

# DIGITAL DIRECTIONS

## Film Scanner Problems

Jack and Sue Drafahl



Top image scan of neg that fell on the floor. Normal scanning would enhance these scratches. The Digital ICE easily removes the scratches and fingerprints.



Underwater images are difficult for color management software. This mage was corrected by touching the small area in front of the fish's head with the white eyedropper.



Adaptive piece of foam used to help scan cardboard mount in Nikon scanners

The bridge between the film world and the digital world today is the film scanner and operator knowledge. Quality of hardware determines just how well this "bridge" works. Because of the complexity of photography, there is no one film scanner that can solve every film to digital conversion. The key to successful scanning is understanding how the scanner handles slide and negative film, so you can adapt the process when situations exceed the scope of a normal film scan.

**ABOUT EIGHT MONTHS** ago, we decided to tackle an ongoing project of scanning our film images for stock. So far, we have scanned more than 10,000 color slides and negatives. For the most part, the bulk of the images have gone through the process fine, but it's those few difficult images that make scanning frustrating.

We have been using both the Nikon LS-2000 and Nikon 4000 ED film scanners for the project, and would like to share with you some of what we've learned about solving scanner problems.

Film comes in color slide, color negative and black and white emulsions. There are hundreds of film types, all with various color sensitivity. You will also find that images have been subjected to a wide variety of environmental situations such as humidity, heat, light, fingerprints, fungus growth and even time itself. If you multiply all these factors together, you end up with millions of possible variations that the film scanner must handle. It's no wonder that scanners occasionally make mistakes during this conversion process.

#### Digital ICE Technology

Luckily, there is a great source of help from a company called Applied Science Fiction. Their revolutionary Digital ICE technology, incorporated into the Nikon LS-2000 and several other scanners, allows scratches to be automatically removed while the film is scanning.

ICE now features an improved version in the Nikon 4000 ED called Digital ICE 3 (ICE Cubed) that allows you to remove fingerprints and fungus growth, reduce grain, and color correct faded images in addition to scratch removal.

Although turning on the Digital ICE doubles the scan time, it saves you lots of editing time down the line. At press time, the Digital ICE technology did not work with black and white negatives or very well with Kodachrome slides. We expect this to change in the near future as this progressive company is always looking to improve technology. Scanning images one at a time is very time intensive, so many photographers turn to the

bulk adapter as a solution. One of the biggest problems in scanning is differences in slide mounts. Cardboard mounts absorb moisture over time and become weak or dog-eared with use. Plastic mounts work great if they are mounted properly.

#### Sticky Labels

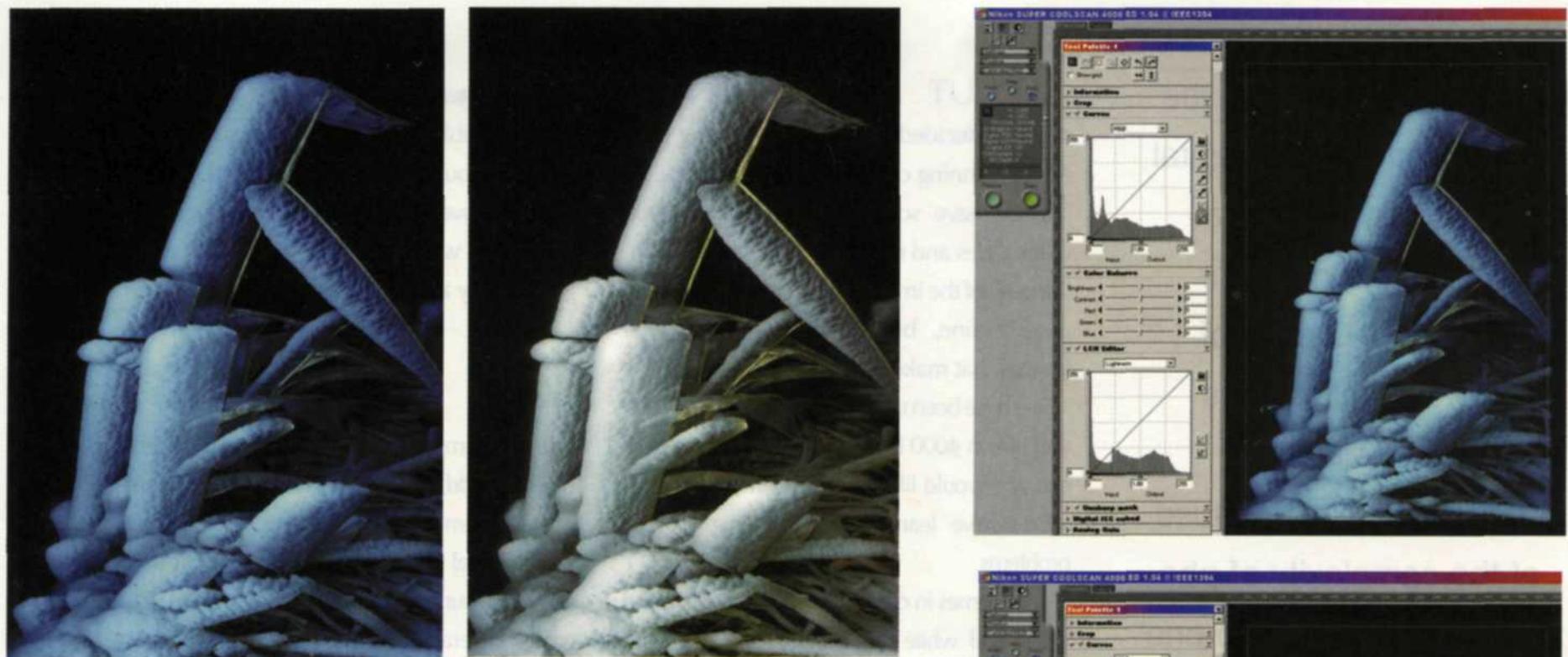
It is a common practice with both mount types to add adhesive labels with pertinent image information. Over time, these labels tend to peel away from the mount, causing several mounts to stick together. When you group several of these weak, sticky, dog-eared mounts, chances are they will jam and possibly damage the scanner.

One solution is to inspect each mount and reduce any problems before inserting them in the scanner. You may have to remount an image, or make individual scans using the single image slide adapter. We have also found that the friction between one cardboard mount and another is greater than with plastic mounts.

It is common for two or three cardboard mounts to stick together and be pulled into the scanner as one. You then get an error, and have to spend time correcting the problem. You will quickly see that the extra time you spend inspecting each mount can reduce down time later.

We experimented with a couple of the Nikon bulk devices and found that a small amount of fingertip tension on the top of the stacked cardboard mounts prevented them from entering the scanner in groups. Knowing that we couldn't do that all day, we found that a small piece of soft foam placed on the top of the stack before closing the lid, kept even the worst cardboard mounts separated.

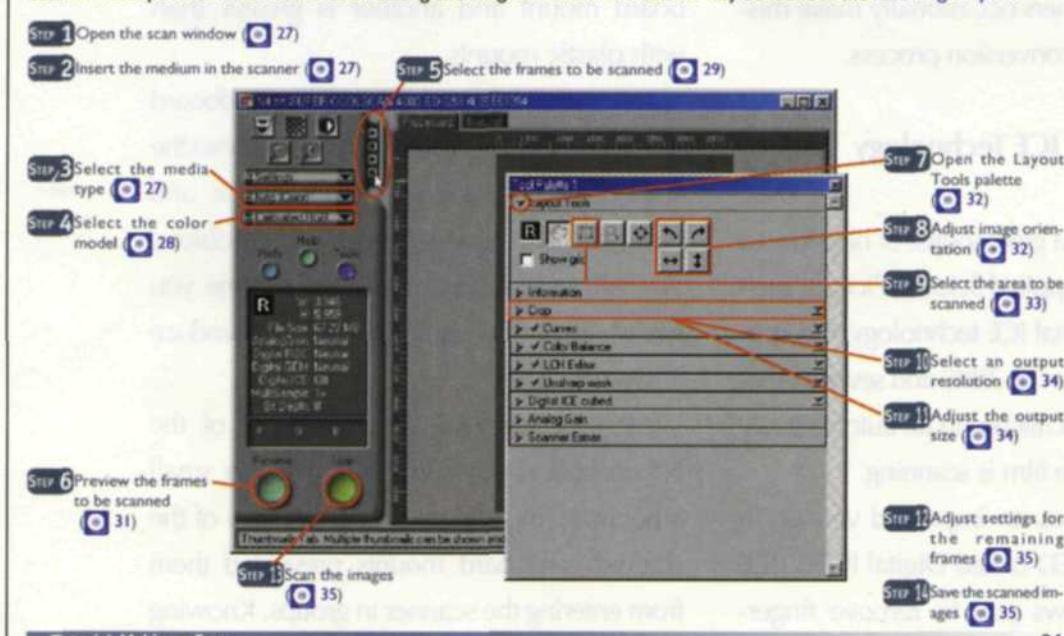
Plastic mounts can also be a problem if the mount has separated due to improper mounting or if it has been opened by the printer to make color separations. When these mounts go through a bulk scanner they often jam. The solution is as easy as running the mounts through the mounter again. To be sure, we always look at all four edges of a stack of plastic-mounted slides



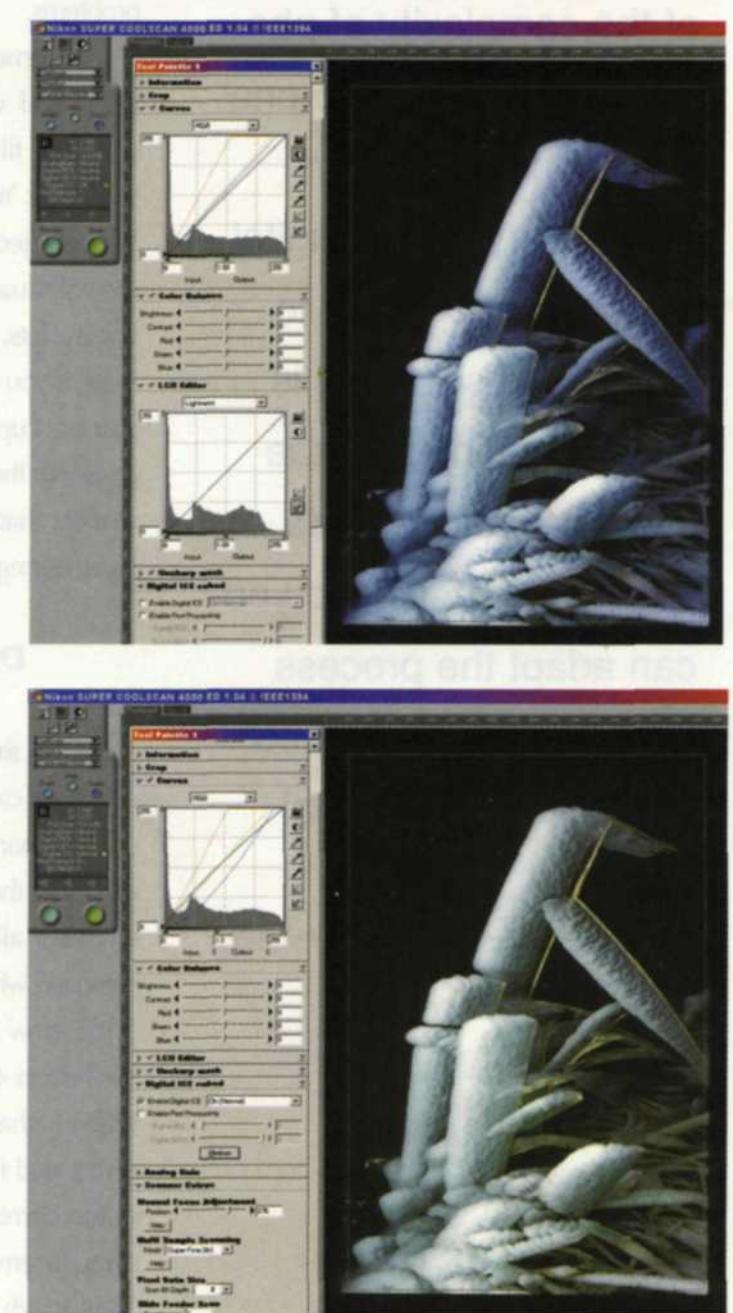
Above left: Old Kodachrome slide of ice on leaves. Above right: Slide before correction with curve editor. Far right top: Autocurve applied to image. Center: Additional correction with curve editor. Bottom: Final scan to Kodachrome slide.

## Making a Scan

This section covers the basics of making a scan, from opening the scan window to scanning an image into the host application. A detailed description of Nikon Scan's color editing and image enhancement features may be found in the following chapter.



Tutorial: Making a Scan



*Best place to start with scanning is the tutorial and help files.*

Scanning film is a bit like driving a car. You have to learn how to do it before you can do it well.

It's important to understand the basics of film scanning before you start.

Once you've learned the basics, you can move on to more advanced topics like color balancing and image enhancement.

It's also important to understand the different types of film and how they behave when scanned.

Before you start scanning, make sure your slides are clean and free of dust and scratches.

Slides mounted in glass mounts can create focus problems for the film scanner. If you cannot remove the image from the glass mounts, then you may have to use the manual focus in the film scanner to obtain accurate focus.

## Kodachrome Ps & Qs

Kodachrome images present further problems. Although Kodachrome use is not as popular today, many images are now being scanned for archival purposes. Most are in cardboard mounts, and you now know how

to solve that problem.

Kodachrome film is processed differently than other films, so that creates another set of problems during the scanning process. If you use the scanner's standard slide color balance setting, your Kodachrome scans will be dark and blue, and will have very little shadow detail.

Separate out all your Kodachrome slides and scan a representative image with a good tonal range from black to white. If your scanner supports multi-sampling, set it high so that you can reduce noise in the shadows. Modify the photographic curves, histograms, and color balance until you have a satisfactory image. Then save these settings as a Kodachrome scan.

To be sure these settings are accurate, try scanning a few more images. You might also try the ROC part of the Digital ICE technology with your Kodachromes, as it is designed to restore old and faded images.

Extremely dark images can often challenge the limits of film scanners. You can try making a scan with the exposure settings at the maximum, but if the image is still unacceptable, use the analog gain to increase the sensitivity of the film scanner. This may add some image noise, but at least you will get an image. You can then use the GEM part of the Digital ICE technology to help reduce the noise during the scan.

#### Watch Out for Mother Nature

The color management software and hardware in today's scanners are quite impressive, but Mother Nature always seems to find a way to confuse the situation.

This is especially true with flowers, abstracts and underwater images that often have only one or two solid colors. When you are preparing your images for scanning, sort these images into a separate pile and scan them separately. You will probably need preview scans for each image, so specific adjustments can be made to each image.

#### Reduce Black and White Grain

Finally, we come to black and white negatives. Generally, when you scan black and white negatives you pick up some grain and contrast, and lose shadow detail. You can reduce the grain using the GEM technology, and reduce the contrast with the contrast or gamma controls. If you still are having problems achieving a good tonal range, try scanning the image in RGB instead of grayscale,

and then convert it back to grayscale in your editing program.

The key to making the scanning system work is to take the time and group your images before you scan. Sort by film emulsion, type of slide mount, physical condition of mount, and any other special consideration. Taking the extra time to inspect your images before scanning

will add additional time on the front end of the job, but will greatly reduce your time in the end. Since time is money, you will quickly find that it will be time well spent.

*Jack and Sue Drafahl are freelance writers and professional photographers based outside Portland, Ore.*

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6900 Noritsu Avenue, Buena Park, California (714) 521-9040, Stan Skrocki ext. 6393  
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