

# Photo for internet and print - a small user guide

## About photo and photo quality

Hylleraas Centre Hylleraas Center is dependent on the members submitting good quality photos for use on the website, facebook, twitter and not least in the Annual Report. All too often, images are sent in too poor a quality to be used in print. Not because the pictures are basically too bad, but because the picture has been processed on the road - consciously or unconsciously. To help understand why the images often become too small to be used in print, we have here tried to explain what happens and why.



Figure 1: To the left as the image appeared on the screen, to the right the same image as it appeared in print.

### Why is the image sharp on screen but becomes blurred on touch?

Finally, you have a nice picture of your dog. Happily, you send the photo to the Annual Report and hope to get it in print. But then comes the downturn - you get an email back that the image does not have a high enough resolution to be used, or the image is printed and most similar to the image on the far right. The image is blurred and you can clearly see small square dots (pixels).

But why is it like this and what do you have to do to get the image as sharp in print as it looks screen on the left?

### A pixel is a small dot of color

All digital images are made up of small square color dots; pixels. Each pixel has only one color and represents the color of a small part of the image. If the image is in high resolution, it has many pixels per. centimeter image, the image has low resolution; the image has few pixels per. centimeter image.

You can compare it to an embroidery like the picture on the right. If you use few but large stitches, the image becomes quite coarse-grained, but if you use many, small stitches, the image gets so many details that it almost looks like a photograph, at least from a distance.

Our eye is made so that it evens out the different hues between each cross stitch or each pixel on the screen. Therefore, an image viewed on screen may have a much lower resolution than images to be used in print.

How many pixels the digital image has is determined by the camera that took the image, any cropping and finishing of the image, and not least what is done with the image from the time it is taken until it is sent via MMS, chat, email, stored on a PC or posted on a website. The possibilities are many!

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Figure 2: If an embroidery consists of many small stitches it is experienced almost as a photograph.



Figure 3: This embroidery has so many small stitches that it is no longer perceived as an embroidery, but as a picture

## Low and high resolution

A sharp image in large format has many pixels (squares), the image is then in high resolution. Resolution is measured in dpi / ppi (dots per inch / pixels per inch). In order to use a print image with good results, the image should have a resolution of 300 dpi. This equates to 300 pixels for every 2.54 cm image.

If you are going to use the image on a website, on Facebook or send it to someone via MMS, chat or email, it is a good idea that the image is as small as possible so that the website does not become slow and so that the image is quick to download. Many photographers know too little about how to best reduce the size of an image without losing sharpness when viewing the image on screen. That's why all mobiles and PCs have software that automatically does this job for you.

## My mobile phone or camera does not take high-resolution images for use in print!

Nonsense - even the smallest and cheapest mobiles now take pictures with a resolution of several megapixels, ie pictures that contain thousands of pixels. The problem is rarely with the camera - unless the image is blurred. The image becomes blurred if the photographer has not kept the camera still or the subject has moved too fast in relation to the lighting conditions and the camera's characteristics.

It is usually the transfer from camera to PC / mail / MMS / chat / facebook that creates the problems.

## This way you can easily see what resolution the image has

When you upload an image to your PC from your mobile phone or camera, it settles as an image file on your PC. Go to the explorer on your PC to see how big the file size of the image is.

When it comes to weight, we have units such as grams, kilos and tons.

When it comes to distance, we have centimeters, meters and kilometers.

When it comes to file sizes, we have bytes, kilobytes (KB) and megabytes (MB)

An MB is thus 1000 times larger than a KB, so a kilometer is 1000 times longer than a meter and a ton is 1000 times heavier than a kilo.

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Lysbilde fremvisning		Brenn	Ny mappe	
Navn	Dato	Type	Størrelse	
HØY { DSC_0710	08.06.2013 15:52	JPEG-bilde	8 216 kB	
DSC01872	30.10.2014 16:32	JPEG-bilde	2 059 kB	
LAV { DSC02027	17.11.2014 12:22	JPEG-bilde	233 kB	
DSC02028	17.11.2014 12:22	JPEG-bilde	271 kB	

Here I have gone in the explorer and asked that the files in a folder be displayed in detail. I see the name of the file, I see the date and time the image was taken or changed, I see the file format and I see the size in kilobytes (KB).

In the image you see four image files: The top two are in high resolution and are respectively 8,216 KB (8.2MB) and 2059 KB (2.1 MB). The bottom two are in low resolution of 233 KB (0.2 MB) and 271 KB (0.3 MB).

ALL of these four images will look sharp on the PC screen, but only two of them can be used in print.

## Different formats - JPEG, TIFF, GIF ...

To make it even more complicated, the images can be saved in different formats. The images above are as JPEG (jpg) files. They are the files that take up the least space on the PC and can also contain as much detail as possible. The same image, without any processing, stored as a TIFF image, is a full 47 MB. On the PC, the image will take up five times as much space, but the quality of print will be exactly the same. JPEG is the most common file type for images, and is a file type that most applications can open and save. Stick to JPEG - it's the easiest.

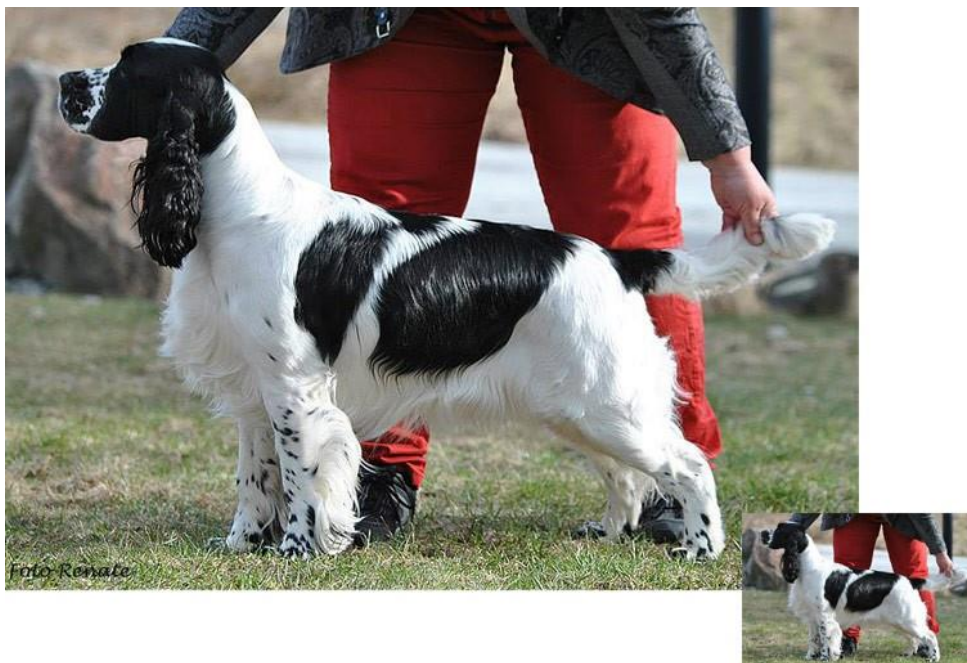


Figure 4: An image of 100 KB and with a width of 15 cm can look excellent on the screen, but on print it will only be 3 cm large if it is to retain its sharpness ... Stamp size - and you will probably have a larger image of your dog in the magazine.

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## How big must the picture be?

As a rule, images used in print should be at least 1 MB when the file format is JPEG. Everything above is a plus. If the printed image is to be large, the image file should be at least 2-3 MB.

If the image is used on a website or Facebook, you want the image as small as possible so that the page loads quickly. It often holds 50-200 KB or 0.05 to 0.2 MB. This is why many programs automatically reduce the image size.

## How to save photos on PC without losing image quality?

The easiest and safest is to use a memory card reader or you can connect the camera / mobile to the PC with a cord and then load by going to explorer and selecting cut or copy and then pasting into new folders. Many cameras also have an included program that allows loading to happen automatically when you connect your PC and camera.

NOTE: Make sure that the program does not have a setting that automatically reduces the size of the images!

## How to send the images from the PC without losing the image quality?

The most common is to use mail. Do not open the image and select send by email, as the program will often automatically reduce the size of the image itself. Do not put the pictures in the email, but attach them as an attachment, as a file. In the most common mail program, Outlook, attachments are marked with the symbol binders - see above. Now you need to search for the right file to attach. Find the folder with the original image and double-click to attach it to the email and press send.

A very easy way to send many large files is to use e.g. FileSender. Then you can send the photos to the email address you want and the recipient can download the photos whenever they want. You will also receive a confirmation that the photos have been received.

## Do you want to edit the image?

Maybe you want to edit the image, maybe cut it. Many programs can do this, but make sure that the file size is not changed significantly. If you are unsure how to do this without losing quality, simply ask the recipient to do this or get someone who can help you. It is done in seconds if the person has a good program for the job and knows what to do.

### **Important:**

**1: Always keep the original image as it came out of the camera! Save valuable photos in separate folders on your PC and feel free to make a backup copy.**

**2: If you have the original image in high resolution, you can always reduce it to size if needed, but if it is stored in lower resolution, it can NEVER be converted to large size / high resolution again.**

**3: A good quality image that is pasted into a word document or similar program is "corrupted" forever.**

**4: If the image is to be used in print, it cannot be sent as an MMS or retrieved from websites, facebook or chat.**