here because it focuses on the more mellow colors, leaving the more saturated areas untouched. The Saturation slider would affect all colors equally.

White balance: The image looks a little blue so we'll use the Temperature slider to correct that. We'll move the slider to the right, toward yellow, until the blue cast goes away. I'll also experiment with the Tint setting, watching the colors as I move the slider back and forth. When doing this, I am looking to find the setting that gives me the greatest separation in the colors.

Remove Cage by Replacing Background (5:40)

The goal is to remove the cage in this image. For some, the first thought might be that we need to retouch out the bars. We are actually going to take a different, easier approach. The background is completely blurry. Therefore, we can't make out any individual objects. Because this is the case, we can completely replace the background with another image that is equally blurry.

Finding a replacement background image We'll search my Lightroom library for a blurry image that would be an appropriate replacement background for the bird. In Lightroom's Library Module, we want the main image window to show thumbnails of the entire image library. We can do this by choosing the "All Photographs" option within the Catalog Panel on the left side of the screen.

Once we're viewing all the images, we can use the Filter Bar (above the image window) to search for images that have blurry backgrounds. In order to create an image with a blurry background, it helps to use a very wide aperture setting (Ex: f2.8) and/or to shoot with a long lens. Knowing this, we can use the Filter Bar to search for images shot with these camera settings.

NOTE: If the Filter Bar is not visible on your screen, know that you can toggle its visibility by clicking on the View menu and clicking on the "Show Filter Bar" option.

We'll click on the Filter Bar's Metadata option in order to expand the bar to show four columns of settings. These settings can be used to narrow down the number of images we're seeing based on the criteria that we specify. We'll start with the column on the far left. We'll click on the heading of that far-left column and a menu will appear. This shows all of the types of data that we can use to filter the images. We'll choose the "Focal Length" option. In the list that appears, we'll select all of the focal lengths that would be long enough to create a blurry background. In the video example, we choose the 448mm length and everything beyond it. (In order to select more than one option, click on the first item, hold down the Shift key and then click on the last option.) The image window will change to show only the images shot with the selected focal lengths.
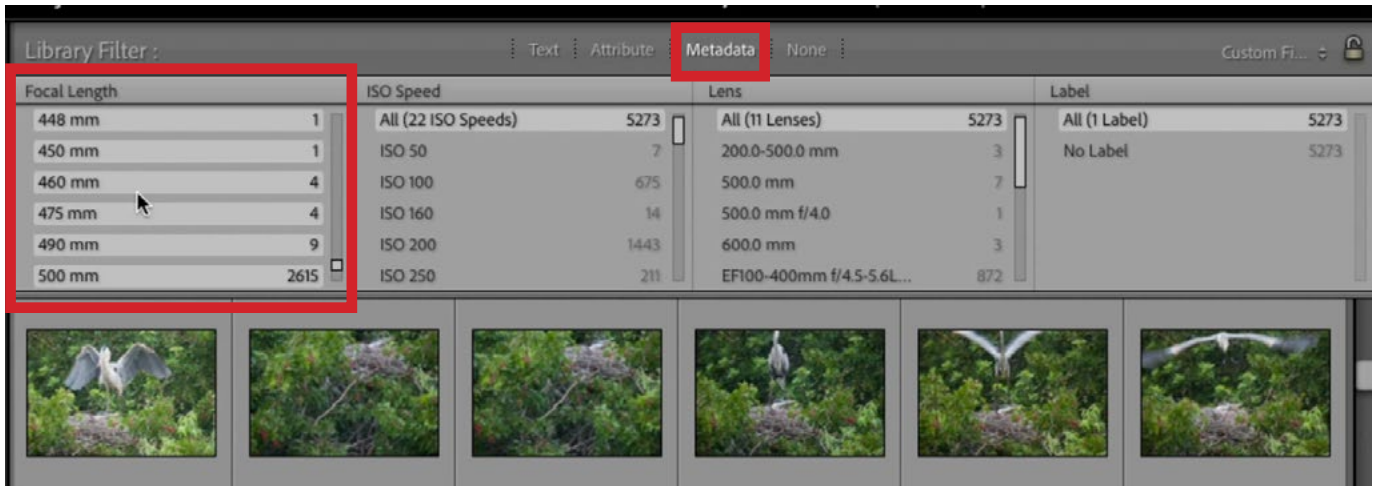
The Metadata category is expanded within the Filter Bar and we're using the left-most column to filter for long focal lengths.

Next, we'll move on to the next column and set the menu at the top to filter by Aperture. In the list of aperture settings that appears, we'll select all of the really wide aperture settings. With long lenses (like the ones we have chosen) it is common to have f4 as the widest setting. We'll choose the aperture options of f4, f/4.5 and f/5 (knowing that we can always add more to expand the range, if need be).

Now the image window will show thumbnails of all images shot with a long lens, using a wide aperture.
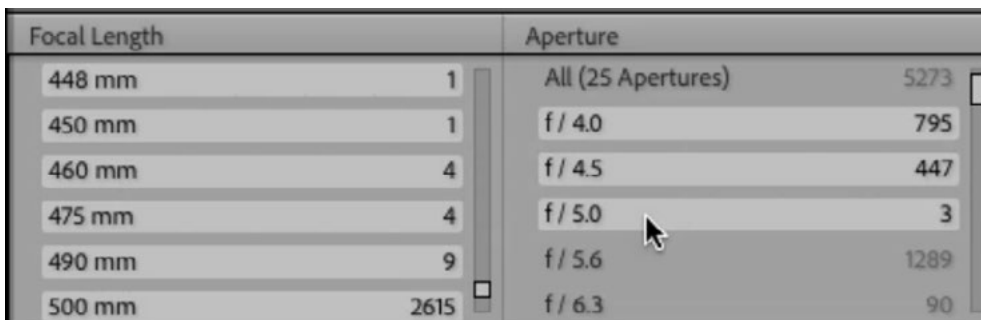
Using Focal Length and Aperture as search parameters, we are filtering for images shot with a long focal length, using a wide aperture.

We can scroll down through the filtered images, looking for a background that is large and blurry enough to use as our new background for the bird. When doing this, you can place a few of these images in the Quick Collection so that you can compare them further.

Here are three of the options we found when searching for images with blurry backgrounds. We ultimately chose to use the image on the right.

Open image in Photoshop In the video example, we found a nice, blurry image that was shot as one of the end frames for a panorama, so it contains very little subject and mostly blurry background. We'll use this image and open it in Photoshop.

We need to get the image into the same document as the bird image. This can be done by dragging the image up to the tab for the bird image (at the top of the image window). The bird image comes to the forefront and, keeping the mouse button held down, we'll drag the image into the image window. We can release the mouse button once the cursor is hovering over the image and the blurry background image will be placed above the bird image in the layer stack.
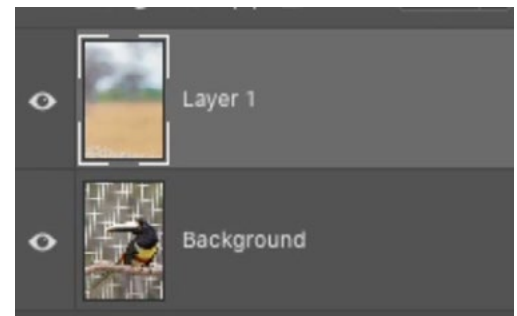

The blurry background image was placed into the same document as the bird image.

TIP: If you hold down the Shift key as you drag an image into a new document, that image layer will be perfectly centered within the document when you release the mouse button.

We need to position the image so that the blurry background takes up the whole frame. This can be done by using the Move Tool and/or the Free Transform command (found under the Edit menu).

For the technique that we're going to use, the subject (the bird) will need to be positioned above the blurry background layer in the layer stack. If the original image is locked (as the background layer often is), we can simply click on the lock icon to the right of the layer name. This will unlock the layer so that we can drag the bird layer above the blurry layer in the Layers Panel.
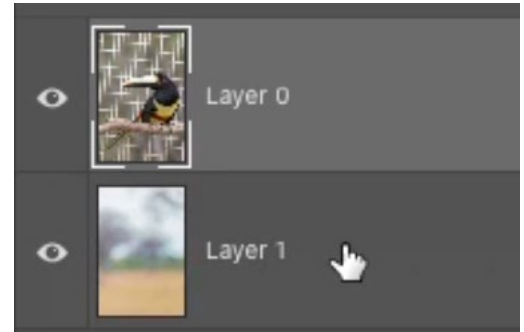
The bird layer was placed above the blurry background layer.

Make Selection of the Bird (15:00)

The next step is to make a selection of the bird. This selection will be used to mask the layer so that the blurry background will be revealed. We'll make sure that the bird layer is active.

Select Subject There are many methods that can be used for selecting a subject, but I like to try the most automated method first. This is the Select Subject command, which can be found under the Select menu. When you choose this command, Photoshop will attempt to figure out what the subject of the image is and make a selection of it. It commonly does a pretty bad job at selecting the subject, but it can be used as a good starting point. We can then supplement the command with other tools.

With the bird image, the Select Subject command ended up selecting part of the bird and none of the perch that he's sitting on.

The results of the Select Subject command

The Quick Selection Tool To supplement the Select Subject command, we'll activate the Quick Selection Tool, which is grouped with the Object Selection Tool and the Magic Wand Tool in the Toolbar.
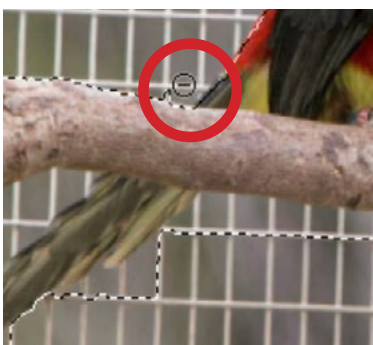

The Quick Selection Tool is grouped with the Object Selection Tool in the Toolbar.

With the Quick Selection Tool active, we'll turn on the Enhance Edge check box in the Options Bar above the main image window. We can also control the size of the tool's brush by using the Options Bar brush settings or by using the left and right bracket keys ([ ]).

Using the Quick Selection Tool, we'll paint over the parts of the subject that still need to be selected. When painting, we need to make sure that the edges of the brush stay contained within the subject and do not spill out onto the background. (This would cause the background to be selected as well.)

We'll continue painting with the Quick Selection Tool until the entire subject is selected. Parts of the background will likely be selected too, and we can then use the same tool to remove those areas from the selection. Hold down the Option key (Alt on Win) and the brush tip will be switched to the subtract setting. While the brush is set to subtract, we can paint over the areas of the background that need to be deselected. Again, we need to be careful that the brush does not overlap onto the subject.

ABOVE: The Quick Selection Tool is being used to paint over the subject. LEFT: The tool is set to the subtract setting in order to remove content from the selection.

NOTE: When the Quick Selection Tool is active, you can also switch between the add and subtract settings by using the icons in the Options Bar above the main image window.
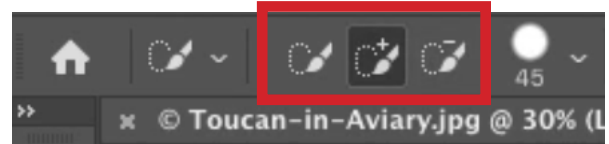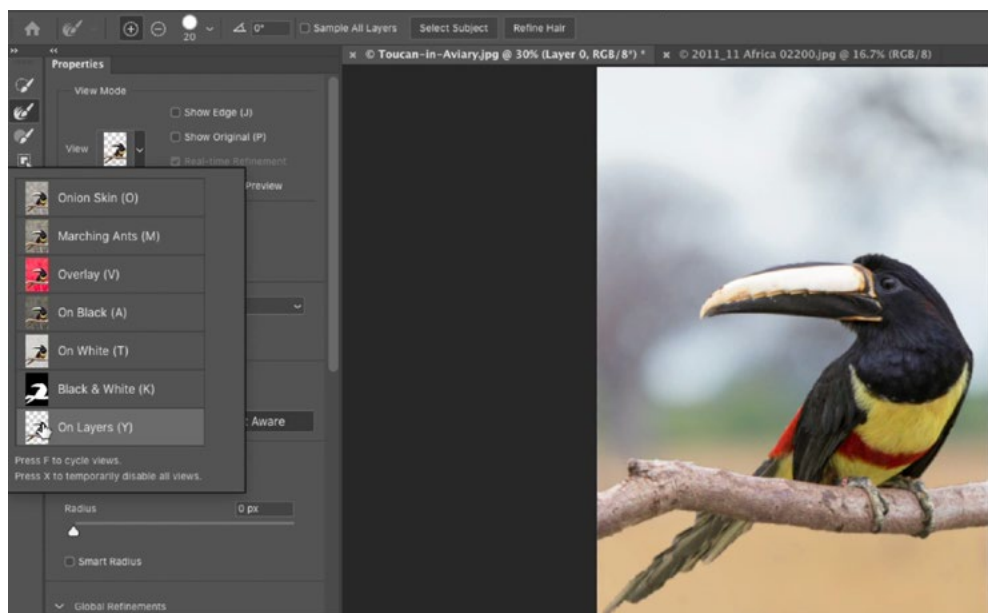

These icons can be used to switch between the add and subtract settings.

Select & Mask We should now have a basic selection of the subject. It's important to note that the Quick Selection Tool will not do a great job with any subjects that are furry, fuzzy, hairy or feathered. This means that we'll need to continue to refine the selection of the bird. We can do that with the Select & Mask feature.

Since the Quick Selection Tool is still active, we can enter the Select & Mask window by clicking on the Select & Mask button that appears within the Options Bar above the image window. Alternatively, we could click on the Select menu and choose Select & Mask.

The Select & Mask window will appear and the view of the image will depend on the View setting that you last used when working in the Select & Mask window. The View menu can be found on the left side of the interface, along with the other settings.

In the Select & Mask window, the view of the selection will be determined by the View menu setting. Here, we are viewing the selection using the "On Layers" view.

In the video example, we're working with the "On Layers" view, which shows the selection as if it is masked to reveal the underlying image layer[s]. Now we can use the settings on the left to further refine the selection.

We'll start with the Edge Detection category. Here, the Radius Slider determines the amount of space, around the edge of the selection, where Photoshop will have control over the selection. If the slider is set to 2, then Photoshop will have control over a 2-pixel radius around the edge of the selection. I generally use a low setting here. In the video example, we used a Radius setting of 2 pixels.

Next, we can use the Refine Edge Brush Tool, which is the second tool in the Toolbar on the left side of the Select & Mask window. The Refine Edge Brush can be used to paint over the selection edges that don't look as clean as they should. When you use this tool, you are giving Photoshop control of the selection in the areas where you paint. It will evaluate the area and recalibrate the selection based on the surroundings. You can change the size of the brush by using the left and right bracket keys or by using the brush size settings in the Options Bar above the image window. We'll use a small brush and paint over the feathers that stick up from the top of the bird's head. We'll do the same thing with the feathers on the bottom of the head, where it looks as if there is still "residue" from the original background.
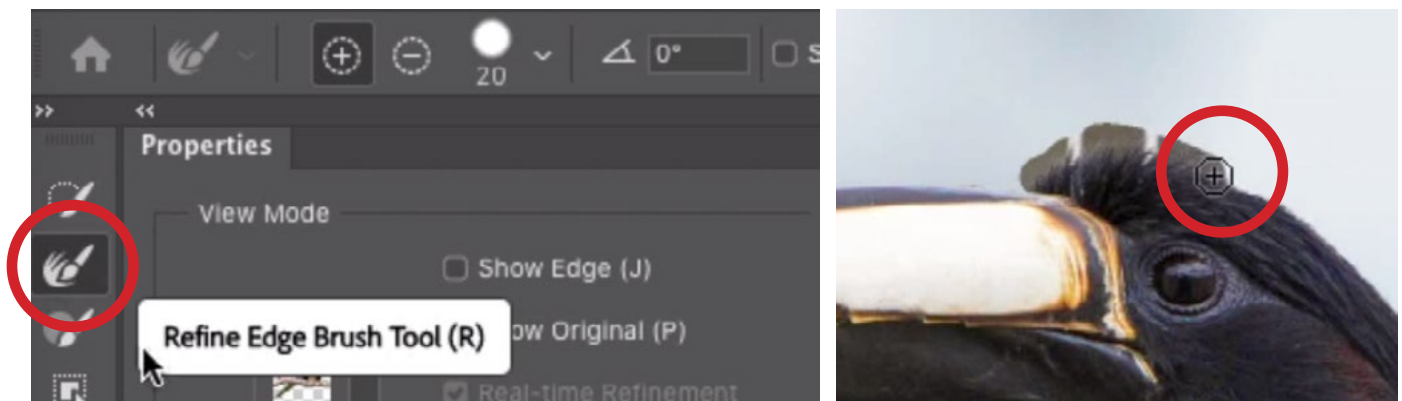
The Refine Edge Brush Tool is being used to paint over the feathers on the top of the bird's head. This tool will give Photoshop control over the selection in the areas where we paint.

The Select & Mask window also contains a regular Brush Tool. It's the third tool in the Toolbar on the left. This tool doesn't do anything fancy when you paint. It either adds to or subtracts from the current selection. When the Brush Tool is active, you can use the settings above the image window to determine wheth-er the tool should add parts of the active image (+) or subtract parts from the

image (-). You can also use the Option key (Alt on Win) to switch between these settings. For example, if you are using the add setting and you hold down the Option key, it will temporarily switch to the subtract setting, only for the period of time that the button is held down. When you are using the add setting, you will be painting the current image back into the selection, therefore making the areas visible in the Select & Mask view. When you paint using the subtract setting, you will remove areas from the selection, making them invisible in the Select & Mask window. When using this Brush Tool, you can basically act as if you were painting on a regular layer mask.


The Brush Tool is being used to clean up the selection on the bird's tail feathers.

Refine Mode In the Select & Mask settings, there is a category called "Refine Mode." This category contains two options: Color Aware and Object Aware. If the Color Aware setting is active, it will act like older versions of Photoshop. When it's trying to isolate the subject from the background, it will be doing it purely based on the differences in color. If the Object Aware option is active, it will act more like the Quick Selection Tool in that it will be looking for edges, trying to recognize shapes. The option you choose will really depend on the image. In this example image, we're going to use the Object Aware setting. Some of the bird's feathers are similar in color to the background and therefore, the Color Aware setting may not be able to differentiate those areas very well.

Decontaminate Colors After isolating the subject using the Select & Mask settings, you may see some residue from the original background in the edges of the fur, hair or in this case, feathers. The Decontaminate Colors setting will usually correct this. It is found under the Output Settings category on the left side of the Select & Mask window.

We'll turn this setting on in order to remove some color from the original background that is still peeking through some of the finer feathers. Then, we'll use the Amount slider (right below the check box) to find the lowest setting that still removes the residual color.

Once we're done refining the selection, we can click the OK button to exit the Select & Mask window.
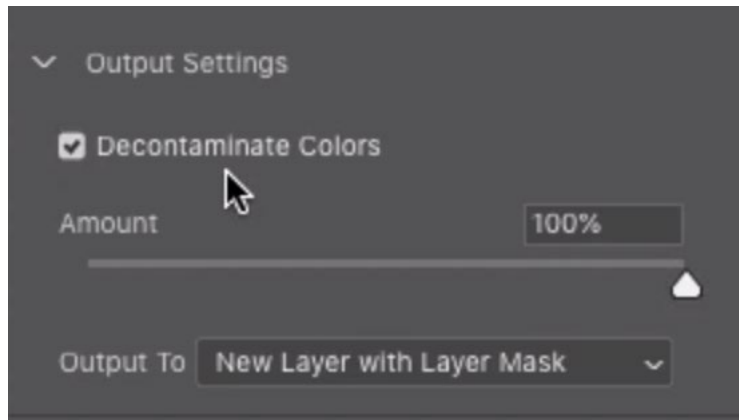
The Decontaminate Colors check box will attempt to remove any residual color from the original background.

Note: When the Decontaminate Colors check box is turned on, the end result will always include a new layer with a layer mask attached to it.

Convert Selection into a Mask (31:10)

Back in Photoshop's main interface, we can see the "marching ants" selection on the image. It may not look visually accurate, and that's just because the marching ants line can not accurately show a selection that has a soft edge.

Now we'll add a layer mask in order to hide everything that is not selected. We'll click the Layer Mask icon at the bottom of the Layers Panel and the selection will automatically be converted into a mask. The area that was selected (the bird and its perch) will be visible and the rest of the image will be hidden by the mask.

The results of the Select & Mask feature might not initially look accurate, but that's only because the marching ants can not accurately display a selection with a soft edge.

By hiding the background of the bird image, we are allowing the underlying blurry background layer to show through. Now it looks like the blurry background has replaced the cage background.
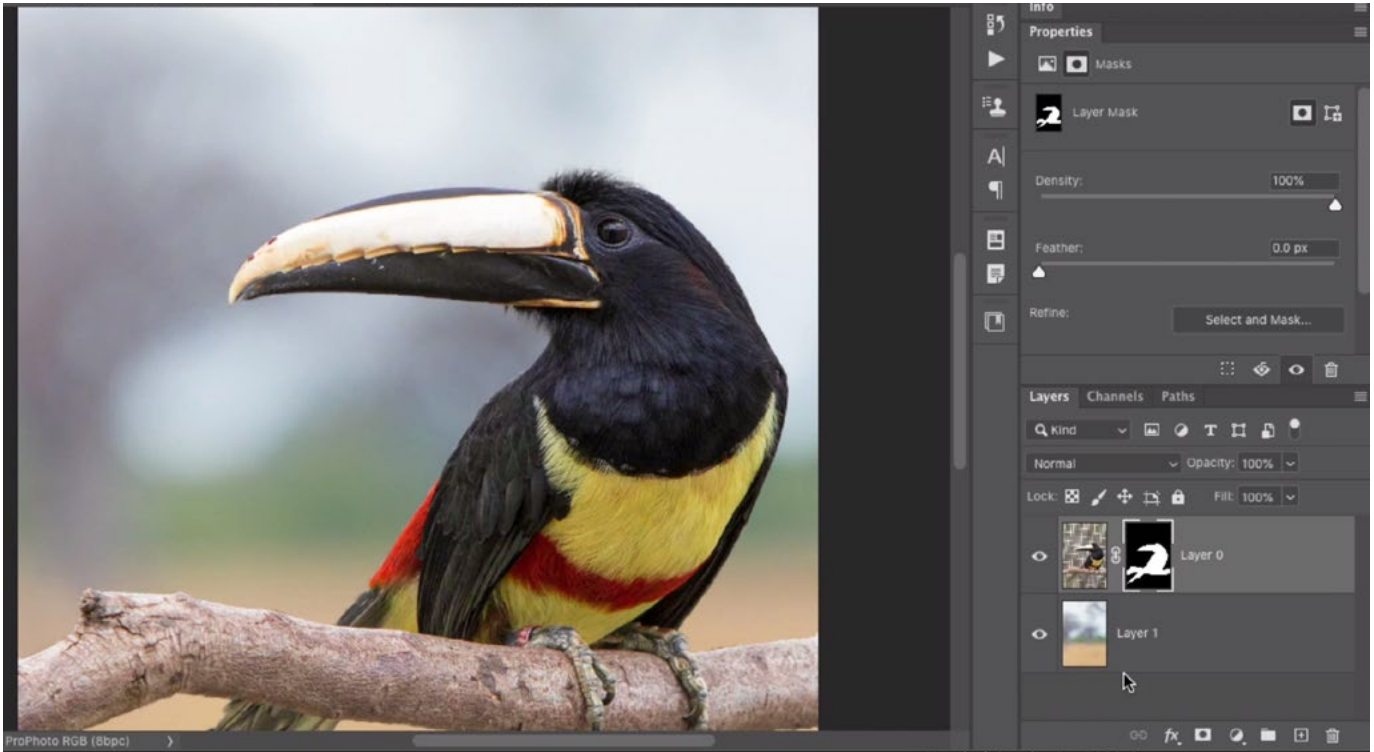
After a layer mask has been added, the cage background is hidden and the new, blurry background is visible in the underlying layer.

If there are any areas that don't look right, or if we see some residue from the original background, we can paint on the layer mask to correct them. To do this, first make sure that the layer mask is active (and not the layer itself). You can tell that it's active if there are little white brackets surrounding its thumbnail. Then, use the Brush Tool to paint with white in the areas where the layer should be visible and paint with black in areas where the layer should be hidden (where there might be residual background, for example).

To make this easier, we can view an overlay of the layer mask right within the image window. We can toggle the visibility of this overlay by tapping the backslash key (located right above the Return/Enter key). The red overlay will look similar to the view you'd see in Quick Mask Mode. Painting with black will add to the red overlay, therefore hiding the area by adding black to the layer mask. Painting with white will remove the red overlay, therefore revealing the area by adding white to the layer mask. In the video example, we could see a hint of the cage bars where they touched the wood perch, so we painted with black in order to hide them.

Here, we are viewing the layer mask directly within the image window. We are painting with black over part of the original background in order to hide it.