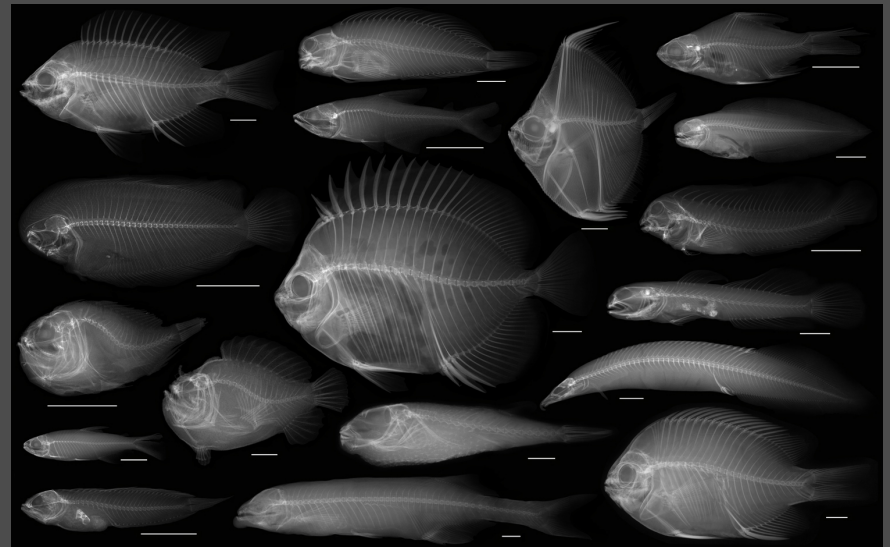


# Type Imaging at the Academy of Natural Sciences

Computer Aided Photography  
and Digital Editing Techniques



# Project Goals

- Photograph all Primary Type specimens
- Radiograph all Primary Type specimens
- Edit images and format for the web
- Upload all images and metadata to the Types Website
- Verify Type status
- Replace faulty lids and jars and top off Ethanol

# Proposed Workflow

- Transport specimens from the collection to the Imaging Lab (1 shelf at a time)
- Verify Type information
- Photograph 1 lot at a time in lateral view (dorsal and ventral if appropriate) insert “Imaged By” label
- Radiograph 1 lot at a time in lateral view (dorsal/ventral if appropriate) insert “Imaged By” label
- Enter Metadata for each lot into the Collection Database
- Once all lots are imaged move all images to the server
- Replace lids and jars if needed, top off Ethanol and return specimens to the collection
- Complete image processing in Photoshop
- Upload images to the Type Imaging website
- Repeat

# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (**multiple shelves – taking specimens of similar size**)
- Verify Type information **check against Type Collection spreadsheet**
- Photograph 1 lot at a time in lateral view (dorsal and ventral if appropriate) **insert “Imaged By” label**
- **Change out lid if necessary**
- Radiograph 1 lot at a time in lateral view (dorsal/ventral if appropriate) **insert “Imaged By” label place black ribbon around jar**
- Once all lots are imaged move all images to the server
- **Enter photograph and radiograph views with date and photographer info for each image in Type Collection spreadsheet**
- Replace jars if needed, top off Ethanol and return specimens to the collection
- Complete image processing in Photoshop
- **Enter Metadata for each lot into the Collection Database**
- Upload images to the Type Imaging website
- Repeat

# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (**multiple shelves – taking specimens of similar size**)

Set up time was optimized by choosing specimens of similar size. Cut down on swapping out tanks and tripods.

# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (multiple shelves – taking specimens of similar size)
- Verify Type information **check against Type Collection spreadsheet**

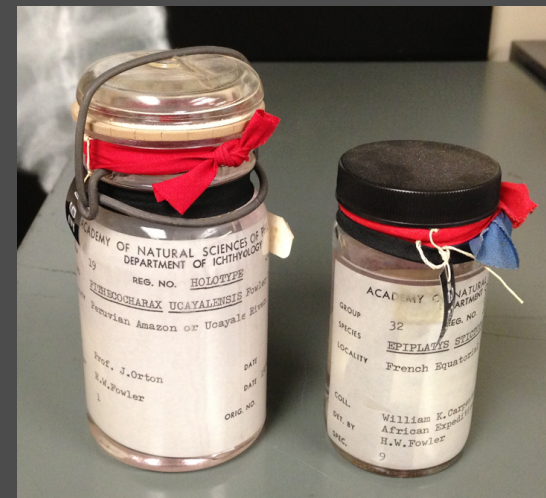
A spreadsheet exported from the Collection Database helped identify which lots needed further investigation without checking the literature for each and every lot.

# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (multiple shelves – taking specimens of similar size)
- Verify Type information check against Type Collection spreadsheet
- Photograph 1 lot at a time in lateral view (dorsal and ventral if appropriate) ~~insert “Imaged By” label~~
- **Change out lid if necessary**
- Radiograph 1 lot at a time in lateral view (dorsal/ventral if appropriate) ~~insert “Imaged By” label~~ **place black ribbon around jar**

We eventually skipped the label in favor of a black ribbon which we use to indicate that a lot has been x-rayed in the general collection.

It also made more sense to change out lids when the specimens were put back in jars after photography.



# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (multiple shelves – taking specimens of similar size)
- Verify Type information check against Type Collection spreadsheet
- Photograph 1 lot at a time in lateral view (dorsal and ventral if appropriate) insert “Imaged By” label
- Change out lid if necessary
- Radiograph 1 lot at a time in lateral view (dorsal/ventral if appropriate) insert “Imaged By” label place black ribbon around jar
- Once all lots are imaged move all images to the server
- Enter photograph and radiograph views with date and photographer info for each image in Type Collection spreadsheet

When images were moved to the server they were placed into dated folders. Rather than go to the spreadsheet after each lot it seemed more efficient to update the spreadsheet at the end of each photography or radiography session.



# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (multiple shelves – taking specimens of similar size)
- Verify Type information check against Type Collection spreadsheet
- Photograph 1 lot at a time in lateral view (dorsal and ventral if appropriate) insert “Imaged By” label
- Change out lid if necessary
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Image_type	Image_by	Image_edited_by	Image_date	Image_view	Image_m	Image_catalog_	Image_museum_catalo	Image_specimen_number
					ANSP	354	ANSP_354	
					ANSP	375	ANSP_375	
					ANSP	378	ANSP_378	
photo	Amanda L. Labadie	Kyle R. Luckenbill	9/14/10	dorsal	ANSP	385	ANSP_385	
photo	Amanda L. Labadie		9/14/10	ventral	ANSP	385	ANSP_385	
xray	Kyle R. Luckenbill		1/21/11	dorsal/ventral	ANSP	385	ANSP_385	1
xray	Kyle R. Luckenbill		1/21/11	dorsal/ventral	ANSP	385	ANSP_385	2
					ANSP	406	ANSP_406	
					ANSP	409	ANSP_409	
					ANSP	414	ANSP_414	

When images were moved to the server they were placed into dated folders. Rather than go to the spreadsheet after each lot it seemed more efficient to update the spreadsheet at the end of each photography or radiography session.

# Actual Workflow

- Transport specimens from the collection to the Imaging Lab (multiple shelves – taking specimens of similar size)
- Verify Type information check against Type Collection spreadsheet
- Photograph 1 lot at a time in lateral view (dorsal and ventral if appropriate) ~~insert “Imaged By” label~~
- Change out lid if necessary
- Radiograph 1 lot at a time in lateral view (dorsal/ventral if appropriate) ~~insert “Imaged By” label~~ place black ribbon around jar
- Enter photograph and radiograph views with date and photographer info for each image in Type Collection spreadsheet
- Once all lots are imaged move all images to the server
- Replace jars if needed, top off Ethanol and return specimens to the collection
- Complete image processing in Photoshop
- **Enter Metadata for each lot into the Collection Database**
- Upload images to the Type Imaging website

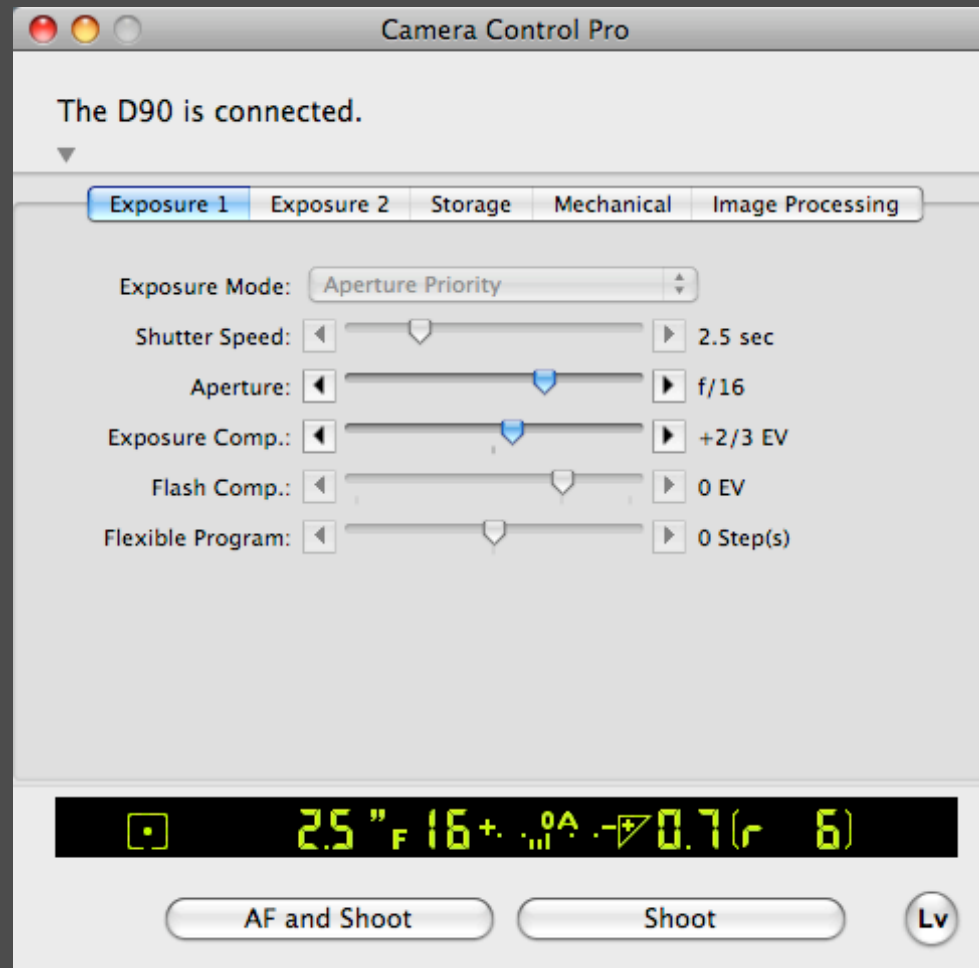
The workstation used for image capture did not have Filemaker installed and was not used to enter Metadata into the Collection Database. This made it more efficient to enter the data before upload to the website.

Questions?

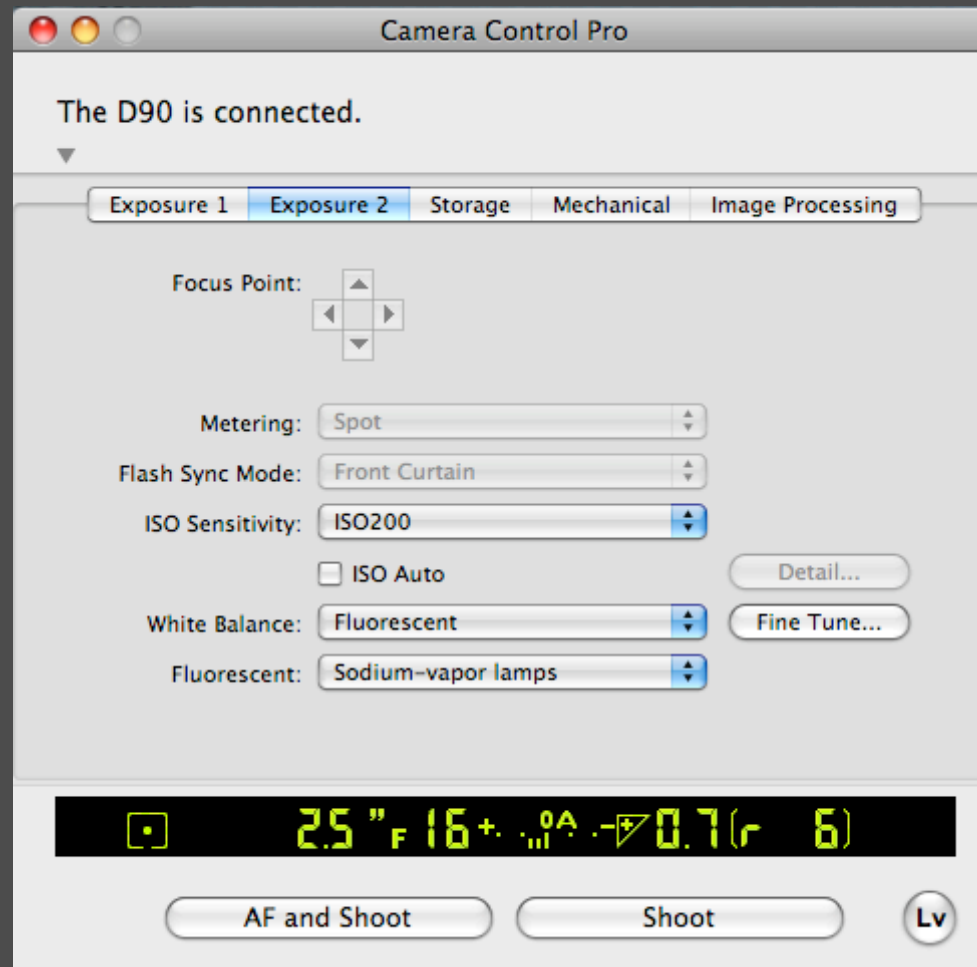
# Photography Software and Equipment

- Nikon D90 with Nikon Micro-Nikkor 60mm Macro Lens
- Nikon Camera Control Pro 2 (Mac)
- Helicon Focus Lite
- Apple iMac

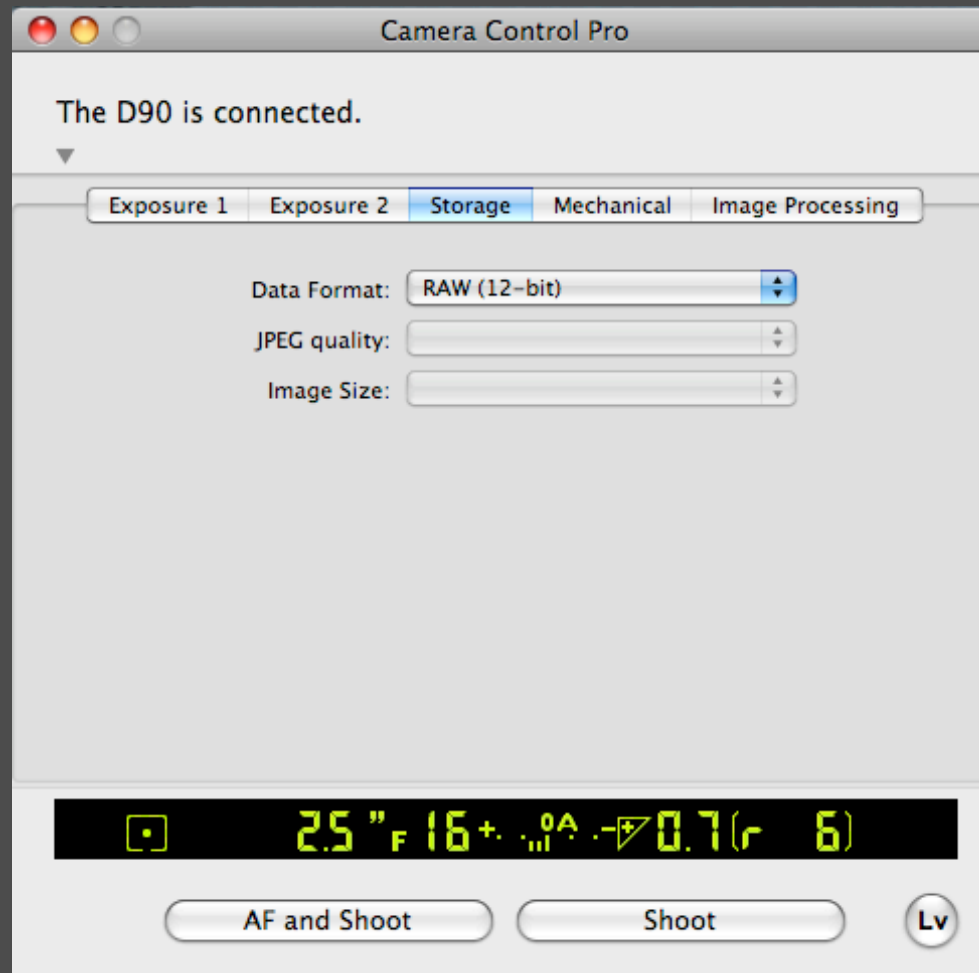
# Nikon Camera Control Pro Settings



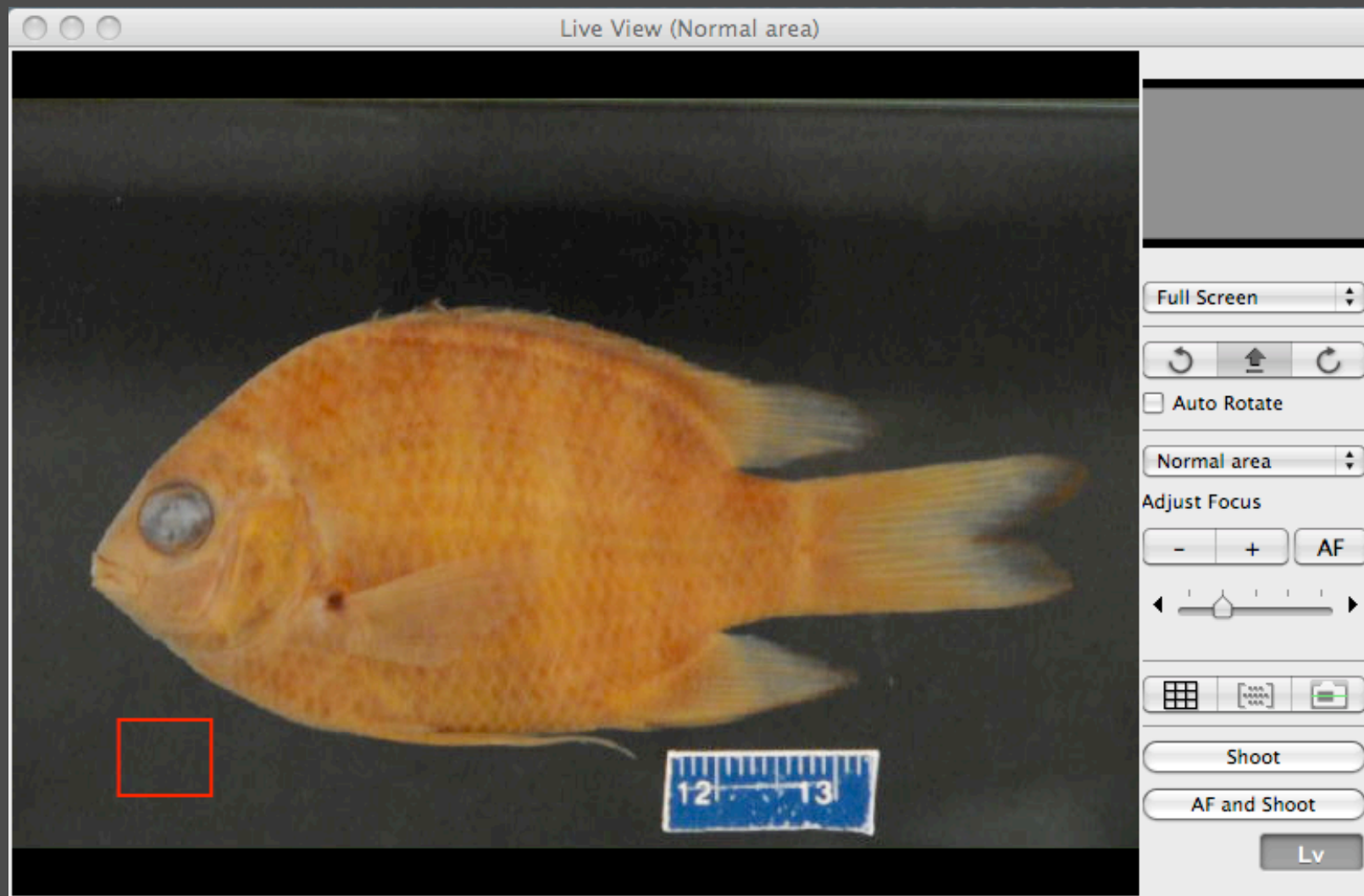
# Nikon Camera Control Pro Settings



# Nikon Camera Control Pro Settings

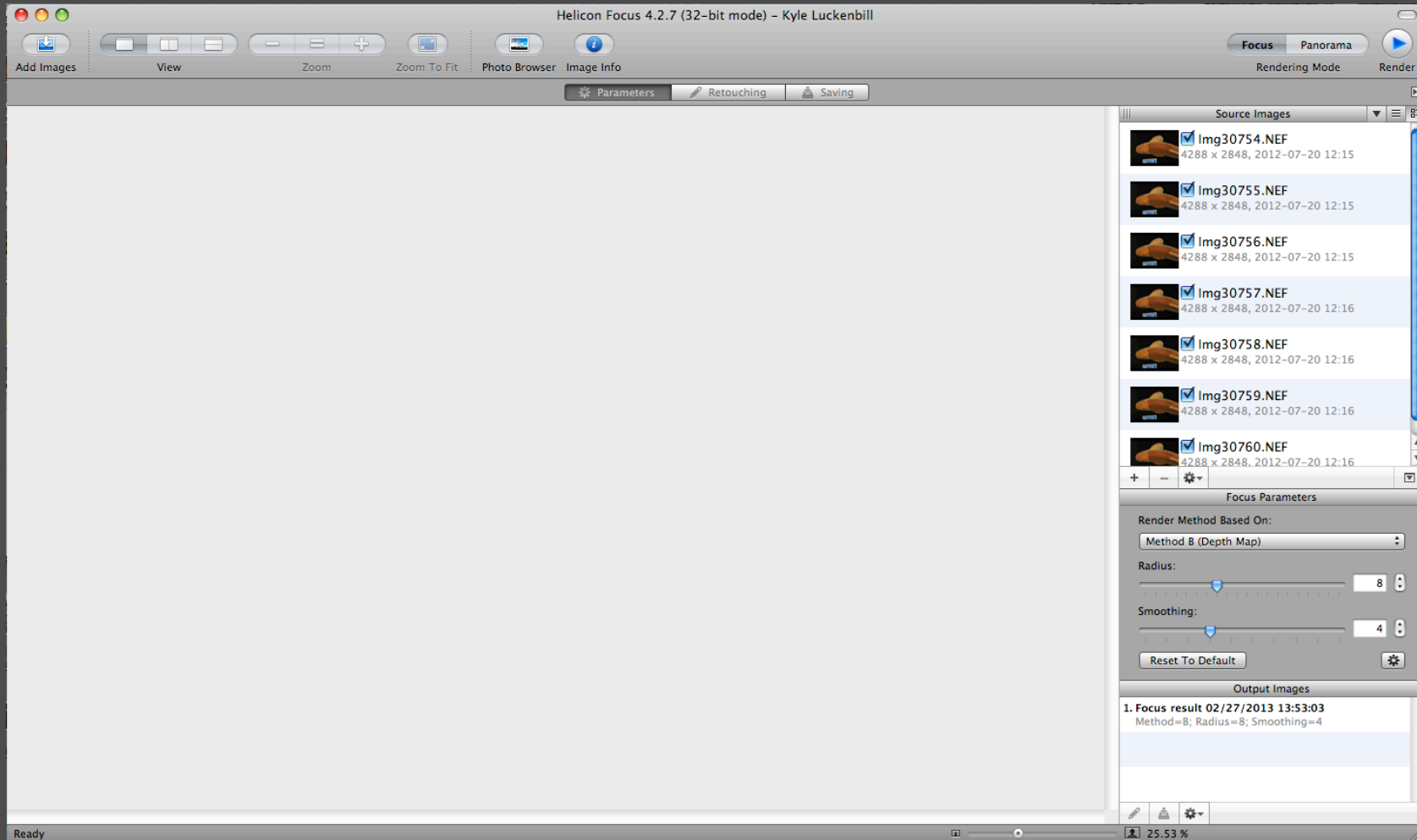


# Nikon Camera Control Pro Settings

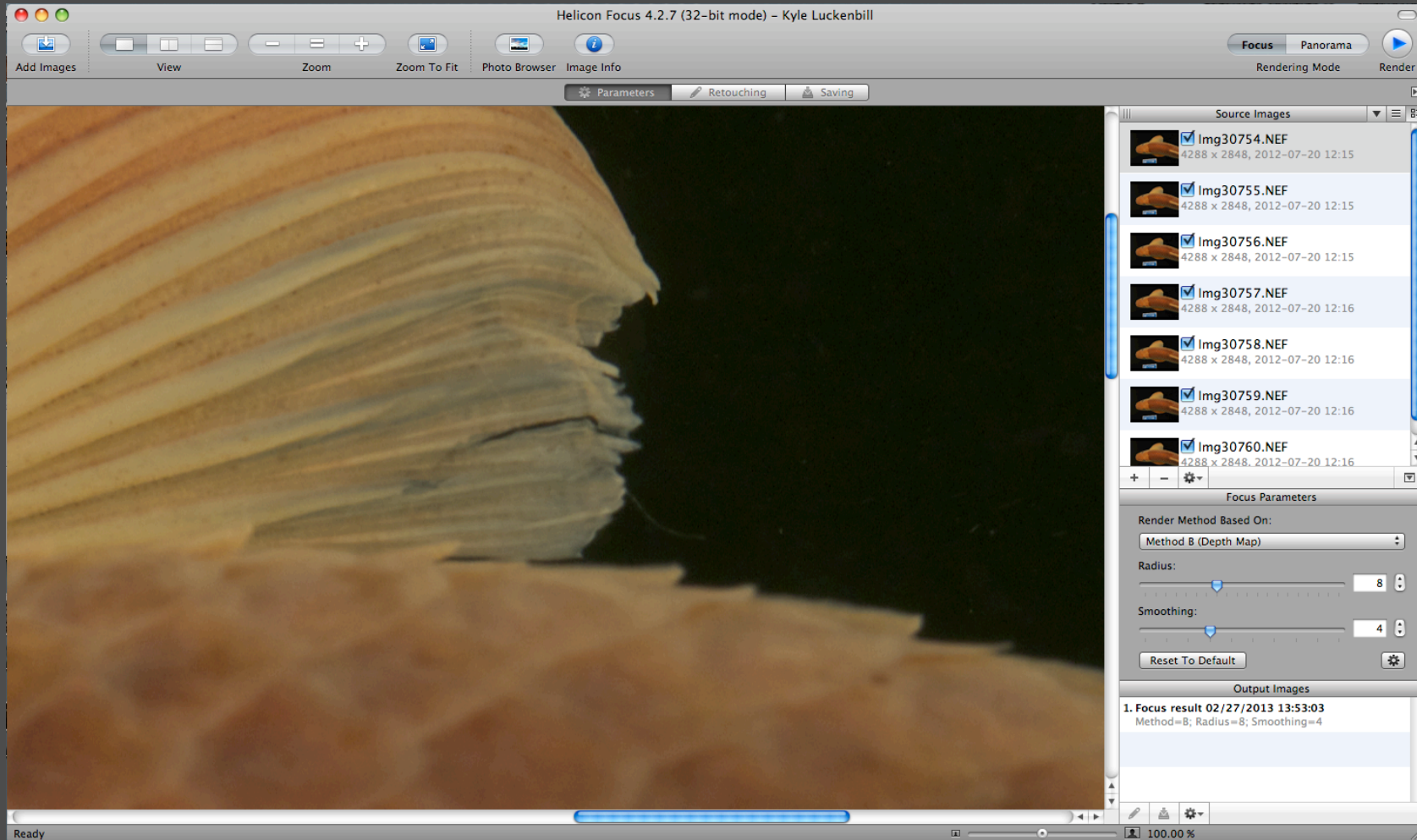




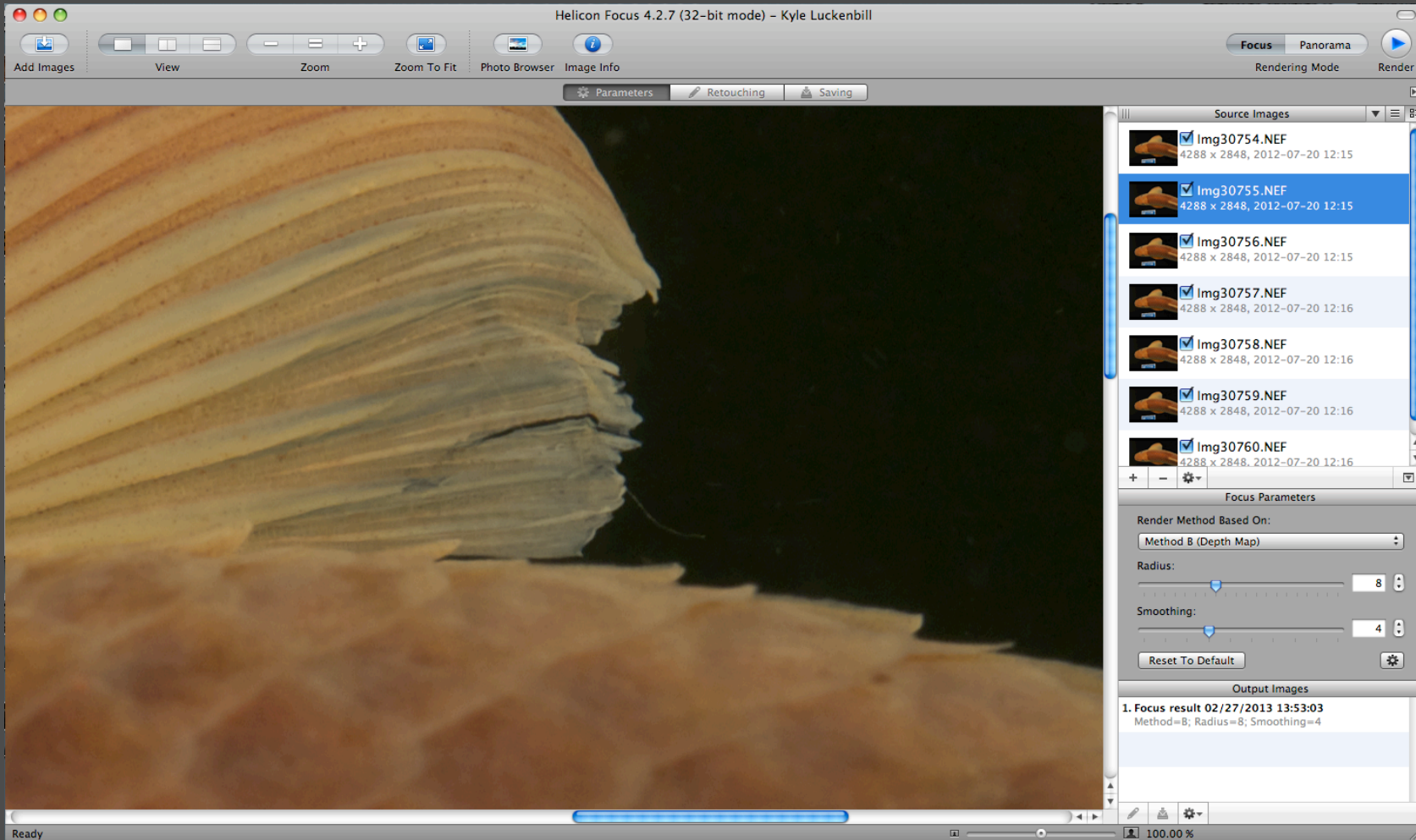
# Helicon Focus Lite



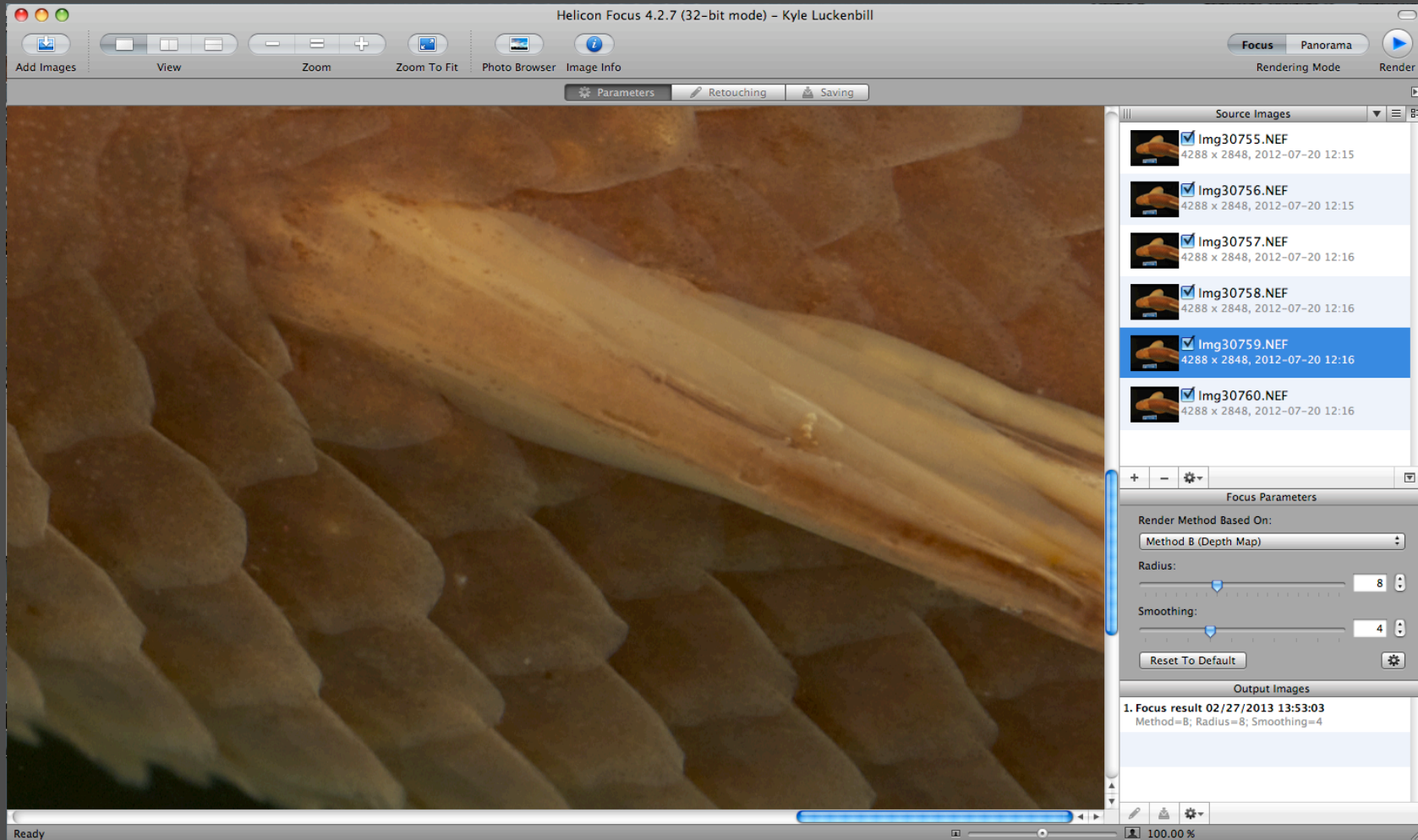
# Helicon Focus Lite



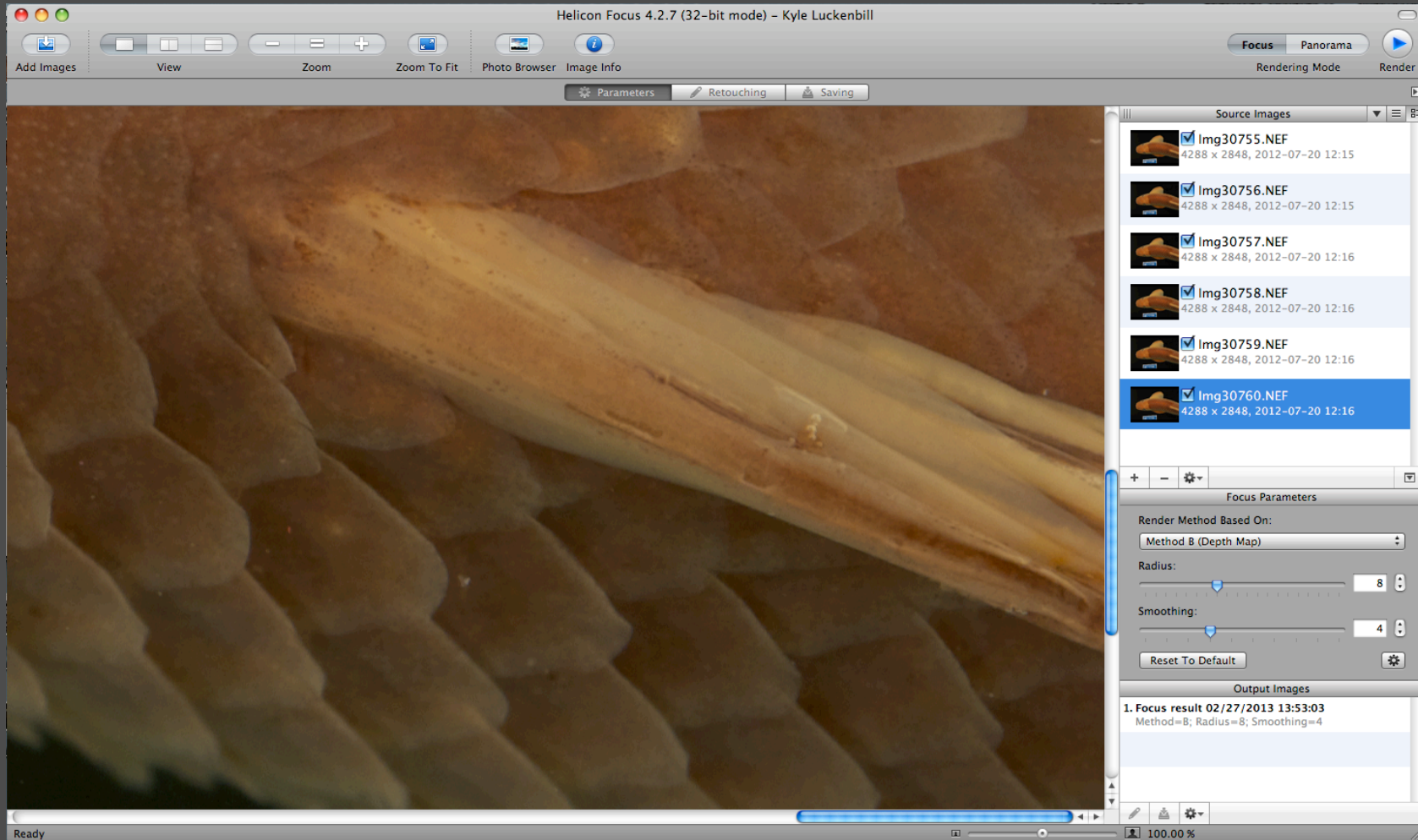
# Helicon Focus Lite



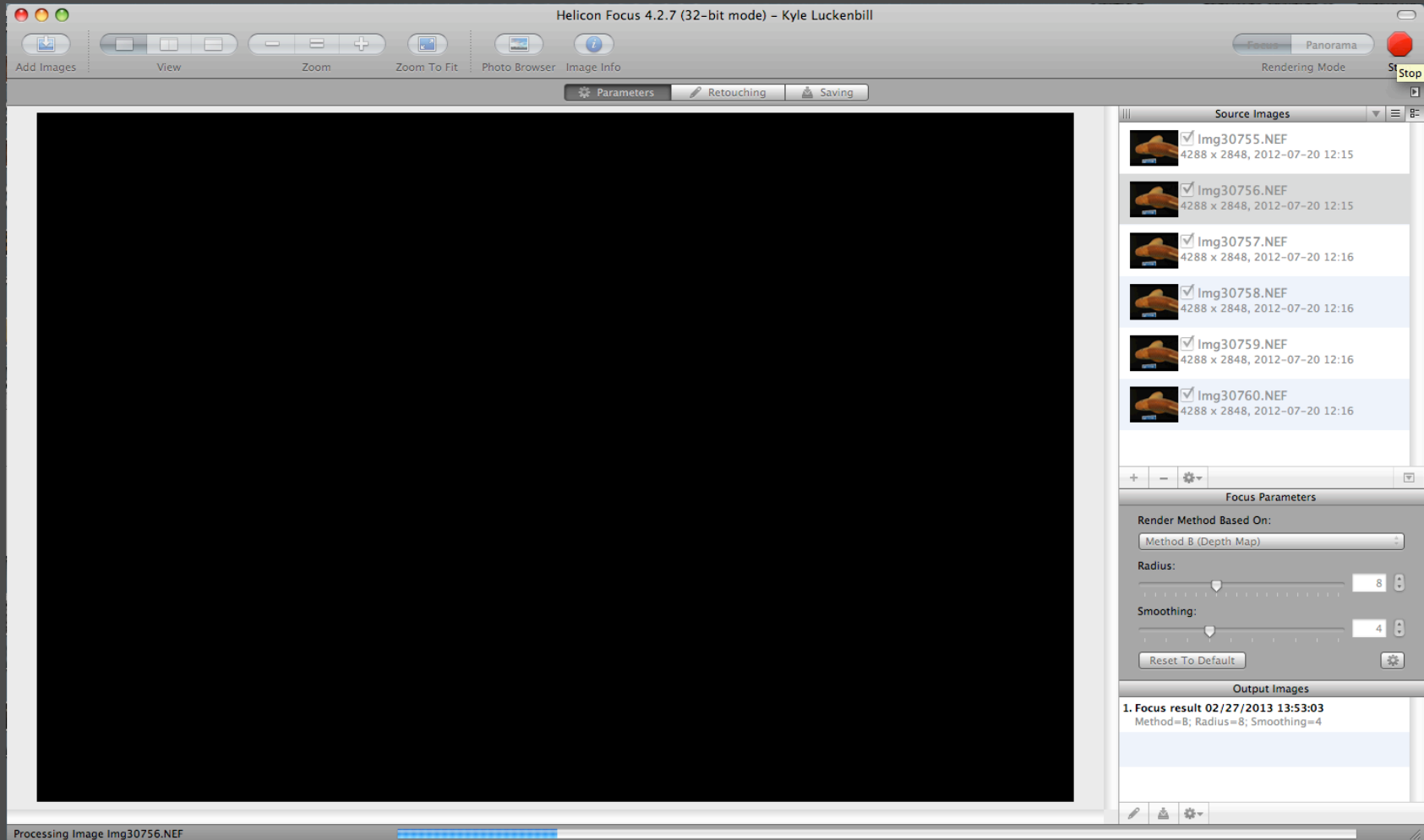
# Helicon Focus Lite



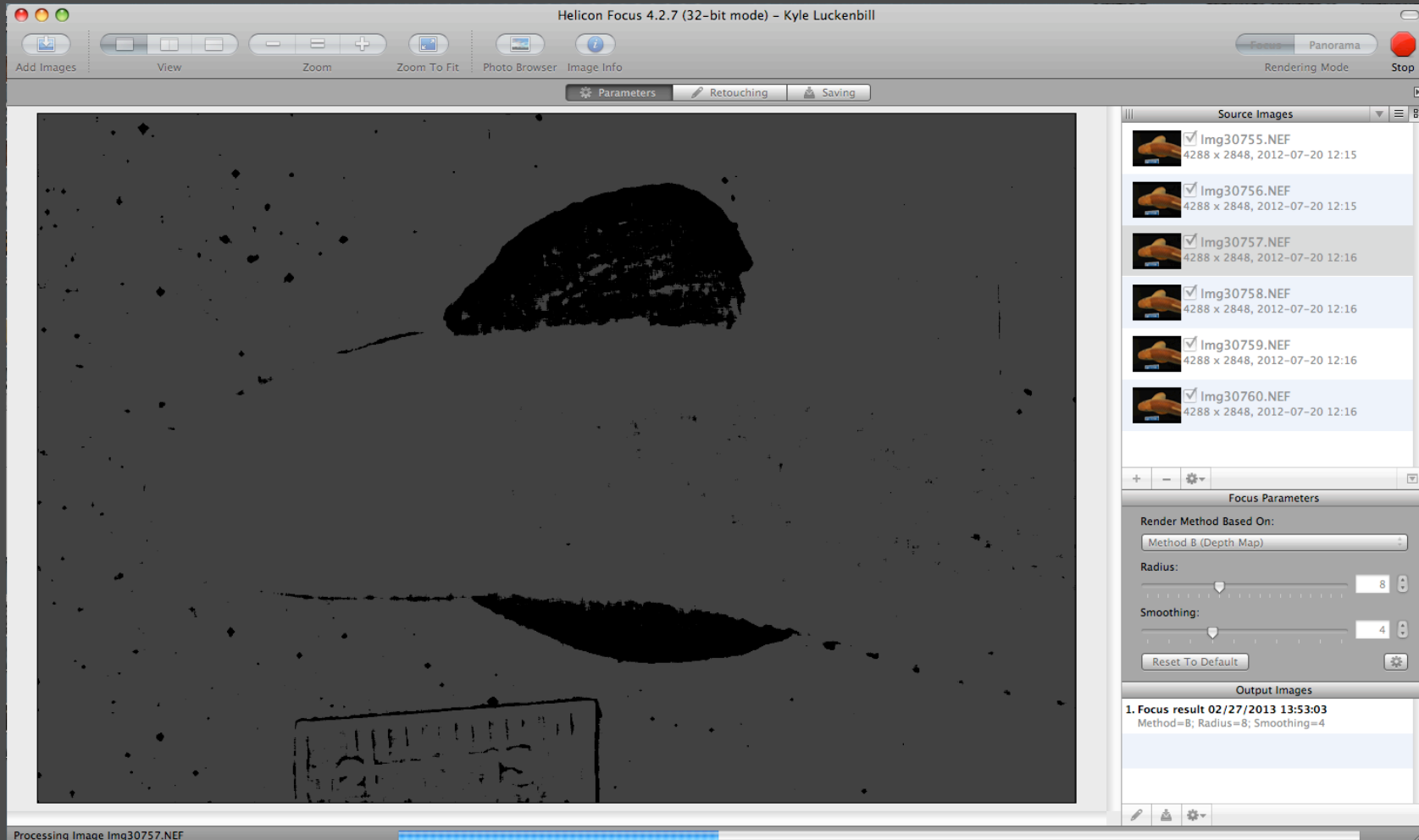
# Helicon Focus Lite



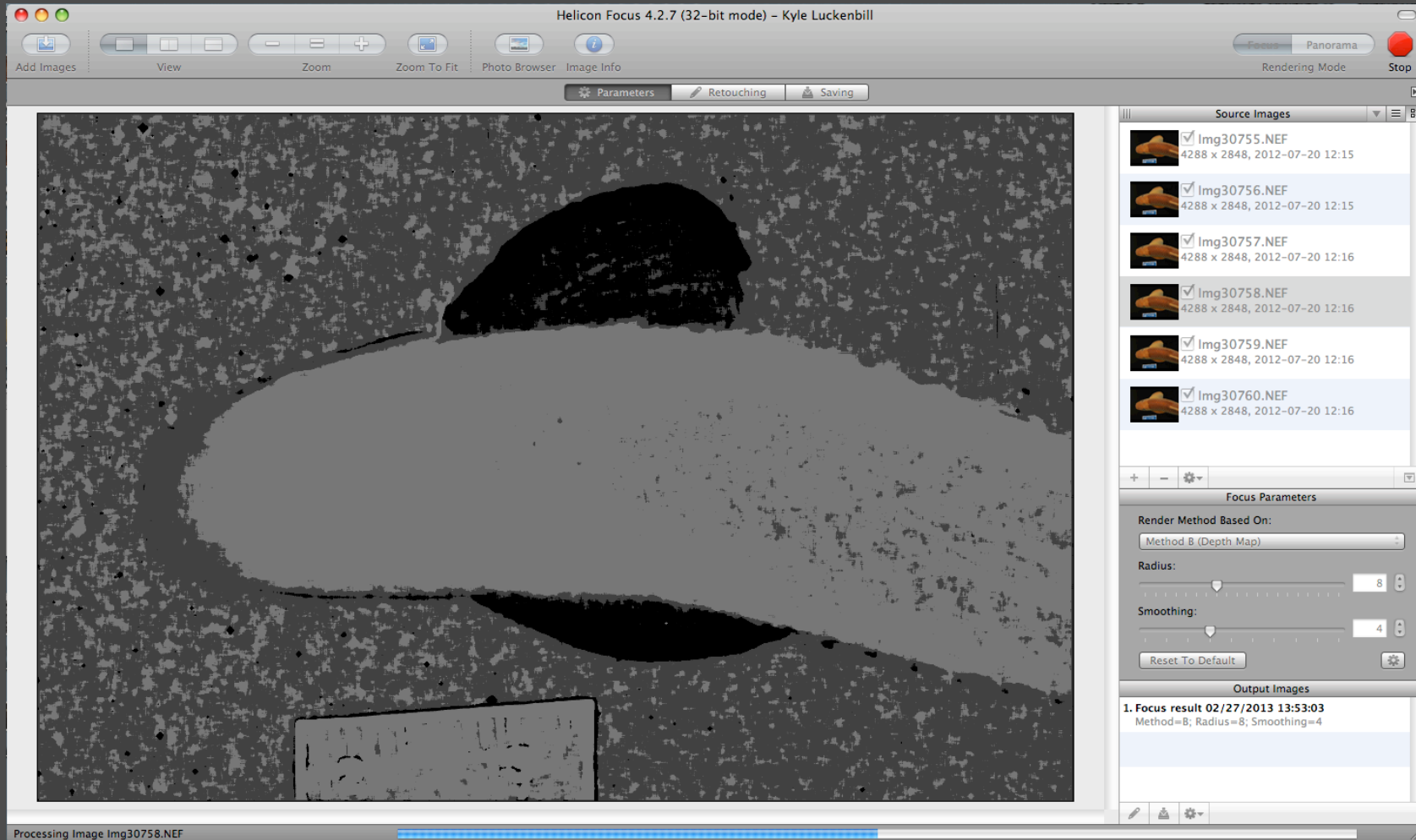
# Helicon Focus Lite



# Helicon Focus Lite

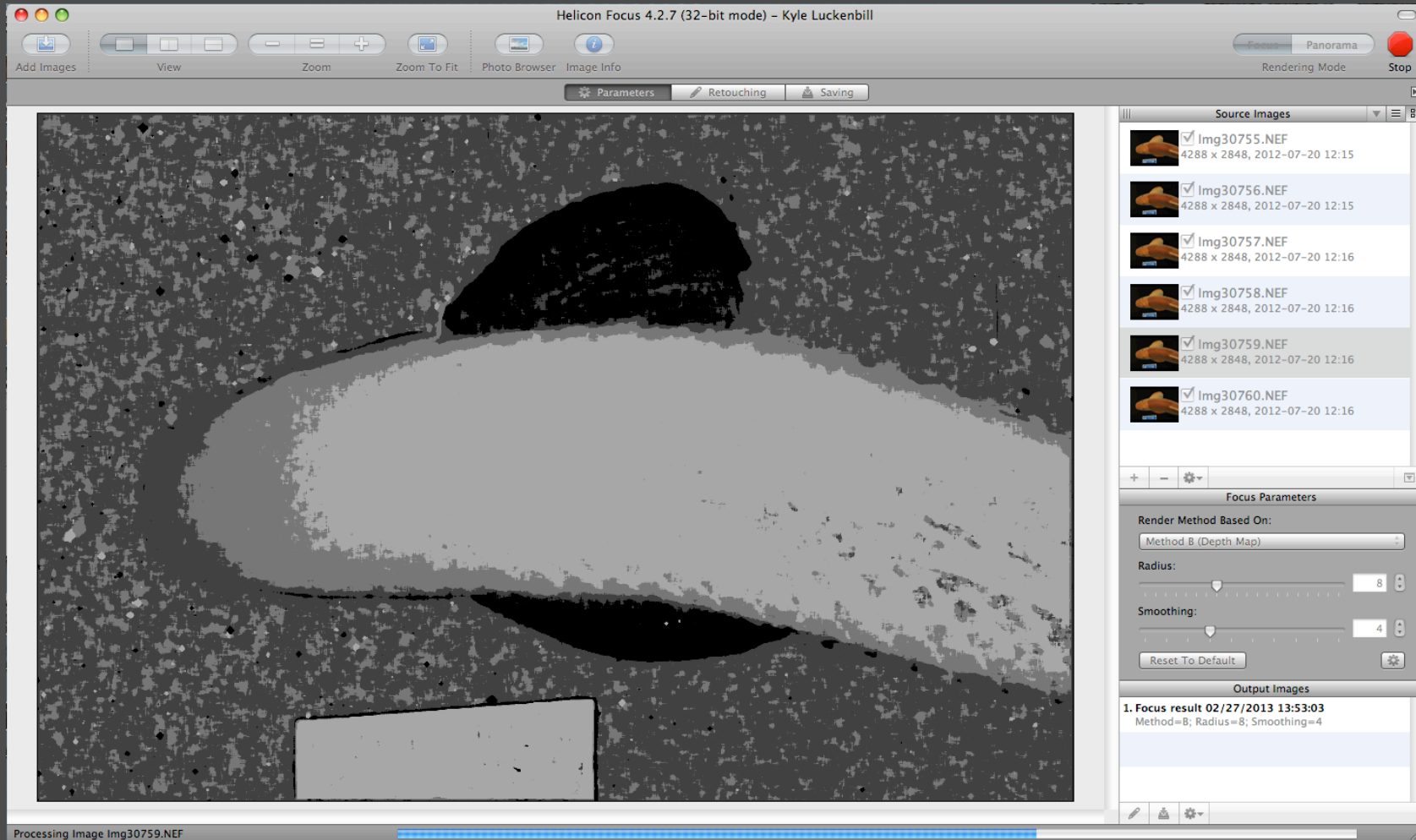


# Helicon Focus Lite

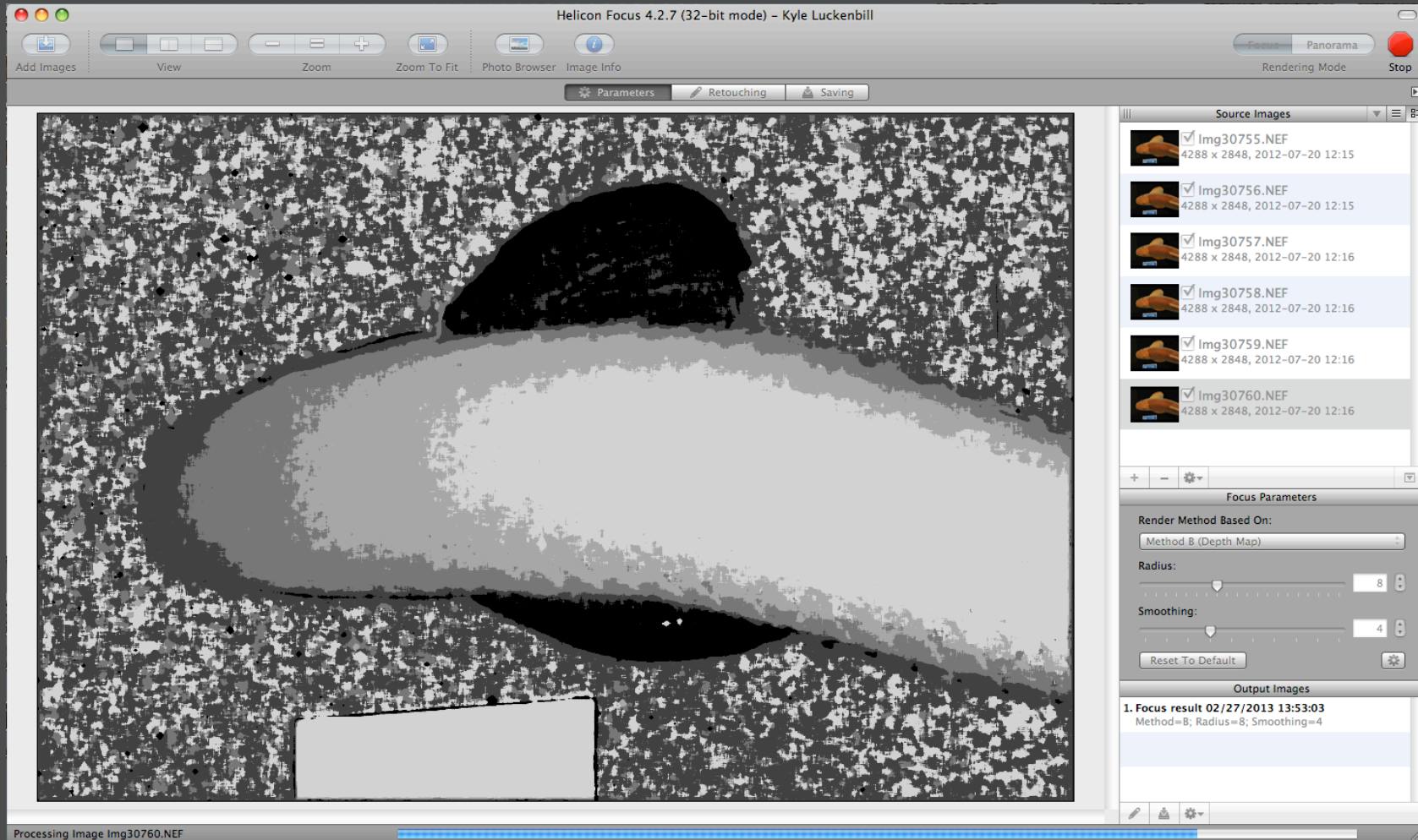




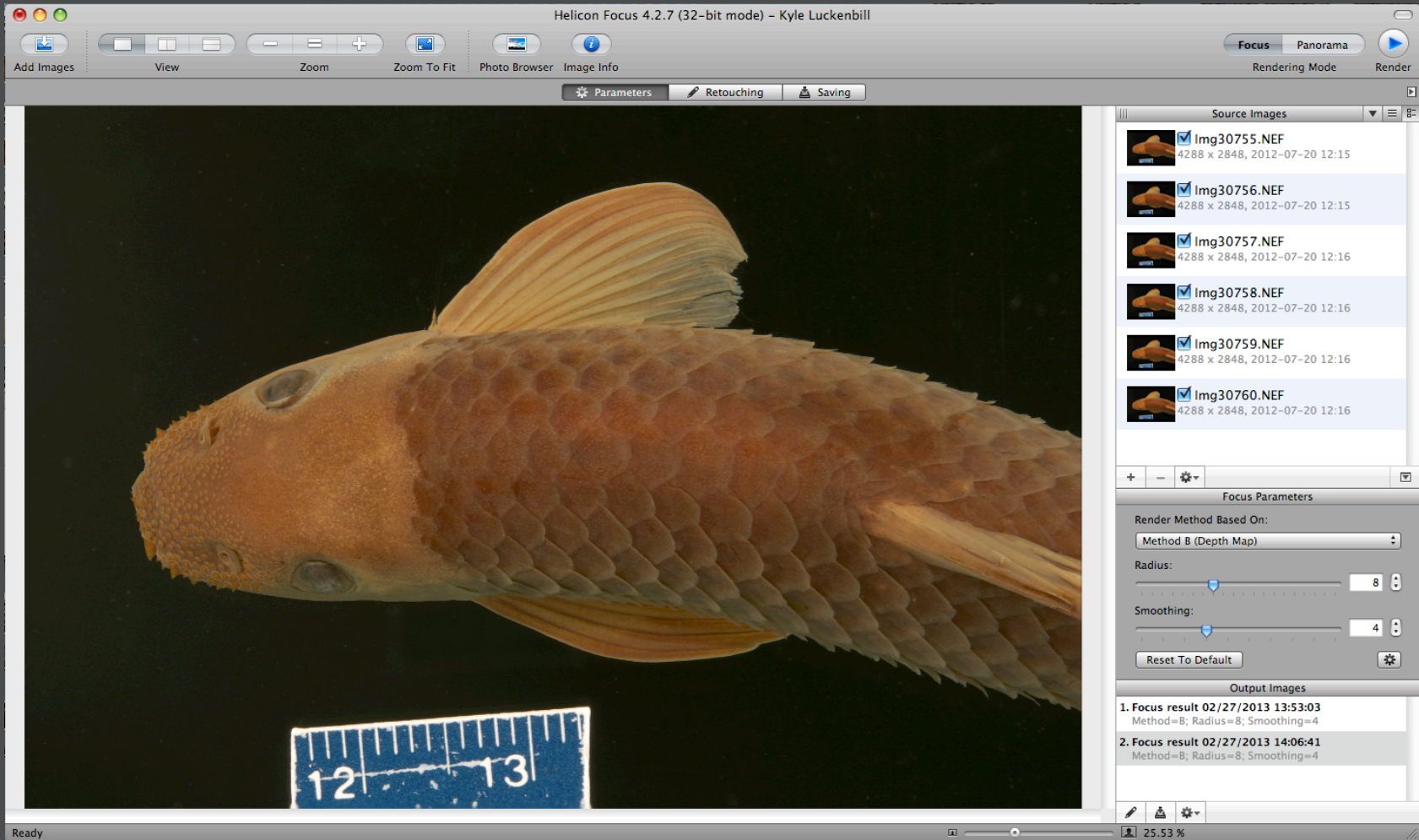
# Helicon Focus Lite



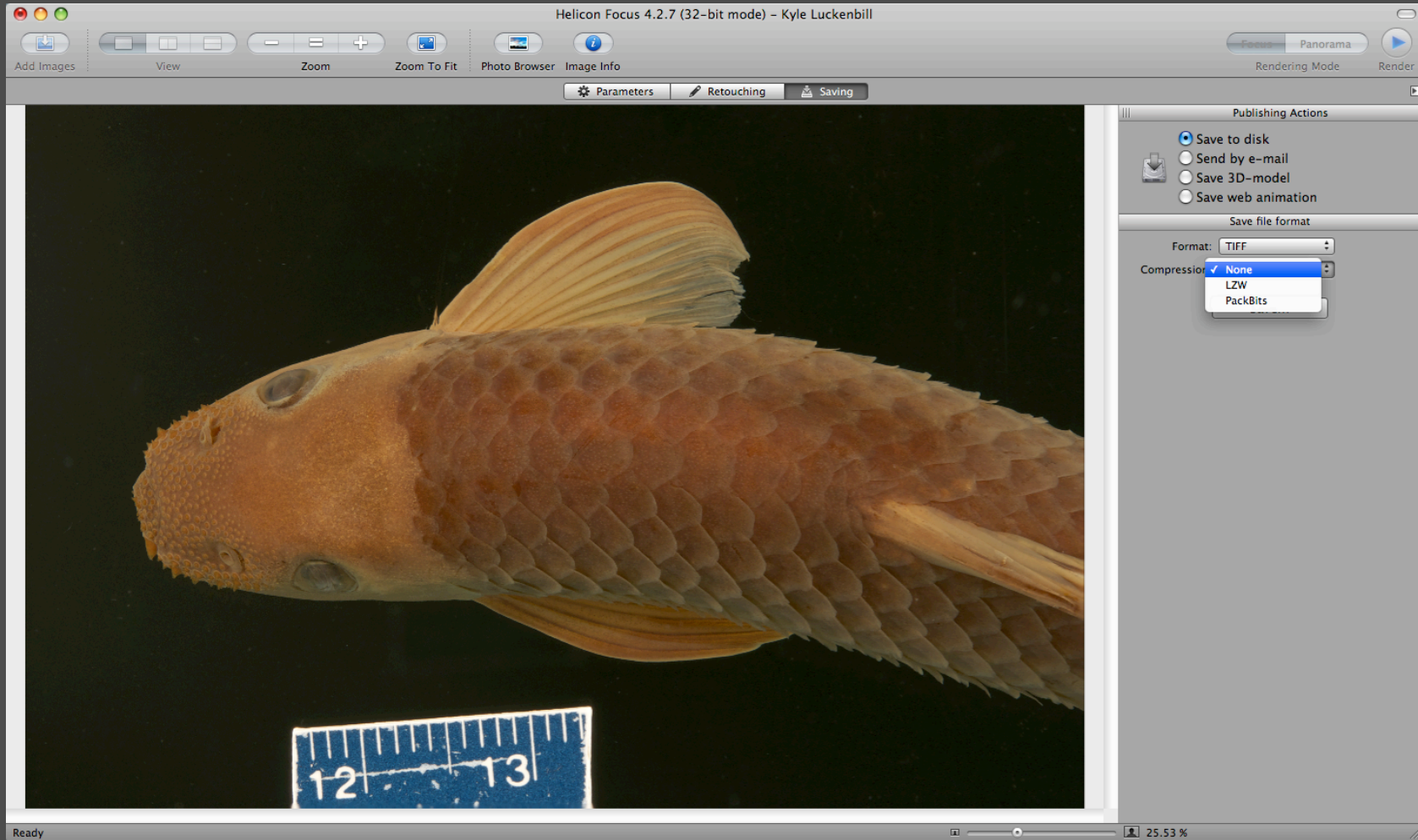
# Helicon Focus Lite



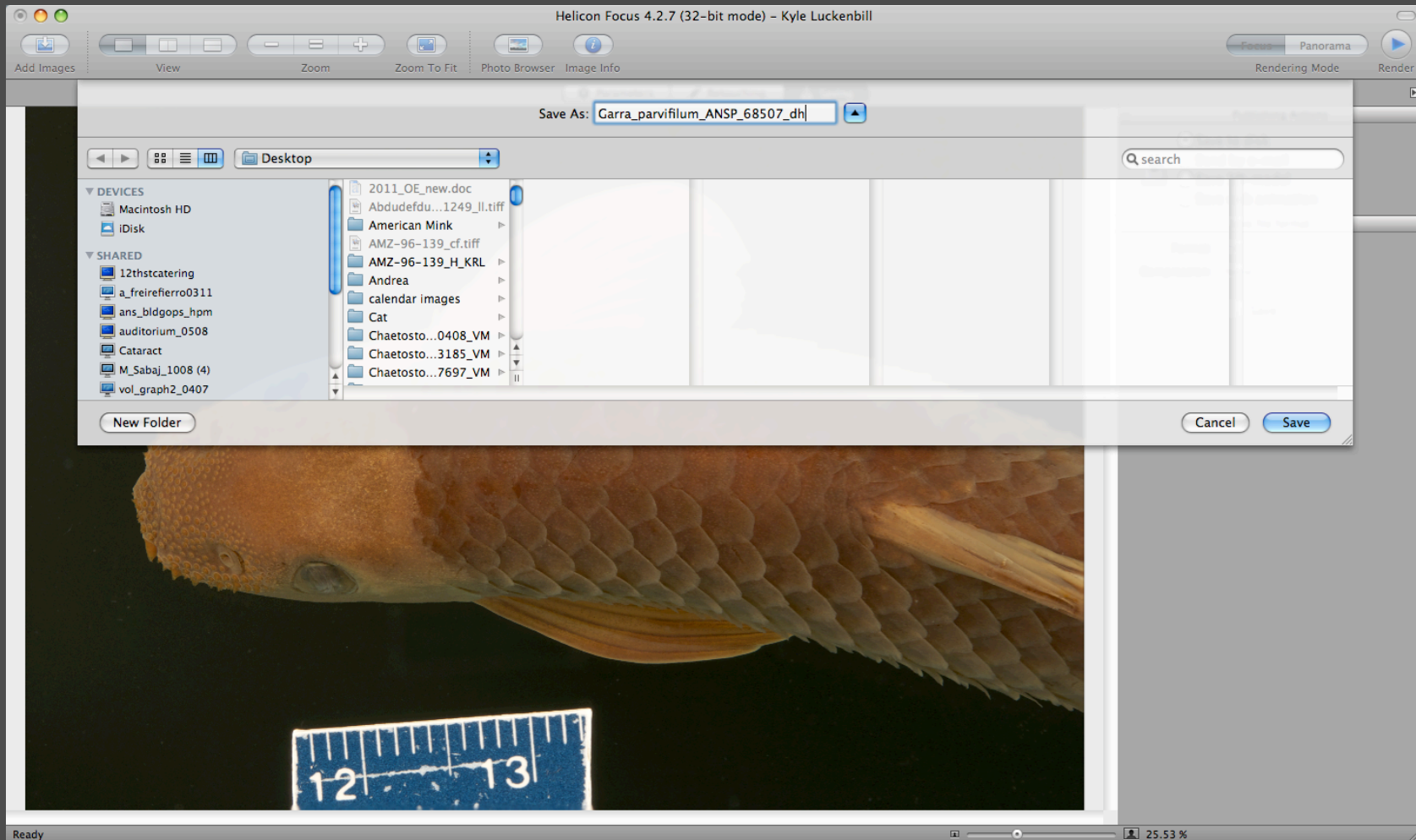
# Helicon Focus Lite



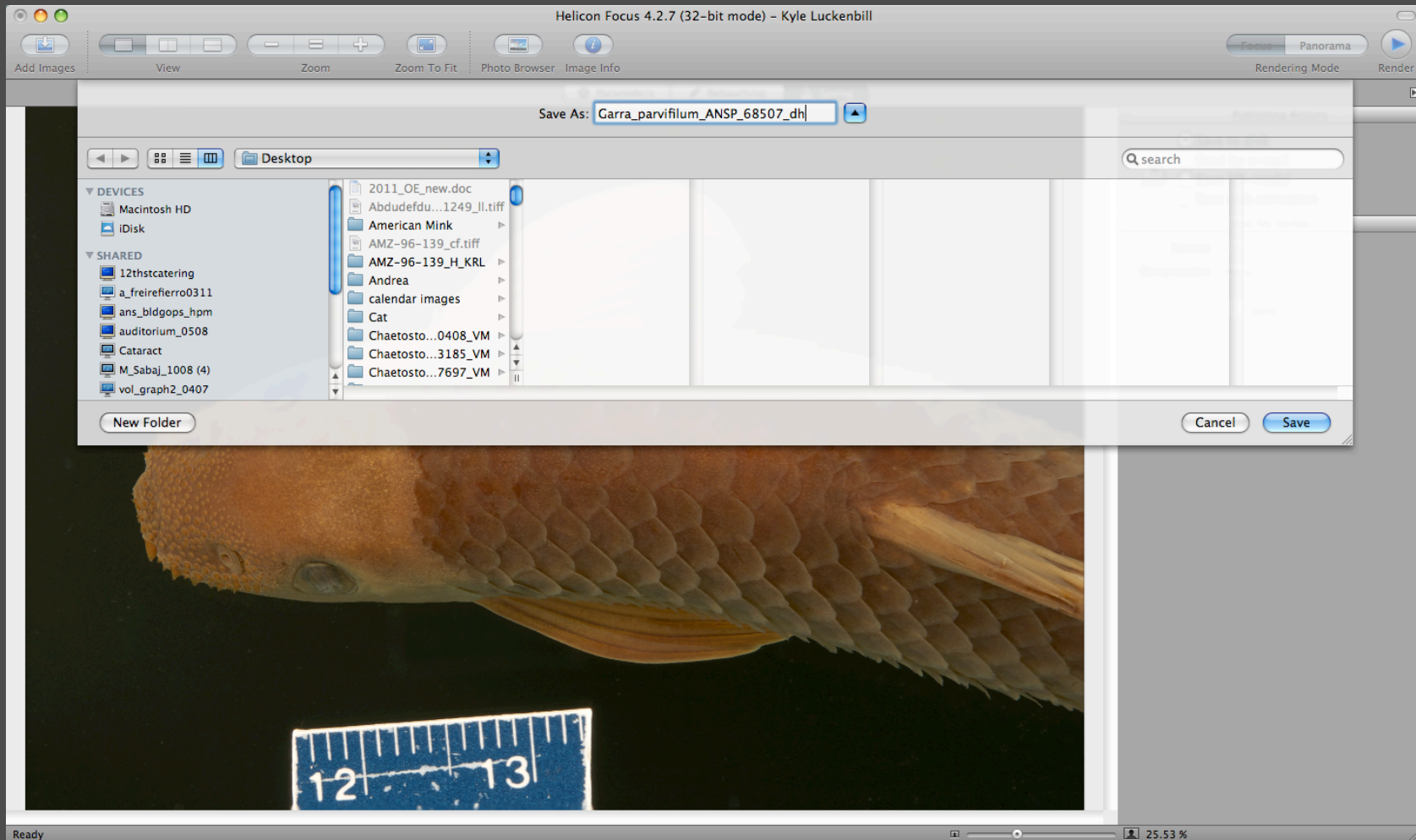
# Helicon Focus Lite



# Helicon Focus Lite



# Helicon Focus Lite



# File Names

## Photographs

Genus\_species\_ANSP\_00000\_view

d-dorsal, v-ventral, ll-left lateral, rl-right lateral, dh-dorsal head, vh-ventral head, llh, rlh-left or right lateral head, cp-caudal peduncle, m-mouth, etc

Barbus\_stigmasemion\_ANSP\_65865\_ll

## Radiographs

Genus\_species\_ANSP\_00000\_view\_x

ll-left lateral, rl-right lateral, dv-dorsal ventral

Barbus\_stigmasemion\_ANSP\_65865\_ll\_x

# Folder Names

Folder for each specimen

Genus\_species\_ANSP\_00000\_type\_by

**type:** H - Holotype, S - Syntype, L - Lectotype, N - Neotype,  
P - Paratype, PL – Paralectotype

**by:** Photographers initials

Barbus\_stigmasemion\_ANSP\_65865\_H\_KRL



# Folder Contents and File Types

Inside the main folder for each lot is another folder titled “originals” which contains unedited images:

- All raw files used to create the final montaged image
- Unedited montaged images
- Radiograph images with .viva extension

Edited images:

- 16 bit layered tiff image with LZW and ZIP layer compression
- 8 bit layered tiff image with LZW and ZIP layer compression
- 8 bit flattened jpg image

# Helicon Focus Pro

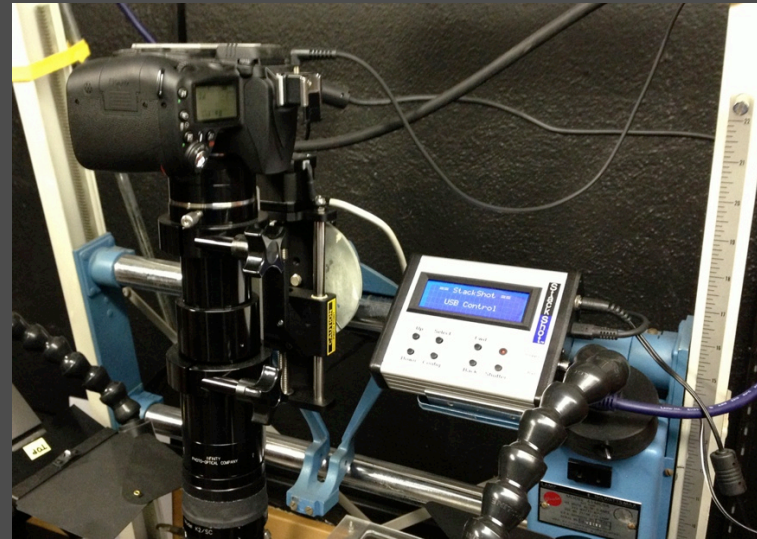
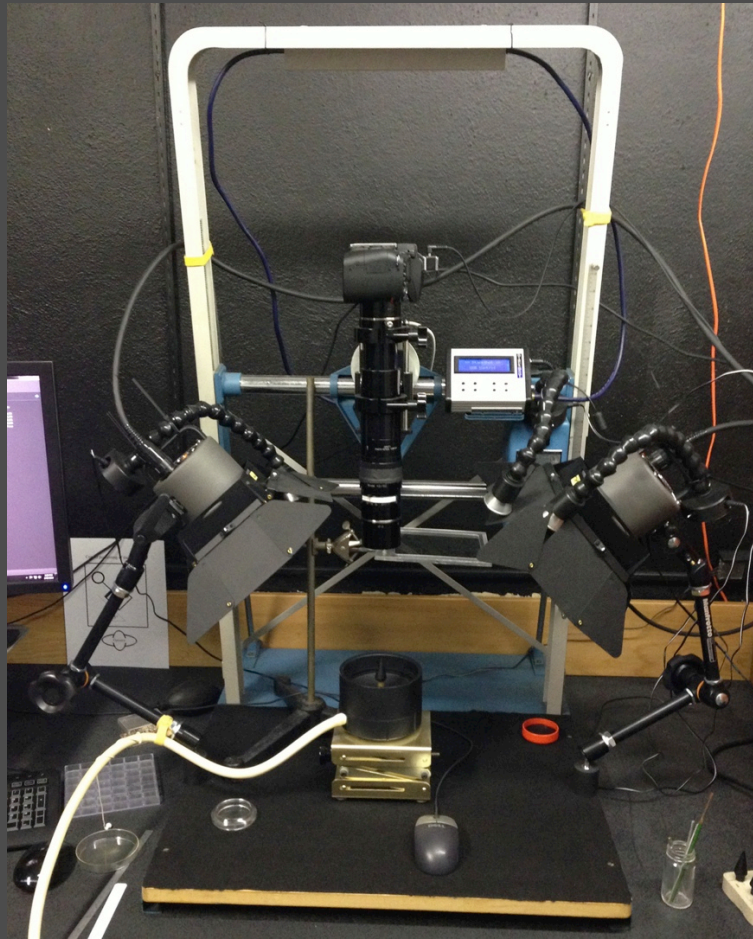
- Same functions as Lite version
- Automatic Step with Helicon Remote and StackShot Rig and Shutter Cable
- No need for Nikon Camera Control Pro



# Helicon Focus Pro

- Retouching Brush – clones from individual source images to the resulting image
- 3-D Model export
- Batch Mode – process multiple image stacks or one image stack with a variety of parameters

# Photography Setup with Stackshot



Nikon D90 with Infinity K2SC long distance microscope mounted on a motorized copy stand run by the StackShot control box.

# Pricing

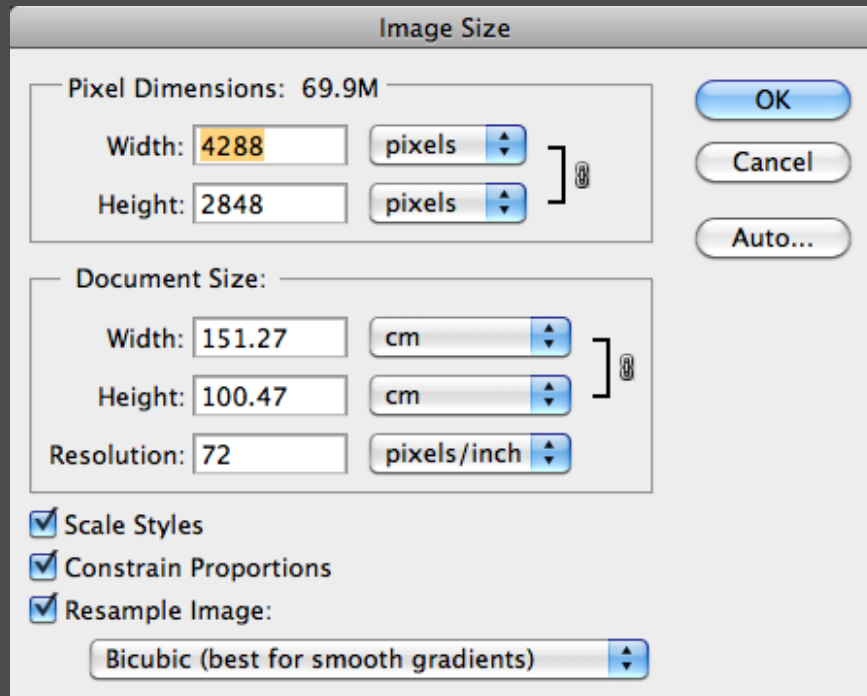
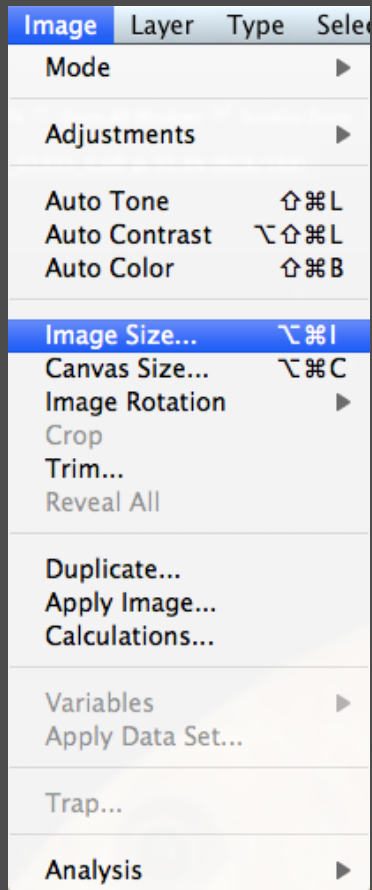
	1 year license	Unlimited license
• Helicon Focus Lite	\$30	\$115
• Helicon Focus Pro	\$55	\$200
• Stackshot Macro Rail Package		\$525
• Shutter Cable		\$45-\$80

# Editing in Photoshop CS6

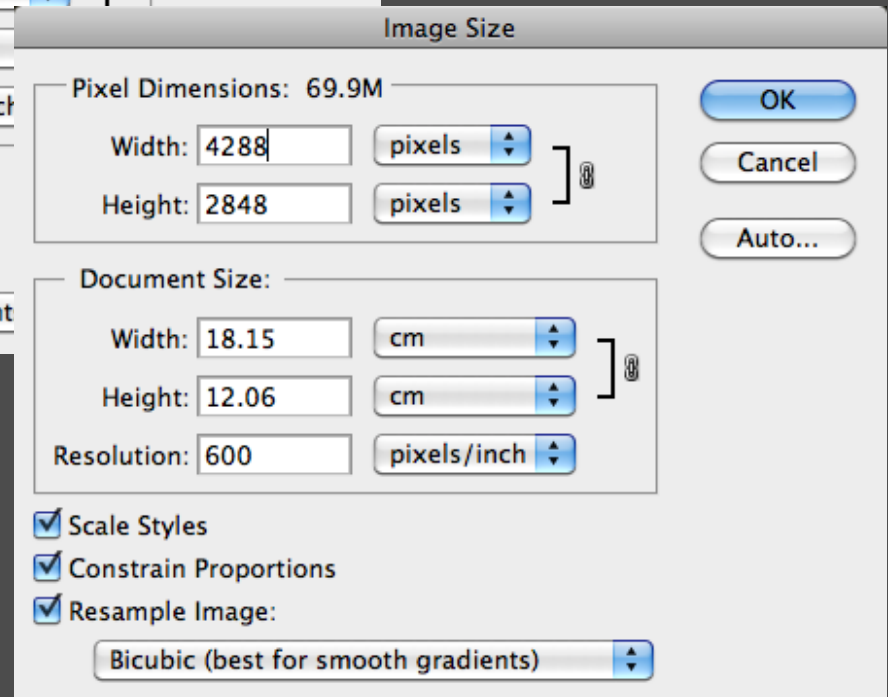
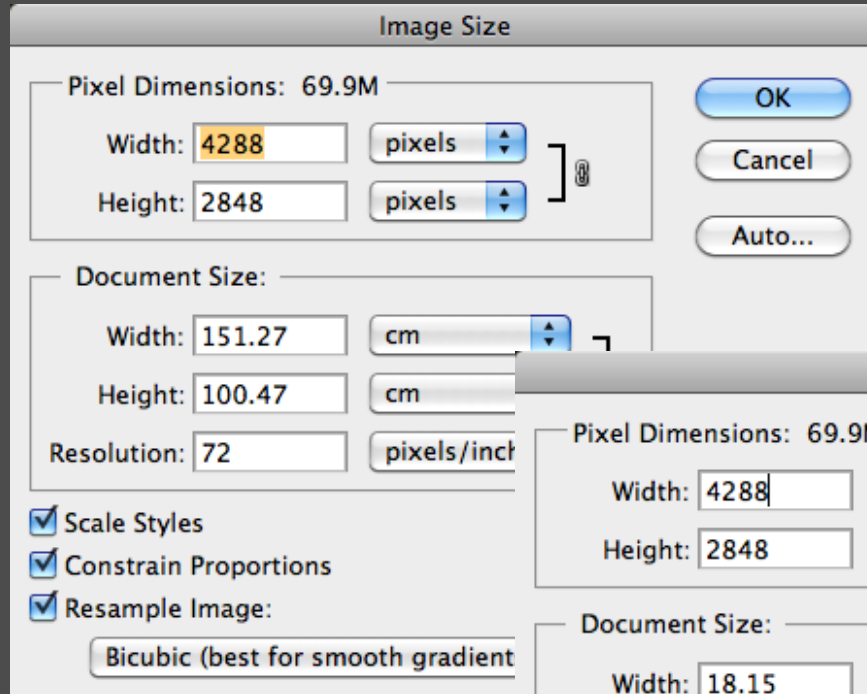
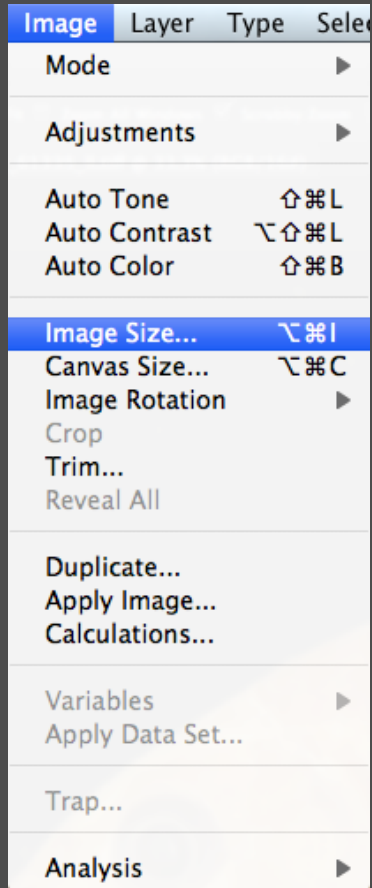
- Image Size
- Levels Adjustment
- Scale Bar
- Cropping
- Background
- Removing Artifacts
- Sharpening
- Saving



# Image Size

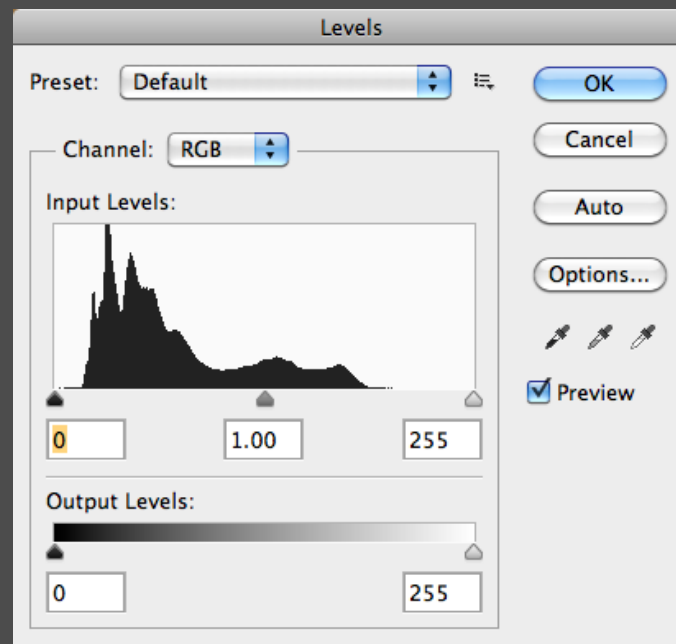
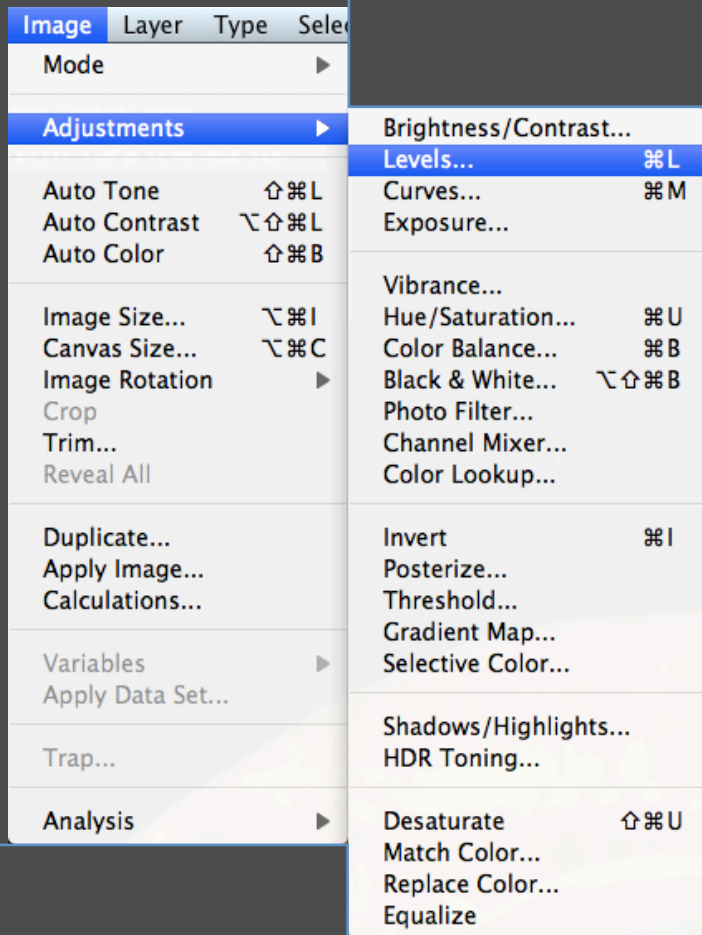


# Image Size

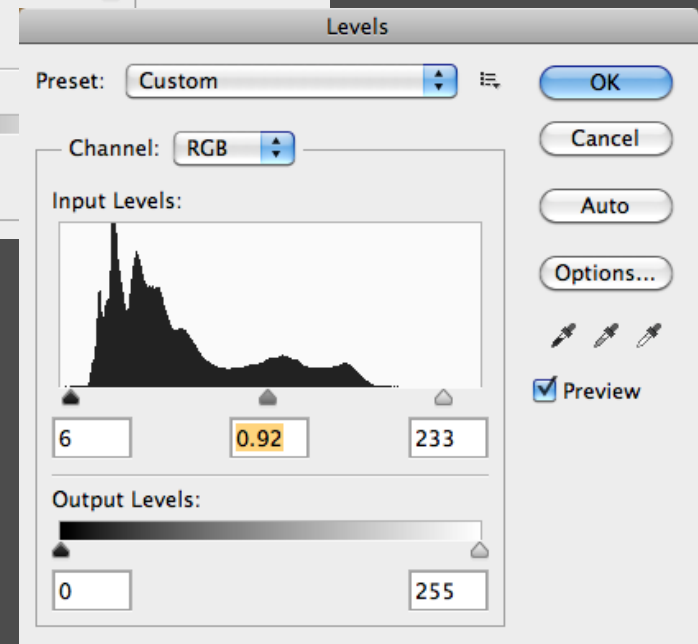
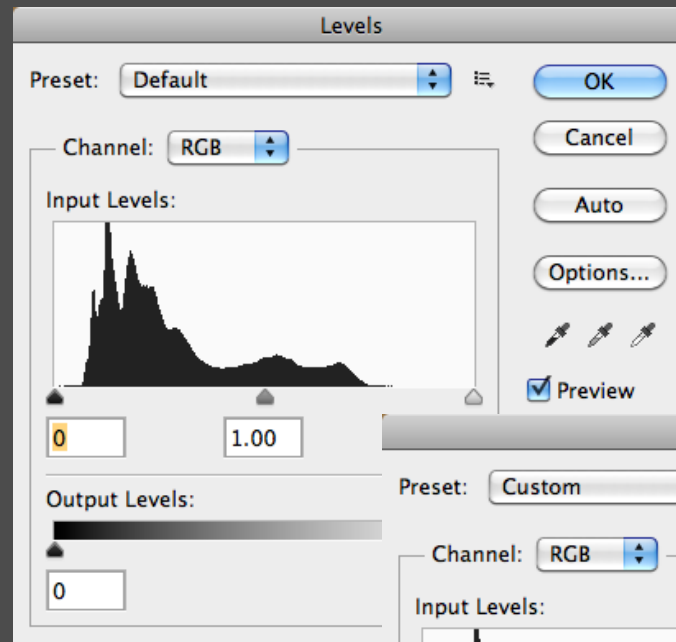
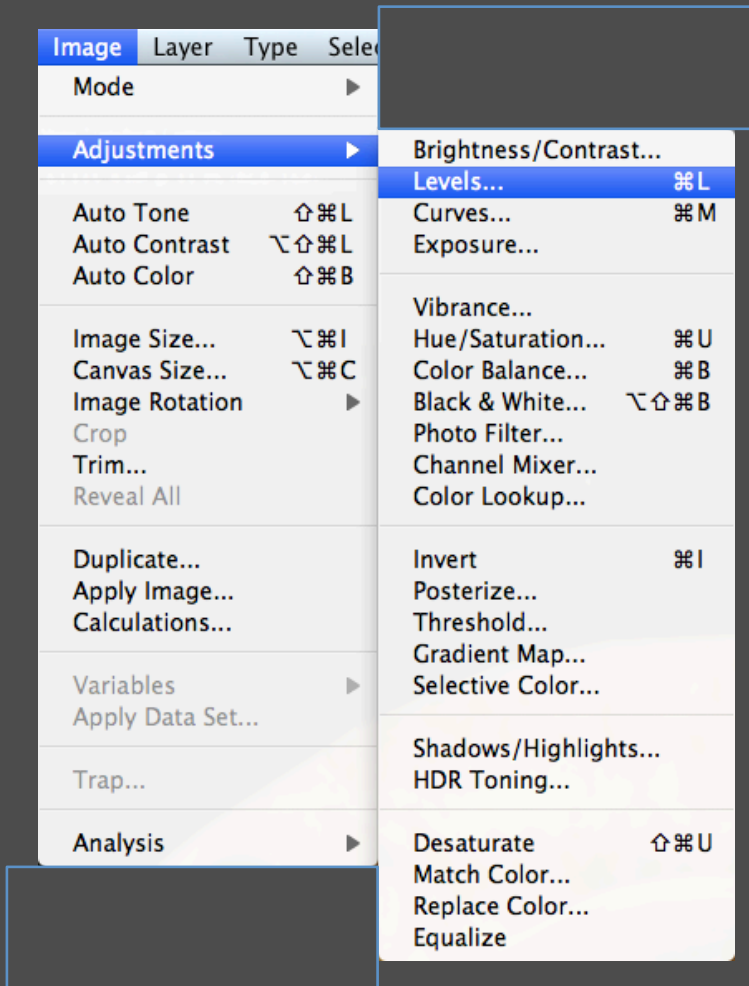




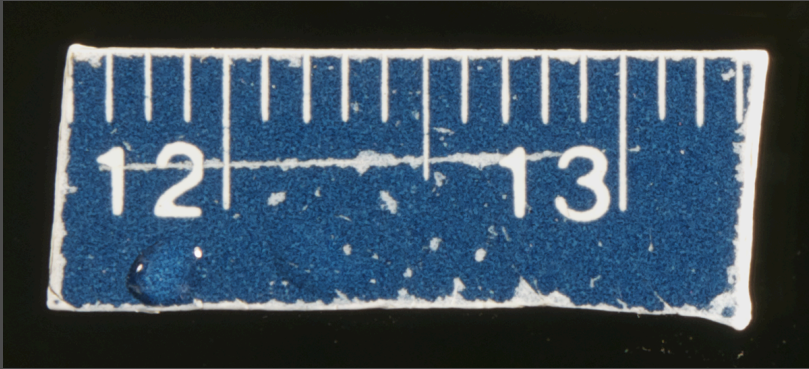
# Levels Adjustment



# Levels Adjustment



# Scale Bar



# Scale Bar



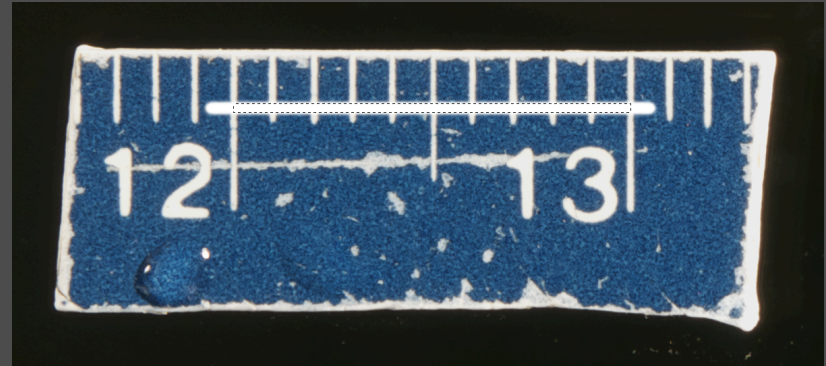
Create a line using  
the pen tool.

# Scale Bar



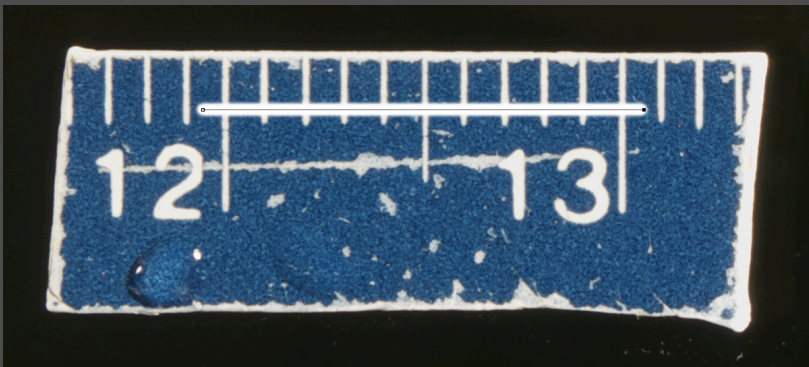
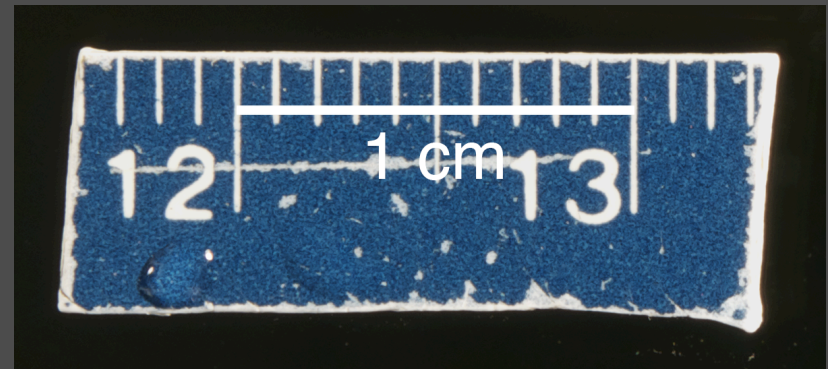
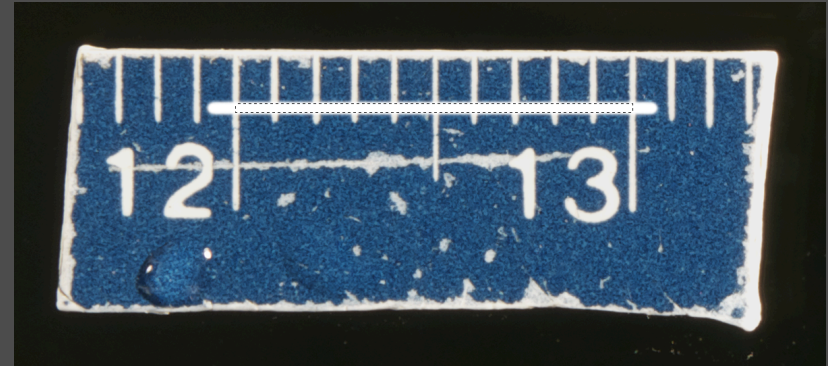
Stroke the path.

# Scale Bar



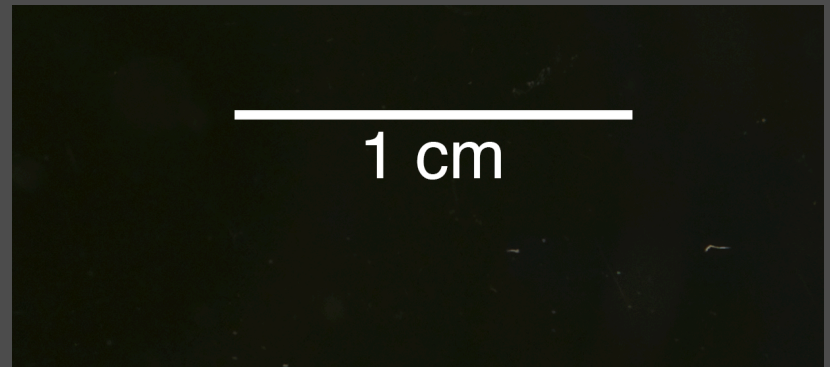
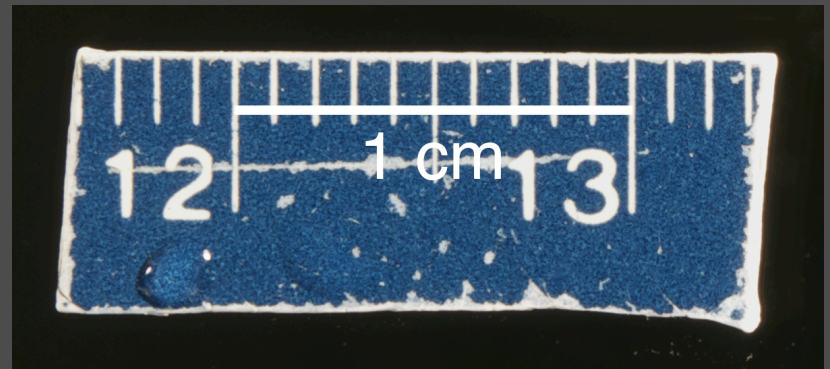
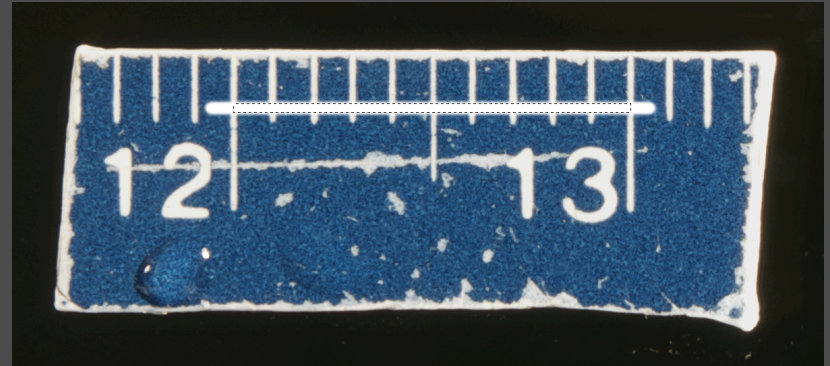
Use the Marque tool to create a selection.

# Scale Bar



Clip off the excess portion of the line and add text.

# Scale Bar

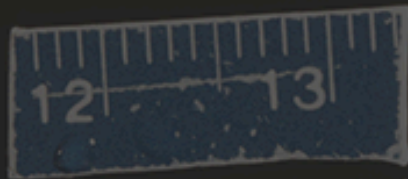




# Cropping



# Cropping



# Cropping



# Background (Wacom Tablets)



Bamboo - \$79



Intuos 5 - \$229

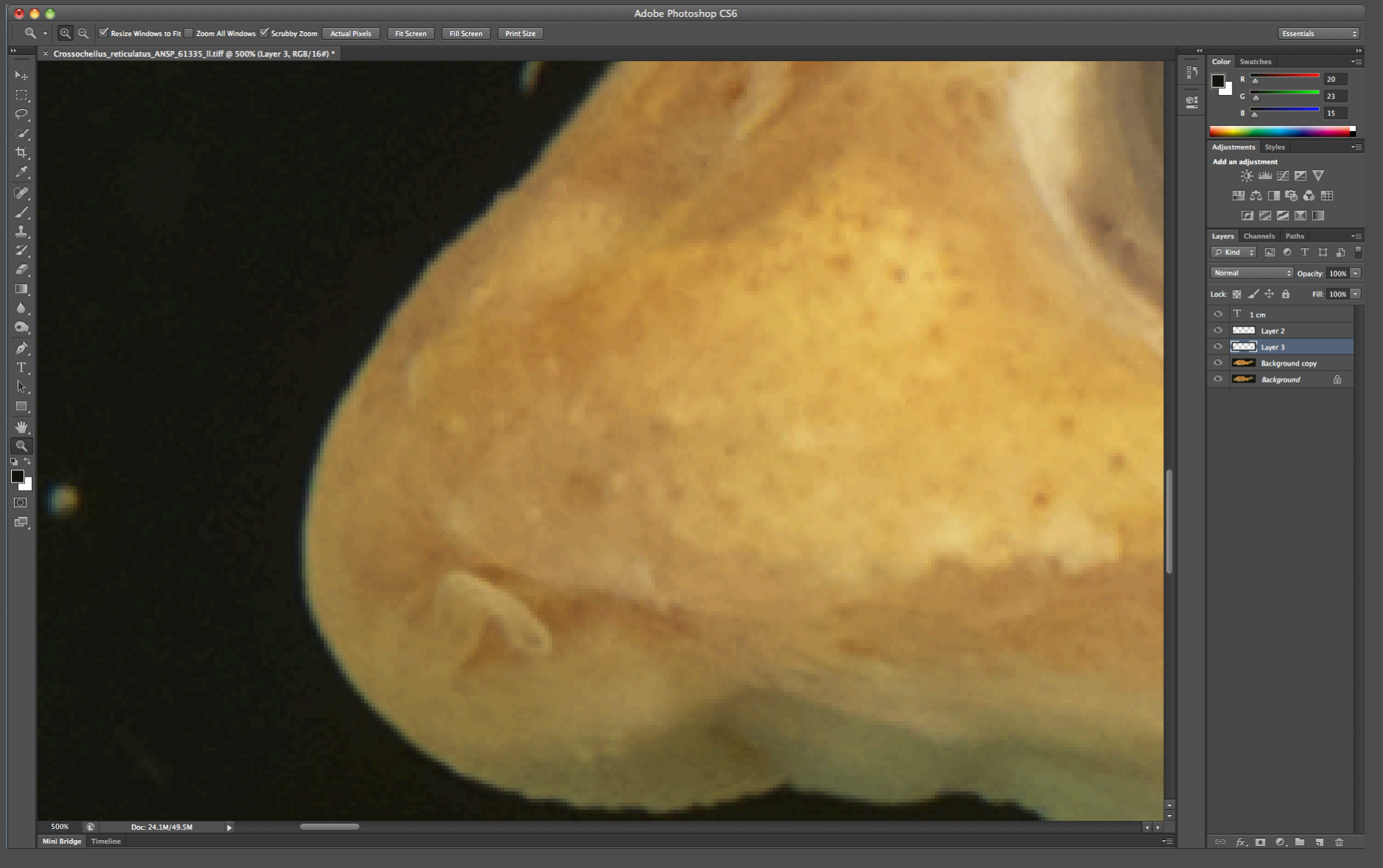


Intuos 5 - \$349

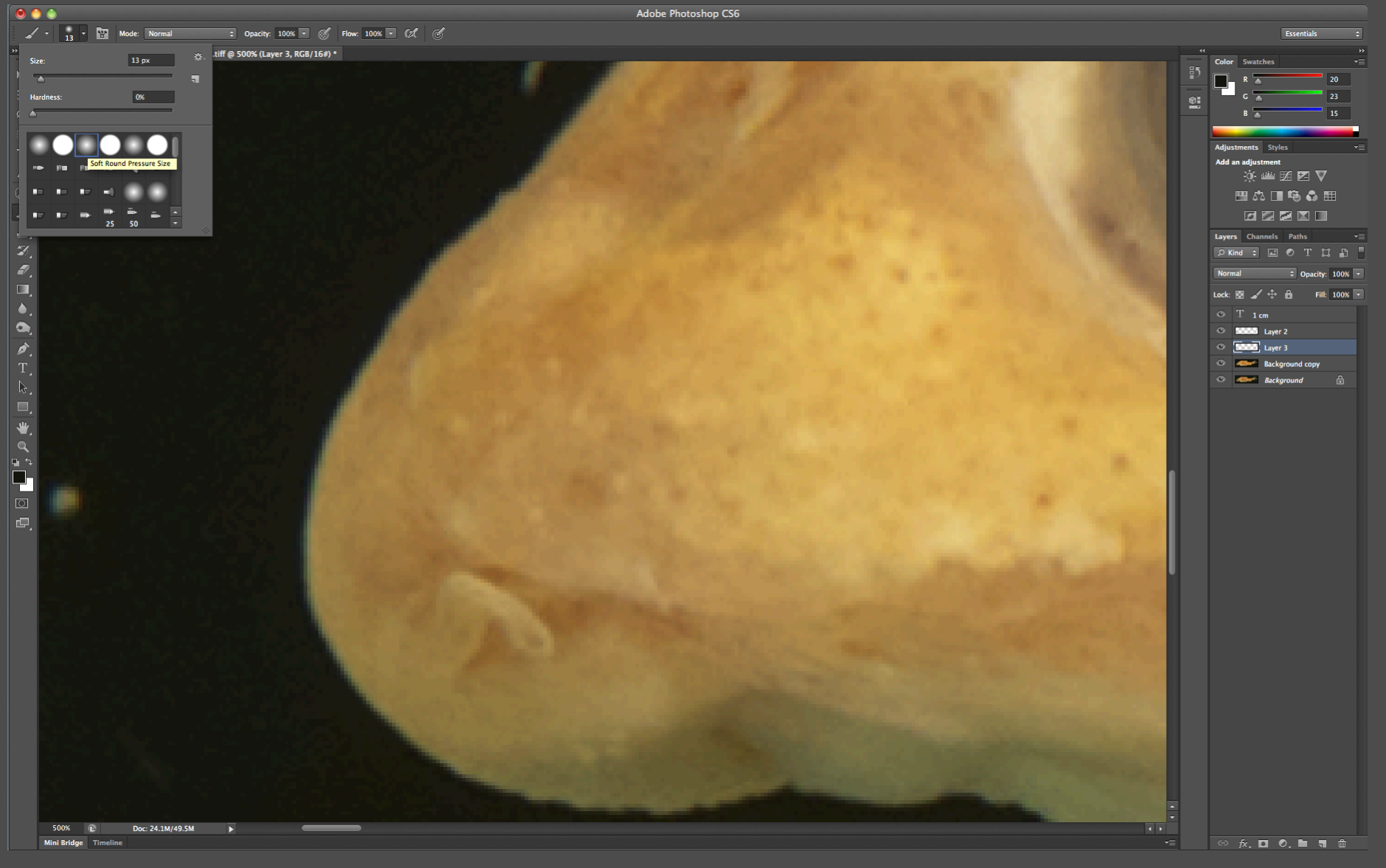


Intuos 5 - \$469

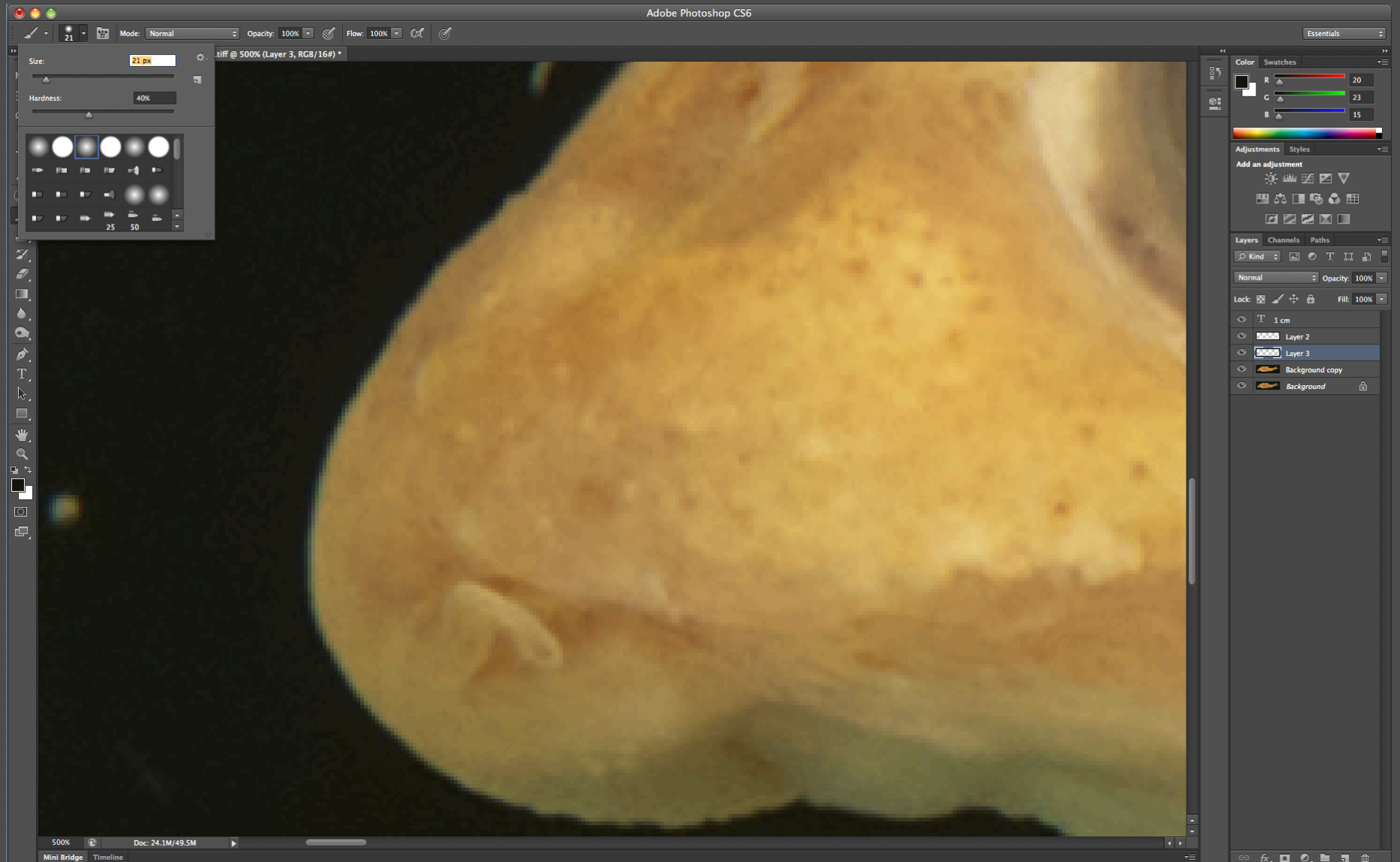
# Background



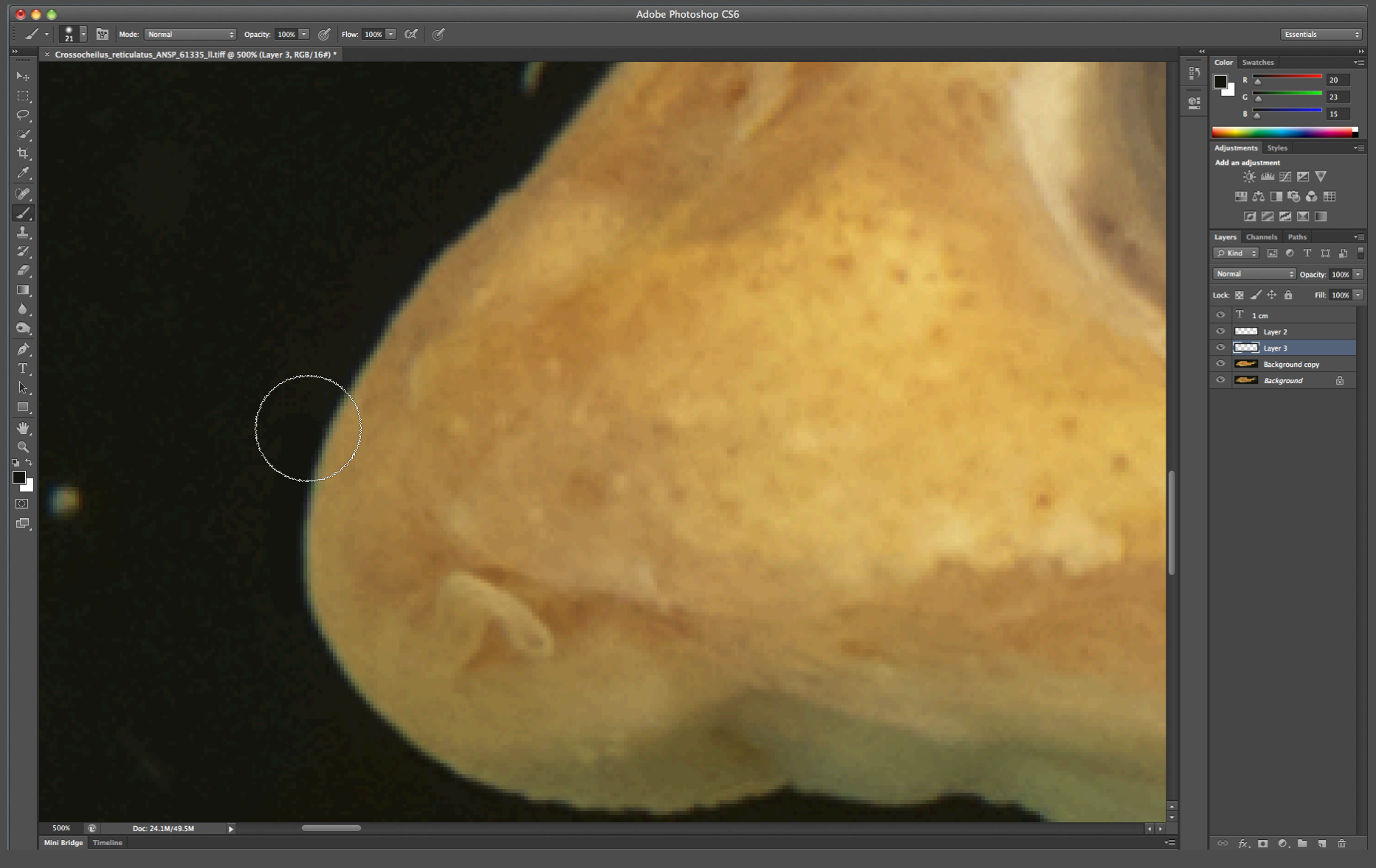
# Background



# Background

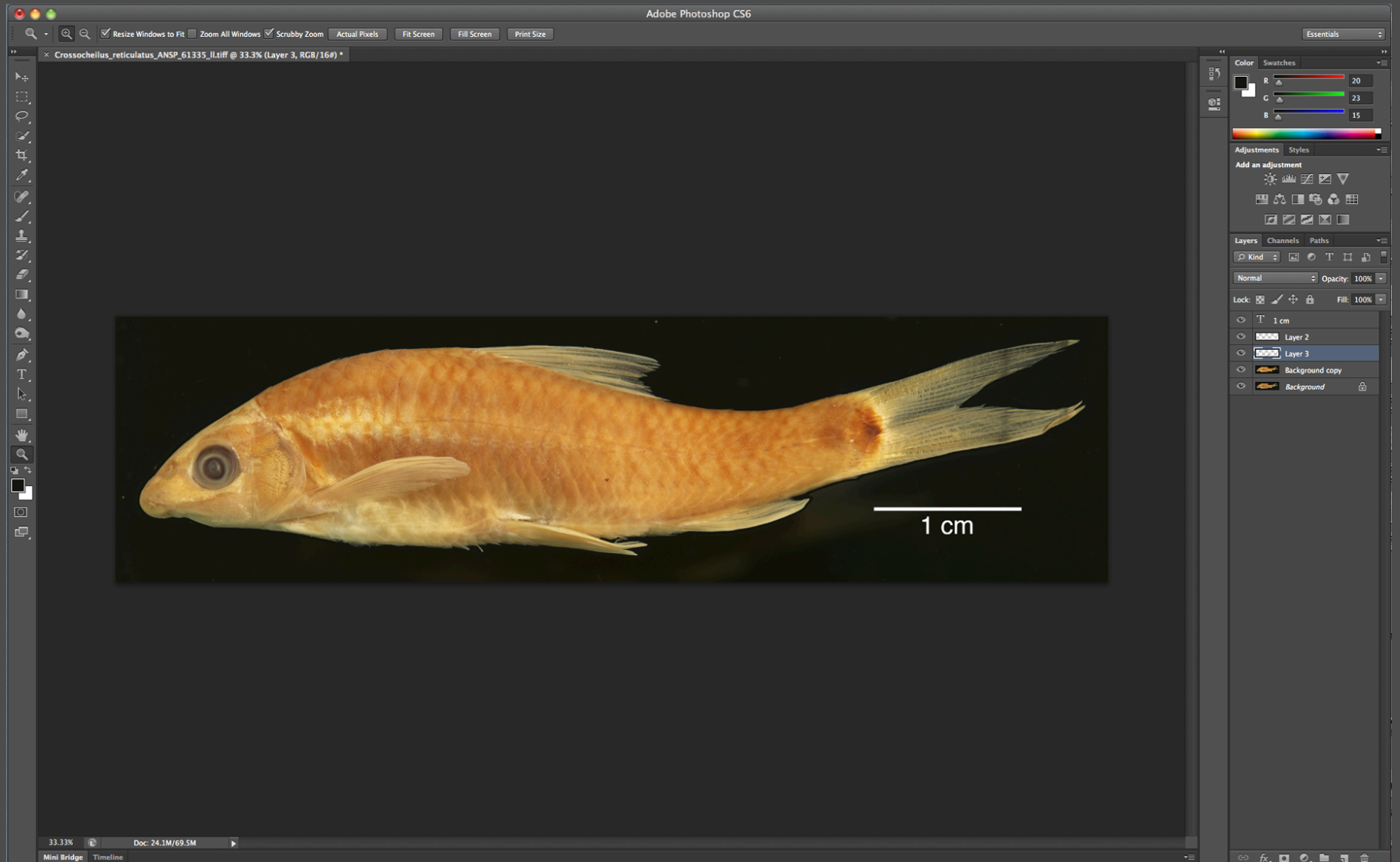


# Background

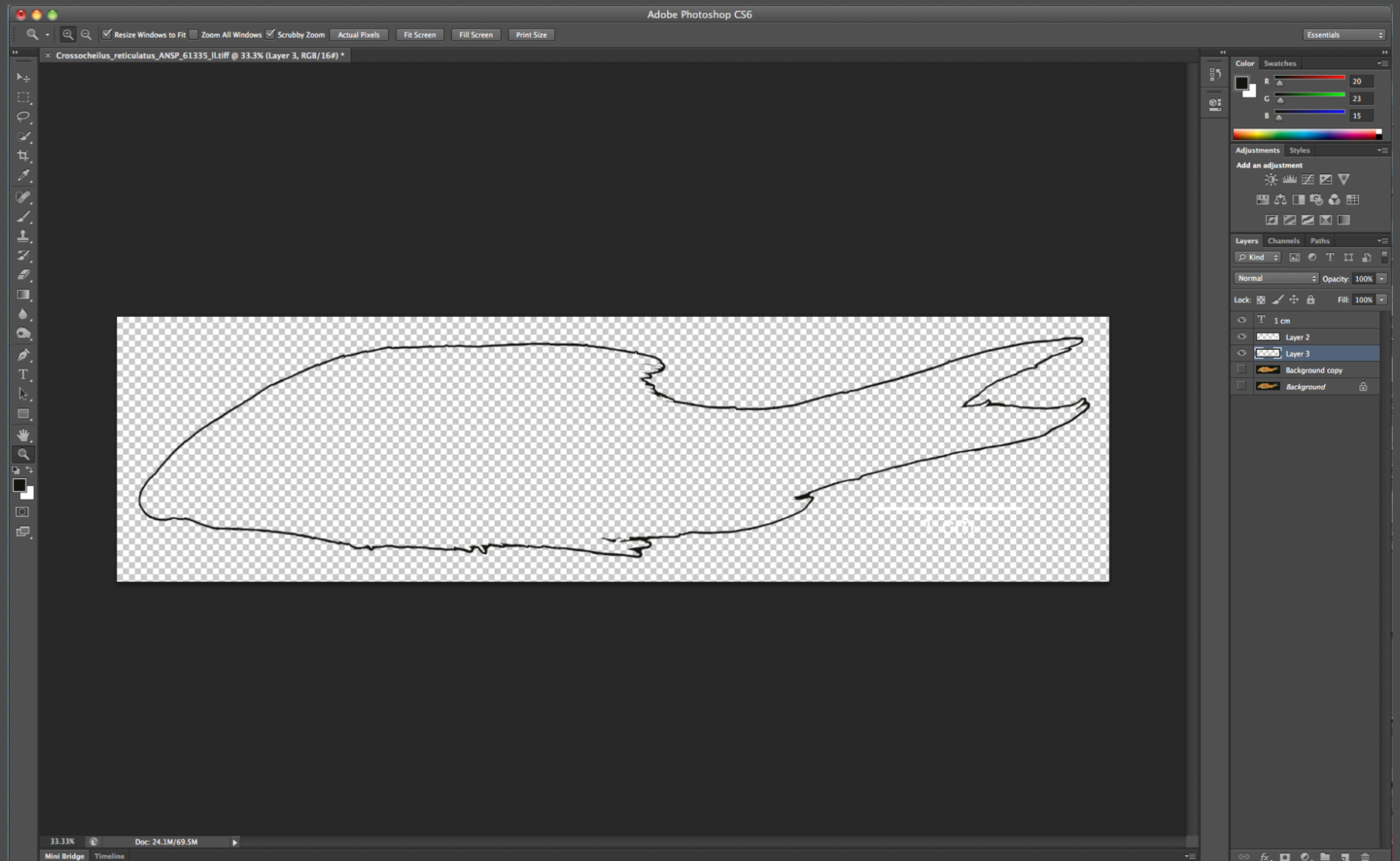




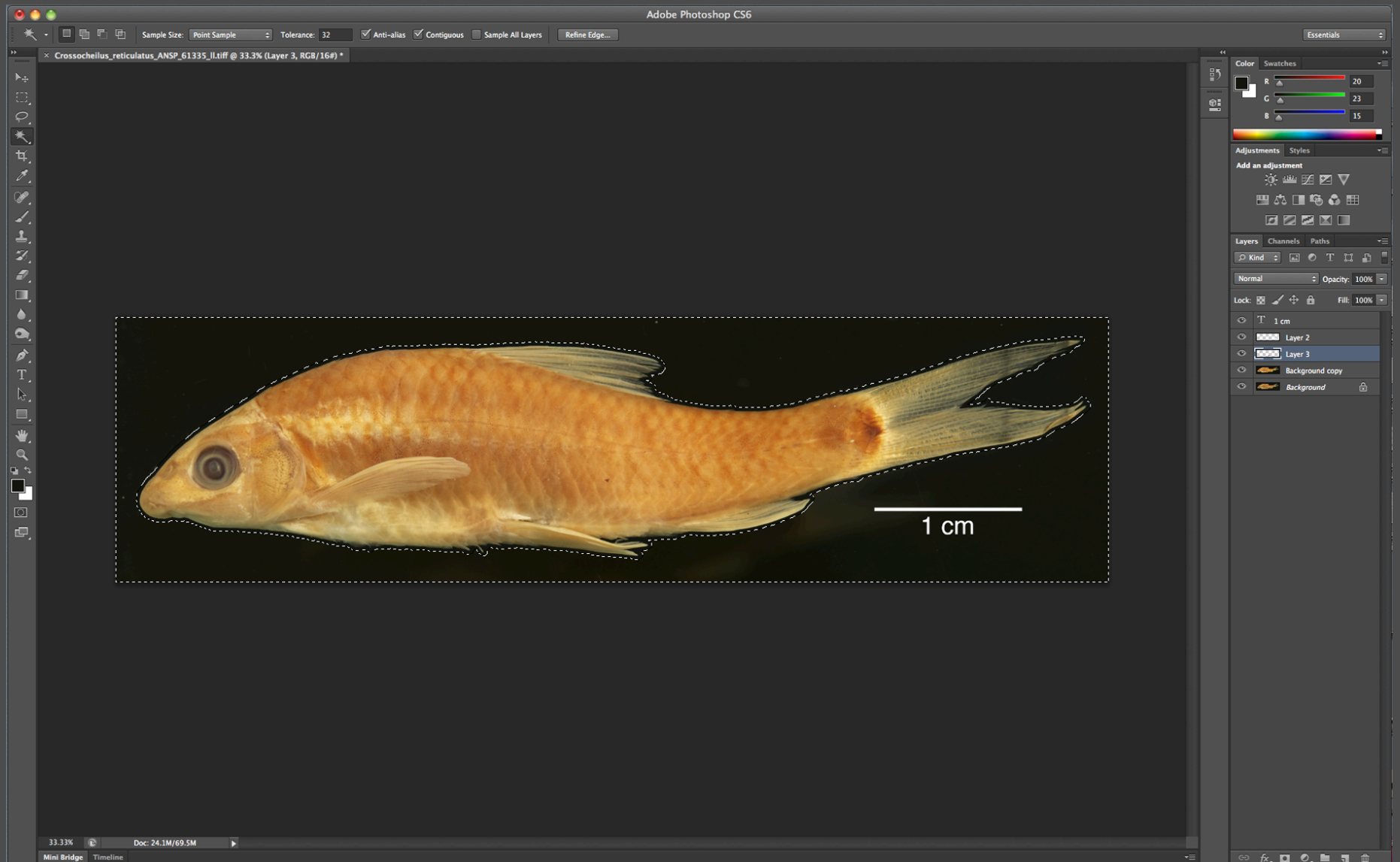
# Background



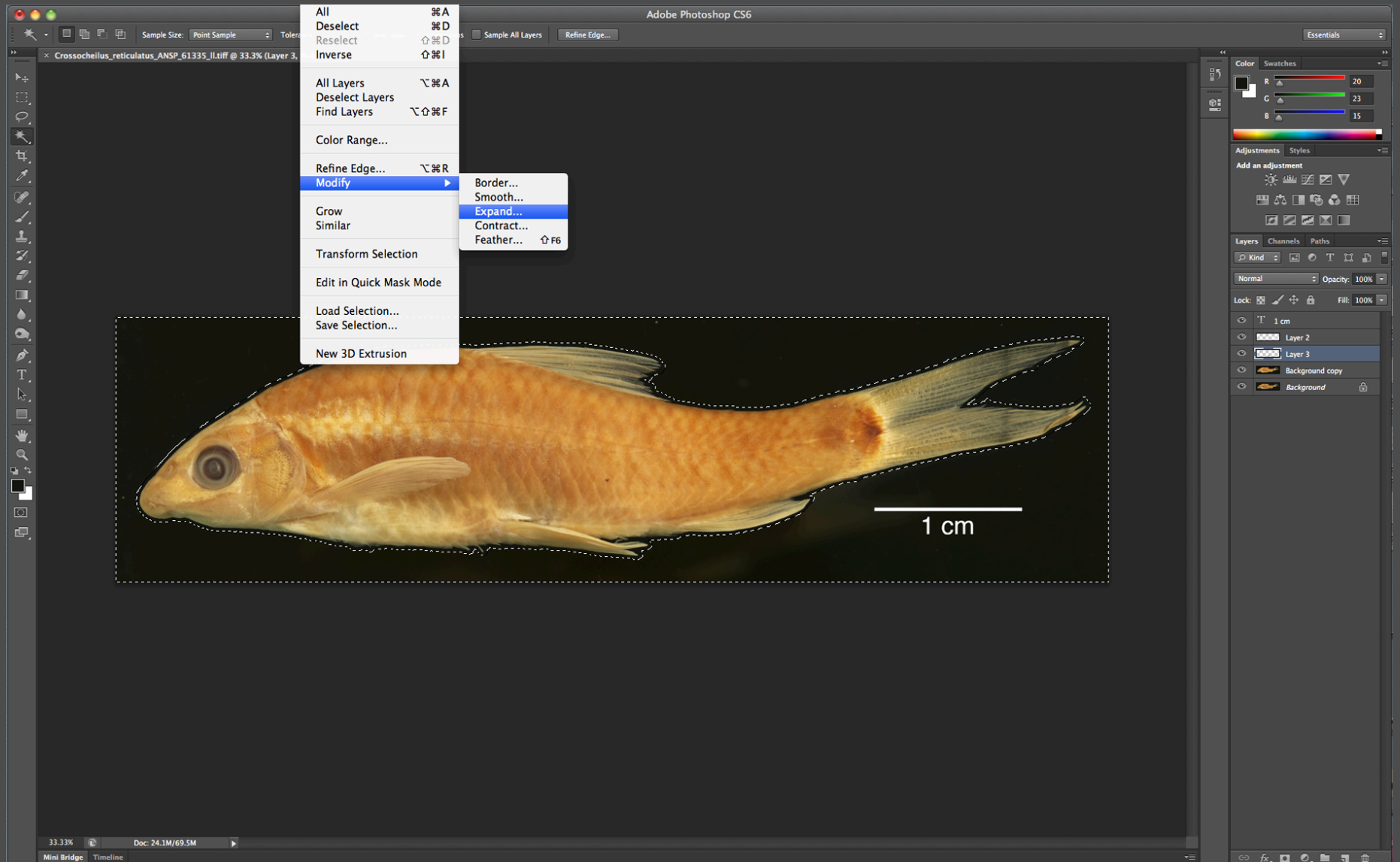
# Background



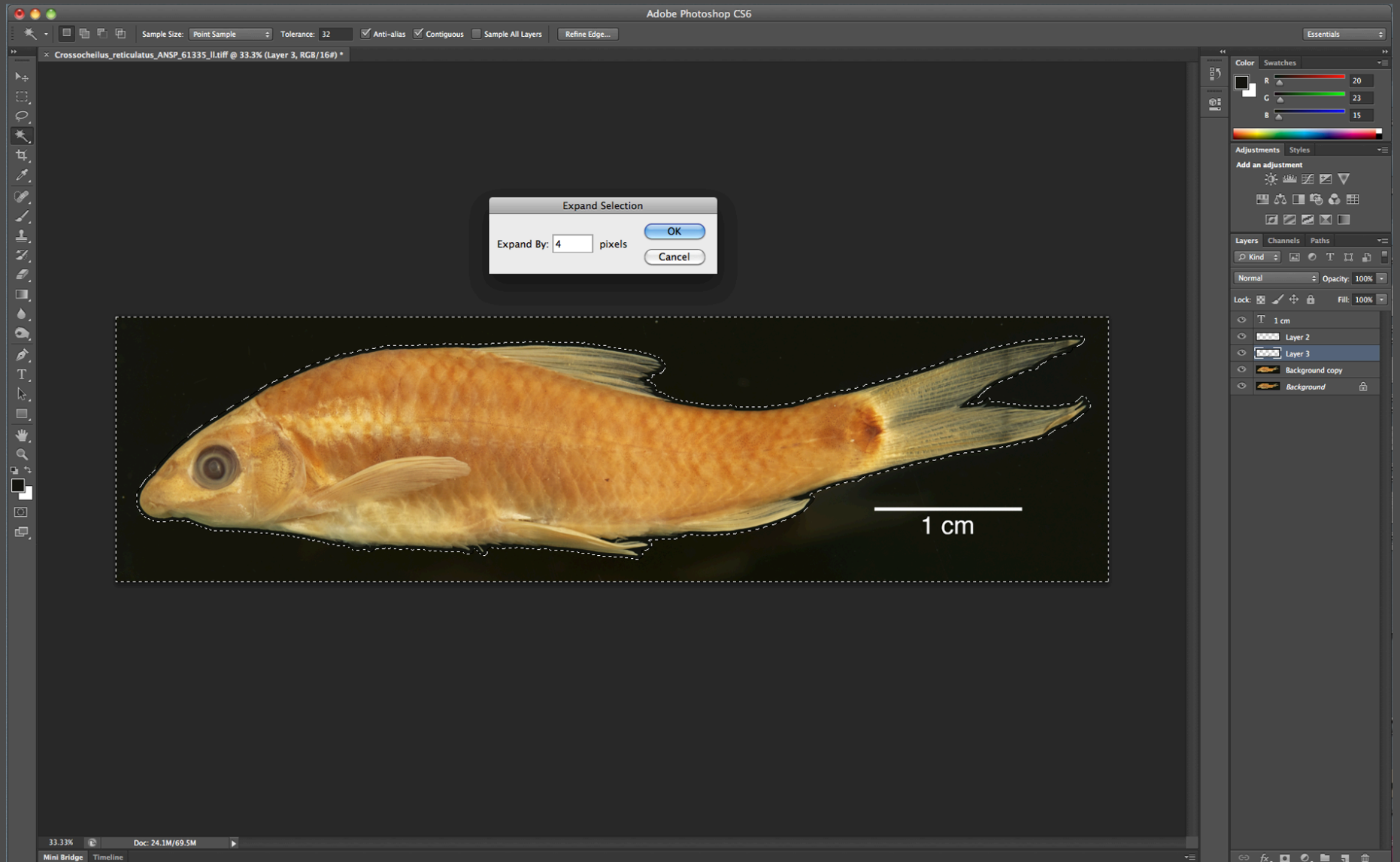
# Background



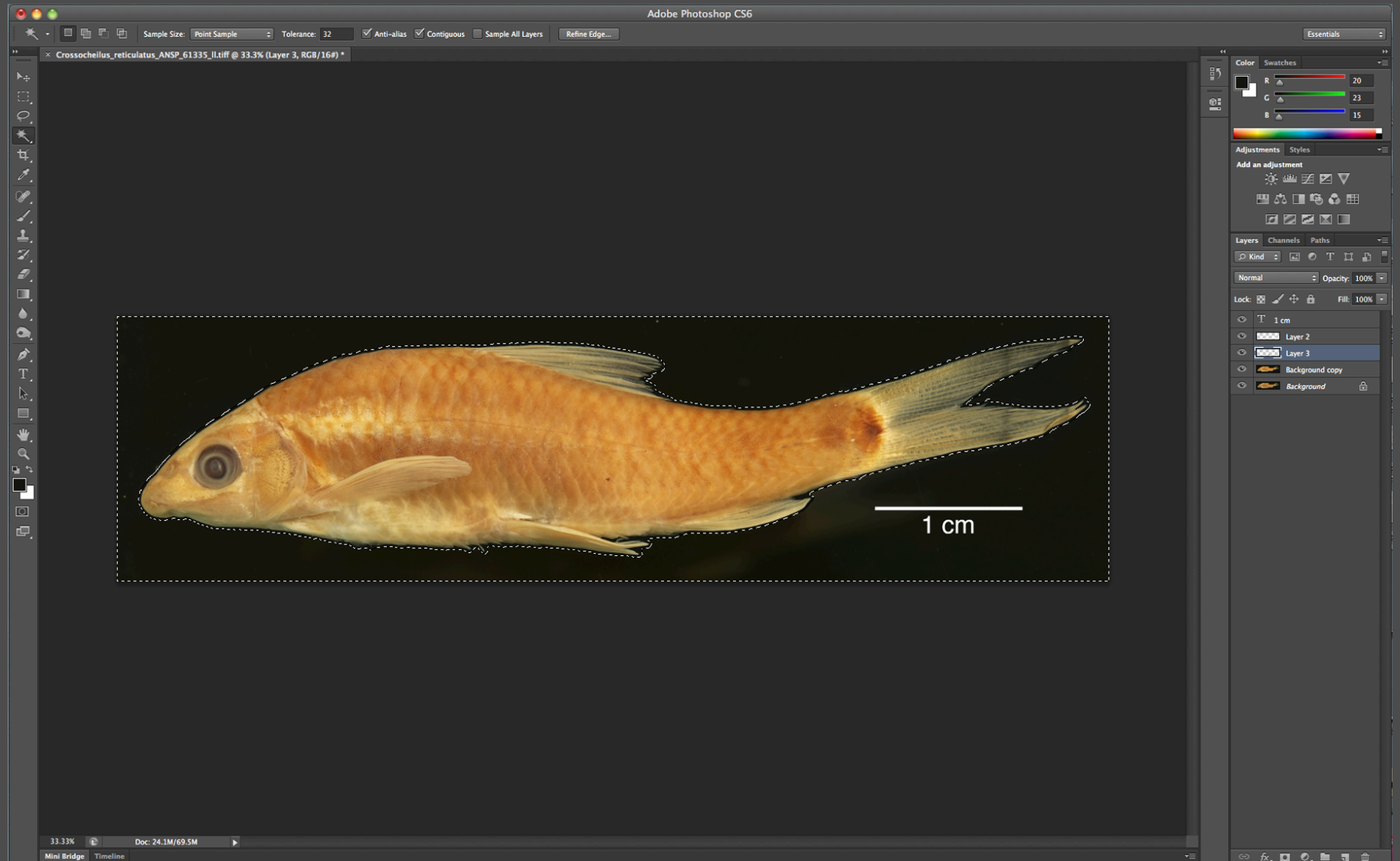
# Background



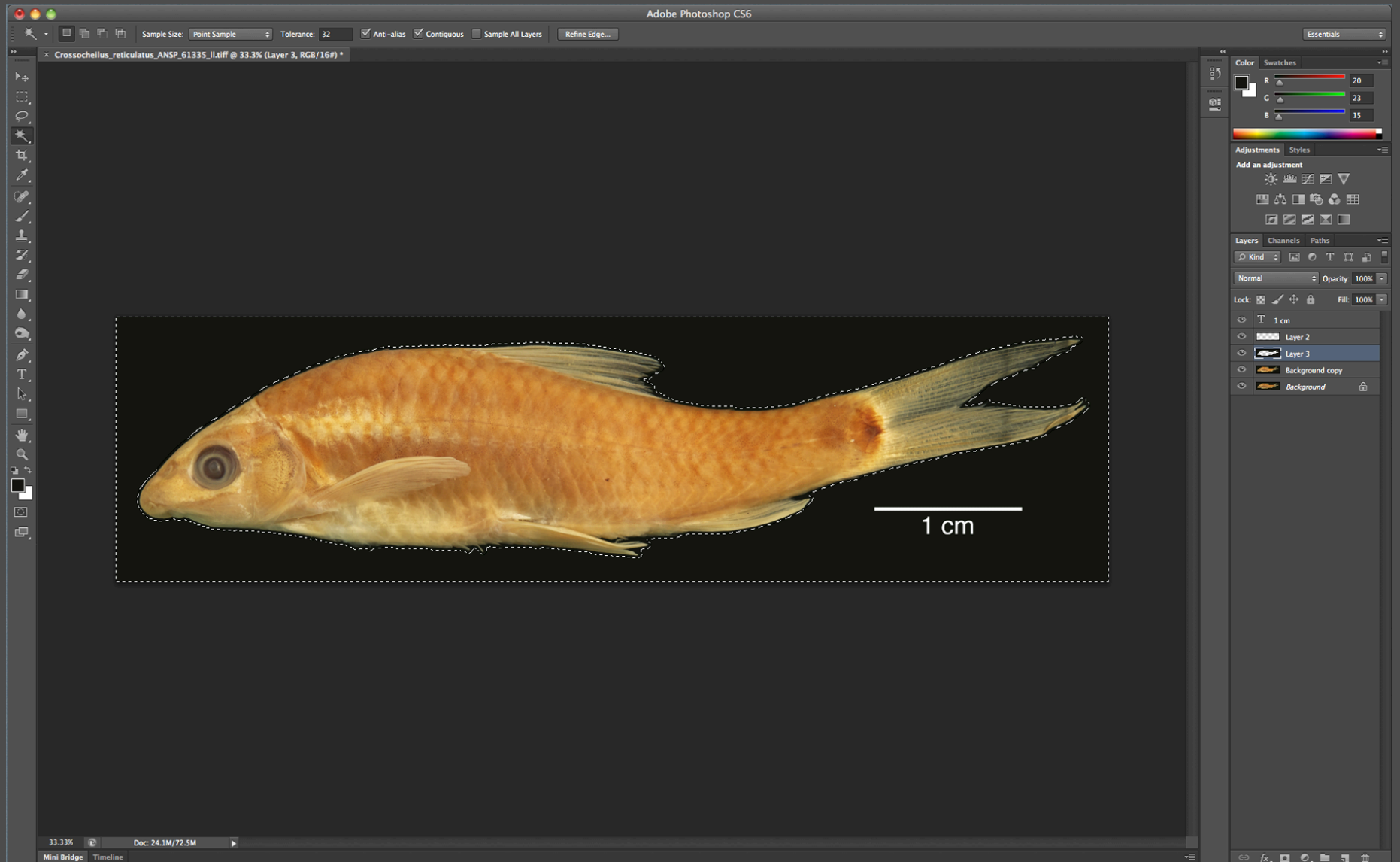
# Background



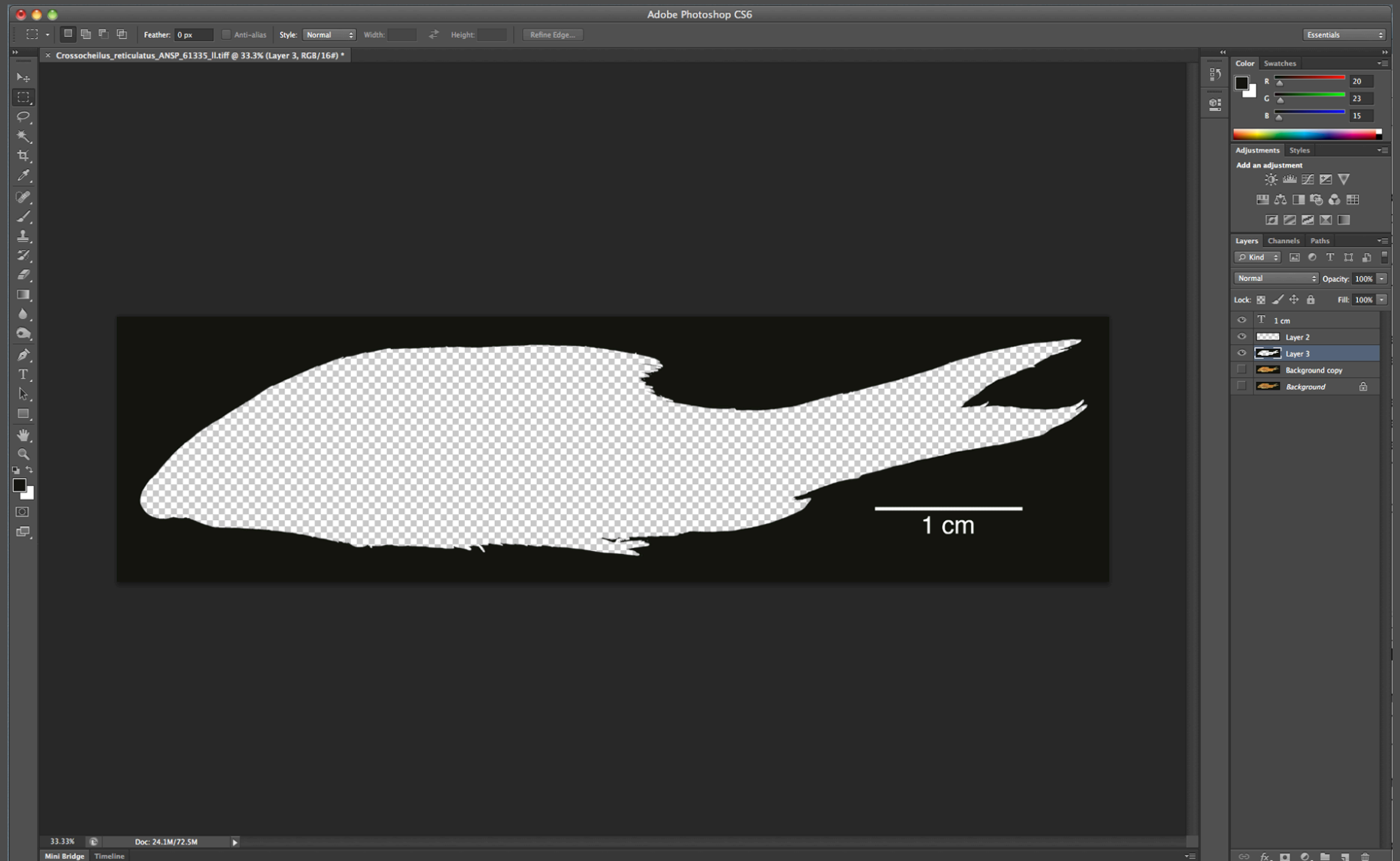
# Background



# Background

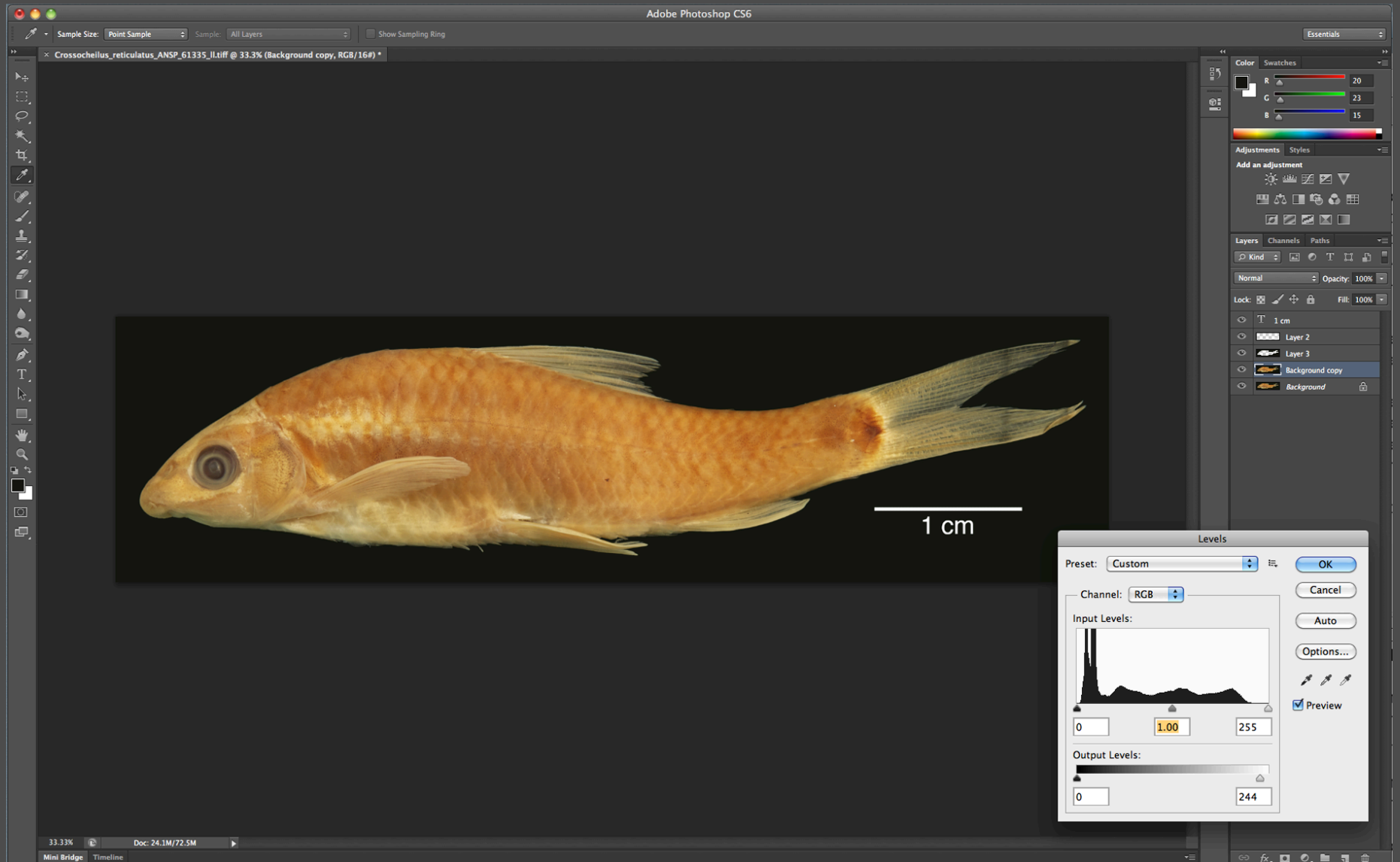


# Background

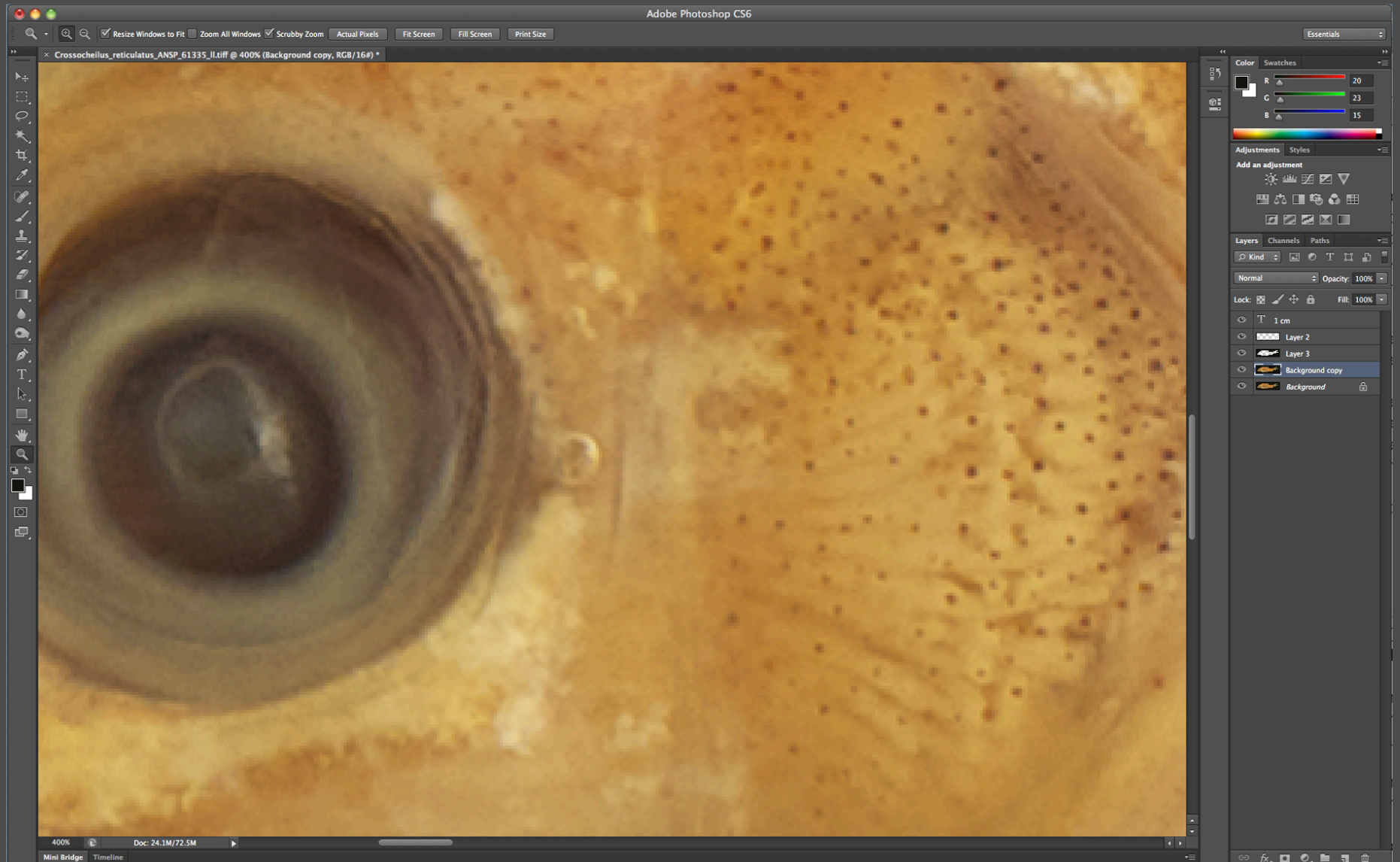




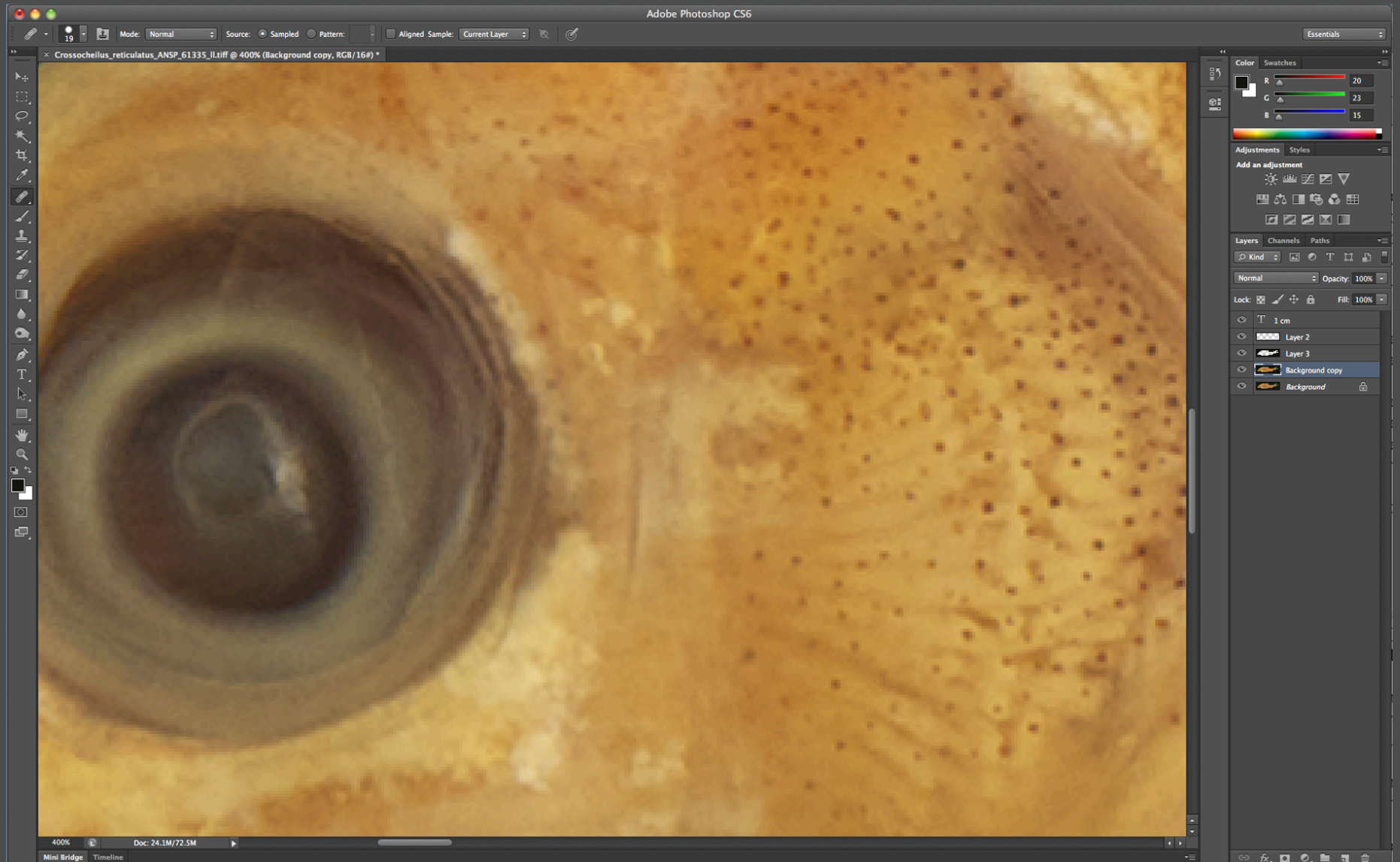
# Background



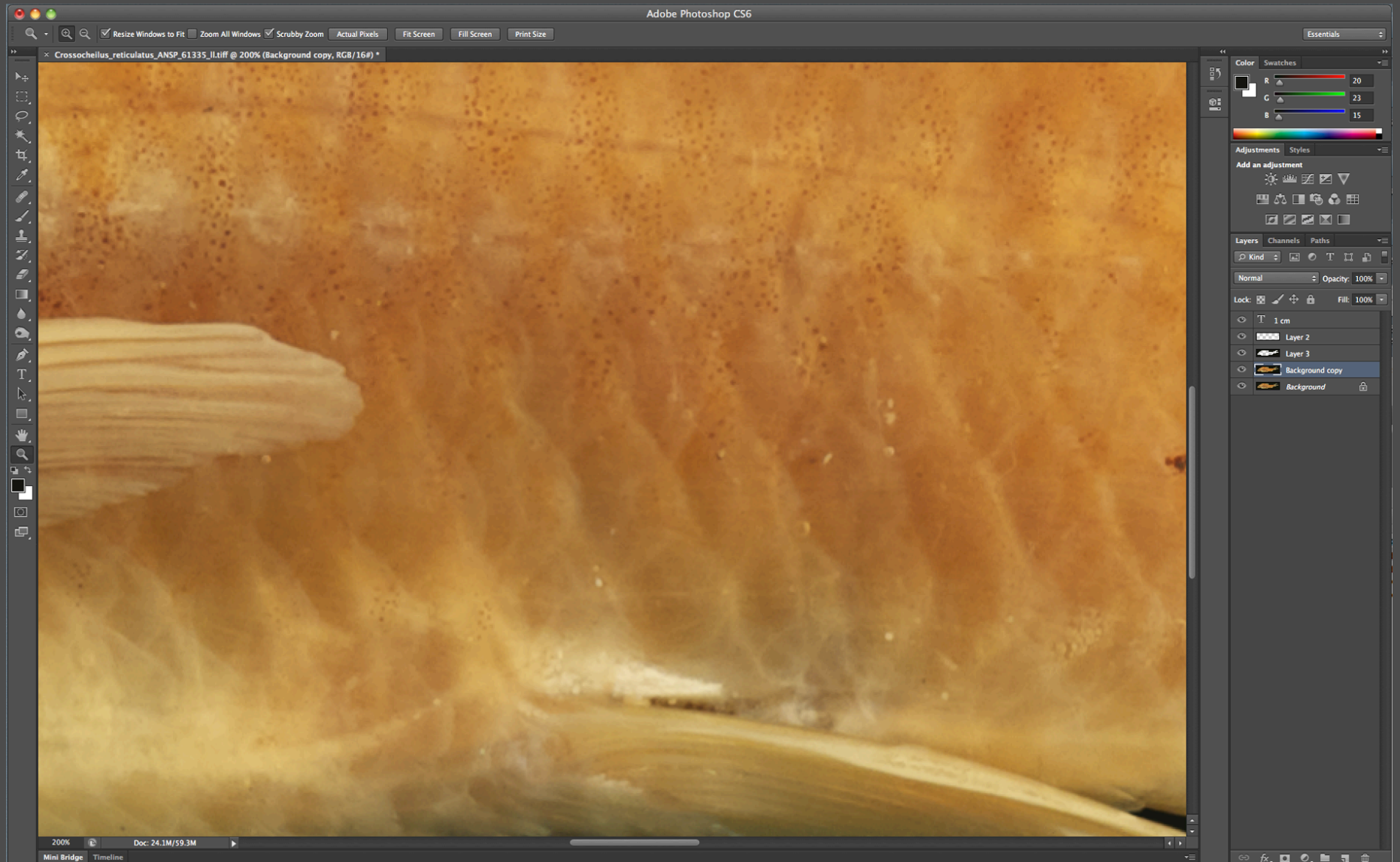
# Removing Artifacts



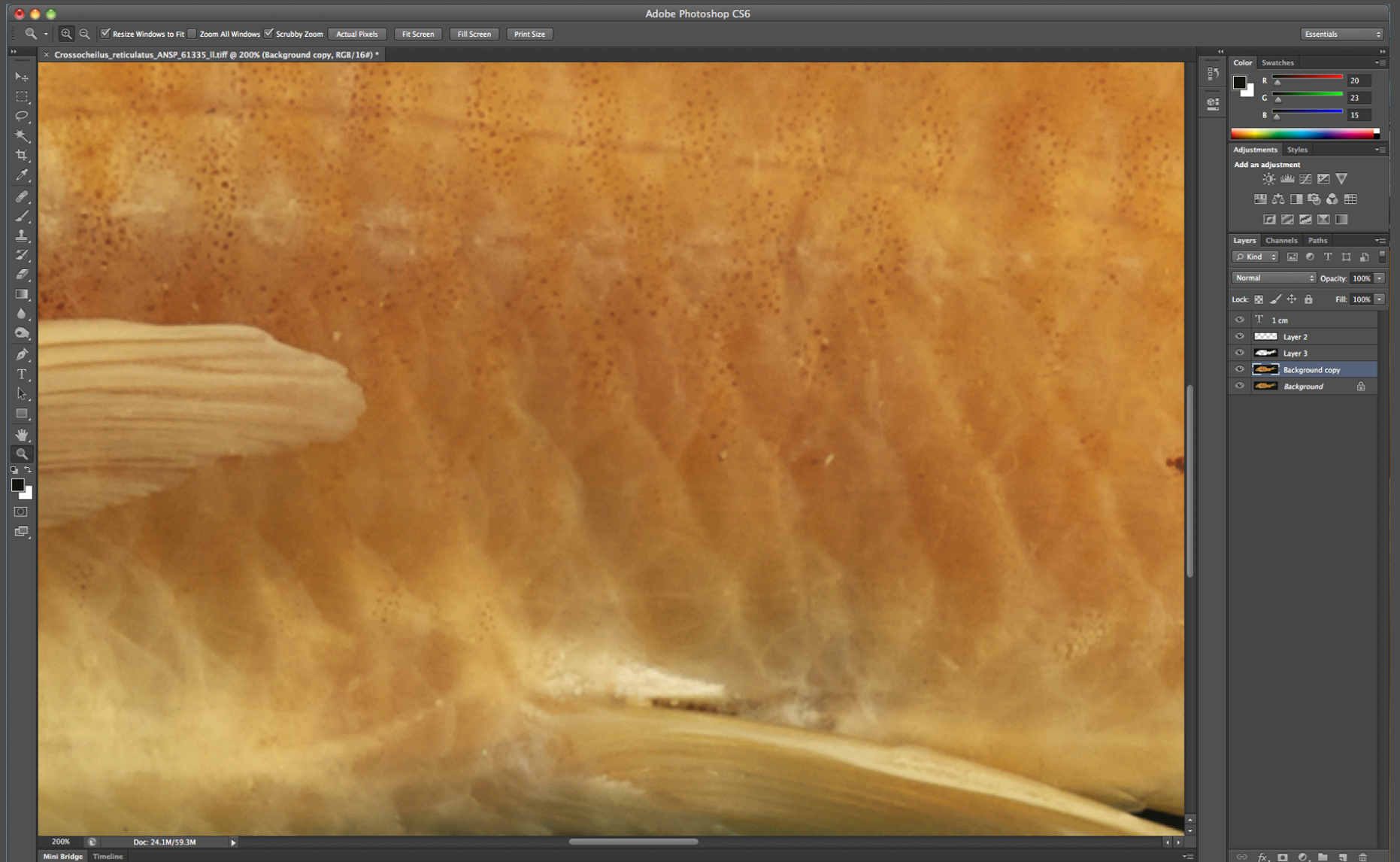
# Removing Artifacts



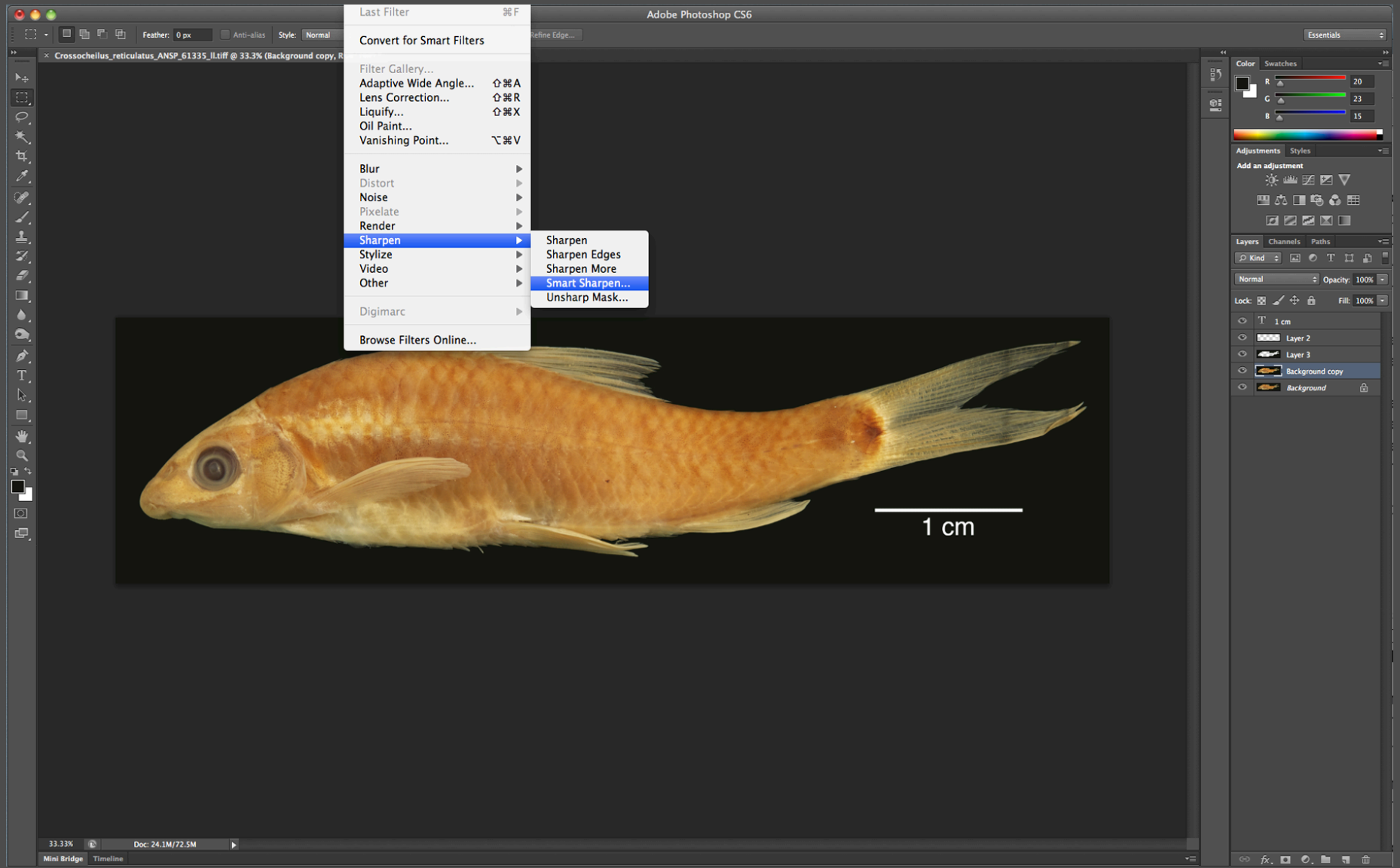
# Removing Artifacts



# Removing Artifacts



# Sharpening



# Sharpening

The screenshot displays the Adobe Photoshop CS6 interface. The main canvas shows a photograph of a fish, identified as *Crossocheilus reticulatus*, at 33.33% zoom. The Smart Sharpen dialog box is open, showing a preview of the fish's scales. The dialog box settings are as follows:

- Buttons: OK, Cancel,  Preview
- Mode:  Basic,  Advanced
- Settings: Default
- Amount: 41 %
- Radius: 1.0 px
- Remove: Gaussian Blur
- Angle: 0 °
- More Accurate

The background interface includes the Photoshop toolbar on the left, the Layers panel on the right showing a stack of layers (Layer 2, Layer 3, Background copy, Background), and the Color and Adjustments panels. The status bar at the bottom indicates a zoom of 33.33% and document dimensions of 24.1M/80.5M.

# Saving

- Use “save as” option to save layered 16bit and 8bit .tif files with LZW and ZIP layer compression.
- Flatten layers, then save as a .jpg file

Be careful not to save over the existing files when saving tifs. Either move files into folders as you save them or add an identifier to the file name

Barbus\_stigmasemion\_ANSP\_65865\_II\_16.tif

Barbus\_stigmasemion\_ANSP\_65865\_II\_8.tif