

European Seabirds at Sea Database Coding Manual

Version 5 proto

As a result of the 7th ESAS co-ordination group meeting in Kiel a number of changes to the codes and additions to the fields used were agreed. This manual is an update to version 2 of the manual dated 18 April 1993, and should be used when preparing data for updates to the database until further notice. Please contact UK SAST in Aberdeen if there are any errors or changes which need to be made to this list of codes.

It will be the responsibility of each organisation to ensure that all their data have been checked and corrected, and that no codes other than those in this manual are used. It is expected that data will be sent in one of the following formats: ASCII comma delimited, Paradox, or DBASE. If you are unsure how to copy data to one these formats, please contact the ESAS database manager (currently UK SAST in Aberdeen) before sending data. Data must be presented with the fields in the order below, and using the same names if presented in Paradox or DBASE format. ASCII coded data must be presented with a comma between each field and each field in the same order as the structure given below.

Changes since version 2 of the database

Since version 2, it has been agreed that we should move to a three table structure of the database. This moves the database to a better relational structure which removes most (but not all) of the repeated information from, in particular, the old base tables.

In the TRIP table we have added four new fields: Base_name, Observer_name, No._observers and Use_of_binoculars. The first field allows assessments to be made of the effects of different types of ships on the quality of observations. Observer_name is the much needed field which will allow us to attempt to get a handle on inter-observer variability in our data. The No._observers field allows us to log store information on the number of observers searching and the last field records if binoculars were used for searching.

In the POSITION table we have added a Tripkey field to relate to the above table. The positional information is changed so that only two fields store the information instead of five. The only other field to be added is one to describe the presence of fishing vessels.

The SPECIES table includes two new fields: the direction of travel for the bird / cetacean and an association code. There follows a discussion about two different methods for storing information about age, plumage, moult and sex.

Database Structure

For each month (January - December) a trip, position and species file are used, the contents of the fields of which are detailed below. The data have been split into three subsets for two main reasons:

- (i) it saves a considerable amount of file storage space and also speeds up queries.
- (ii) storage of the area surveyed with the number of birds could lead to analysis problems by overestimating the area surveyed in total.

Please note that the database structure used assumes that there is only one position record for a time period. Operating different width transects for different species at the same time will therefore cause great problems with analysis. This is a database constraint resulting from the logical data design

used, and is independent of the physical file structure (e.g. DBASE or Paradox) which is used to organise the data. All records should have a value for each field.

In the table structures, N represents numeric fields, S represents short numeric fields, A represents alphanumeric fields followed by a number representing the maximum number of characters to be used. *indicates field containing unique values for these data (key fields).

TRIP TABLE

1. Tripkey	N*
2. Base_type	S
3. Name_of_ship	N
4. Day	S
5. Month	S
6. Year	S
7. Transect_width	S
8. Observer_name	S
9. Number_of_observers	S
10. Species_observed	S
11. Count_type	S
12. Use_of_binoculars	S

1. Tripkey N*

A unique number to identify each record in the trip tables. The number is unique within the whole data set; that is, numbers are not repeated for each month. Key values will be assigned by the organisation responsible for data updates.

10,000,001 - 19,999,999	JNCC, RSPB, CSR Consultancy (UK)
20,000,001 - 29,999,999	NIOZ, Alterra, NZG, CJC Consultancy (NL)
30,000,001 - 39,999,999	Omis Consult (DK)
40,000,001 - 49,999,999	NINA (N)
50,000,001 - 59,999,999	Vogelwarte Helgoland (D)
60,000,001 - 69,999,999	University of Lund (S)
70,000,001 - 79,999,999	Vrije Universiteit Brussel (B)
80,000,001 - 89,999,999	Rijkwaterstat, Tidal Waters Division (NL)
90,000,001 - 99,999,999	NERI (DK)
110,000,001 - 119,999,999	INB (B)
200,000,001 - 209,999,999	University of Cork (IRE)

2. Base_type S

The platform used for carrying out observations

1	Ship
2	Helicopter
3	Aeroplane

3. Name_of_ship S

A code to represent the name of the ship or type of aircraft. A separate coding list or database table must be provided containing information on the code, the full name of the ship or aircraft (e.g. Partenavia observer) and a basic description of the type of ship (e.g. ferry, fishery protection, research, chartered ship). For the present, we can work with each data

provider giving their own code, I recommend starting at 100, for each of the ships they used. There will be a degree of overlap, where different groups have used the same ship (e.g. R.V. Dana, M.V. Gorm), however, these codes can be addressed once we have received all the different codes.

4. Day S

The day of the month (1 - 31)

5. Month S

The month (1 - 12)

6. Year S

The year, two digits ('79 onwards)

7. Transect width S

The width of the strip transect in metres

8. Observer_name S

As with the Name_of_ship field, this is a numeric code to represent the name of an observer. When there is more than one observer, the code given should represent the primary observer; the one who makes the majority of the bird and cetacean observations.

9. Number_of_observers S

The number of observers searching for birds (or cetaceans). If a second person is only writing down observations and not searching, this should be classed as one observer.

10. Species_observed S

The species groups which were being observed in this observation session.

- 1 All species recorded
- 2 All species except Larus Gulls
- 3 All species except Fulmars
- 4 All species except Larus Gulls, Fulmars and Kittiwakes
- 5 Auks only
- 6 Auks and Seaduck only
- 7 All species except Eiders and Gulls
- 8 All species except Gannets
- 9 Other
- 10 Cetaceans only

11. Count_type S

The type of observation being carried out in an observation period.

- 1 Full transect method with snapshot for flying birds
- 2 On water transect, no snapshot for flying birds
- 3 All observations, but no transect operated
- 4 Presence / absence data

5 Full transect, but no scan data for outside the transect.

12. Use_of_binoculars S

The extent to which binoculars were used to detect birds and/or cetaceans

1. No binoculars used for detection of birds or cetaceans
2. Binoculars used for detection of birds and cetaceans far ahead of the ship (e.g. for seaduck and diver surveys)
3. Binoculars used extensively for scanning ahead and to the side, naked eye used for close observations (e.g. for cetacean surveys)

POSITION DATA

1. Poskey	N*
2. Tripkey	N
3. Time_hour	S
4. Time_minute	S
5. Posmark	A1
6. Latitude	N
7. Longitude	N
8. Area_surveyed(km2)	N
9. Km_travelled	N
10. Seastate	S
11. Visibility	A3
12. Floating_matter	S

*indicates field containing unique values for these data (key fields).

1. Poskey N*

A unique number to identify each record in the Position table. The number is unique within the whole data set; that is, numbers are not repeated for each month. Key values will be assigned by the organisation which provided each record in the data set

10,000,001 - 19,999,999	UK SAST
20,000,001 - 29,999,999	NIOZ
30,000,001 - 39,999,999	Omis Consult
40,000,001 - 49,999,999	NINA
50,000,001 - 59,999,999	Vogelwarte Helgoland
60,000,001 - 69,999,999	University of Lund
70,000,001 - 79,999,999	Vrije Universiteit Brussel
80,000,001 - 89,999,999	Tidal Waters Division
90,000,001 - 99,999,999	NERI
100,000,001 - 109,999,999	NZG
110,000,001 - 119,999,999	INB (Belgium)
120,000,001 - 129,999,999	IBN (Netherlands)

2. Tripkey N

The link to the trip information for the position record. Note that each trip record may relate to a number of position records, but that each position record may relate to only one trip record.

3. Time_hour S

The hour component of the time (0 - 23)

4. Time minute S

The minutes component of the time (0 - 59)

5. Posmark A1

A character to represent the status of the base record along the line transect. A line transect is taken to be a continuous series of observations along a line or series of lines.

- S The start of the line transect.
- M A mid-point along the transect, when a new position has been recorded or the speed or course has changed.
- I Also a mid-point along the transect, with a calculated position, but the speed and course have not changed.
- Blank *Ibidem*
- E The end point of the line transect
- L The last base record of the line transect. Similar to E, except the latitude represents the position at the start of this 10-minute period.

6. Latitude N

The latitude of the position in the middle of the observation period in degrees to at least 4 decimal places. Note that this is radically different from the latitude in degrees and minutes, because there are 60 minutes in a degree. A position of 52 degrees and 54 minutes North would be expressed as 52.9000 degrees North in decimal degrees.

The geographical limits shall be 42 - 65 degrees North

7. Longitude N

The longitude of the position in the middle of the observation period in degrees to at least 3 decimal places. Positions west of Greenwich are represented as negative numbers.

The current geographical limits shall be 25 degrees West - 14 degrees East (-25 to +14°).

8. Area_surveyed (km2) N

The area of sea surveyed during the observation period in km². Information should either be calculated from the distance between positions multiplied by the transect width (in km) or from the base speed multiplied by the transect width (in km). A value of zero is attached to base positions for which there are no matching species records (e.g. end points and some mid and start points on the line transect).

9. Km_travelled N

The distance travelled during the observation period in km. Calculated from the distance between positions, the base speed or the area surveyed divided by the transect width (in km). Zero values have the same meaning as in Area Surveyed.

10. Seastate S

- 0 Sea like mirror
- 1 Ripples with appearance of scales, no foam crests
- 2 Small wavelets, crests of glassy appearance, not breaking
- 3 Large wavelets, crests begin to break, scattered whitecaps
- 4 Small waves becoming longer, numerous whitecaps
- 5 Moderate waves, many whitecaps, some spray
- 6 Larger waves, whitecaps everywhere, more spray
- 9 No data

11. Visibility A3

0	No data
A	Poor
B	Fair / moderate
C	Good / very good
D	Excellent / infinity
0.1 - 9.9	visibility in km
10	visibility \geq 10 km

12. Floating_matter S

The presence of fishing vessels during part of the recording period. Highest priority is given to recording floating matter with the highest number. Therefore if a trawler is present on the horizon and a trawler is fishing within 0.5 km of the observation base then the code for the latter trawler is coded as a priority.

* fishing activity is defined as any type of visibly detectable fishing activity. This includes, trawling, purse seining, seining, steaming between static nets or longliner buoys, discarding, a fishing boat moving slowly as if trawling.

0	No data
1	No trawlers observed
2	Presence of some form of ice
3	Angling boat visible at any range
4	Trawler visible greater than 2 km away at its closest point during the observation period.
5	Trawler present, but no other information about fishing activity or distance
6	Trawler present within 2.0 km at its closest point
7	Trawler 2.0 - 0.5 km away at its closest point during the observation period engaged in fishing activity*.
8	Trawler within 0.5 km at its closest point during the observation period engaged in fishing activity*.

SPECIES DATA

1. Species_key	N*
2. Poskey	N
3. Transect_indicator	S
4. Voous	N
5. Number_of_birds	N
6. Behaviour	S
7. Age	A1
8. Plumage/moult	A1
9. Distance	A1
10. Direction_of_travel	S
11. Association	S

*indicates field containing unique values for these data (key fields).

1. Species_key N*

A unique number for each record in the species files. It is not repeated in the different months' files. Key values will be assigned by the source of each record in the data set

10,000,001 - 19,999,999	UK SAST
20,000,001 - 29,999,999	NIOZ
30,000,001 - 39,999,999	Omis Consult
40,000,001 - 49,999,999	NINA
50,000,001 - 59,999,999	Vogelwarte Helgoland
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100,000,001 - 109,999,999	NZG
110,000,001 - 119,999,999	INB (Belgium)
120,000,001 - 129,999,999	IBN (Netherlands)

2. Poskey N

The link to the position table for a species record. Note that each position record may relate to a number of species records, but that each species record may relate to only one position record.

3. Transect_indicator S

- 1 Out of transect
- 2 In transect - also used when no birds are seen during an observation period.

4. Voous code N

Code for species or species group - see separate list of codes.

5. Number of birds N

The number of birds or cetaceans counted or estimated for each record.

6. Behaviour S

What the species was doing when observed (new codes).

Code	Description	Category
0	no data	
4	??	Unknown
5	??	Unknown
8	??	Unknown
11	??	Unknown
19	??	Unknown
30	Holding fish	Foraging behaviour
31	Without fish	Foraging behaviour
32	Feeding young at sea	Foraging behaviour
33	Feeding, method unspecified	Foraging behaviour
34	Wading, filtering or probing	Foraging behaviour
35	Scooping prey from surface	Foraging behaviour
36	Aerial pursuit	Foraging behaviour
37	Skimming	Foraging behaviour
38	Hydroplaning	Foraging behaviour
39	Pattering	Foraging behaviour
40	Scavenging	Foraging behaviour
41	Scavenging at fishing vessel	Foraging behaviour
42	Dipping	Foraging behaviour
43	Surface seizing	Foraging behaviour
44	Surface pecking	Foraging behaviour
45	Deep plunging	Foraging behaviour
46	Shallow plunging	Foraging behaviour
47	Pursuit plunging	Foraging behaviour
48	Pursuit diving, or bottom feeding	Foraging behaviour
49	Actively searching	Foraging behaviour
50	??	Unknown
52	??	Unknown
60	Resting or apparently asleep	General behaviour
61	Courtship display	General behaviour
62	Courtship feeding	General behaviour
63	Copulating	General behaviour
64	Carrying nest material	General behaviour
65	Guarding chick	General behaviour
66	Preening or bathing	General behaviour
67	Colony rafts	General behaviour
68	Kleptoparasitising	General behaviour
69	Haul-out (pinnipeds)	General behaviour
70	Wheeling or swimming slowly	Cetaceans
71	Escape from ship (rooster tail)	Cetaceans
72	Swimming fast, not avoiding ship	Cetaceans
73	Breaching clear out of the water	Cetaceans
74	At the bow of the ship	Cetaceans
75	Apparently feeding: herding behaviour	Cetaceans
76	Apparently feeding: other behaviour	Cetaceans
77	Calf at the tail of adult	Cetaceans
78	Calf swimming freely in herd	Cetaceans
79	Basking, afloat	Cetaceans

80	Spy-hopping	Cetaceans
81	Lob-tailing	Cetaceans
82	Tail/flipper slapping	Cetaceans
83	Approaching ship	Cetaceans
84	Only blow visible (whales)	Cetaceans
85	Only splashes visible (dolphins)	Cetaceans
86	Acrobatic leaps	Cetaceans
87	Sexual behaviour	Cetaceans
88	Play	Cetaceans
89	Sailing	Cetaceans
90	Under attack by kleptoparasite	Misfortune, disease
91	Under attack (as prey) by bird	Misfortune, disease
92	Under attack (as prey) by mar. mammal	Misfortune, disease
93	Escape diving	Misfortune, disease
94		Misfortune, disease
95	Injured	Misfortune, disease
96	Entangled in fishing gear or rope	Misfortune, disease
97	Oiled	Misfortune, disease
98	Sick, unwell	Misfortune, disease
99	Dead	Misfortune, disease
111	NOT foraging	Unknown
121	??	Unknown

Note that the codes have been rationalised for flying birds. Those not flying in a fixed direction are now coded in the same way as birds flying in a fixed direction. This information can now be taken from the "Direction of movement" field.

7. Age A1

J	juvenile
A	adult
I	immature
N	not adult, age not precisely known
2	Second year. Use for birds hatched two summers ago. The split date is 1 June between juveniles and third year birds.
3	Third year. Use for birds hatched three summers ago. The split date is 1 June between second and third year birds.
4	Fourth year. Use for birds hatched three summers ago. The split date is 1 June between third year and adult birds.
X	primary moult (only fulmar, auks, divers, seaduck)
Y	definitely no active primary moult (<i>ibidem</i>)

8. Plumage/moultA1

B	breeding (summer) plumage
W	full non-breeding (winter) plumage
T	transient (moulting winter-summer or <i>vice-versa</i>)
M	male
F	female

Gannet:	1	plumage 1, combine with J juvenile under Age
	2	plumage 2, combine with I immature under Age
	3	plumage 3, combine with I immature under Age

- 4 plumage 4, combine with I immature under Age
 5 plumage 5, combine with I immature under Age

- Guill. & Raz. 1 ½ or less than adult size
 2 over ½ adult size
 3 about same size as adult

- Fulmars & skuas: L double light (phase LL in fulmar), light in skuas.
 D coloured / dark phase (L, D, DD in fulmar, intermediate or dark in skuas)

9. Distance A1

This is the distance at which birds were observed. A 300m transect is assumed for codes A-E, which are for birds on the water only. If other transect widths have been used, code this field as Blank.

Code	Description	Fly/Sea
Blank	No data	F
0	No data	F
4	??	F
A	On water, in 0 - 50m transverse strip	S
B	On water, in 50 - 100m transverse strip	S
C	On water, in 100 - 200m transverse strip	S
D	On water, in 200 - 300m transverse strip	S
E	On water, Beyond strip transect	S
F	Flying. No contact made with water	F
O	??	F
U	??	F
W	On water, within strip transect	S

10. Dir_Ass S

The code represents the direction in which the bird or cetacean is travelling or their association. For animals reacting to the ship, the direction is that when leaving the ship, and not the direction of travel to the ship. For animals travelling toward something they are associated with (e.g. a trawler), the association code takes priority over the direction of travel.

Code	Description	Category
0	no data	
1	Flying, no apparent direction	Direction of flight
2	Heading N	Direction of flight
3	Heading NE	Direction of flight
4	Heading E	Direction of flight
5	Heading SE	Direction of flight
6	Heading S	Direction of flight
7	Heading SW	Direction of flight
8	Heading W	Direction of flight
9	Heading NW	Direction of flight
10	Associated with fish shoal	Associations
11	Associated with cetaceans	Associations
12	Associated with front	Associations
13	Associated with line in sea	Associations
14	Sitting on or near floating wood	Associations

15	Associated with floating litter	Associations
16	Associated with oil slick	Associations
17	Associated with floating seaweed	Associations
18	Associated with observation base	Associations
19	Sitting on observation base	Associations
20	Deliberately approaching observ. base	Associations
21	Associated with other vessel	Associations
22	Associated with or on buoy	Associations
23	Associated with offshore platform	Associations
24	Sitting on offshore platform	Associations
25	Sitting on marking pole or stick	Associations
26	Associated with fishing vessel	Associations
27	Associated with or on sea ice	Associations
28	Associated with land (e.g. colony)	Associations
29	Associated with sand banks	Associations
42	??	Unknown
45	??	Unknown
47	??	Unknown
50	MSFA participant, no further details	MSFAs
51	MSFA participant, joined by others	MSFAs
52	MSFA participant, joining flock	MSFAs
53	MSFA participant, scrounger type	MSFAs
54	MSFA participant, solitary diver	MSFAs
55	MSFA participant, beater	MSFAs
56	MSFA participant, social feeder	MSFAs
57	Type II MSFA participant	MSFAs
58	Type III MSFA participant	MSFAs

11. Prey S

This code represents any attempt at identifying prey seen to be carried or captured by the animals observed

Code	Description	Category
9	Other item	
10	fish, no further details	F
11	small fish, unidentified (ca. bill length)	F
12	medium fish, unidentified (ca. 2-5x bill length)	F
13	large fish, unidentified (difficult to handle)	F
14	feeding sandeel ball at surface	F
15	feeding clupeoid ball at surface	F
16	feeding unidentified fish ball at surface	F
20	gurnard	F
21	herring or sprat	F
22	sandeel	F
23	gadoid fish	F
24	flatfish	F
25	regurgitated fish after aerial pursuit	F
26	salmonid	F
27	capelin	F
28	??	
30	small particles, unidentified	O

31	large object, unidentified	O
32	jellyfish	O
33	squid	O
34	worm (e.g. Nereis)	O
35	??	
36	??	
39	??	
40	crustacean, unidentified	O
41	swimming crab	O
42	starfish	O
43	sea urchin	O
44	??	
45	bivalve, unidentified	O
46	mussel	O
49	??	
50	carrion or big unidentified corpse	C
51	seal carcass	C
52	whale carcass	C
53	bird carcass	C
54	litter, rubbish	C
55	regurgitated unidentified prey after aerial pursuit	O
56	bird kill (e.g. bonxie)	O
57	??	
60	fishery waste, unidentified	
61	discarded roundfish	
62	discarded flatfish	
63	discarded offal	
64	discarded benthic invertebrate,unidentified	
65	discarded starfish	
66	discarded crustacean	
70	??	
72	??	
92	??	
99	??	

12. Association S

Another new field which allows associations between related individuals to be coded. An unsuccessful discussion took place at the 7th ESAS to define what associated animals were. There was a feeling that there is a very high degree of agreement between good observers in field situations, and that careful definition may be unnecessary. My own experience of attempting post-hoc analysis of plotted data is that over-precise definition of what is an association creates greater variation in the eventual results than in trusting the experience of the observer. It should be borne in mind that the following definition, in effect, relates to the flock size represented in the No. of individuals field.

Each record representing part of an association will have the same number, but will be numbered consecutively for every ship on each day starting at 1. For instance, all records in the first associated group will have the code 1, then all records in the second associated group will have the code 2, and so on.

Other fields stored in the UK database, not yet in the ESAS database

The purpose of this section is to list fields I had forgotten about at the last ESAS meeting, which other ESAS members might want to see included in ESAS version 4 (i.e. not this version).

Trip table

Base activity (whether steaming, trawling, steaming between trawling stations, steaming between other sampling stations)

Height of eye

Angle of view - 90° or 180° scan

Duration - whether 1 min, 2 min, 5 or 10 min observation periods carried out

Position table

Base direction (not very valuable)

We store additional material in our environment table, namely wind speed and wind direction

Species table

Oiling - if a bird is seen to be oiled and the degree of oiling