DIGITAL PHOTOGRAPHY

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HAVE YOU EVER HAD A PROBLEM WITH AN ELECTRONIC DEVICE, MANY MONTHS/YEARS AFTER YOUR PURCHASE, AND HAVE TORN YOUR HAIR OUT TRYING TO FIND THE MANUAL? OR JUMPED INTO YOUR CAR AND REACHED FOR YOUR TRUSTY ROAD MAP, ONLY TO FIND THAT IT'S MISSING? HAD TO JOT DOWN A PHONE NUMBER AND THE PEN IS MISSING? FRUSTRATING? NOW IMAGINE THAT YOU ARE ONE OF THOSE SUPER-ORGANISED TYPES. YOUR MICROWAVE MANUAL IS TAPED TO THE BACK OF THE UNIT, YOUR PHONE PEN IS CHAINED TO THE PHONE AND YOUR CAR MAP IS STORED IN AN ON-BOARD COMPUTER. I HATE THOSE SORTS OF PEOPLE.

Well the same can happen to your digital image files. Sure, your last dive, dive #100, was memorable because it was the first dive on a famous wreck, you cracked the century in your dive log and the weather was perfect. So perhaps in a couple of years time you can identify the photos from dive #100 – but what about dive 109, or dive 52? Or where did you find that particular weird scorpionfish? Where was it taken? What exposure did I give that? What lens did I use?

A few issues back we discussed creating a database to keep track of your hundreds, thousands and tens of thousands of digital image files. It can be very satisfying to look through last weekend's photos and fiddle with them, maybe print some out, transfer some to your phone, make a desktop image for your computer, email a few braggable goodies to your friends at work. When you're doing that, entering the relevant information into your database is a logical thing to do. But what if your photo and your database get separated? How can you ensure that your caption information is matched to your images? How can you find out the date, time, exposure, lens used, etc?

Metadata is your answer. What is it? Metadata is information stored within your image file. It gets there in two ways. First, your digital camera inserts metadata into the image file. That type of metadata is called Exchangeable Image File Format or EXIF data. The second type of metadata is information that you add yourself. This is called IPTC, short for International Press Telecommunications Council. They, the Tele Council, created IPTC data as a means to keep track of images by including captions and other information with an image. So, if you 'found' an image and wanted to use it in a news story, you could check to see if it was copyright-protected, who the author was, plus other information added by the photographer such as where and when the photo was taken and possibly a caption describing the image or the events portrayed in the image.

IPTC metadata obviously has more uses than those unique to newspapers. Other publishers and stock photo libraries use IPTC metadata as a way to keep important information with the image file or to 'suck' information out of the file to insert into image databases. Those clever folks at Adobe, makers of Elements and Photoshop, took the IPTC system and incorporated it into a new system called XMP, Extensible Markup Platform. This does much the same job but is able to be shared with software developers to incorporate it in many different software applications and file types. You can even convert a file from one format, such as TIFF, into another format, such as JPEG, and retain the metadata.

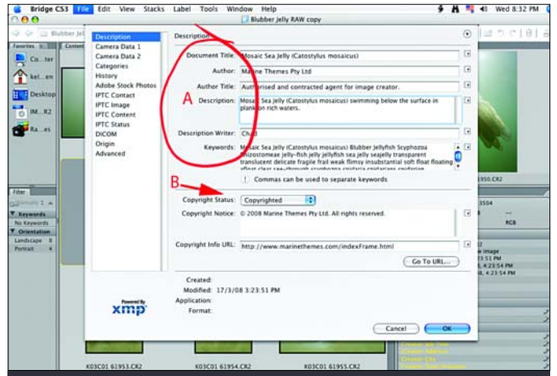
So how do you get your information inside the image file? One way is to use your photo editing software. Photoshop, Elements and your camera's RAW file converter let you add metadata information. In Photoshop or Elements, go to File>File Info and up pops a dialogue box which allows you to add captions, keywords, copyright information and more. Elements gives you fewer options than Photoshop but those options are more than adequate for most needs. These include an image title, author's name, caption, copyright status, copyright notice and a URL or web page (or email address) to contact the owner. You don't need to strictly add just those pieces of information; you can add anything you want in there but it's best to follow the general theme of things to avoid problems further down the line. For example, if you were to put information about the photo in the URL field you won't break anything, but that information field would generally be ignored by a database importing information just from the captions field. A stock photo library would, for example, ignore the URL field because they already know who you are and are not interested in copying contact information that we can assume they already have.

As a matter of interest, Elements and Photoshop or similar programs also will show you the EXIF information. This info is mostly uneditable because it is a record of fact, not a record of added information. It lists, among other things, the camera model, exposure time or shutter speed, f-stop used, ISO speed rating, date shot, etc. It will also show some of the IPTC info that you can edit such as Image Description and Artist. Because most of this information is uneditable, you can find out the origins or original camera information. So if you enter a photo competition which stipulates that images must have been taken during a particular time period, they can check the creation date of your digital camera files.

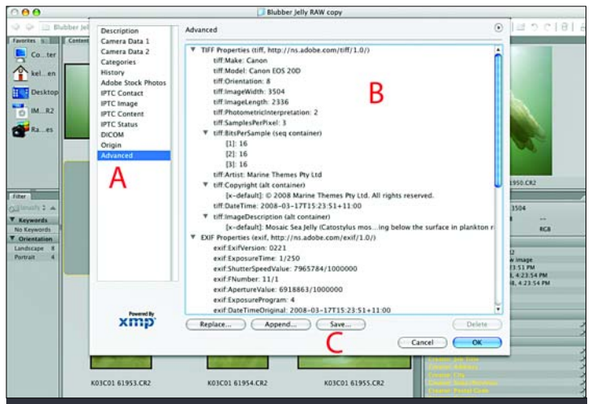
So there you sit, with a few folders holding 300 images from your last weekend dive trip to a shipwreck off the coast. Obviously there are pieces of information that will be common to all images, such as the name of the shipwreck and it's location, the author (you), the fact that it's a copyrighted work with an appropriate copyright notice and your Owner URL. In addition, you may have other information that varies, such as the caption. So let's say you have 300 shots taken on your weekend jaunt to the HMAS *Sydney* off the West Australian coast. OK, no chance of that but you can dream. You have two fields that will take all of the variable information, the Title field and the Caption field. So the title could be 'HMAS *Sydney* shipwreck' and the caption could be 'HMAS *Sydney* shipwreck. Detail of the skeleton holding the box of gold coins and pirate jewels.' The next image would have the same title but the caption may be slightly different or completely different. Such as 'Davo wearing the emerald and diamond encrusted crown on the bow of the HMAS *Sydney* shipwreck with giant squid stalking him.'

From the above example we can automate the process of adding the same title along with copyright information to every image file but we'll need to customise or change the caption information. You can do this using Photoshop or Bridge (the Adobe file browser software which comes with Photoshop 8 and above) or another software application designed for this purpose. Elements lets you add or change metadata information but doesn't let you batch process images or save metadata templates. This may have changed in recent versions. Check your Elements Help file using the 'File Info' search term.

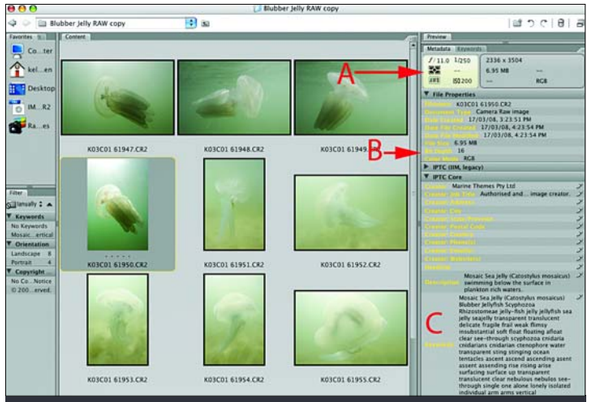
Kelvin Aitken is a Melbourne-based professional photographer and diver passionate about the big blue and the big sea creatures to be found out there. He's dived from the Arctic to the extremes of the South Pacific and if there's a new marine dive adventure to be experienced or invented, he's always the first to put up his hand. He's also dived the southeastern Australian continental shelf and photographed shark species nobody knew would be found out there. Kelvin is a BBC Wildlife Photographer of the Year marine category winner and his unique work is on www.marinethemes.com



Using my RAW file converter, in this case Adobe Bridge which is part of the Photoshop package, I've opened the File Info dialogue box and filled the Description fields (A) with my own information. I've changed the Copyright Status (B) from Unkown to Copyrighted and filled in a copyright notice and a copyright URL. All of this information now becomes part of the image file.



After filling in the Description fields, and any of the others that I care to fill in, I click the Advanced tab (A) which allows me to view various types of metadata (B). This tells me that the image I am working on was shot on a Canon 20D, it is a 16 bit image file, some of my Description IPTC information has been included, the date and time of the image capture is shown and exposure information is shown in the EXIF properties list. With Bridge I have to access the Advanced tab to save the metadata (C) as an XMP file so that it can be applied to any other image that has the same general information.



Once I have closed the File Info window I can view not only the EXIF exposure data that was already embedded in the file (A) but other information about the file properties (B). Also the new information I have added (C) can now be seen. Notice that there is a small pen graphic opposite my IPTC information but not the EXIF data. By clicking on the pen graphic I can edit my metadata, something which cannot be done to the EXIF data.

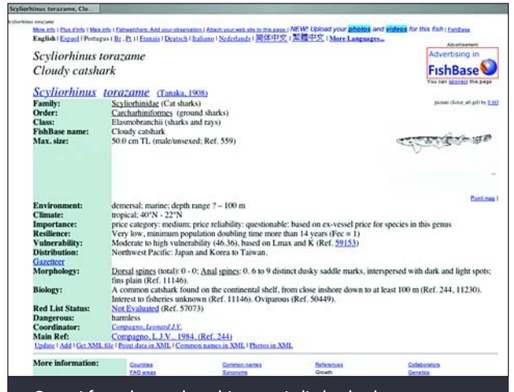
Using Bridge, open one image from your folder of images. Open the File Info dialogue box (File>File Info) and type in your information. Put in your title, author, copyright notice, etc, using the Description tab in the File Info box. When that's done, click on Advanced and Save to save the metadata as a template. This process will vary depending on which version of Photoshop you have. The important thing is to save the metadata as an XMP file in the correct place. On my Mac, that place is in the User>Library>Application Support>Adobe>XMP>Metadata Templates. On Windows, do a search for the XMP folder to find out the right path for your saved file. If you save it in a different place than the Adobe XMP folder you will not find it in the Bridge menu in the next step. When you have saved you XMP metadata template (lets say we called it HMASsydney.xmp) click OK to close the File Info window. Save your image. Now in Bridge select all the image files to which you want to apply the metadata information. Go to Tools>Replace Metadata>HMASsydney.xmp. Bridge will now replace all of the metadata fields with the information you applied to the first image.

To make more templates, just open one image; use the File Info dialogue box to change or create metadata information and save it with a unique name in the Metadata Templates folder. Select image files that you want that new information to be applied to and go to Tools>Replace Metadata> and select the xmp file that you want to use. You'll also see an Append Metadata menu item. This will place metadata information from your xmp file only where a field is empty.

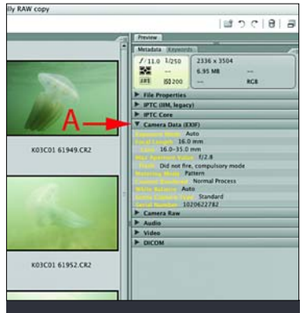
To apply metadata to a batch of files in Photoshop you need to create a script which is beyond this basic article. For example, if you have a database, such as my Filemaker database I wrote about previously, you'll find that adding the IPTC information in appropriately created fields is much faster and easier than fiddling with images. Then a script can target a folder of images, using Photoshop to insert your database information into the IPTC fields in the File Info dialogue box. A less daunting method is to create an Action (Window>Actions) on one image then do a batch process (File>Automate>Batch) on a folder of images. There are other software packages designed to batch process IPTC information, some free, others will cost you. Your RAW file viewer which came with your camera software will allow you to add or change metadata information, but not all may allow batch processing. A quick Google search gives you a huge list of software options.

A note here about Copyright information. For your own sake and sanity, always mark your images as copyright protected. Never, ever give away your right as copyright holder. There's never a good reason to do this and dozens as to why you should not. By not marking your images as copyright protected you open the door to allow anyone to use your images as they see fit without your permission or payment. Imagine that a photo of a friend or your significant other were used in a derogatory or defamatory way. Or used by a commercial entity to promote a product that you're adverse to. Not to mention missing out on a very fat fee, possibly enough to send you on your dream dive vacation.

If you've struggled through all the above you may think it's all a bit much. You have much better things to do with your time. But this touches on a most vital fact regarding your dive experience. The one thing that destroys a dive lifestyle is diving for the experience of breathing underwater. It is like learning to drive a car. When you first get your license the experience of having mobility and freedom to travel where you wish is so exciting that you cannot wait to drive. I know of people who have driven between capital cities over a weekend just because they could. But after a few months or years the excitement wears off. Driving becomes a chore, a drudgery, a necessary evil. If you apply that to diving then you can see why many people give up the underwater world once they become accustomed to the dive experience, along with the inevitable washing of gear, getting seasick, getting cold, packing your car, servicing equipment, etc.



Once I found out what this cryptic little shark was, fishbase.org gave me more detailed information.



Notice that additional EXIF data can be viewed under another tab (A) including which lens was used (in this case a 16-35mm zoom), what zoom setting was used, what my strobe was doing (only applies if you are using a dedicated strobe) and other exposure and processing information. I find Bridge to be a bit disjointed in displaying the information. Older versions grouped metadata types together so was less messy.

So what is it? A shark, yes. But what sort? Where is if found? How much do we know about this little chap? Providing accurate captions to your images will add purpose and value to your diving, and make you more aware of the amazing animals in the oceans.

Photography gives your diving meaning. Or, to put it more accurately, **photography of underwater subjects is your destination, diving is the journey**, the driving if you will. If you have a 'significant other' living 200km away, driving is the means to get there. Sure, a Maserati may make the drive more fun but the destination is what you are looking forward to. Your photographs begin to provide you with a purpose in your diving and captioning provides education and knowledge. In the above example we were captioning shipwreck photographs. To provide an accurate title and caption, some sort of research and interest is needed. Historical documents and photos are accessed and curiosity is fulfilled. So what is that funny looking slug thing crawling across the deck? And on the deco line, what was that wiggly thing that floated past? On a reef dive you'll swim over dozens or hundreds of species of living creatures. What are they, what are their names, what do they do, how do they relate to the reef?

Captioning will educate and inform you about the marine world and give a far deeper satisfaction to your diving than just getting wet.

The best source of information about the critters you see on your dives are books. Sorry, the internet isn't quite the same as a well designed book. The web is a very important tool but nothing beats a well researched and understandable book. General marine life books or specialised species ID books are all good investments. The *Indo-Pacific Coral Reef Field Guide* by Dr Gerald Allen and Roger Steene is an example of a good general ID book, covering everything from plants to dolphins. *Coral Reef Animals of the Indo-Pacific* targets invertebrate life. *Australian Marine Life* by Graham Edgar is a superb visual guide to a huge variety of temperate marine life. For those hard to identify octopus, cuttles and squid Mark Norman's *Cephalopods: A World Guide* is a fantastic resource. See, you've already found out what a cephalopod is. Your education is forging ahead.

The web is a great place to get additional information about critters you identify from your books. They provide a vast array of photos to compare and target your critter while the web has an unlimited amount of space to provide detailed information about your new discoveries. Say, for example, that you've photographed a strange bottom dwelling shark on your last dive. A photo ID book will enable you to quickly target the species. The internet can then give you much more information about the behaviour, distribution and taxonomic information than a book is able to provide, purely because a book is limited by cost as to how much information is included. See the side bar for suggested web sites. Dive Log, the Australasian dive newspaper, often has a comprehensive array of ID books available.

The internet also enables you to ensure your critter ID is accurate. People are fallible so mistakes are made, more so with spelling of taxonomic names. For example, one of my favourite and well thumbed books (I have worn out one copy already) is the CSIRO book "Sharks and Rays of Australia" by Peter Last and John Stevens. A common shark found throughout the Indo-Pacific has a spelling mistake in its taxonomic name. See if you can find it. The recent World Atlas of Marine Fishes by Debelius has a number of spelling mistakes. Your search on the web for more information will soon show up any errors.

Animal and Invertebrate web sites:
http://www.eol.org/
http://www.fishbase.org/search.php
http://faculty.washington.edu/cemills/Ctenophores.html
http://www.bsc-eoc.org/avibase/avibase.jsp
http://www.aviceda.org/abid/

IPTC information and software:
http://www.adobe.com/products/photoshop/family/
http://www.breezesys.com/
http://www.lightcrafts.com/products/index.html
http://pagesperso-orange.fr/pierre.g/xnview/enhome.html

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