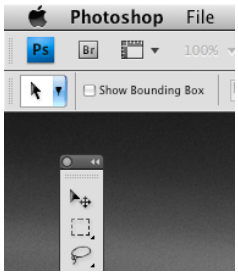
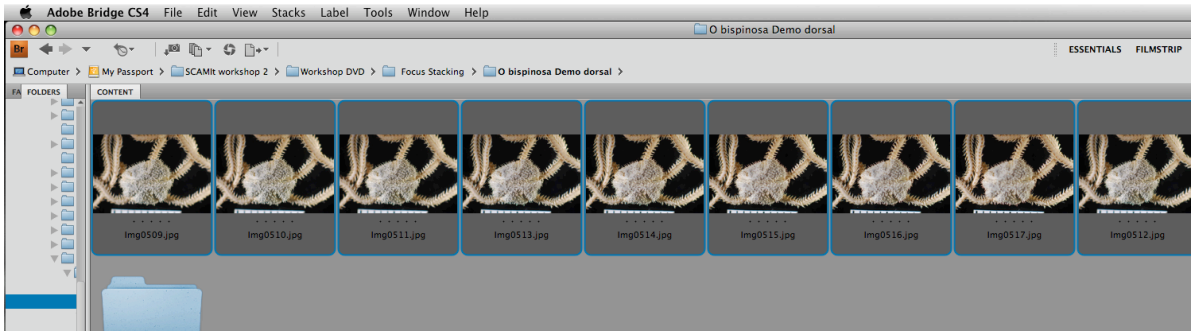
Focus Stacking

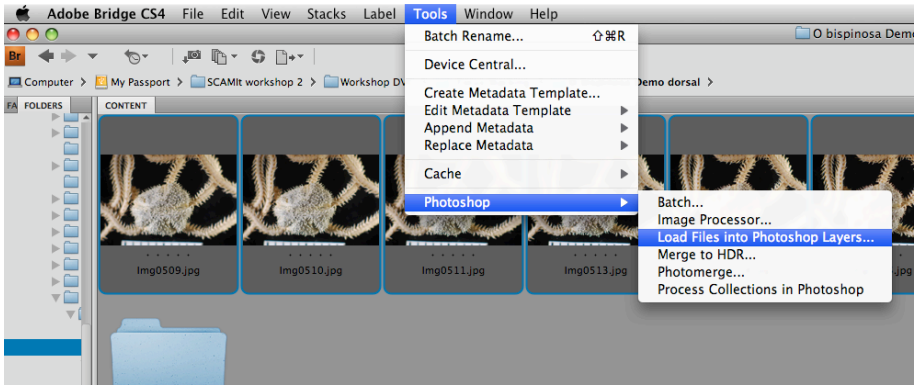
Focus stacking is a method of blending together two or more exposures of the same image taken with different focal points resulting in an image with a greater depth of field than could be achieved in a single exposure. Two programs were demonstrated, Helicon Focus and Photoshop CS4 Focus Stacking. Focus Stacking was created in Photoshop CS3 and refined in CS4 and CS5. It is particularly useful for macro photography where it is not possible to capture an image of a subject that is completely in focus from front to back (top to bottom in microscopy).



Start by clicking on the Adobe Bridge icon [Br] in Photoshop CS4.

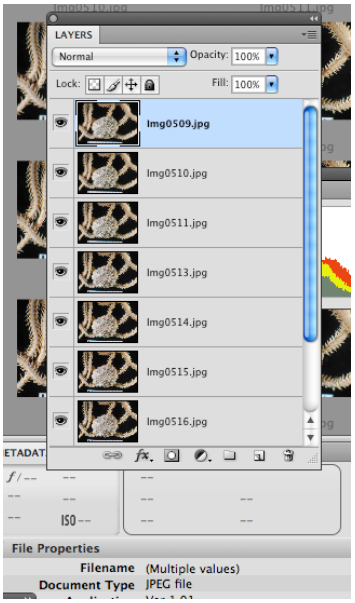


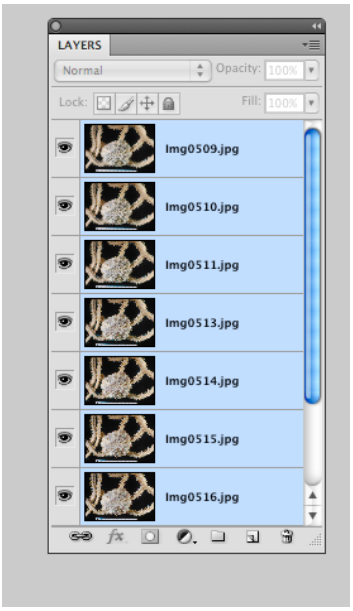
Shift click on the all the images in Adobe Bridge to be focus stacked.

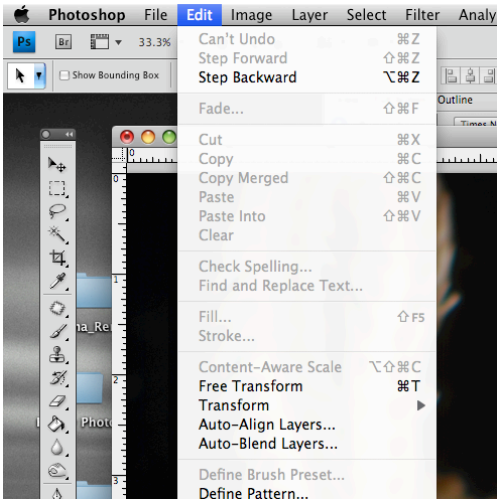


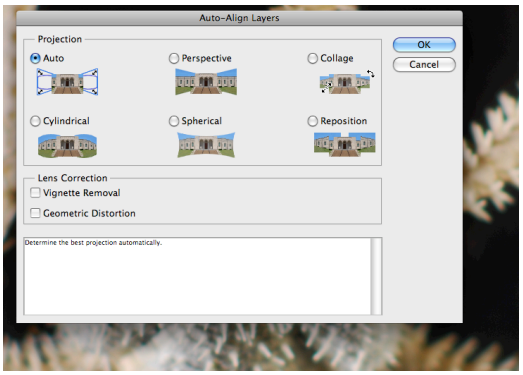
Select Tools > Photoshop > Load Files into Photoshop Layers.

All images will be automatically loaded as layers in a single file in Photoshop CS4 or CS5. Shift click on the bottom layer to select all layers as shown in the right image. All layers should be blue.



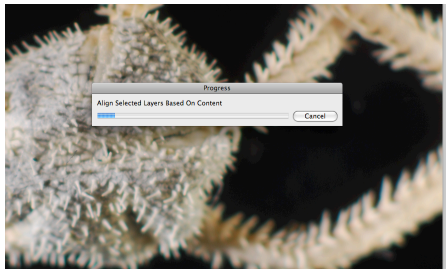






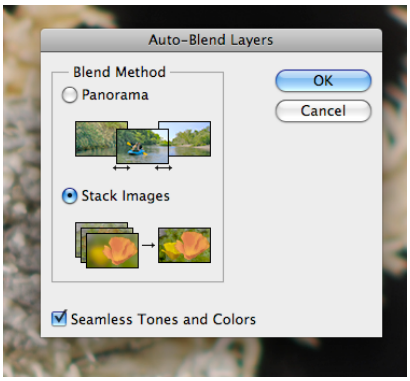
In the pop-up window leave Auto as the default selection and click OK.

In Photoshop select Edit > Auto-Align Layers.

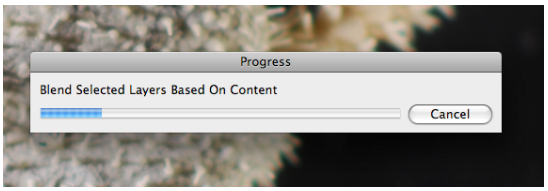


When you see this timer you can take a break. It may take a while.

When alignment is completed select Auto-Blend Layers located underneath Auto-Align Layers.

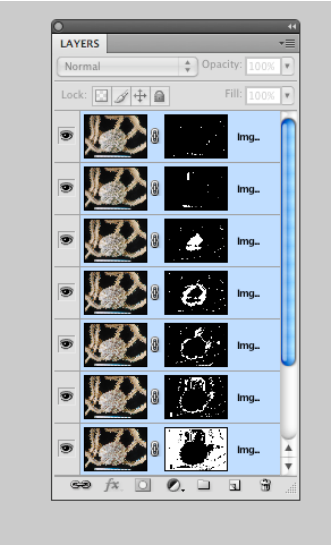


In the pop-up window select Stack Images.



Another timer will appear. Take a bigger break. This will take a bit longer.

Layer masks are created for each image and blended together.



The final image is now in focus. Flatten the layers and save the image as a tiff or psd file.

High Dynamic Range Imagery

High Dynamic Range (HDR) imagery was not discussed in the workshop due to a lack of time. However, it is similar to focus stacking, but it is the merging of a range of exposures of the same image. Cameras and photos sensors in general have a range of about six stops. If an image has shadows and highlights that constitute a range of six or more stops there will be a loss of detail either in the shadows or in the highlights and sometimes in both. Prior to the creation of Photoshop CS3, the process of HDR photography was done manually by painting in detail from one layer to another where the layers were composed of different exposures for the same image. Adobe added an HDR feature that allows for the merging of several exposures into a single image labeled as "Merge to HDR pro." This feature has matured with Photoshop CS5. It can be accessed from Adobe Bridge menu under Tools → Photoshop →Merge to HDR pro, or within Photoshop CS5 under File → Automate →Merge to HDR pro. It is important that a tripod, microscope, or copy stand and a remote cord be used, and that the aperture remains the same for each image. The shutter speed should be used to control exposure.

HDR is mostly being used for landscape imagery and artwork. However, it can be useful for photographing animals where a wide range of exposures would help bring out detail. For example, sea urchins such as *Strongylocentrotus purpuratus* are difficult to photograph where the color of the spines is saturated and the surface of the test is still visible in a single image. By combining multiple exposures of an urchin it is possible to have saturated color where all details of the test and spines are visible and identifiable.

In addition to HDR Pro in Photoshop other software is available to take further advantage of HDR capabilities such as HDR Efex Pro (Nik Software) and Photomatix. For a demonstration on HDR imaging go to the following link:
http://tv.adobe.com/watch/learn-photoshop-cs5/indepth-hdr-pro