



Bohemian Waxwing *Bombycilla garrulus*. Important factors for this shot were the 45 focusing point area of my camera, the optimum weather for flight photography and the use of a short enough shutter speed to stop the movement. The most decisive thing was the fact that I could take 1,300 shots of flying birds in ideal conditions. After the hard work a couple of excellent images were found amongst them all. Canon 1D + 300 mm F2.8, 45 focusing points with continuous focusing, ASA 200, 1/5300s F3.5, offhand, image stabiliser on, Finland, Helsinki, 4 March 2003.

Birds in Action

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Birds' ability to fly is one of their most interesting traits. Besides species portraits and bird in the landscape type pictures, bird photographers have always been fascinated by shooting flying and moving birds. It has always been hard to take pictures of flying birds. Although during the last ten years the development of auto focus, film quality and especially digital cameras have made it remarkably easier

to take good flight shots, I can say, based on my own experience, that it is still far from easy!

I will first deal with the essential issues related to camera techniques in terms of taking action pictures. Then give some advice on how you can take good shots with modern camera equipment. The photo captions are an important part of this article because in each of them I tell both the technical information

of the shot and things related to the situation.

The most important properties of camera

The era of film cameras is definitely over in shooting flying birds. With an excellent camera it was and still is possible to get good action photos, but the advantages of the latest digital cameras in quick situations



Snow Bunting *Plectrophenax nivalis*. From the focusing perspective it is very difficult to photograph against a variable background. In this situation it was essential that the distant Arctic Ocean was far behind the bird. In the bright midday light I used ASA 400 for this shot to get enough depth of field in order to add possible sharp images. For shutter speed I chose a value which I knew would in most images only just stop the movement. Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/2700 F7.0, offhand, image stabiliser on, Helsinki, Finland 26 March 2006.

are so obvious, that it is not even worth thinking about purchasing a film camera.

Without dealing with the differences of film and digital bodies I simply state that the most essential advantages of digital cameras in taking flight shots are:

- The opportunity to use high ASA values without risking the image quality. For example, with a Canon 1D mk II camera you can use ASA 800 if just the exposure is correct without risking the image qual-

ity. High ASA values make flight images possible even in dim conditions. Using 800 ASA in a film camera caused disturbing grainy and pale-coloured images.

- The best digital bodies for action shooting give 1.3 – 1.6 times more magnification compared to film cameras while the speed of the lens still stays the same. In Canon EOS 1D mk II body the 300 mm F2.8 lens corresponds to the 390 mm F2.8 objective in film format which means that

you get closer to the target while the speed stays the same. This is a remarkable advantage in bird photography because birds are often so shy that getting close enough to get a good shot is often difficult.

- The opportunity to underexpose a little bit without losing quality. Afterwards it is easy to correct the exposure with the help of image editing software. When needed it is good to take advantage of this property and thus get more speed

Goldcrest *Regulus regulus*. This picture taken in the dim mid-winter light succeeded even with a relatively slow shutter speed because I used a tripod and the bird was hovering for a moment in the same place. With the old Canon 1D body it was not practical to use over ASA 400 values without losing quality. Today in the same situation with the new body I would use ASA 800. Essential in getting this image was the fact that after having seen the bird hover at the tip of a branch I knew from experience it would do it again. I put the camera on my tripod and started to wait for the next situation which I just managed to capture. In the series of six shots only in one image had everything right. Canon 1D + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/800 F4.0, tripod, image stabiliser on, Finland, Helsinki, 30 December 2003.





Barred Warbler *Sylvia nisoria*. It turned out to be very hard to photograph a Barred Warbler in display flight on its territory. I was lucky enough to get several occasions to try and finally I managed to get a few sharp images. In quite sharp early summer light the under parts of the bird were underexposed with the shutter speed used to stop movement. To get a printable image both the contrast and light had to be strongly corrected with image editing software. Correcting a clearly underexposed image always adds the noise of dark parts and nor could I avoid it totally in this image. Canon 1D mk II + 300 mm F2.8 + 1.4x extender, 45 focusing points with continuous focusing, ASA 400, 1/3200 F6.4, offhand, image stabiliser on, Estonia, 5 June 2004.

or depth of field in use. With film you could not do anything to the original after the film was developed. Of course you can also scan a slide and then correct the digital file, but the result is always far from that of a digital image.

- After the expensive camera investments, the digital shooting itself is practically free of charge. Nobody even thought to take one thousand shots of a difficult target with a film camera but in digital time it happens every day. Even in a very difficult situation it is possible to get one pearl from amongst a thousand poor images.

- It is easy to check images right after the shooting using the camera screen and make the necessary corrections to camera settings. Using film you have to wait until you get your film developed to see the result and then you only have to learn your lessons and hope that next time the settings are correct.

The properties of digital body and lens for action photos

Let's start from the easiest part, that is, the lens. The best objectives suitable for ac-

tion shooting have not actually developed during the last five years. This means that already at the end of the film era some of the same lenses, which still for the time being are in use, were already used.

Auto focus

In action shooting it is very important to have a fast and silent auto focus system. Nowadays, the highest f-number auto focus lenses by Canon and Nikon are the best on the market.

Sharpness, contrast and speed of lens

We can use Canon 300 mm F4.0 and 300 mm F2.8 lenses as examples. The image quality of the remarkably more expensive and higher f-number F2.8 lens is clearly better, both in the name of contrast and details, than that taken with 300 mm F4.0 lens. If you are a skilful image editor you can however get quite high quality images also with 300 mm F4.0 lens. The most essential difference is in the speed of lens and in its effect on shutter speed and auto focus functionality.



Hoopoe *Upupa epops*. This image is a good example of anticipating a situation. I was in a park in Dubai when I noticed a Hoopoe on the lawn digging in the ground just by the promenade. Simultaneously I saw some people approaching from the opposite direction. I supposed the bird would be frightened by people and fly to a nearby tree in the shadow of which I stayed to wait. So it happened and quickly I managed to get one good shot when the bird noticed me and put on the brakes. Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/2700 F6.3, offhand, image stabiliser on, United Arab Emirates, 7 November 2004.



Common Swift *Apus apus*. Last summer for many days I concentrated on photographing flying swifts. I found a suitable site where Common Swifts breed under the eaves of reasonably low buildings flying continuously at a suitable distance for a photograph. Soon I noticed that the needed shutter speed to stop the movement of fast flying, especially when they fly very close, is at least 1/3200 s. It is not very difficult take shots of flying birds against the clear blue sky, but to get a well exposed image with two sharp speeding swifts, one of which is screaming, is already a bigger challenge... Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/3200 F5.6, offhand, image stabiliser on, Finland, Helsinki, 15 July 2005.



Image stabiliser

When you shoot offhand or with long lenses using a tripod the most important property to add to the number of quality shots is an image stabiliser. I keep it always switched on although the shutter speed is 1/3200s. Many Canon 20D users consider that the use of the stabiliser makes the auto focus slower and they do not use it if the shutter speed allows it. In

Black Woodpecker *Dryocopus martius*. Black Woodpecker is considered to be a strictly residential species, but in autumn young birds especially tend to move a lot. During one day at good migration watching points several birds, which hesitate to go over the sea, may come close enough to photograph. Usually birds turn back at the tip of the cape and give another opportunity to photograph them. The autumn colours and the distant blue sea add some extra interest to this image. Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 500, 1/3200 F4.5, offhand, image stabiliser on, Finland, Hanko, 10 October 2005.



Roller *Coracias garrulus* and Indian Roller *C. benghalensis*. After watching a feeding flock of Indian Rollers and one juvenile Roller for a while at a field in Oman I noticed that the birds had quite strict feeding territories. Especially when the juvenile Roller happened to fly to the neighbouring territory controlled by an Indian Roller a row started and the troublemaker was chased away. I parked my car very close to the invisible border of the feeding territories and then I just waited for the next row of which this is a photograph. Canon ID mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/3200 F4.5, offhand, image stabiliser on, car as a hide, Oman, 4 November 2004.

professional bodies I have not noticed that the image stabiliser has any effect on the functionality of the auto focus.

Suitable body for action shooting

In the best cameras you can choose only

one focusing point or, for example, an area of 45 focusing points. One point is a little faster but often, especially in the case of close flying birds, it is almost impossible to keep the target in one fo-



Rock Ptarmigan *Lagopus mutus*. I have several times been in early spring in Utsjoki to photograph Rock Ptarmigan. We had gundogs with us which greatly help to find Rock Ptarmigan. In sunny days in early April when day temperatures rise few degrees above zero male Rock Ptarmigan start their lek. Males squeak openly on the top of their lekking boulders and are often quite tame making flight shots possible. In the bright light ASA 250 was a suitable shutter speed and also made it possible to stop down a little bit to add depth of field. Canon ID mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 250, 1/4000 F6.4, offhand, image stabiliser on, Finland, Utsjoki, 10 April 2005.



Grey Partridge *Perdix perdix*. When I was photographing a flock of Grey Partridges, which take off like a rocket, I used 300 mm lens with an extender. I know it is very difficult to keep close flying birds in a viewfinder with a 500 mm lens. On the other hand I wanted to have a little looser cropping to get as many birds as possible in one image. By choosing ASA 400 I could use a fast shutter speed and also some extra play for the depth of field. Canon ID mk II + 300 mm F2.8 + 1.4x extender, 45 focusing points with continuous focusing, ASA 400, 1/3200 F6.3, offhand, image stabiliser on, Finland, Liminka, 26 February 2005.



cusing point so the chance to use 45 points is an extremely brilliant property.

Nowadays, the amateur and semi-professional bodies of many brands can quite easily follow a flying bird in the sky if it is moving relatively smoothly and in a steady direction. The situation changes dramatically, when the target makes unexpected turns or when the bird flies so that there is either land or water in the background. The only cameras which can just and so manage such situations are Canon and Nikon professional bodies. No company has so far developed an auto focus body which would fluently work when the background where bird flies is something other than sky. All cameras focus too easily on the background.

High serial picture speed

The best bodies can today take about eight images per second. The difference to those cameras, which take four photos per second, is in practice bigger than one might first believe. A fast flying bird can be less than a second at the optimum distance, so it is more obvious to get a sharp image, in which the wings are also in a good position, among eight shots. I have heard

Rough-legged Buzzard *Buteo lagopus*. Last winter was exceptional for small rodents in Southern Finland. Plenty of food tempted a record number of Rough-legged Buzzards to winter here. Some of the birds were real long-stayers offering an excellent opportunity to shoot them in exceptional conditions when bright snow reflected extra light on the underwings of birds. Canon ID mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 500, 1/3200 F8.0, offhand, image stabiliser on, Finland, Porvoo, 6 February 2006.



Gyr Falcon *Falco rusticolus*. A fledged Gyr Falcon brood, which was found by a highway in Northern Norway, offered a brilliant opportunity to take flight shots of the adults when they came to feed youngsters sitting on a steep rock. The distance to birds was quite far so I put the 500 mm lens with a 1.4x extender on my tripod. Because the effective focal distance taking the magnification factor of the body into account was 900 mm the use of both stabiliser and tripod was necessary. In the dimming evening light I managed to use a fast enough shutter speed for peacefully gliding falcons by raising the ASA value to 640. Canon 1D mk II + 500 mm F4.0 + 1.4x extender, 45 focusing points with continuous focusing, ASA 640, 1/1000 F5.6, tripod, image stabiliser on, Norway, 1 July 2006.



comments from Canon 20 D users, that the shooting speed 5 images per second happens every now and then be the same as the wing beats of the bird and then in all the images the wings can be in the same position!

Hawk Owl *Surnia ulula*. This winter I spent a lot of time photographing hunting Hawk Owls. At the same time I noticed that on sunny days in particular the auto focus seemed to be on the glistening snow cover rather than on the owl diving after prey. I received much better results on cloudy days obviously because then snow cover has no contrasts for the auto focus. To compensate for the lack of light of cloudy days I used ASA 800 value. Canon 1D mk II + 300 mm F2.8, 45 focusing points with continuous focusing, ASA 800, 1/2700 F3.5, offhand, image stabiliser on, Finland, Liminka, 12 February 2006.



Great Black-backed Gull *Larus marinus*. Taking photos of gulls following boats is quite straightforward because birds often fly in the wake at the same speed as the boat. The easy situation made me try to take slightly different flight shots. The light was ideal as the early evening soft sunshine reached the target. The dark clouds which happened to be in the background made the circumstances almost optimal. By using aperture 10 I got enough depth of field for the close flying target. Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/1600 F10.0, offhand, image stabiliser on, Norway, 3 August 2005.

Big buffer memory

You get the best quality by taking RAW pictures. With the best professional bodies you can take about 20 images before the buffer memory is full. Although it takes only a moment to transfer pictures to the memory card, the situation is often over when the buffer memory is ready to take new shots. In amateur bodies the buffer memory can take only 10 pictures, which many times is far too few.

The small buffer memory is one of the only properties in which digital professional bodies are worse than film bodies. With the film camera you were always able to take 36 shots before you had to change the film. I believe that in the next digital camera generation the size of the buffer memory will no longer be a problem.



Herring Gull *Larus argentatus*. Splashing water, rain and snow fall are elements which add impressiveness to an image. The splash of water shows best against a dark background. I shot gulls which were fighting for fish guts against a shadowed fjord wall. Birds were still against the light to get water drops shown as well as possible in the image. Canon 1D mk II + 300 mm F2.8, 45 focusing points with continuous focusing, ASA 400, 1/1600 F6.3, offhand, image stabiliser on, Norway, 4 August 2005.



Little Gull *Larus minutus*. This picture is a good example how you should take advantage of an opportunity created by weather conditions. When I was photographing in Hailuoto I noticed that a flock of 40 Little Gulls were feeding in a strong head wind by flying almost still very close to the shore of a small bay. The sun was shining through thin clouds and from the right direction towards the flying gulls. This continued for over two hours so I decided to start to use a tripod. The feeding behaviour of Little Gulls followed the formula in which a low flying gull made a quick move to the water surface to take an insect and after that it took few steps on the water surface before it continued flying and searching for more insects. Catching an insect always took place very unexpectedly and the situation was over quite quickly. The auto focus was almost always on the water surface but fortunately I also got a few successful shots of a gull walking on water. Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/2000 F6.4, tripod, image stabiliser on, Finland, Hailuoto, 14 May 2005.

Dipper *Cinclus cinclus*. In winter I put a lot of effort into photographing Dippers. During the winter the birds got used to photographers so that I could observe their bustle without a hide at a suitable distance. A 5 m-wide river was optimal for flight shots. The best images were when Dippers flew from the riverbank into the water searching for food and then when they jumped up from the water back onto the bank to eat their larva meal. In close situations 500 mm lens is too slow and also keeping the target in the viewfinder is almost impossible. 300 mm lens with 45 focusing points was ideal for this purpose. With experience I learned that 1/3200s shutter speed is needed if you also want to stop the wing of a flying Dipper. Canon 1D mk II + 300 mm F2.8, 45 focusing points with continuous focusing, ASA 500, 1/3200 F2.8, offhand, image stabiliser on, Finland, Lapinjärvi, 27 February 2006.





Common Crane *Grus grus*. The picture was taken early in the morning at 4.12 on a bog shadowed by trees. The image is an example of how it is possible with modern digital technique to get good action shots in difficult conditions. I was in a hide on a bog watching cranes exchange hatching duties when I noticed that the arriving bird was going to fly over a small pond to the nest. I chose ASA 1250 value and afterwards I saw that with these settings the shutter speed was 1/800s which was enough to stop both the body and head movements of the bird. With careful editing the result is also technically a decent image. Canon 1D mk II + 300 mm F2.8, 45 focusing points with continuous focusing, ASA 1250, 1/800 F2.8, tripod, image stabiliser on, Finland, Pernaja, 27.2.2006.

Good image quality and big enough image file size

In the latest digital system cameras the image quality even in most amateur bodies when using ASA 200 is reasonably good and fully comparable with the quality ASA 100 films. In the best professional bodies you can even use ASA 800 and still the result is quite good. In action pictures you usually need short shutter speeds so the cameras with high image quality when using ASA 400 – 800 are clearly the best for such shooting.

The eight million pixel sensor produces for many different purposes a big enough file and in normal magazine and book use it gives the chance to crop the image quite a lot without losing the original quality.

I believe that the size of sensors will still grow and in the next professional bodies 12 – 14 million pixels will make 8 – 10 pictures per second possible. The bigger image files will make it possible to crop them even more, which also makes it easier to take printable action shots.

To take a good action shot

We have now shortly dealt with the properties of cameras and lenses, which facilitate taking action images. Even more important than the shooting technique is the ability of photographers and the motivation to take good photos. Knowing bird behaviour and shooting experience are also of great importance in taking good action photos.

Next I will go through a couple of things which I believe play an important role in the hunt for splendid action images:

Know your target and its behaviour

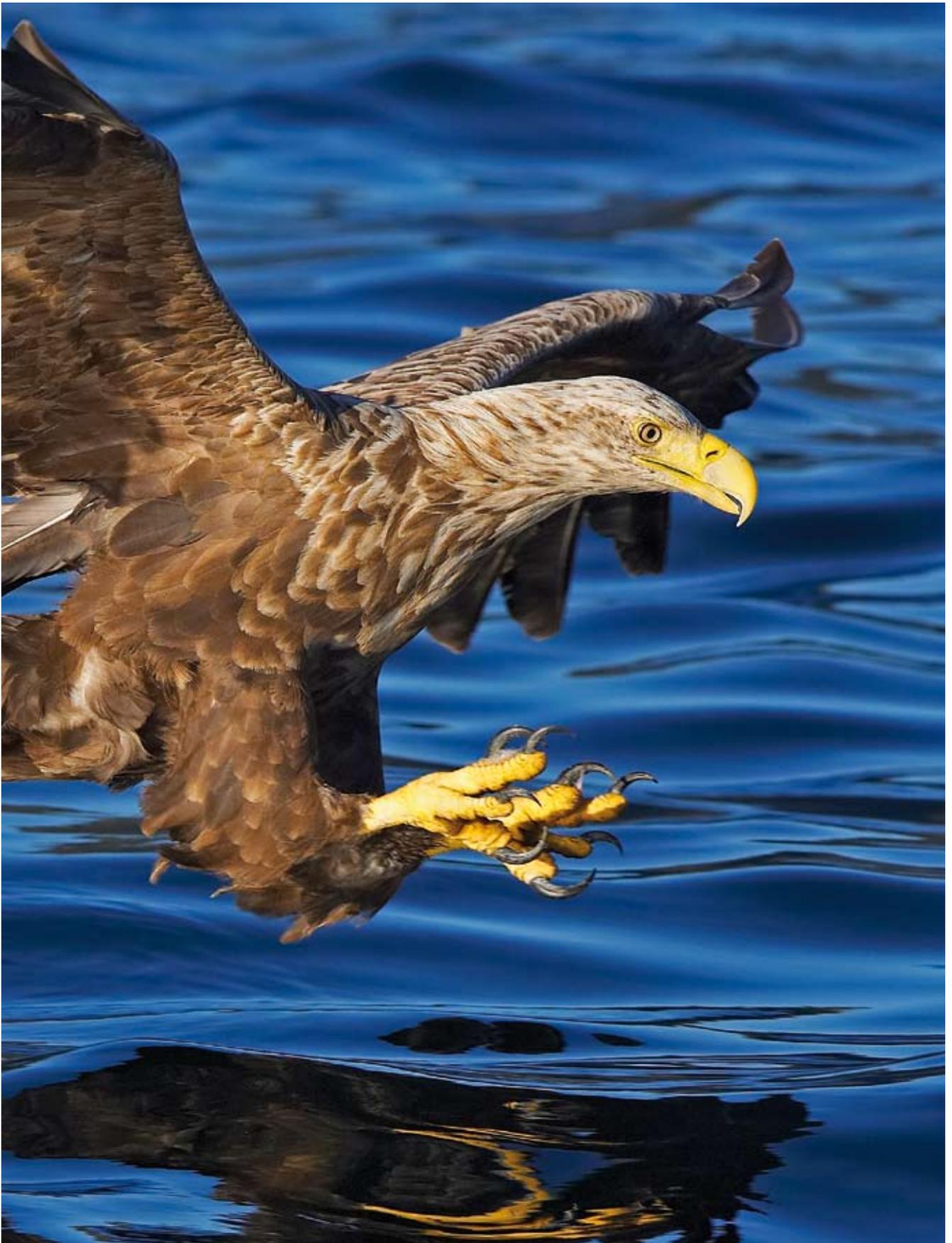
From a bird's behaviour it is often easy to see, that it is soon going to do something of which you want to take an action shot. Waterbirds often pump their head nervously up and down just before they take off. Female Black Grouse stretches its wings to trail on the ground showing its rump and thus letting the male know it is soon ready to mate. Raptors defecate just before they take off and bigger birds take off almost without exception into a head wind.

Always be ready

A good flight situation can take place any time. If camera settings are not always correct the situation can be over without any decent shot. Keep your camera always in the continuous focusing mode. Check that the shutter speed is fast enough to stop the movement. Keep the distance limiter of the lens in the position in which the lens focuses from the most distant meter value possible into infinity (it remarkably improves and makes the focusing faster). Check that on the memory card there is space for at least 20 images and make the needed exposure corrections in advance. The correct settings are of no use if the camera is not in your hands when the situation arrives. There is seldom time to take it from a rucksack!

Be in the right place

In spring and autumn, for example, capes by the coast and outlying islets on migration routes are well-suited to photography. The best bird lakes inland and concentration areas of migratory birds also offer good opportunities for flight shots. Many



White-tailed Eagle *Haliaeetus albicilla*. I knew the eagle would come very close to our boat to take the offered fish. Although the light was reasonably good I chose ASA 500 value to get a close enough depth of field. I managed to get an interesting series of shots of which this image was just before the eagle took the fish. Canon 1D mk II + 300 mm F2.8, 45 focusing points with continuous focusing, ASA 500, 1/1600 F7.0, offhand, image stabiliser on, Norway, 27 February 2006.



Red-throated Pipit *Anthus cervinus*. A Red-throated Pipit nest was found by a small road giving a great opportunity to use the car as a hide and photograph the feeding adults without disturbing them. Most shots taken against pale cirrostratus were not interesting, but when I managed to get the distant landscape in the background the images became more interesting. The shutter speed was fast enough to stop all movement. Canon 1D mk II + 500 mm F4.0, 45 focusing points with continuous focusing, ASA 400, 1/2000 f4.0, offhand, car as a hide, image stabiliser on, Norway, 29 June 2005.

species are shy and taking action pictures of, for example, eagles and Black Grouse usually require the use of a hide.

Spring snow and ice

The best time to take flight shots is sunny spring days when the light reflects off snow and ice beautifully to the underparts of flying birds. Pale sand and beaches may give a similar reflection but in Finland such circumstances are really rare.

Use a short shutter speed

To stop the movement of smoothly-flying big birds a shutter speed of 1/1000 s or even less can be enough. When shooting flying passerines the minimum shutter speed to stop body and head movements is, according to my experience, about 1/2500 s. If you want to stop the wings of a flying Dipper the speed must be 1/3200 s. By raising the ASA value you can even during cloudy days achieve short enough shutter speeds for flying targets. You can also take interesting action shots using clearly slower shutter speeds but then we are more or less talking about art photography.

Shoot offhand and use a tripod

With a 500 mm lens equipped with a stabiliser, which in the Canon 1D mk II body equals a 650 mm lens in film camera, it is fine to take offhand action shots. However, a lot of practice is needed, but in quick situations offhand shooting is essentially easier than using a tripod.

A steady tripod is almost always a must when working in a hide or shooting with a long lens (>700 mm) birds which fly in the distance. For flight shooting by far the best solution is to use a steady tripod equipped with a sensitively moving video head.

Expose correctly

Usually there is clearly less light on the underparts of a flying bird than in its surroundings. Although in the editing phase the exposure can be corrected it is important to overexpose the image a little bit, especially in summer and autumn when there are no reflections, to get the colouration and all the underpart details visible.

Be tough

Very seldom do you get a brilliant action shot by chance. By analysing your own mistakes and successful shots you get experience which you should take advantage of in the following shooting situation.

I consider the Waxwing picture shown in this article a good example of trying hard and its result. In 2003 we had an excellent rowanberry year in Finland and the Waxwing influx reached Helsinki in late February. I was lucky enough to shoot Waxwings in clear sunshine with lots of snow on the ground. That day I took 1,300 shots of flying Waxwings and though I immediately deleted 90% of them I also got one of my best action shots ever.

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