

**EUROPHLUKES**  
**DATABASE SPECIFICATIONS HANDBOOK**

*FINAL VERSION – December 2002*

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## 1. INTRODUCTION

Thirty-five species of cetaceans have been recorded from Europe and the north-eastern Atlantic islands (Azores, Madeira, Canaries, and Faroes). Of these, seven species are rare in the region either because they have become endangered (like the northern right whale), or because their normal range is primarily outside the area (for example tropical dolphins like the rough-toothed dolphin) (see Table 1).

**TABLE 1. CHECKLIST OF EUROPEAN CETACEANS**  
(\* = rare or casual in Europe)

### SUBORDER MYSTICETI (baleen whales)

#### Family Balaenidae

Bowhead whale	<i>Balaena mysticetus</i>
*Northern right whale	<i>Eubalaena glacialis</i>

#### Family Balaenopteridae

Minke whale	<i>Balaenoptera acutorostrata</i>
Sei whale	<i>Balaenoptera borealis</i>
Blue whale	<i>Balaenoptera musculus</i>
Fin whale	<i>Balaenoptera physalus</i>
Humpback whale	<i>Megaptera novaeangliae</i>

### SUBORDER ODONTOCETI (toothed whales)

#### Family Ziphiidae

Sowerby's beaked whale	<i>Mesoplodon bidens</i>
Blainville's beaked whale	<i>Mesoplodon densirostris</i>
*Gervais' beaked whale	<i>Mesoplodon europaeus</i>
*Gray's beaked whale	<i>Mesoplodon grayi</i>
True's beaked whale	<i>Mesoplodon mirus</i>
Cuvier's beaked whale	<i>Ziphius cavirostris</i>
Northern bottlenose whale	<i>Hyperoodon ampullatus</i>

#### Family Kogiidae

Pygmy sperm whale	<i>Kogia breviceps</i>
*Dwarf sperm whale	<i>Kogia simus</i>

#### Family Physeteridae

Sperm whale	<i>Physeter macrocephalus</i>
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#### Family Monodontidae

White whale	<i>Delphinapterus leucas</i>
*Narwhal	<i>Monodon monoceros</i>

## Family Phocoenidae

Harbour porpoise

*Phocoena phocoena*

## Family Delphinidae

Rough-toothed dolphin

*Steno bredanensis*

White-beaked dolphin

*Lagenorhynchus albirostris*

Atlantic white-sided dolphin

*Lagenorhynchus acutus*

Risso's dolphin

*Grampus griseus*

Bottlenose dolphin

*Tursiops truncatus*

Atlantic spotted dolphin

*Stenella frontalis*

\*Spinner dolphin

*Stenella longirostris*

Striped dolphin

*Stenella coeruleoalba*

Common dolphin

*Delphinus delphis*

\*Fraser's dolphin

*Lagenodelphis hosei*

\*Melon-headed whale

*Peponocephala electra*

False killer whale

*Pseudorca crassidens*

Killer whale

*Orcinus orca*

Long-finned pilot whale

*Globicephala melas*

Short-finned pilot whale

*Globicephala macrorhynchus*

## 2. NATURE OF DISTINGUISHING FEATURES

Although European collections of images depicting individual distinguishing features exist for 28 species, for nine of these, either the number of individuals represented is very small (less than 10) or they have been collected from just a single location. Summary details of each of the remaining 19 species is given below, including information on the regions they represent, total catalogue sizes, the nature of the distinguishing features and whether these are likely to be amenable to matching algorithms:

**Northern right whale** <10 images (from Madeira and Canaries; possibly also west of Ireland/Scotland). The distinguishing features are mainly callosity patterns and associated whale lice (cyamids) on the rostrum but may also include scars, birthmarks, and lip crenulations. This is an endangered species, the European population being extremely small. There is an urgent need to check for matches with the North-west Atlantic population which numbers c. 300 individuals. A pattern recognition algorithm has already been developed by Lex Hiby. The main limitation is the fact that in a European context, very few pictures exist. Nevertheless, assembling all European images together would be a valuable exercise.

**Minke whale** c. 1,300 images (all from North-west Europe). Distinguishing features are primarily nicks and contrasting pigmentation on the dorsal fin, small oval scars, and lateral body pigmentation. The species is common on the European continental shelf, where it is sometimes hunted by Norwegians. Information on movements between areas is badly needed. The limitations are that body markings are not as clear as nicks/notches and only a relatively small percentage have the latter.

**Fin whale** c. 13,700 images (80% from the Ligurian Sea in the Mediterranean). Distinguishing features include nicks and patterns upon the dorsal fin, and pigmentation patterns, also body scars. Genetic information suggests that the Mediterranean population is isolated from the one in the Atlantic, whilst migration patterns within the Mediterranean are only poorly known (and in the eastern North Atlantic scarcely known at all) so this project could lead to substantial advances in our knowledge. Limitations for developing useful algorithms are that recognition is mostly dependent upon body patterns.

**Blue whale** <200 images (mainly from Greenland, Iceland and Norway, the rest of Europe having only a small number). Distinguishing features include ventral tail fluke nicks, notches and patterns, scars, and body pigmentation (mottling). Populations of this species have declined globally following human exploitation, with numbers in Europe now very low. A larger population exists in North-west Europe where photo-ID has been conducted since the late 1970s. Images from the eastern North Atlantic submitted to a central catalogue would be of particular conservation biological interest. Limitations are that images exist from only a few localities, in some areas blue whales do not fluke up, and algorithms may be difficult to develop on the basis of scars and body pigmentation, although it might be possible to use similar algorithms as developed for grey seal pelage marks.

**Humpback whale** <1,000 images (mainly from Greenland, Iceland and Norway, the rest of Europe having only a handful although small numbers have recently been photographed in the Cape Verde Islands). There is a very large catalogue, numbering some 18,000 images, of animals mainly from the North-west Atlantic; some of these also migrate to Greenland). Distinguishing features include tail fluke nicks, notches and patterns; also dorsal fins, pigmentation and lip grooves. This is an endangered species with a European population that is small (in the North-west Atlantic, the population numbers several thousand individuals). There is an important need to determine whether individuals that are being seen increasingly in Europe come from sites in the North-west Atlantic or derive from a population breeding in the eastern North Atlantic. Although nicks and notches in tail flukes should be amenable to already developed algorithms, matching of fluke patterns themselves will require a new approach.

**Harbour porpoise** c. 50 images (mainly from North-west Europe). Distinguishing features include scars and pigmentation patterns on the dorsal surface and upper flanks. Occurring mainly on the European continental shelf, it is one of two species most commonly affected by coastal human activities. It has undergone widespread declines in recent times, is specially a victim of gillnet fisheries, and has been given special protective status by the European Union and other international organisations/legislative instruments, and therefore is of great conservation interest. Limitations are that it is inconspicuous at the surface, difficult to photograph and therefore rarely photographed, and, so far, only a very few animals have been found to be individually identifiable. There is scope for further research but given practical considerations it is unlikely that the species will ever be an important subject for photo-ID.

**Bottlenose dolphin** c. 70,000 images (with several intensively studied populations from all parts of Europe). Distinguishing features include nicks in the dorsal fin, and scars/pigmentation patterns usually either on the fin or on the body just below fin. With its often near shore habit, it is one of two species most commonly affected by coastal human activities. It has undergone widespread declines in recent times, and is given special protective status by the European Union and other international organisations/legislative

instruments, and is therefore of great conservation interest. It is generally well-marked with a high percentage of individuals recognisable. The limitations are that recognition is dependent partly on scars and pigmentation patterns which would be difficult for a matching algorithm to be developed, although fin nicks/notches are quite common and algorithms for automated matching have already been developed, tried and tested (see, for example, program written by Texas A&M University).

**Risso's dolphin** c. 13,000 images (spread widely across Europe). Distinguishing features include nicks in the dorsal fin, and scars/pigmentation patterns either on the fin or on the dorsal surface and upper flanks. It is a widely distributed species that is increasingly being the subject of photo-ID study in various parts of Europe. It is one of the best marked of cetacean species although some markings change over time. Limitations are that recognition often relies upon complex patterns of scars and de-pigmentation (white scratches, and patches).

**Common dolphin** c. 22,500 images (mainly from the western Mediterranean but with some from UK waters). Distinguishing features include nicks and marks on the dorsal fin, and scars/unusual pigmentation patches on beak, head, and back. The species is very common and widely distributed in Atlantic Europe but rare and declining in the Mediterranean. Along with striped dolphins, it is particularly vulnerable to accidental mortality in fishing gear. The limitations are that recognition often has to rely upon different features in different individuals and sampling frequently only extends to a tiny fraction of the population. On the other hand, in certain localities, a larger proportion may be photographed and this may be very relevant to conservation concerns.

**White-beaked dolphin** c. 200 images (all from North-west Europe). Distinguishing features include scars/unusual pigmentation patterns on the beak, head, and back, and, secondarily, upon the dorsal fin (usually poorly marked). It is fairly common in continental shelf seas of northern Europe where it is of special conservation interest because of its restricted global occurrence (restricted to the North Atlantic), and its vulnerability to human activities. Photo-ID studies have only recently started and are likely to be growth area over coming years. Limitations are likely to be that recognition will have to rely upon different features in different individuals.

**Atlantic white-sided dolphin** c. 50 images (all from North-west Europe). Distinguishing features include nicks in the dorsal fin, and scars/unusual patterns on the beak, head, and back, and, secondarily, upon the dorsal fin (usually poorly marked). It is quite common mainly off the continental shelf of northern Europe where it is of conservation interest because of its restricted global occurrence (being restricted to the North Atlantic) and its vulnerability to fisheries activities. Photo-ID studies have scarcely started on this species but would benefit from further investigation. Limitations are likely to be that recognition will have to rely upon different features in different individuals, and that only a small percentage of the population may be identifiable.

**Short-finned pilot whale** <13,000 images (all from the Azores, Madeira and Canaries). Distinguishing features include nicks in the dorsal fin and fin shape, and the saddle mark which individually can be very variable. The species is common and widely distributed in the tropics and subtropics, and in a European context only the Canaries forms an important study population.

**Long-finned pilot whale** <5,000 images (from North-west Europe and the Mediterranean). Distinguishing features include nicks in the dorsal fin and fin shape. It is common and widely distributed offshore throughout Europe. The species has been little studied by photo-ID but has potential, although the limitation is that the dorsal fin alone is not very variable (mainly notches and variable in shape).

**Killer whale** c. 1,000 images (mainly from Norway and Iceland, but also UK, Ireland and Straits of Gibraltar). Distinguishing features include nicks in the dorsal fin, fin shape, the shape of the saddle patch, and scars over the head and body. It has been well studied in Scandinavia and is of recently more intensive interest in UK and the Strait of Gibraltar. It is a fairly uncommon but widely distributed species though mainly in deep waters often offshore. Limitations are that recognition features are based upon pattern recognition and include variation in the shape of the flexible dorsal fin.

**Sperm whale** c. 3,000 images (from throughout Europe but mainly Atlantic archipelagos of Azores, Madeira and Canaries, as well as Norway and the Mediterranean). Distinguishing features include tail fluke edges, also the shape of the dorsal fin. It is well studied in certain localities, mainly around oceanic island archipelagos, and is easily recognisable. The main limitation is that a sizeable portion of the Atlantic population is likely to live far from land and be relatively inaccessible for photo-ID. Matching algorithms using the trailing edge of the tail fluke have already been successfully developed, making this a useful species to start testing the value of the EUROPHLUKES Project.

**Beaked whales** c. 200 images (mainly of **Cuvier's beaked whale**; but also a handful of images of **northern bottlenose whale**, **Sowerby's beaked whale**, **Blainville's beaked whale**). A larger catalogue exists for northern bottlenose whale in the North-west Atlantic off Newfoundland. Distinguishing features include nicks and the shape of the dorsal fin, and scars/pigmentation patterns either on the fin or on the dorsal surface or flanks. Cuvier's beaked whale also has variation in de-pigmentation patterns of the head; other beaked whale species show some variation in scars and pigmentation patterns, but photo-ID studies have only recently started (<100 images). This is a likely growth area of interest but limitations are the difficulty of obtaining pictures of more than a few animals except in certain localities.

At the EUROPHLUKES workshop held in Leiden in December 2001, votes on which species should receive priority attention in the database system were as follows:

Sperm whale (22 votes)  
Bottlenose dolphin (19 votes)  
Killer whale (16 votes)  
Risso's dolphin (10 votes)  
Humpback whale (9 votes)  
Common dolphin (7 votes)  
Blue whale (5 votes)  
Long-finned pilot whale (5 votes)  
Short-finned pilot whale (5 votes)  
Fin whale (4 votes)  
Minke whale (3 votes)  
Northern right whale (2 votes)

It was decided that the project would start with a selection of the above species. The first two choices were sperm whale and bottlenose dolphin. Criteria for selection should include the ease to which features could be retrieved, the availability of reasonable quantities of images from a range of locations., the conservation implications, and their regional interest. On that basis, the following other species are proposed for subsequent attention: killer whale, Risso's dolphin, humpback whale, long- finned and short-finned pilot whale, common dolphin, fin whale, and blue whale (these are not listed in any particular order). Other species will be included if time is available.

Table 2 summarises the catalogues held throughout Europe for fourteen species.

**TABLE 2. SUMMARY OF PHOTO-ID CATALOGUES IN EUROPE**

Species	ID Features	Number of Catalogues	Number of Countries	Approx. No. Slides	Estim. No. Of Indivs
Blue whale	Tail, fin, scars, pigmentat.	4	3	<200	<100
Fin whale	Fin, chevron	4	4	13,700	700
Minke whale	Fin, scars, pigmentat.	3	3	1,300	<200
Humpback whale	Tail, fin, pigmentat.	5 (1)	6	<1,000 (18,000)	562
Northern right whale	Callosities, scars	2 (1)	2	<10	3
Sperm whale	Tail edges, fin	16 (1)	9	3,000 (1,000)	1,000
Cuvier's beaked whale	Fin, scars, pigmentat.	3	3	<100	<50
Long-finned pilot whale	Fin, saddle mark	12	7	<5,000	1,000
Short-finned pilot whale	Fin, saddle mark	9	2	<13,000	1,500
Killer whale	Fin, scars, saddle	12	7	<1,000	550
Risso's dolphin	Fin, scars, pigmentat.	20	9	13,000	<2,000
Bottlenose dolphin	Fin, scars, pigmentat.	42	11	70,000	5,000
Common dolphin	Fin, scars, pigmentat.	19	8	22,500	<2,000
White-beaked dolphin	Fin, scars, pigmentat.	4	2	<200	<100

### 3. DETAILS OF CATALOGUE

Fifty individuals or organisations in Europe hold catalogues of images of cetaceans that provisionally they are prepared to include in a central European database within the EUROPHLUKES Project.

Table 3a) summarises details of catalogues in North-west Europe (including Greenland); Table 3b) does the same for South-west Europe (Spain, Portugal and their north-eastern Atlantic dependencies); and Table 3c) does this for South-east Europe (the central and eastern Mediterranean including the countries of France, Italy, and Greece).

**TABLE 3a). DETAILS OF  
CATALOGUE: NW EUROPE**

Organisation, Contact Person, e-mail	Geographical coverage	Spp.	No. of images	No. of animals	File size/ Av. Resol.	Media for images and storage	Extra related material	Conditions Of Access	Previous purpose/ investigation
CoA, Judy Allen jallen@ecology.c oa.edu	Greenland, Iceland, E North Atlantic, Europe, Cape Verde Islands	Mn	[18,000] for all North Atlantic	562		Video disc (updated every few years), photographs	Time, date, location, group size	Collaborative use of data	a, b, e, f, g, h, l, n, o
CRMM Olivier van Canneyt <a href="mailto:vcanneyt@univ-lr.fr">vcanneyt@univ- lr.fr</a>	Bay of Biscay, esp. Pertuis Charentais	Gme Tt	80 10	39 5	20Mb  120 pixel/ cm	Colour slides Gme,  B/w negs, colr slides Tt	Time, date, location, grp size; other indivs in group	1) ? 2) ?	b, c, d, f ??
IFAW / Tim Lewis timlewis@sheillin g.fsnet.co.uk	Azores, Mediterranean, Canaries, Madeira, Caribbean	Pm	1033+	c.1000	3.85Mb  Scan at 1000dpi	Mainly B/w prints  Electronic, on CDs as bitmaps	Time, date, location, grp size; other indivs in group	1) c ? 2) c ?	a, b, c, d, f ??
Andy Williams BDRP <a href="mailto:Andy.Williams@biscay-dolphin.org.uk">Andy.Williams@ biscay- dolphin.org.uk</a>	Biscay [Bahamas, N Carolina]	Ha Mm [Md Zc Mb	? 1 100 140 20-40	? 1 20] 50-70 4-9	269Kb- 7Mb  Scan at 2720dpi	Colour prints, slides and video  Electronically	Time, date, location, grp size {other indivs in group}	1) ? 2) ?	a, b, c, d, f ??
Greenland Institute for Nat. Resources Michael Kingsley msk@natur.gl	West Greenland	Mn		348 (‘88-‘93)		Colour slides	date, location, group size; other indivs in group	Slides incorpor. in N. Atlantic humpback catalogue	a, b, e, g, h, n, o ??
Colin Speedie Colin.speedie@b	S. Devon, Cornwall, England, incl. Scillies	Tt Gg	100 30	25 3		Colour slides	Time, date, location, grp	1) a	a, b, c, d, f

tinternet.com		Gme	12	6		Slides	size; other indivs in grp	2) a	
MRI, Iceland Gisli Vikingsson <a href="mailto:gisli@hafro.is">gisli@hafro.is</a>	200nm around Iceland	Mn Oo Bm	300 500 50	150 350 30	3Mb  Scan at 600dpi	Mostly B/w prints, some of all listed formats Prints All Oo scanned	Time, date, location, group size; other indivs in group	1) c 2) c	a, b, c, d, f, o
Dolphin & Whale Spotting, Marianne Rasmussen <a href="mailto:mhr@dou.dk">mhr@dou.dk</a>	Keflavik, Iceland	Lal	?	93	?	Negatives and Prints	Time, date, location, group size; other indivs in group	?	a, e, f, k
Oceanopolis, France Celine Liret <a href="mailto:Celine.liret@oceanopolis.com">Celine.liret@oceanopolis.com</a>	Archipel de Molene, NW France	Tt	2000	41	c. 500 Kb  70pixels/cm	Colour slides  Slides	Date, location, group size; other indivs in group	1) b 2) c	a, b, c, d, , e, f, g, l, o
Wild Idea, Norway Tiu Simila <a href="mailto:iolaire@online.no">iolaire@online.no</a>	Lofoten and Vesteralen Is., Norway (67-69°N, 12-17°E); Rørvik, Norway (c. 65°N); Ålesund, Norway (62.20-63.00°N, 4.30-6.00°E)	Oo  Gme	Oo 15,000; 200; 70 250	Oo 463; 7; 28 ?	60,000 Kb, 800 x 620 x 16 M jpeg	B/w negs. (some colour prints, negs, slides). Digital catalogue since 2001	Time, date, location, group size; other indivs in group	1) a 2) a	a, b, e, f, g, h, I, k, l
HWDT, Scotland Phil Johnston BottlenoseHWD <a href="mailto:T@aol.com">T@aol.com</a>	Islay, Loch Indaal, Scotland	Tt	50	7		Colour slides,  Colour slides, Video	Time, date, location, grp size; other indivs in group	1) a 2) a	a, b, c, d, f, o
UCC, Eire Simon Ingram <a href="mailto:s.ingram@ucc.ie">s.ingram@ucc.ie</a> Emer Rogan <a href="mailto:E.rogan@ucc.ie">E.rogan@ucc.ie</a>	Outer Shannon Estuary, Eire	Tt Oo Gg	1000	300	2-5Mb	Colour slides	Time, date, location, group size; other indivs in group	1) ? 2) ?	a, b, c, d, e, f
DMP, England Jo Wharam	Durlston, and local Dorset coast, England	Tt	60	27 (12 well)		Colour slides	Time, date, location, est.	1) b	a, b, c, d, o

<a href="mailto:jodmp@aol.com">jodmp@aol.com</a>				marked)		Slides, video	group size; other indivs in group	2) c	
CRRU, Scotland Kevin Robinson <a href="mailto:Kev.robinson@crru.org.uk">Kev.robinson@crru.org.uk</a>	Moray Firth – outer southern sector, Scotland	Tt Ba Gg Oo Mn Ha Lal	6000 200 (+250 misc.)	186 29 7 8 1 2 28	80- 140Kb  350dpi	Colour slides, prints  Prints, slides, electronically	Time, date, location, group size; other indivs in group	1) a ? 2) a ?	a, b, c, d, o ??
Nick Tregenza <a href="mailto:nick@cheloniamon.co.uk">nick@cheloniamon.co.uk</a>	Cornwall, England	Tt	50	20		Colour prints, slides	date, location	1) ? 2) ?	Contribution to Channel Tt catalogue
University of Bergen, Norway Nils Øien	Norwegian waters	Mn	500	190		Colour slides	date, location, others in group?	1) ? 2) ?	a, b, d, e, f, n, o ??
University of Göteborg / Hvalsafari Erland Lettevall <a href="mailto:Erlan.lettevall@kfmf.gu.se">Erlan.lettevall@kfmf.gu.se</a>	Norwegian Sea	Pm	c. 3000	300	2800- 4000dpi	B/W negatives, sometimes electronically archived	Time, date, location, group size, body length, related species	1) a? 2) a?	a, b, c, d, e, f
University of Aberdeen Paul Thompson <a href="mailto:lighthouse@adbn.ac.uk">lighthouse@adbn.ac.uk</a>	NE Scotland	Tt	1600	500 (150 well marked)	4 Mb  1100dpi	Colour slides  Slides Electronic '00	Time, date, location, group size; other indivs. in group	1) b or c 2) c	a, b, c, d, e, f, g, h, j, k, l, m, n, o
SSMG, Scotland Paul Fisher <a href="mailto:prfisher@lineone.net">prfisher@lineone.net</a>	Shetland, NE Scotland, Faroes Channel Scotland	Oo** Pm Mn Gg** Lal	c.30 1 c.5 c.5 c.2	30 in total	150Kb  250dpi	Prints Slides Video	Time, date, location, group size; other indivs. in group	1) a 2) b	Contribution to Oo catalogue
SWF, UK Peter Evans, Mick Baines, Emily Lewis- Brown	North Sea, W Ireland Shetland Hebrides	Gme Oo Oo Gg Lal	c. 30 c.20 c.60 c.200 c.50	10 10 15 60 c.20	10-60 Mb  up to	Colour slides Colour slides Slides, prints Colour slides Colour slides	Time, date, location, group size; other indivs in group	1) a 2) a	a, b, c, d, e (Tt), f (Gg, Oo, Tt), h (Ba), o

Peter.evans@zoo .ox.ac.uk	Moray Firth Cardigan Bay Various around UK	Ba Tt Tt Dd	c.500 c.500 c.1500 50	c.60 c.150 c.200 30	4,000 dpi	Colour slides Colour slides Slides, prints Slides, video			
SDWF, Eire Simon Berrow <a href="mailto:sdwf@oceanfree.net">sdwf@oceanfree.net</a>	River Shannon Galway Bay Cork Harbour  Loop Head, Blaskets, Aran Is., south Connemara	Tt   Dd	275prints 40slides  71prints, 80slides	99   c.10	5-40 Mb  1200dpi	Colour& b/w prints, slides, negatives	Time, date, location, group size; other indivs in group	1) a  2) a	b, c, d, o
Gerard Gauthier Gerard.gautier6 @fnac.net	North France	Tt	27	20	??	Colour slides	Time, date	1) a ?  2) a ?	Examination of population in Mont St Michel bay
Alison Gill, Scotland agillm@aol.com	Hebrides, Scotland	Ba Oo	600prints 70prints	70 5	??	Colour prints	Time, date, location, grp size; other indivs in grp	1) a  2) a	a, b, c, d, e, m ??
Sarah Canning, Aberdeen	Aberdeenshire, NE Scotland	Tt	c. 200			Colour prints, slides	Time, date, location, grp size; other indivs in grp	1) a  2) a	a, b, c, d, e, m ??

**TABLE 3b). DETAILS OF  
CATALOGUE: SW EUROPE**

Organisation, Contact Person, e-mail	Geographical coverage	Spp.	No. of images	No. of animals	File size/ av. Resol.	Media for images and storage	Extra related material	Conditons Of Access 1) position 2) time	Previous purpose/ investigation
ALNITAK, Spain Ana Canadas <a href="mailto:Alnitak@cetaceos.com">Alnitak@cetaceos.com</a>	Southern Spain	Dd Tt Gme Gg Pm Bp Oo Ziph. Pcr	8000 1000 3000 1000 20 25 12 1 2	1000 250 450 350 10 12 9 1 2	1-15 Mb 1900dpi	Colour slides  Slides and electronically (a few)	Time, date, location, group size, other indivs. in group	1) c  2) c	a, b, c, d, e, f, o
UICMM Michel André <a href="mailto:mandre@cicei.ulpgc.es">mandre@cicei.ulpgc.es</a>	Canary Islands	Pm Gg Tt	30 13 25	23 10 20	300Kb - 25Mb 1900- 2500dpi	Colour slides  Colour slides		1) a  2) a	a, b, c, d, e, f, g, h, k, l, n, o
CEMMA, ALFernandez <a href="mailto:cemma@iim.csic.es">cemma@iim.csic.es</a>	Spain, SW Galicia coast	Tt Dd	40 10	30 4	72 to 300p/c m	Colour slides, prints  Some electronic	Time, date, location, group size	1) a  2) a	a, b, c, d, e, f, o
SECAC Vidal Martín, Canaries	GC,T,LG,F,L GC,F,L GC,T GC,T GC GC,F,L GC T	Tt*, Gg*, Sb*, Gma*, Be, Pm*, Me*, Md	2250 1000 750 1250 450 350 110 50	400 200 200 300 20 30 3 2		Colour slides Colour slides Colour slides Col. slides/prts Colour slides Colour slides Colour slides	Time, date, location, group size; other indivs in group*	1) a  2) a	PhD theses on two spp. (Gg,Gm)
CIRCe Renaud de	Offshore in Gibraltar Straits	Gme Dd	500 300	200 100	1-20Mb	Colour slides	Time, date, location,	1) c	a, b, c, d, e, f, g, h, I, k, l, n, o

Stephanis, Spain renaud@teleline.es		Tt Pm Oo	400 300 100	150 12 15	2700dpi	4000 slides 7000 slides scanned	group size; other indivs in group	2) c	
Projecto Delfim Miguel Couchinho and Manuel dos Santos, Portugal <a href="mailto:miguel.nc@clix.pt">miguel.nc@clix.pt</a> , <a href="mailto:manuel@ispa.pt">manuel@ispa.pt</a>	Sado Estuary, Portugal	Tt Dd Pp	2,000 20 10	35 ? ?	10Mb  2000 x 2000dpi	Colour slides  slides	Time, date, location, group size; other indivs in group	1) c  2) a	k, l, n (Tt)
Raquel Gaspar, Portugal <a href="mailto:rakas@mail.telepac.pt">rakas@mail.telepac.pt</a>	Portugal, incl. Sado Estuary, Troia coast.	Tt Pp	1000 <50	60+75? <10	----	Colour slides  slides	Date, location, other indivs. in group;	1) ?  2) b	n (Tt) d (Pp)
Paul Linares. Gibraltar kjplinares@gibnynex.gi	Bay of Gibraltar	Dd	100	70	-----	Colour prints  prints	Time, date, location, group size; other indivs in group	1) ?  2) a	a, e
Museu de Baleia Luis Freitas, Madeira <a href="mailto:lfreitasmb@mail.telepac.pt">lfreitasmb@mail.telepac.pt</a>	Madeira, mainly south coast	Tt Gma Pm	345 280 70	71 30 20	3Mb  2700dpi	Mainly colour slides, video increasingly; Scanning from 2000	Time, date, location, group size	1) c  2) c	a, b, d, e, f, o
MEEReV Fabian Ritter <a href="mailto:meer@infocanarias.com">meer@infocanarias.com</a>	S. of Gomera, Canaries within 5 miles of coast	Tt Gma Sb Md Sf	40 70 95 20 7	30 40 20 10 7	4.5Mb  1200- 2400 dpi	Colour slides  Slides Electronically (10% of slides)	Time, date, location, group size; {other indivs in group}	1) c  2) a	b, d, e, f, l, o
WWA Lisa Steiner, Azores <a href="mailto:info@whalewatchazores.com">info@whalewatchazores.com</a>	Azores	Pm Tt Gg Pc Bp Bm Gma	1500 2000 1500 75 15 11 100	850? ? ? ? 3 2 ?	1.5- 2Mb  1200- 3000 dpi	b/w negs Colour slides  Scanned Pm	Time, date, location, group size	1) c  2) c	Contribution to NAMSC  b, c, d, e, f, l, o

		Gma (cv) Mn Ha Bb Oo Sf Dd Ba Pm (cv)	27 2 30 10 3 500+ 500+ 6 2	? 1 ? ? ? ? ? 2 2		and some Tt			
Univ of Azores, Monica Silva, Azores <a href="mailto:monica@horta.uac.pt">monica@horta.uac.pt</a>	Pico, Faial, Azores	Tt Pm Gma Bm Bp Gg Ha Bb Pcr	705 90 120 200 60 400 60 20 20	120 50 106  110   10	?	Colour slides  Slides	Time, date, location, group size; other identif indivs in group	1) c	Tt Pm – a, b, c, d  Other species: b, c
ESPARTE Noelia Villalba proyectocetus@wanadoo.es	North Central Alboran Sea, southern Spain	Dd Tt Gme Bp	2000 150 180 20	5	----	Colour slides  Slides electronically	Time, date, location, group size; other identif indivs in group	1) c	a, b, c, d, e, f, g, l, o
AMBAR J.A. Vazquez ggbvaboj@lg.ehu.es	Algeciras and Tarifa, Spain	Pm Sc Oo Tt Dd	8 1 6 29+ 2		----	Colour slides  Colour slides	Time, date	----	----
Whalesense Jim Boran England Jim.boran@umist.ac.uk	SW Tenerife, Canary islands	Gma	10,000	495	-----	Colour negs 10%, B/w negs 65%, Colour slides 25% Prints	Time, date, location, group size; other identif indivs in group	Permission to use should be sought	f ??

						slides			
Sonia Mendes Soniamendes22@ hotmail.com	Azores, central group {Portugal}	Tt Pm Gma	30 30 2(?)	30? 30? 4?	-----	B/w prints and negatives, colour slides  B/w prints and negatives, colour slides	Time, date, location, group size; other identif indivs in group	1) a  Other images avail. through Univ. of Azores	a, d, f, o
CEMU V́ctor Alcalá cemucadiz@worl donline.es	Gulf of Cadiz, South-western Spain	Dd Sc Gg Gme	10? 10? 10? 10?	60 40 20 30	?	Colour prints, colour negatives, b/w prints, b/w negatives	Time, date, location, group size; other identif indivs in group	?	?
ANSE Pedro García <a href="mailto:Anse-cartagena@wanadoo.es">Anse- cartagena@wanad oo.es</a>	South of Murcia, South-eastern Spain	Dd Tt Gg Gme	2 20 20 10	1 8 8 4	?	?	?	?	?
Atlantic Blue Bern Braderlau atlanticblue@airte l.net	Gomera, Canary Islands	Dd Tt Sfr Sbr Gma Bbo Bmu Egl	50 350 50 70 200 10 3 1	30 150 40 50 150 3 3 1		Colour slides			
Tenerife Conservación Manolo Carrillo monachus@mixm ail.com	Canary Islands	Tt Gma Md Be Sb Sf Dd Per Bp Mn	500 700 100 70 100 200 100 60 15 25	159 100 25 2 30 50 20 12 1 1	?	Scanned Md and Tt  Colour slides	Time, date, location, group size	1) c  2) b	a, b, c, n, o

Univ. of Valencia Toni Raga Toni.raga@uv.es	Valencia, Eastern Spain	Tt Gg	2 2	1 2	?	Colour slides		1) ? 2) a	From strandings
Fundación Bitácora Diego Maldonado fbitacora@teleline.es	Western Alboran Sea	Dd Tt Gme Oo Sc	150 50 200 3 20	15 5 25 1 5	?	colour slides, colour prints, B/W prints, Colour negatives, B/W negatives, video and digital video	Time, date, location, group size, other identif. indivs. in group	1) c 2) b	a, b, c, d, e, f, k

**TABLE 3c). DETAILS OF  
CATALOGUE: SE EUROPE**

Organisation	Geographical coverage	Spp.	No. of images	No. of animals	File size/ av. Resol.	Media for images and storage	Extra related material	Conditions Of Access: 1) Locality and 2) Date	Previous purpose/ investigation
Tethys, Italy Sabina Airoidi <a href="mailto:Sabina.airoidi@jol.it">Sabina.airoidi@jol.it</a>	Ligurian Sea, Mediterranean	Gg Pm Gme Tt Zc Dd	5000 150 200 300 30 4	310 26 35c. 60c. 10c. 1	-----	Colour slides  Slides electronically	Time, date, location, group size; other indivs in group	1) ? 2) ?	?
Tethys, Italy Giovanni Bearzi <a href="mailto:bearzi@inwind.it">bearzi@inwind.it</a>	N Adriatic Sea, Mediterranean	Tt Dd	c. 25,000 c. 50	150 4	-----	Colour slides  Slides	Time, date, location, grp size; other indivs in group	1) c 2) c	?
Tethys, Italy Elena Politi <a href="mailto:epoliti@inwind.it">epoliti@inwind.it</a>	E Ionian Sea, Mediterranean	Dd Tt Bp	15,500 5,000 60	100 50 6	-----	Colour slides  Slides	Time, date, location, grp size; other indivs in group	1) ? 2) ?	?
Tethys, Italy Margherita Zanardelli <a href="mailto:marghez@tin.it">marghez@tin.it</a>	Ligurian Sea, Mediterranean	Bp	12,000 1,650	380c.	-----	Mostly B/w prints, few colour prints, b/w negs.	Time, date, location, grp size; other indivs in group	1) ? 2) ?	?
PCRI, Greece Alexandros Frantzis <a href="mailto:afrantzis@otenet.gr">afrantzis@otenet.gr</a>	Greece, SW Crete & Gulf of Corinth	Pm Zc Gg	200 50 50	40 10-15 10-15	15Mb  2700dpi	Colour.slides; some colour negs, prints  Slides and partly electronically	Time, date, location, grp size; other indivs in group	1) ? 2) b or c	??  have been involved in NAMSC catalogue

Marina Pulcini, Italy mpulcini@rdn.it	Ionian Sea, Lampedusa Island	Dd Tt	90 110	60 90	-----	B/w negs, colour slides, video  As above and electronically	Time, date, location, grp size; other indivs in group	1) ? 2) ?	??
GECEM Jean-Michel Bompar Jeanmichel.bomp ar@wanadoo.fr	French part of Ligurian Sea	Gg	1750	250	-----	Colour slides mainly; some colour and B/w prints, negs. Slides;scanning in progress	Time, date, location, grp size; other indivs in group	1) ? 2) ?	b, d, g ??  Environ. data logged
GECEM Frank Dhermain dhermain@club- internet.fr	Provence and Corsica, France	Tt	2,500	250	1.5 to 2 Mb  2800dpi	Prints slides and electronically	Time, date, location, grp size; other indivs in group	1) ? 2) c	With EPHE/ Beaubrun
GREC, France Alexandre Gannier assgrec@cote- dazur.com	W and Central Mediterranean (0 deg E to 20 deg E)	Bp Pm Gg	900 25 350	140 25 160	0.6 Mb  1000dp	Colour slides; some B/w negs.  Slides Scans for Gg	Time, date, location, grp size; other indivs in group	1) a 2) a	c, f (Pm)  Sex (Gg) ??
EPHE, France Pierre Beaubrun beaubrun@crit.u niv-montp2.fr	North occidental Mediterranean (French-Spanish frontier to north of Sardinia)	Bp Gg Tt Gme Pm	150-180 c.500 c.150	50-70 150-200 70-80	??	Mainly b/w prints and negs, some colour slides and prints  Prints – all Bp, most Gg; slides – all T.t, some B.p, Gg	Time, date, location, grp size, other indivs in group	1) ? 2) ?	b, c ??
Christophe Guinet, France c.guinet@utas.ed u.au	Ligurian Sea, Mediteranean	Bp	c.300	17	-----	Colour slides and prints  Slides and prints	Time, date, location, grp size; other indivs in group	Need to discuss	??
Barbara Mussi,	Islands of Ischia and	Dd	c.300	20	1.5 Mb	Colour	Time, date,	1) ?	??

Italy studiomare@poi ntel.it	Ventotene, Italy	Tt Gg Gme Pm Bp	c.100 c.100 c.150 c.10 c.100	15 12 6 2 12	300dpi	slides+60 hrs video  Prints, Slides, Video, and electronically	location, grp size	2) ?	
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### Key to Tables 3a), b), and c)

1. Species have the following scientific name abbreviations:

Mn = Megaptera novaeangliae  
Bm = Balaenoptera musculus  
Bp = Balaenoptera physalus  
Bb = Balaenoptera borealis  
Be = Balaenoptera edeni  
Ba = Balaenoptera acutorostrata  
Eg = Eubalaena glacialis  
Pm = Physeter macrocephalus  
Ha = Hyperoodon ampullatus  
Zc = Ziphius cavirostris  
Mm = Mesoplodon mirus  
Mb = Mesoplodon bidens  
Md = Mesoplodon densirostris  
Me = Mesoplodon europaeus  
Gme = Globicephala melas  
Gma = Globicephala macrorhynchus  
Pcr = Pseudorca crassidens  
Oo = Orcinus orca  
Gg = Grampus griseus  
Sb = Steno bredanensis  
Tt = Tursiops truncatus  
Dd = Delphinus delphis  
Sc = Stenella coeruleoalba  
Sf = Stenella frontalis  
Lal = Lagenorhynchus albirostris  
Lac = Lagenorhynchus acutus  
Pp = Phocoena phocoena

2. The no. of reasonable quality images available is given for each species.
3. Approximate estimate of the number of separate individuals represented by the images taken. Where this is completely unknown, a question mark is given.
4. The media used for storage of original images: prints, negatives, slides, video (Hi 8, VHS, or digital) or a combination of these. It is also specified whether they are stored electronically, and if so, the approximate number stored in this way.
5. File size/Average Resolution of digital images: the file size occupied by an average image is given in terms of Kb or Mb (or an approximate range if the values differ greatly); the average resolution at which images have been scanned are given in pixels/cm or dpi.

6. Extra related material: information is given on which of the following data have been collected: time, date, location, group size, other identified individuals in the group.
7. Conditions of Access: All images entering the European database would include a reference number, contact details (of photographer or approved catalogue manager), locality and year at which the photograph was obtained:
  - i. The locality may be expressed as a) co-ordinates (degrees and decimal minutes), b) region using ICES grid cells at a scale of 1 degree of longitude and 30 minutes of latitude; or c) broad categories such as northern North Sea, Irish Sea, or Aegean Sea, etc.
  - ii. The time at which the image was taken may be revealed as: a) day, month, year; b) month and year only; or c) year only.

Any further details would be available only from the owner of the image/catalogue manager.

8. Present purpose/previous published analysis: reasons for investigation by photo-ID are summarised using the following letters: a) individual distribution, b) ranging movements, c) site fidelity, d) habitat use, e) abundance – mark-recapture or total count, f) social structure (including mother-calf and other associations), g) birth and death rates, h) DNA studies, i) diet, j) pollutant loads, k) acoustics, and l) behaviour, m) epidemiology, n) population dynamics, and o) conservation and management.

## **4. DIGITAL STORAGE REQUIREMENTS**

Two levels of information are proposed: one for participants, members and contributors to Europhlukes, and one for the general public.

It was agreed in Liege at the 2<sup>nd</sup> EUROPHLUKES meeting, that the associated database for all contributors would have a number of mandatory fields that should be completed for every image, and some optional fields. These are detailed in Table 4 below. The precise location will not be available to the public, but instead a "regional sea" will be extracted from it. Similarly, the date that the image was taken would not be made generally available, only the year.

### **4.1 Scanning**

The scanning criteria are:

- a) For unsorted images (those who haven't analysed and classified their images yet), scan all those that are of good quality, sufficient to identify features.

b) For existing catalogues, scan the best of each animal, both sides, and one (each side) per year at least. If a change is noticed (new nick or notch, etc), scan also one just before and one just after the change.

There exist three different measures for resolution:

- SPI (samples per inch) is scanner resolution. To scan an image the scanner performs sampling (of portions of) the image. The more samples it takes per inch, the closer the scan is to the original image.
- PPI (pixels per inch) expresses the resolution of a monitor. It gives the number of pixels the monitor can display per inch.
- DPI (dots per inch) is a measure of the resolution of a printer. It properly refers to the dots of ink or toner used by some printing device to print your text and graphics. In general, the more dots, the better and sharper the image.

These measures have always been a major source of confusion as they are being used without much care. For example, the documentation of most scanner software speaks of DPI rather than SPI. Below, we will use SPI for scanner resolution.

The input analogue image (slide, positive, or negative) is measured in inches, the scanner resolution in SPI (samples per inch), and the output size of a digital image in pixels. Depending on the quality of the monitor or printer this results in a displayed or printed image of a given size.

Another important quantity is the number of bits per pixel (colour depth). It is advised to use a colour depth of 24 bits per pixel for colour images, and 16 bits per pixel for grey-scale.

We suggest that you choose a scanner resolution independent of the size of the cropping area. That means that a smaller cropping area will result in a smaller image (less pixels). Cropping can be done either before or after scanning, the result will be the same (same total number of pixels, same pixel values).

Once the scanner resolution ( $R$  in spi) and the size of the cropping area (width  $w$  in inches) are fixed, the width ( $W$  in pixels) and height of the digital image in pixels can be computed:  $W = R \times w$  (same for height). It depends on your screen resolution at which size a digital image will show on your screen, and on the printer resolution at which size it will print. Most scanner software allows you to specify a printer resolution (or output size). You can use it if you want, as long as it will not affect the scanner resolution.

To compute the size of an uncompressed image file, one may use the formula:

$$\text{Size (in bytes)} = H \times W \times (\text{depth}/8),$$

where  $H$ ,  $W$  are the height and width (in pixels) of the digital image and 'depth' the colour depth.

Excellent reading about scanning can be found at the following URL:

<http://www.scantips.com/>

Below, we make a distinction between scanning photographic prints (photos) and scanning negatives or slides. We will express scanner resolution in SPI, but your scanner documentation may use PPI or DPI.

### **Photos**

In case of colour prints it does not serve any practical goal to scan at a resolution above 300 spi. Scanning at a higher resolution will result in a larger image, but it does not contain more significant detail. A high quality grey-scale print could be scanned at 400 spi. At 300 spi, a scan of an 8x10 inch photograph will result in a digital image of 2400 x 3000 pixels (uncropped).

### **Negatives and slides**

Scanning a negative or slide (with a film scanner) will give better results than scanning the print. Most film scanners will scan both slides and negatives. We suggest you scan negatives and slides at a resolution of 1600 spi. Resolutions beyond 2400 spi are of no practical value but give huge image files (over 20 megabytes for a colour image!)

There exist many different image formats. A very readable and useful discussion can be found at the following URL:

<http://www.scantips.com/basics09.html>

We recommend that you use neither JPEG nor GIF. If your scanner software allows it, use PNG, otherwise use TIFF (with LZW compression).

## **4.2. Database Fields**

Save the image with the **EUROPHLUKES ID** as the file name. For the EUROPHLUKES code, please remember that it will be a catalogue of images rather than a catalogue of animals, so each image (even if you are sure that it belongs to the same animal) should have a different EUROPHLUKES ID code.

Many catalogue holders will already have their own **INTERNAL (LOCAL ID)** Code. This should constitute the second field in the database, and refers to the unique number or combination of letters and numbers that you have given to that particular image. You will probably have your own system for linking two or more images that you consider are the same individuals in your catalogue (for example an additional **Individual ID** code/name).

The EUROPHLUKES code should start with the initials of the species depicted, using scientific names, viz. MN = *Megaptera novaeangliae*, humpback whale, followed by underscore, followed by your agreed initials for the organisation/body you represent, viz SWF = Sea Watch Foundation, followed by underscore, followed by a unique number.

Here is the completed example: MN\_SWF\_00001.

Whether it is a PNG or TIFF will be appended automatically to this, once saved in that format. Ensure that five digits are used to signify the number (to allow for catalogues increasing to 99,999). This information will form one field of the linked database to be held in ACCESS on the central server.

The unique identifier code could add a, b, c, etc for images of the same individual where more than one feature is needed to identify it (e.g. fin whale identification by chevron and fin markings).

Before participating, please send to Peter Evans (NW Europe), Ana Cañadas (SW Europe) or Simone Panigada (SE Europe) the letters that will identify your group or institution (up to 4 letters) so we are sure that two persons are not using the same code. Place the information in an Access database that we can provide you with, or if you do not possess Access, use an Excel spreadsheet that any of the three regional co-ordinators can provide.

A **SPECIES** field (using the same abbreviation system for species as in the EUROPHLUKES code) will generate the full scientific name and common English name. It could also include vernacular names from other languages as well if requested.

**TABLE 4. PROPOSED FIELDS IN ASSOCIATED DATABASE**

<b>Essential fields: Available also to the public:</b>	<b>Highly desirable<sup>1</sup> fields: Password protected &amp; available only to members of Europhlukes<sup>2</sup>:</b>	<b>Other recommended fields: Password protected &amp; available only to members of Europhlukes<sup>2</sup></b>
Europhlukes ID code	Actual Co-ordinates	Gender
Internal (local) image code	Day	Subgroup size
Species	Month	Time of Day
Data source holder details	Associated Individuals (Indiv. ID No.)	Age Class
Regional Sea	Type of study <sup>3</sup>	Mother-Calf link
Year		Genetic sample taken
Status: Dead / Alive at time of photo taken		Diet sample taken
Features: ventral or dorsal aspect, left or right side, etc		Contaminant sample taken
		Audiogram taken
		Morphometrics available

<sup>1</sup> Catalogue holders are encouraged to enter these data at this stage if they have them, since <sup>2</sup> Access to this information entirely by agreement of source holder; this will save them time in the future and facilitate collaborative analyses

<sup>3</sup> This information will be derived through a questionnaire circulated to all catalogue holders

The next field will have the **DATA SOURCE HOLDER** details, abbreviated in the same way as in the EUROPHLUKES image code. A pop-up menu or some other linkage will enable the user to locate full contact details: a contact name, full name and address of the organisation, telephone and fax numbers, e-mail address, and web-site. The area of coverage and period of coverage would also be provided. These are essential for the Europhlukes Database, but optional additional information could include typical research usage of the images by the organisation, and any relevant recent publications or sources of further information.

Then will come the **LOCATION**, at two different scales of resolution. Essential for open access should be the **REGIONAL SEA** in which the image was taken (see list below); Highly desirable (password protected, and with access only within the EUROPHLUKES Consortium at the discretion of the data source holder) will be the actual **COORDINATES** in degrees and decimal minutes (east or west of Greenwich meridian being recorded as + and - respectively).

**TABLE 5 LIST OF REGIONAL SEA CODES**

---

Davis Strait (DAVS)
Baffin Bay (BAFB)
Greenland Sea (GRES)
Barents Sea (BARS)
Norwegian Sea (NORS)
Baltic Sea (BALS)
Skagerrak (SKAG)
Kattegat (KATT)
northern North Sea (NONS)
southern North Sea (SONS)
English Channel (ENCH)
Celtic Sea (CELS)
Bristol Channel (BRCH)
St George's Channel (STGC)
Irish Sea (IRIS)
North Channel (NOCH)
Sea of Hebrides (SOHE)
Minches (MINC)
Eastern North Atlantic (ENAT) – this could be divided into Atlantic Ireland (ATIR), Atlantic Iberia (ATIB), Azores (AZOR), Madeira (MADE), and Canaries (CANA)
Bay of Biscay (BOBI)
south-western Mediterranean Sea (SWMED)
Balearic Basin (BALB)
Gulf of Lions (GLIO),
Ligurian Sea (LIGS)
Tyrhhenian Sea (TYRS)
Adriatic Sea (ADRS)
Ionian Sea (IONS)
southern Mediterranean Sea (SMED)
south-eastern Mediterranean Sea (SEMED)
Aegean Sea (AEGS)
Sea of Marmara (SEMA)
Black Sea (BLAS)

---

The next set of fields would give the date that the image was taken at two scales of resolution. Essential for entry into the Europhlukes Database, and with open access, is the **YEAR** (viz 1999 or 2002); Strongly encouraged, for use within the EUROPHLUKES Consortium at the discretion of the data source holder, is the **MONTH** (viz 01 for January, 12 for December); and **DAY** (viz 01 for 1st of the month, or 30 for 30th of the month).

The next field will provide information on the **STATUS** of the animal, whether it was photographed dead (e.g. washed ashore) or alive. This is essential information for the EUROPHLUKES database.

Finally, the **FEATURE** which the image depicts will be categorised as follows: dorsal fin left side (FL), dorsal fin right side (FR), body left side (BL), body right side (BR), head left side (HL), head right side (HR), tail ventral surface (TV), tail dorsal surface (TD), above the animal (A), and other (O). This is also essential for EUROPHLUKES.

Any other fields would be **OPTIONAL** and stored only on the local catalogue holder's server for their own research use (or others with their permission). These include: Individual ID number (a unique local catalogue code ascribed to a particular individual), Time of day (using 24-hr clock), Gender, Age, Sub-Group Size, Individual ID numbers for any companions in the group, Mother and Calf link, Genetic, Diet, or Contaminant sample taken, Audiogram available, etc. Although not directly part of the current EUROPHLUKES Project, catalogue holders are encouraged to include this information in their own local databases during assembly so that in the future this should facilitate other types of analysis.

In these various latter cases, protected fields can be built in, available only by passwords. An agreement can then be drawn up between data holders as to who will conduct analyses, with a similar agreement for contributors.

A few fields stored on the central server will be accessible to anyone (see Table 4). All others require contact with the catalogue (data source) holder who decides whether or not to release any further information. They have three options:

The information can:

- a. be used only by the owner
- b. be made available to the consortium
- c. the type of data available simply noted (using a complete list of optional fields), and then the person can be redirected to the owner

### **4.3 Security**

It is recommended that images and associated data be copied onto two CD's, one for submission to the co-ordinator for that region (Simone Panigada – SE Europe, Ana Cañadas – SW Europe, and Peter Evans – NW Europe), the other being retained as a back-up of your images.

## **5. CONDITIONS OF ACCESS**

At the EUROPHLUKES workshop held in Leiden in December 2001, a number of collaborators had expressed concerns about the level of detail of the data associated with the images that would be made available publicly.

As a result, it was generally agreed that all images entering the European database would include a reference number, contact details (of photographer or approved catalogue manager), the locality and year in which the photograph was obtained in a central database containing jpeg images that could be accessed freely but which would be watermarked to avoid unattributed use.

The locality would be expressed as a regional sea such as Baltic Sea, North Sea, Irish Sea, English Channel, Bay of Biscay, Ligurian Sea, Aegean Sea, etc. Catalogue holders were asked to indicate by the letters a), b) or c) whether they would be happy for general access to a) actual co-ordinates; b) ICES grid; or c) Regional Sea. This information is provided in Table 3a, b, and c.

Further details would be available only from the owner of the image/catalogue manager.

## **6. PERFORMANCE OF EUROPHLUKES SYSTEM**

The system will have various functions, one of which is to enable mark-recapture analysis. The queries that are basic to mark-recapture analysis have been documented in a separate document.

The Europhlukes system will function both at sea and online, and therefore will be implemented and distributed on CD and on the Internet as an interactive site.

Based on the presentations and the discussions during the conference in Madeira 2002, the performance of the system is proposed as follows:

Data-entry should be conducted off-line and it should be possible for users to import and export the data out of and into their local research databases. Off-line data entry will result in a batch file, to be uploaded once a connection has been made with the central server.

Off-line queries and off-line matching will be carried out against a mirror of the database, distributed on CD, at least once a year, so that photos will be matched against material that is no older than 1 year.

On-line queries and on-line matching will be processed within 24 hours.

It should be noted that the detailing of the performance of the system will continue in Work Package No. 3, Development of Conceptual Design.

## 7. FUTURE MAINTENANCE

It is proposed that access to the system will be limited to the consortium and its members during the development phase, that is, in the period ending November 2004. During this time, the contract with the European Union is binding, which basically means that each contributor keeps the ownership of knowledge and material supplied to the Europhlukes project.

In November 2004 the contract ends, and a construction will have to be found for future maintenance of the system. This might involve setting up a foundation or any other body, or possibly handing over the responsibility of the system to an existing organisation. As the separate contributors keep the rights to their material, any future construction will have to be based on agreement with the contributors.

As yet, insight into the advantages and disadvantages of the various constructions is insufficient and the preferences of the various contributors and end-users is not yet known. It is proposed that at this stage, the consortium cannot make a decision on this issue and will refrain from doing so.

Finding out the advantages and disadvantages of the various options is part of the Work Package no 9, for which Leiden University is responsible. In 2004, Leiden University will present various constructions and the consortium will decide on the construction and form of future maintenance. In the meantime, the following proposal has been made:

### A) PROPERTY RULES

Property Rules (see EUROPHLUKES contract ANNEX II (General Conditions), part B (Rules relating to intellectual and industrial property, publicity and confidentiality), Article 9 (Ownership of knowledge) and Article 10 (Protection of knowledge):

Database, CD-ROM and Internet System software developments:	MARIS
Picture recognition and Watermarking:	CWI
Meta-Data records and Pictures:	Submitting partners

### B) REQUIRED MAINTENANCE OF EUROPHLUKES SYSTEM ON THE INTERNET

- Checking of new submitted pictures and meta-data records
- Filling of the Central Database with the new records and pictures; the Central Database(s) will always be on the Internet System.
- Maintenance of the Central Database(s)
- In case new organizations/institutes/persons are submitting pictures and records: updating of the concerning fields/parts within the system
- Help Desk for questions
- Use of server
- Possible software updates
- For all these maintenance, specific IT-skills are required

Regarding the matters mentioned above, it is clear, that the Internet System can not be easily transferred to another server.

Only the meta-data records and pictures (THUS NOT THE DATABASE STRUCTURE) can be placed without problems on another server.

**Maintenance Costs involved after the end of the Project:**

In case the total Internet System will stay on the MARIS Server after Project End, MARIS will guarantee FREE Access to the public and private parts of the Internet System by the partners and all others authorized by the Consortium.

In case grants can be obtained (should be part of the Exploitation Plan), than MARIS will require a moderate financial contribution.

In case the decision will be made, to put the total Internet System on another Server, MARIS will require Yearly License Fee/One License Fee for the software developed by MARIS within the EUROPHLUKES Project. The amount of the License Fee will depend on grant possibilities after Project End. After transferring of the Internet System to another server, MARIS will have no more responsibility of the system.

Regarding the software for Picture Recognition and Watermarking, this is a matter for CWI to decide.

In case only the meta-data records and pictures must be transferred to another organization, MARIS will charge NO COSTS for the activities involved.

**C) REQUIRED MAINTENANCE OF EUROPHLUKES SYSTEM ON CD-ROM/DVD**

- After 1-2 years up-dating of the meta-data records and picture databases
- Possible up-dating of the software involved within the CD-ROM/DVD
- Software Integration of new records and pictures (relational databases)
- Production of new “mother” CD-ROM’s/DVD’s
- Production (copying) of new CD-ROM’s/DVD’s form the “mother”
- Help Desk for questions

MARIS will execute FREELY for:

- Acting as help desk
- Updating of software links
- Transfer of databases from Internet System

However, for the Production of the New CD-ROM’s/DVD’s, grants are required, because this should be done by a third, external party. This must be part of the Exploitation Plan.

**APPENDIX**

**CURRENT LIST OF CATALOGUE HOLDERS  
PARTICIPATING IN THE EUROPHLUKES PROJECT**

**a) North-west Europe**

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