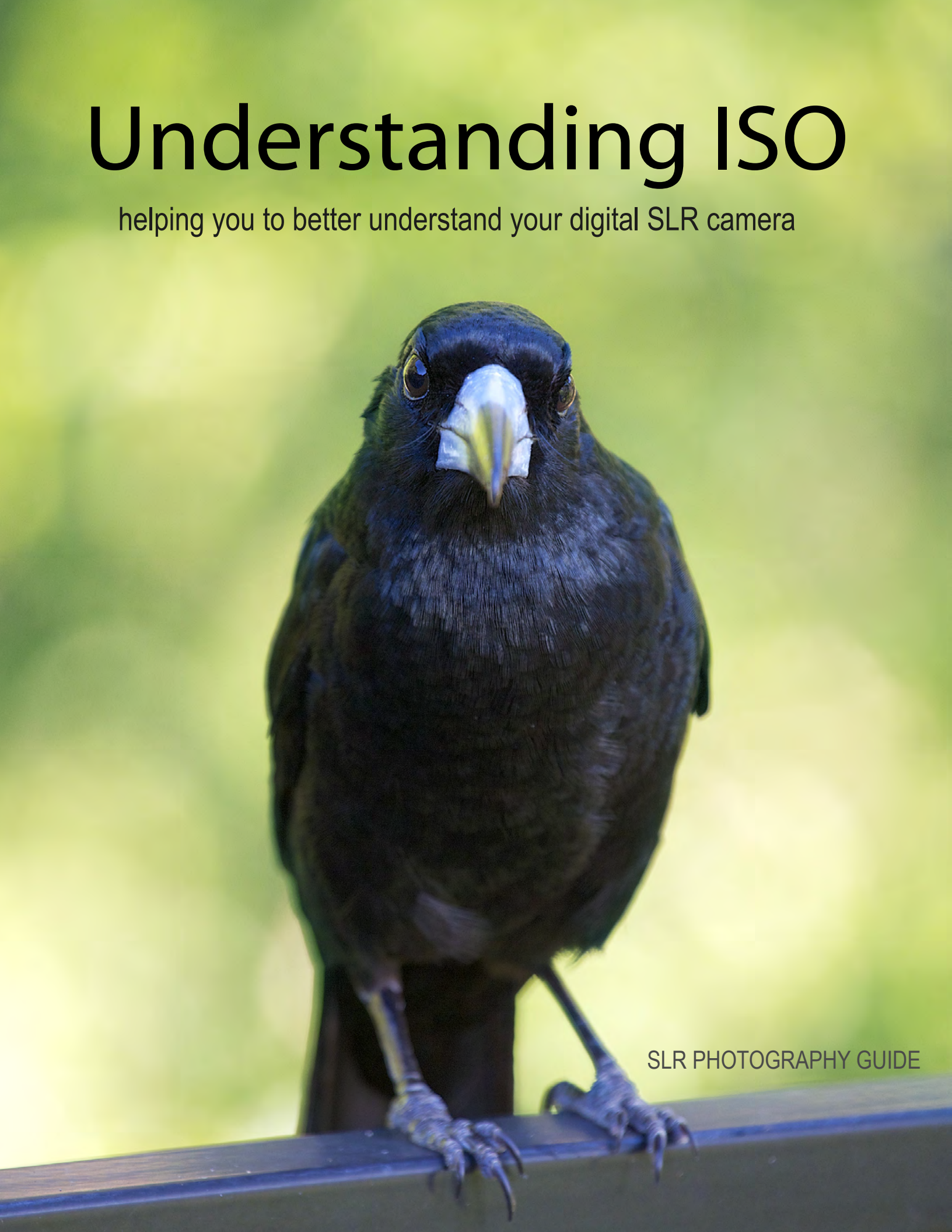
Understanding ISO

helping you to better understand your digital SLR camera



SLR PHOTOGRAPHY GUIDE

WELCOME TO UNDERSTANDING ISO

Understanding ISO is the second ebook in a four part series that helps you to better understand your digital SLR camera settings. If you don't already have it, the first ebook, Aperture Explained can be downloaded from: http://www.slrphotographyguide.com/blog/resources/aperture-explained.html

We highly recommend reading Aperture Explained first, followed by Understanding ISO.

Understanding your digital SLR camera really isn't as hard as it seems. Once you grasp the 3 basic settings Aperture, ISO and Shutter Speed, the rest is childs play!

SLR Photography Guide

Dedicated to helping you better understand your SLR Camera

www.slrphotographyguide.com

UNDERSTANDING ISO

Photography is about using the available light to make a good exposure. Knowing how your digital camera can be manipulated to deliver a good exposure under all types of light situations will take you a long way to making better photographs overall.

The ISO setting on your camera is simply the film speed standard set by the International Organization of Standardization. Those with film cameras can buy rolls of film from 50 ISO and upwards that will suit certain light situations. The downside is that once you start using that roll of film, you need to expose the entire roll.

Of course the majority of people now use digital cameras, not film, which can be manipulated to handle ISO speeds from 50 to now above 1600, with some amazing results in high end cameras. You can take a few shots inside a dimly lit building, walk outside into the sunshine, adjust your ISO setting and make more photographs that you will be proud to call your own. No more waste and no more technical downsides.

What actually goes on in your camera is that a low ISO of 100 blocks light to the sensor, while a higher ISO setting allows more light to the sensor.
Once you have a handle on what your ISO actually does, digital photography becomes much easier.

In Laymans Terms - Changing the ISO number will determine how fast your camera takes the shot. Which in turn also determines if the resulting image is exposed properly i.e. is it too dark, too light, or just right.

Have you ever photographed a scenery or subject where your camera seems to have taken forever to take the shot, especially at night time or indoors? Increasing the ISO number can help you with this problem.

Have you ever taken an image where the result is too dark or in some cases pitch black? Again, increasing the ISO number can help you with this problem as well.

No doubt by now you've tried to photograph a moving subject like a child running or bird flying and noticed motion movement or ghosting in your images? Again, increasing the ISO number will help you shoot faster to assist in eliminating this problem.

In the following pages we will explain how to use ISO settings to fix these common problems.

Bird in flight
ISO 800

Program mode is the easiest setting to use when learning ISO on your digital camera. Program mode is displayed via a letter P on most entry level camera brands. If you don't see a letter P on your cameras main dial, have a look in the manual. Professional level cameras may have this setting within the menu options and not on the actual dials.

When your camera is set on Program mode and you choose an Aperture and ISO setting, your camera automatically takes care of the shutter speed. Depending on your camera brand, ISO can be any number between 50 and 204,800 (or possibly more in future cameras). In this ebook we'll only be concentrating on ISO set within the range of 100-3000.

When following the examples in this ebook, begin by setting your Aperture number to F/8, for the pure reason that it is neither fast or slow, but rather middle range. Now look for a button on your camera that says ISO. Press the ISO button and look on the back LCD screen (or top depending on the model) of the camera. You should see a number next to the letters ISO. Now turn the main dial and you'll notice the ISO number changes. For now set it to ISO 100.

Once again, depending on your model, you may need to look in the camera manual for instructions on how to change the ISO. With so many different models out nowadays, it's almost impossible to cover each one. Although the majority do work very similar. The main point being, before continuing on through this ebook make sure you know how to change the ISO setting from say 100 to 800 or higher and back again.

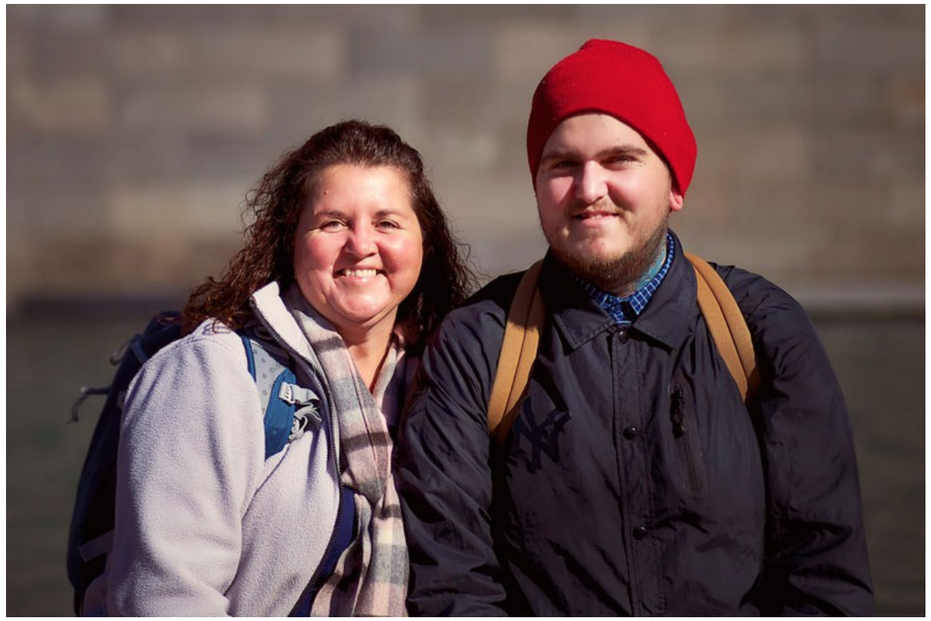
WHAT IS THE BEST ISO SETTING

Many people ask "what is the best ISO setting for my camera". There is no answer to that question. The question that they should be asking is, “What is the best ISO setting for this particular light situation".

Good rule of thumb settings to remember are:

1. Outdoors, sunny days … set a low ISO number.

2. Inside, no flash zones, shade or low light shots … set a higher ISO number.



ISO 100 - photographed outside an art gallery

ISO 6000 - photographed inside an art gallery

Photography Exercise

To better understand your cameras ISO setting, lock yourself in a bedroom and close all the doors and curtains so it’s darker. Set your camera to P mode (as explained on Page 3) and set your ISO to the lowest number it will go. For many this will be 100. Now take a shot. You should find your camera takes a long time to shoot. So long that it is impossible for you to hand hold the camera and get a good image!

Now change the ISO to the highest possible number for your camera model and take the shot again. This time notice how fast your camera shoots! You should find it shot much faster than it did when your ISO was on 100? The higher the ISO number, the more light your camera is letting into the sensor.

EXAMPLES OF WHEN YOU WOULD SET A LOW ISO NUMBER

Let's look at some real life examples. However, before we do, I'll explain again the difference between low and high ISO number settings. The higher the ISO number, the more light you are letting in to the cameras sensor, the faster your camera will take the shot. The downside being, the higher the ISO number, the more grain you will see in the image when you look at it on your computer. Hence, the answer is to set the lowest possible ISO for the available light at any given time.

On a bright sunny day where sunlight is streaming from the sky and blessing the earth with warmth, a low ISO of say 100 is more than sufficient to shoot quickly and expose the image perfectly. There is no need to increase the ISO any higher than 100 because there is already enough natural light available from the sun hitting the scenery or subject. An ISO of 100 will result in a high quality image with no grain. We will demonstrate what we mean by grain later on when we discuss high ISO settings. For now, just remember if there is plenty of available light, set a low ISO number.

ISO 100

EXAMPLES OF WHEN YOU WOULD SET A HIGH ISO NUMBER

At a wedding, where the light is subdued inside the church and use of flash would perhaps upset the mood as vows are taken, a higher ISO like 800 for example, would allow more light onto the camera sensor, allowing you a faster shutter speed. In these low light situations, a high ISO and faster shutter speed could actually allow you to hand hold the camera and get a good photograph without camera shake.

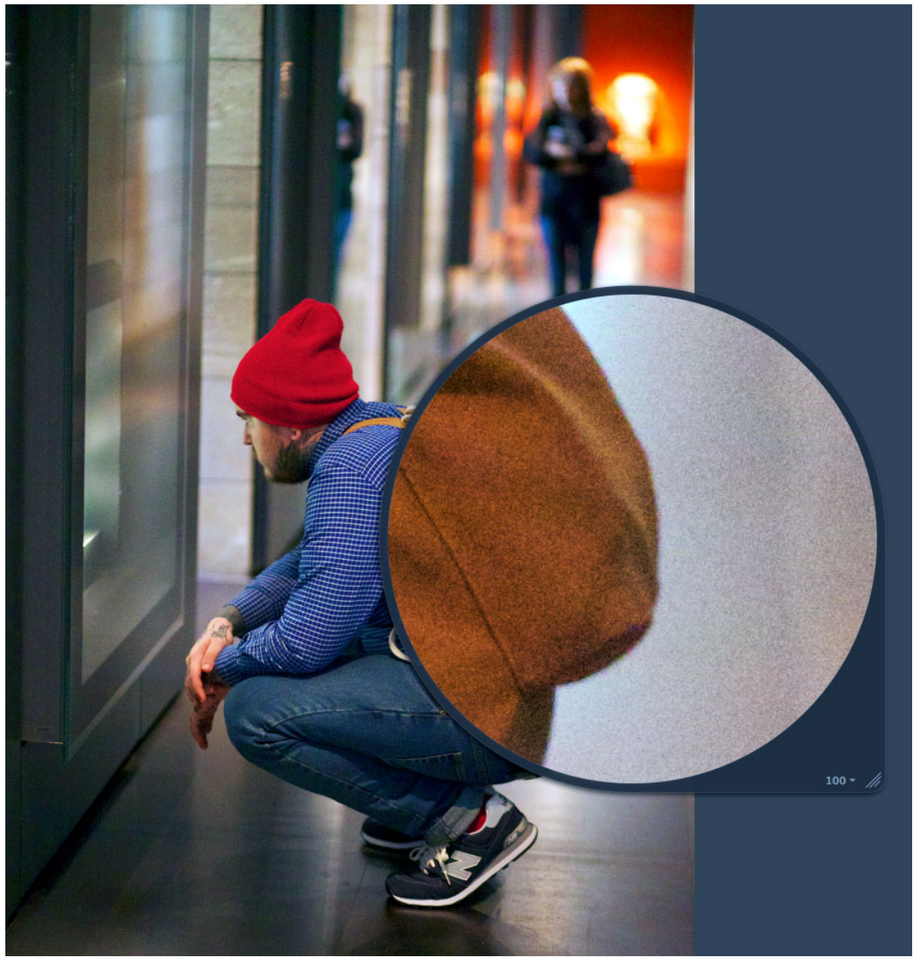
You would use a high ISO number for any indoor shot, for example in a museum, art gallery, aquarium, or any public place where the use of flash is prohibited.

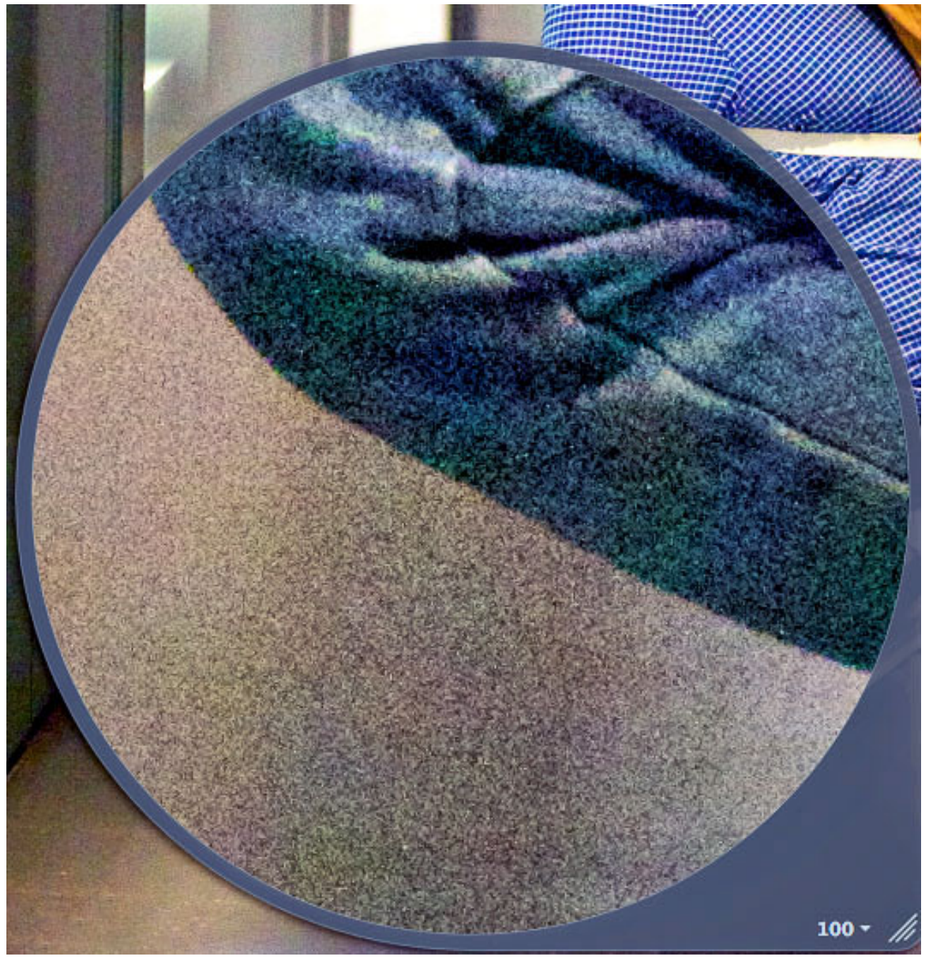
ISO 1000

Many photographers intentionally use high ISO settings to add grainy effects to their images for artistic purposes. We demonstrate on the next page what we mean by grain. Bookcases, dusty antiques or metal machinery are perfect subjects for this type of photography.

DISADVANTAGES OF USING A HIGH ISO

The main disadvantage of using a high ISO number is the amount of grain that can be seen in the resulting image. To understand fully what we mean by grain, look at the two images below. Note: professional photographers often refer to grain, as being images that are noisy.





Really pushing the limits with an ISO of 20 000

Sometimes a high ISO can mean the difference between getting the shot or not, especially when shooting indoors without flash. If getting the shot is of more importance than the quality, then by all means up that ISO to over 800 if need be. For example, when shooting indoor sports where there is not a lot of available light. These sorts of shots are often images you may want to upload to facebook and show family and friends, but not necessarily print them out to poster size and hang on your wall. Therefore quality isn't necessarily the priority.

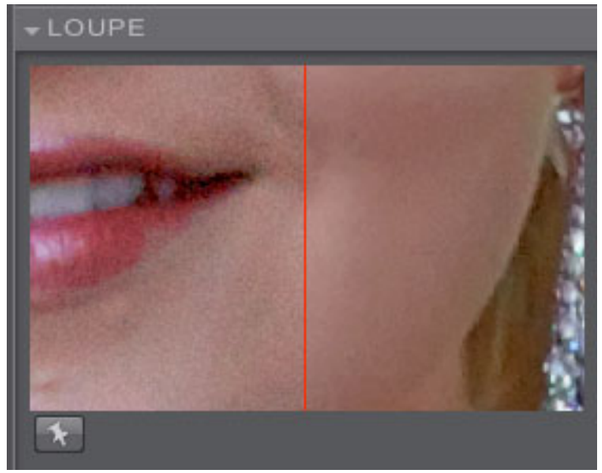
USING SOFTWARE TO FIX GRAIN / NOISE

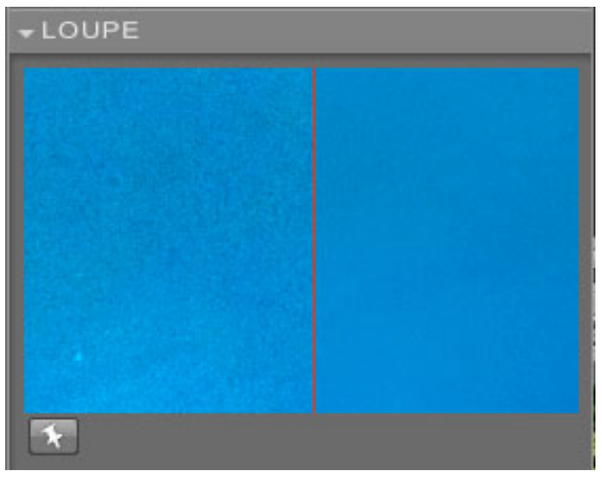
The great news is, there are plenty of software options available to help photographers improve the amount of grain / noise seen in their images. Firstly I recommend checking out whatever software you already use for editing your images. Most photography software incorporate a function for removing noise.

If you are after a product dedicated to noise removal, my personal favourite is one from Nik Software called Define. Unfortunately it's not a stand alone product, but rather a plugin for Photoshop and Aperture. To download a trial version of Define visit: http://www.niksoftware.com, I highly recommend it.

A popular stand alone product is called Noise Ninja that can be downloaded from: http://www.picturecode.com

ISO 1000





Nik Plugin - Define 2

VISUAL EXAMPLES

Blue bird - ISO 1600

Need to shoot fast?

Increase your ISO. We recommend no more than 800 for low end cameras or 3000 ISO for high end models.

ISO 1000

Images are too dark or the camera shoots too slowly to capture a sharp shot?

Indoors, darker sceneries, no flash zones like galleries, museums or aquariums, set a higher ISO number to shoot faster and allow more light in to the camera sensor.

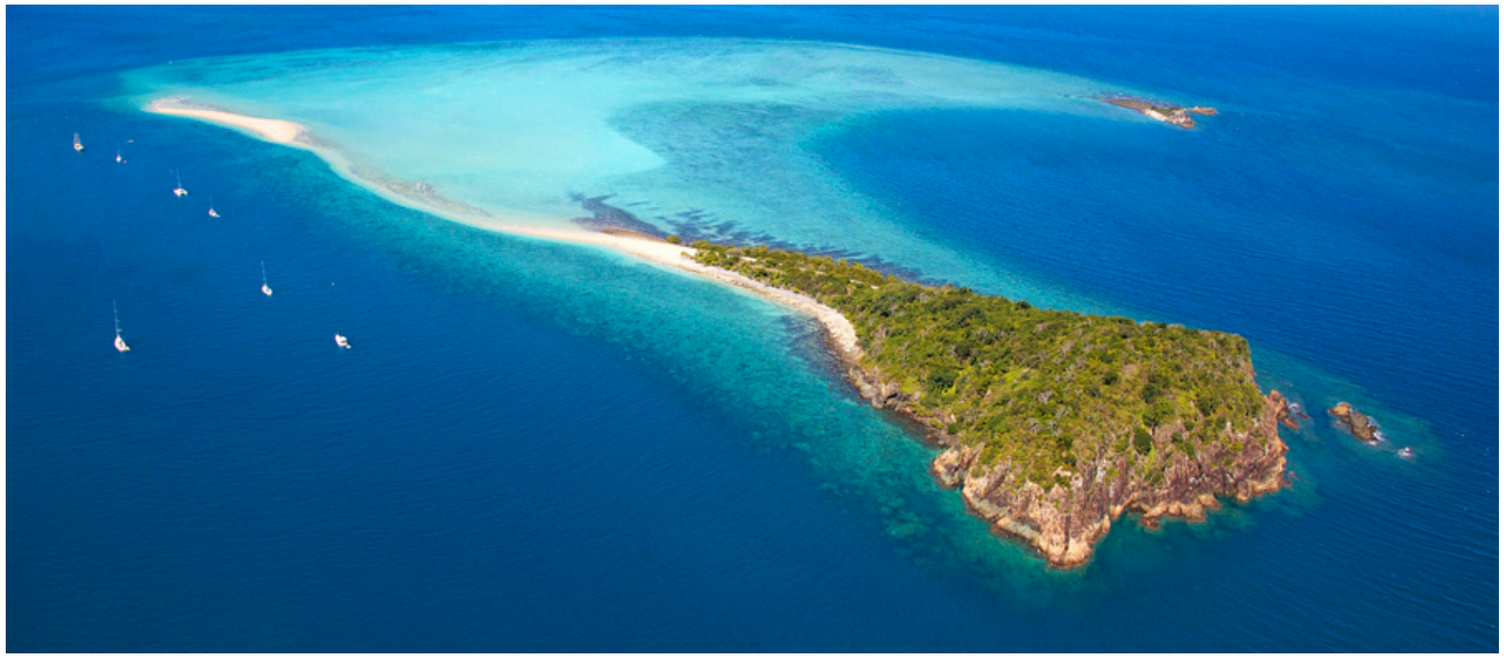
400 IS THE NEW 100

Some of you may have read quite a lot on photography, with plenty of helpful advice from other photographers who suggest you should keep your ISO set to 100 for quality reasons. I beg to differ! After all, for the most part, the 100 rule was a rule of thumb way back in the dinosaur age. Ok that may have been a little exagerated ;)

In recent years, major camera manufactures are making incredible advances in technology. One of the main areas that have seen mind blowing improvements is the ISO setting. Even with entry level DSLR cameras, I would highly recommend keeping your lowest ISO number to 400. I know I do.

Whether I'm shooting for fun or commercial photography, 400 ISO never lets me down. It's much faster than the default 100 and even when printed to poster size, I see no grain or noticeable loss of image quality.

Since shooting with a much faster 400 ISO (minimum), I throw away far less images than previously. No more camera shake and far less motion blur. Give it a try for the next couple of weeks and see the results for yourself.



ISO 400

ISO 400

QUICK SUMMARY AND OUR FINAL RECOMMENDATIONS

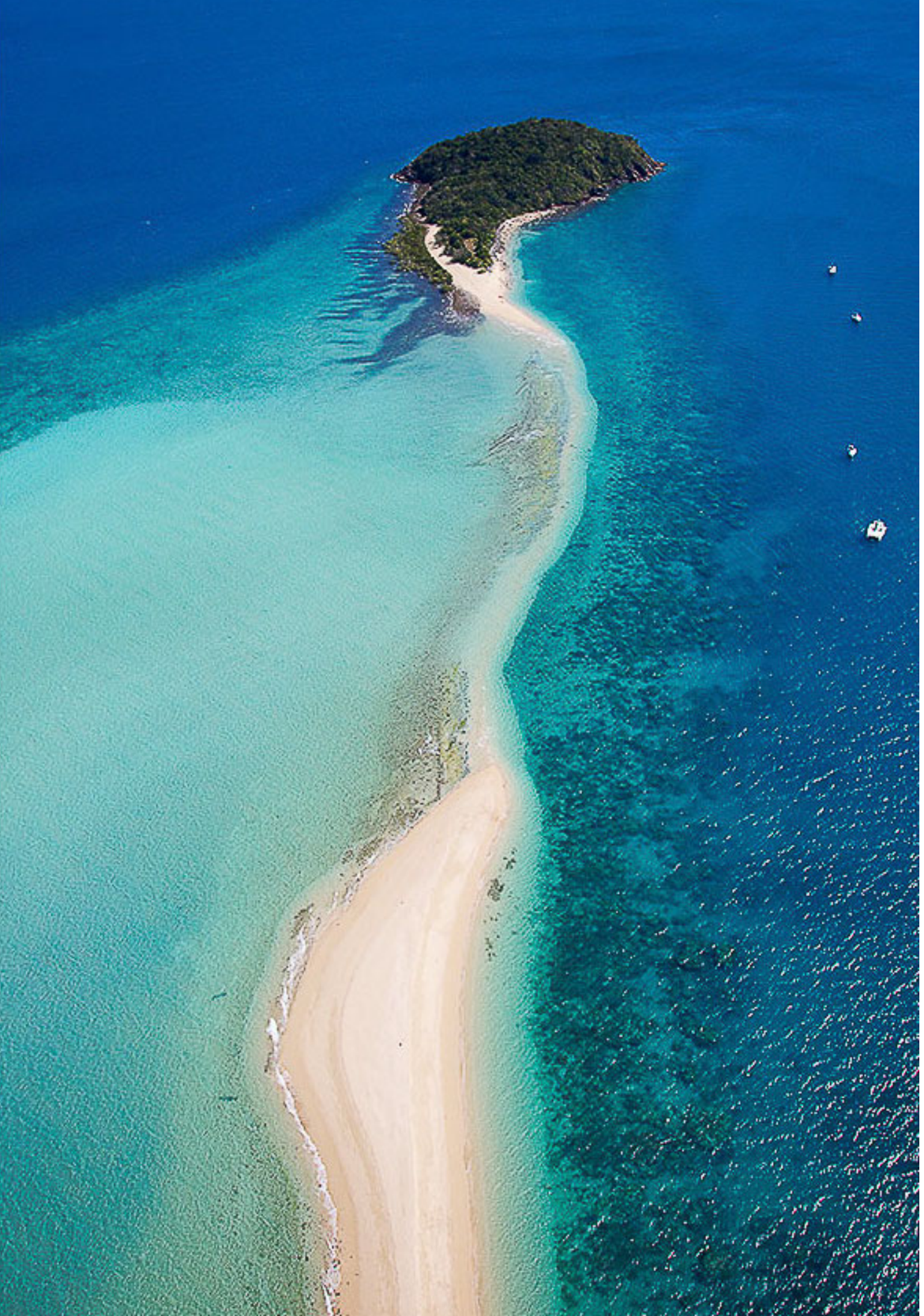
1. Outdoors and sunny days, set a low ISO number.

2. Inside, no flash zones, shade or low light situations, set a higher ISO number.

3. Make 400 your minimum ISO setting. Or at least give it a try for a couple of weeks ;)

4. Learn how to use a good noise removal software for those times when you have no option other than to use extreme ISO settings.

ISO 400



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'You don't take a photograph, you make it'
~ Ansel Adams