



PHOTO-IDENTIFICATION OF INDIVIDUALS

For a number of species of whale and dolphin, it is possible to recognize individuals by the unique markings that some of them bear. These may take the form of a particular pattern of nicks in the dorsal fin, or pigmentation patterns on the fin, head, flippers or flanks. Recording such information on photographs (more accurate than drawings), particularly on a regular basis, allows one to learn a great deal about local populations of the species. An individual may be recognized in various different localities, giving us an idea of its ranging movements. If it is recorded in the same region over several months, it provides valuable evidence that it is resident. If it is seen from year to year we can obtain a good idea of longevity, whilst the presence of a small calf associated with a recognizable female in successive years would indicate that the animal was reproducing annually. The more information that can be obtained over time and from several individuals, the more we can learn about populations of that species, their size, individual growth, associations, mortality, and reproductive rates.

Photographic Equipment Anyone can collect useful data so long as they have some basic photographic equipment and can get reasonably close to the animals (for this, a boat is usually necessary). Any camera will do, but best is a 35 mm single lens reflex with automatic metering. There are many makes and models available which will be perfectly satisfactory and there is no need to spend vast sums of money to achieve good results. More important is to have a zoom telephoto lens (preferably around 70-210 mm or 75-300 mm since a reasonably large image is essential). A zoom lens has the advantage of being able to move rapidly to a smaller or larger image as the animal moves towards or away from the boat. Most cameras nowadays have autofocus, a useful facility not only for inexperienced photographers but also for those who want to be assured accurate focus when taking pictures in fairly rapid succession. Autofocus requires a little practice to use successfully on fast-moving dolphins. Before taking the picture, focus in the vicinity of the animal since this will help the automatic focusing to operate rapidly, and find correct focus. In some situations, however, for example in low contrast conditions, autofocus may prove difficult with the lens continuously hunting for the correct focus. In those situations, it is best to switch to manual focus.

A motor drive is extremely useful for taking pictures in rapid succession, so ensuring that at least one frame will show the maximum part of the animal above water. Also, by automatically winding the film on, they enable one to move quickly from one individual to another. Many cameras nowadays have a motor drive built in. It is best to ensure that it can operate at 5 frames per second or faster.

Additional useful items of photographic equipment include a lens hood to cut out glare, and a UV filter to compensate for large amounts of ultra-violet at sea level. Although a polarising filter is useful for revealing cetaceans underwater, it is of limited value for photo-ID since views from above do not easily show up individual markings. A very valuable additional item is a camera data back which can imprint the date and time of day on each frame. Some cameras will store this information automatically, to be downloaded later onto a computer.

Taking pictures Pictures are best shot at high shutter speeds (1/500 or faster). For those species with markings on their dorsal fin or flanks, it is important that the animal is side on, as parallel to the photographer as possible. Try therefore to avoid taking the picture when the animal is right alongside the boat or bow-riding since pictures from above are of less use for photo-ID work. Where possible, photograph both left and right sides of the animal, cross-referencing the two (they may contain different marks on each side), and try to have the sun behind you so that more subtle markings can show up. In

particular, avoid taking animals in silhouette. An example of a good picture and a bad one is given in Figures 1 & 2. For those species such as humpback and sperm whales where the shape and markings of the tail flukes are important clues to individual identity, it will be necessary to photograph from behind rather than side-on.

Film cameras Different people will have their own preferences over which film to use. Colour usually brings out tones better than black and white, and if the conditions are usually bright and sunny, a slow film such as Kodachrome 64 or Fuji 100 is ideal. Otherwise a fast colour film (200 or 400 ASA) is best. Colour slide film is more versatile than print film because it can be projected, and prints can readily be made from them anyway. If large quantities of film are being used, it may be more economical to use black and white film (Kodak T-Max is excellent in this regard) and for many research groups, this seems to have been quite adequate for humpback, minke whale, sperm whale, killer whale and pilot whale. On the other hand, for various dolphin species, colour tends to cope better with variation in hue unless one has ready access to a darkroom and can experiment with the printing process.



Fig. 1. Good images of well-marked bottlenose dolphins (courtesy of Celine Liret / Oceanopolis)



Fig. 2. Poor images of bottlenose dolphins taken from wrong angle and in shadow (Peter Evans / SWF)

Digital cameras There are now several digital SLR cameras (6-12 megapixel resolution) which are perfectly adequate for photo-identification, and which, though expensive, have the advantages that there are no film costs and one can review images to check whether a particular animal has been photographed adequately. Because of the latter feature, they are very useful for training in photo-ID, and to ascertain

when one has photographed all individuals sufficiently to leave the group thus ensuring one does not spend more time with a group than necessary. With the cheaper models, beware of slow responses to pressing the shutter and difficulties to take pictures in rapid succession one after the other. If you want to photograph fast-moving species like common dolphin, it is advisable to purchase a model that can shoot at least at 5 frames per sec. If you want to shoot in a programmed mode, moving to sports mode generally yields good results in that the autofocus can keep up with the speed of the animal.

Recording data It is very important that extra information is collected to accompany each photograph. This should first include a cross-reference to the frame and film number (a camera data back obviously helps here, whilst with digital cameras this information is usually automatically stored electronically). It is generally wise to take a photograph of something other than cetaceans between separate encounters so that pictures of one group do not merge with the next.

Other important information to record besides date, exact time and location (include coordinates if possible) are: best estimate of number of individuals in the group, a note of any recognizable individuals in association, and main behaviours (including direction of travel). If calves are observed, try to photograph them alongside their putative mother.

Disturbance It is important when photographing cetaceans to cause them minimal disturbance. Allow individuals to approach you rather than chase after them; don't markedly change the speed or direction of the vessel, and in particular, don't drive the vessel directly at them. It is always best to approach from behind and to one side and allow the animals to join you, moving in the same direction. Be sensitive to their behaviour. If they do not appear receptive (i.e. they keep steering away from you or change their behaviour by making repeated dives or tail slapping), then leave them. Avoid boxing them in, and isolating calves (that will be less experienced how to avoid propeller damage from boats). And, finally, remember that to behave recklessly around cetaceans causing them disturbance is a criminal offence, and that intentional disturbance for the purpose of photography can only be conducted under licence from the relevant statutory conservation agency (Scottish Natural Heritage in Scotland, the Countryside Council for Wales in Wales, and English Nature in England).

Europhlukes In 2002, a European Commission funded project, entitled EUROPHLUKES, was started, to bring together catalogues of images of individual cetaceans of many species throughout Europe. The aim was to develop a European-wide electronic catalogue of images and computer programs to facilitate the automated matching of images of particular individuals. The project has been co-ordinated by the University of Leiden in the Netherlands., whilst Sea Watch was tasked with co-ordinating the receipt and collation of digital catalogues from participating groups. This project continues under the name **Euroflukes**, with funding support from the European Cetacean Society and ACCOBAMS.

Anyone can contribute images. For more information, contact: Dr Peter Evans, Sea Watch Foundation, Cynifryn, Abershore, Llanfaglan, Caernarfon, Gwynedd LL54 5RA, UK (e-mail: peter.evans@zoo.ox.ac.uk).