2010 BWASP Historical Database Review
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I. General Notes:

The database has undergone prior reviews, but documentation of those reviews is not available.

The historical archives that we received from MMS were originally housed in the NMML Arctic shed in building 32. They contained hardcopy data printouts from 1987-present. Unable to find hardcopy data from 1979-1986, and from 1987-1991 "NOSC" flights. Janet Clarke (JTC) has old records for some of these years, so she is a good resource. The NOSC\Ljungblad et al. technical reports from these years, some of which are accessible online via the MMS website, may also be a resource. Don Ljungblad (Project Leader in 1980s) has hardcopy data printouts from 1978-1994.

Laura Morse (NMML) boxed the archives, assigned them accession numbers and delivered them to the National Archives and Records Administration facility down the street (6125 Sand Point Way NE, Seattle, WA). Information about the organization of the archives, as well as how to request them, is on the LAN (\\Afsc-s1\NMML\INFORMATION\data archiving).

The Access file that was identified as the most up-to-date version of the BWASP historical database was Aerial_Master_12feb09.mdb. This is the database that 2009 data were appended to and that is being reviewed and revised. All revisions are being done via our NMML Arctic Marine Mammal Research SharePoint site (Shared Documents\BWASP Historical Data\Restricted); all edits made to the database are being tracked through the file's version history.

When uploading new edited versions of the database on SharePoint, the version history\comments field is used to track any changes made. However, use of this field is constrained by its maximum limit of 1,023 characters. Consequently, some editing notes were truncated.

II. Review Outline:

Section III provides a detailed look at each field in the historical database. Where applicable, it describes inconsistencies or problems within the field, discusses what revisions are necessary, and explains how the fields were reviewed and revised. An accompanying editing workbook in Excel provides additional information about each field along with helpful tools for the revision process.

Database Field
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III. Database Review:

1. ID

Notes

At the beginning of this review, there were only 141,271 records in the database even though the maximum ID number went to 153,182. Some records must have been deleted over its history. Note that I have added additional records since the review started, and that the above mentioned maximum ID number will change.

I looked into sorting by date\time and resetting the ID numbers (note that the ID field is an auto number field), so that records would appear in chronological order. However, the maximum locks per file error, which only allows you to update a default of 9,500 records at a time, prevents you from doing this in the

design view. As an alternative, it may be possible to modify the registry in order to increase the maximum locks per file, but I am hesitant to do this as serious problems may arise if done incorrectly causing our data to be lost. In addition, this would not be as simple as sorting by date\time and resetting the ID field, since flight number and event number would also need to be taken into account. There is also the concern that corrections made to the database reference ID numbers, and that information would be lost if we reset them.

Resetting the auto numbered ID field would be purely for aesthetic reasons and is <u>not</u> necessary. The ID field should only be considered a unique identifier used to refer to a record, so the sorting order of these numbers or gaps in them should not have any relevance. The ID field should <u>only</u> be used as a reference and should <u>not</u> be used for anything else.

2. Event, Flt_No, and GMT_Minus8_DateTime

The dataset must be sorted by date\time, flight number, and Event number.

1. Sorting by date\time alone, may incorrectly order multiple flights with the same date.
2. Sorting by date\time and flight number alone, may incorrectly order events that have the same date\timestamp.
3. Need to sort by date\time, flight number, and Event number.

3. Event

Notes

Event numbers were missing from MMS\BWASP flights from 1987-1997.

Some Event numbers were not in ascending order even when date\time was in chronological order. If two or more records have the same date\timestamp, sorting by date\time alone in Access will not necessarily order the Event numbers correctly. For example, if an "end transect" and a "deadhead" Entry have the same date\time, Access may sort the records so that the "deadhead" comes before the "end transect."

Within one flight, Event numbers may be skipped, but they should <u>not have duplicates or be out of ascending order</u> when date\time is in chronological order. Event must be used to properly sort records with the same date\time, so it is important that they are in ascending order.

Data Review\Revisions

1. Checked that all saved records have an Event number; added numbers where they were missing.

2. Checked that all Event numbers are in ascending order by date\time; corrected events that were not in order.

4. Flt_No

Notes

Flight number schemes were not consistent over the years. From 1979-1982, flight numbers were not always consecutive (i.e., some flight numbers were either missing or skipped, or it's possible that the flight was not added to the dataset). From 1986-1991, the same flight numbers were used on different dates (i.e., two different survey teams were using the same flight numbers). Most years had multiple

flight numbers on the same date; this can be attributed to either multiple aircraft flying or one aircraft may have surveyed multiple times in a day and renumbered each flight.

Non-consecutive flight numbers and multiple flight numbers on the same day from multiple aircraft should not be a problem. Multiple flight numbers on the same day from one aircraft has been inconsistent between and within years.

It was agreed that all flights within one year should have unique flight numbers. Duplicate flight numbers within one year were used from 1986-1991, and consequently, they need to be revised. Based on discussions with JTC, a numbering scheme was developed where 200 would be added to flight numbers used by the secondary aircraft. In general, the secondary aircraft was the one to arrive later in the season (JTC helped identify primary vs. secondary aircraft). Flight numbers used by the primary aircraft were left "as is."

Data Review\Revisions

1. Checked that all flights within a year have unique flight numbers.

2. Added 200 to secondary aircraft flights where flight numbers were repeated within a year based on guidance from JTC (see historical_data_flt_number_changes_may2010.xls).

5. GMT_Minus8_DateTime

Notes

Some records have identical date\timestamps. These records may appear out of order, if not sorted by Event number as well. For example, if there are two flights on the same date with survey times that overlap, sorting by date\time alone will inter-mix records from two different flights. Sorting by date\time and flight number alone, may incorrectly order Event numbers that have the same timestamp. The data need to be sorted in ascending order by GMT_Minus8_DateTime, Flt_No, and Event.

Some survey times were incorrect. Flights with unusually early or late survey times were investigated. The biggest offenders were flights in 1982 and 1989. It appears as if the times may have originally been in correct local time, but that at some point, had been changed by someone thinking that they were in GMT (i.e., some times in the database were 8 hours earlier than they should have been).

In 2009, automatic date\time\position updates were logged every 30 seconds.

Data Review\Revisions

1. Compiled start\end times for each flight. Cross-checked times with archives, where available. Time periods where archives were not available for cross-checking include 1979-1986, 1987-1991 NOSC\non-MMS flights and a few flights in 2005 and 2007.

2. Flagged\highlighted flights with unusual start\end times. Flights with start times before 8 am and flights with end times after 10 pm were flagged and investigated.

3. Verified that all dates within one flight were the same.

4. Added 8 hours to the following flights:
-8\2\1979, flt 13

-9\7\1979, flt 30
-6\7\1980, flt 30
-7\23\1980, flt 50
-9\18\1980, flt 72
-10\6\1980, flt 85
-all 1982 flights
-9\12\1986
-9\16\1986
-all 1989 NOSC flights

Corrected times on 9\15\1980, flt 69 per JTC records

5. There are a few remaining late night flight times that are suspicious, but old data records appear to be incorrect as well, so without anything solid to cross-check against, these times are being left as is for now.

6. Deleted flight 30, 10\19\1990 (originally denoted as BWASP). Survey was a duplicate of flight 13, 10\19\1990 (originally denoted as NOSC). Prior to the concatenation of datasets, the flight was duplicated so that it would be counted in both the "BWASP" and "NOSC" datasets.

6. Lat\Long\ArcLat\ArcLong

Notes

The Lat\Long fields appear to have been used from 1979-2006 and are in the degrees decimal minutes format. The ArcLat\ArcLong fields are in the decimal degrees format; all position data have been converted into this format.

7. Alt (Altitude)

Notes

Did the units change over the years from meters to feet, or is altitude wrong in some cases? In 1979, there were sightings with an altitude less than or equal to 200? – Update: talked to JTC and looked briefly at reports; sounds as if altitude has always been in feet and that there were some years that the survey team was just flying extremely low!

8. Air_Head

Notes

This field is populated with values from 1998-2009. The metadata states that prior to 2007, the accuracy of this field is unknown. Beginning in 2007, these values came from the GPS unit and should match the airhead_gps field. Starting in 2009, automatic position updates have a –1 in this field but the airhead_gps field is populated.

Note: there are approximately 10 records where Air_Head and airhead_gps do not equal one another. The field airhead_gps takes precedence and will be considered the correct field in these cases. The airhead_gps field comes directly from the GPS unit, and it is more likely that the Air_Head field was accidentally changed during editing. See also airhead_gps, Swimdir, Swimdir_True.

Data Review\Revisions

1. Checked that Air_Head=airhead_gps, when both fields are populated.

9. Entry

Notes

Records with the same date\timestamp may appear out of order if not sorted by Event. For example, an "end transect" and a "deadhead" may have the same date\time. If they are not sorted by Event number, then the "deadhead" Entry may appear before the "end transect" Entry. It's important that Event numbers are used when sorting the data and that they are in ascending order by date\time.

The following logical order rules apply to this field:

-"start transect" can only be followed by "p\s on transect", "divert\divert to circling", or "end transect"
-"start transect" must always have an "end transect"
-"connect\search" can be followed by one another or by "deadhead" or "start transect"
-"deadhead" can appear anywhere between "connect\search" or after "end transect"
-multiple "deadheads" can be used in succession

Prior to 2009, the convention used after breaking track was "divert, s\p on search, resume transect." The original convention will be left "as is" with the following exception – prior to 2009, if diverting from search mode, change "divert" and "resume search" to "p on search."

See logical test spreadsheet (LogicalTestForAerialMaster_Entry&Flttype.xls) for a more detailed look at how the Entry field should proceed.

The following table lists original values found in Aerial_Master_12feb09.mdb, the years they were used, and, where applicable, changes made. Note that the years used field may not necessarily be indicative of when the value first appeared in the database, as fields may have been revised prior to this.

Entry	Years Used (default is all years if not specified)	Changed To
deadhead	1979-2006, 2009	
divert	1979-2008	
divert to circling	2009	
end connect	2007-2008	p on connect
end search	2007	p on search
end transect		
flight aborted	1989,1991,1999,2001,2003	deadhead
p on circling	2009	
p on connect	1979-2008	
p on deadhead	2007-2009	
p on search		
p on transect		
resume	2009	
resume search	2007	p on search
resume transect	1979-2008	
s on circling	2009	
s on connect	1979-2008	

Entry	Years Used (default is all years if not specified)	Changed To
s on search		
s on transect		
search	2009	
start connect	2007-2008	p on connect
start deadhead	2007-2008	deadhead
start search	2007-2008	search
start transect		

Data Review\Revisions

1. Checked that each flight has an initial and final "deadhead;" inserted where missing.

2. Where applicable, changed first and last "p on deadhead" entries in a flight to "deadhead."

3. Changed "start deadhead\flight aborted" to "deadhead."

4. Inserted "start\end transect" where missing.

5. Changed "start\end connect" to "p on connect."

6. Changed "start search" to "search."

7. Changed "resume search\end search" to "p on search."

8. Inserted new records for sightings on "deadhead", "start transect", "end transect", etc.

9. Checked that each flight proceeds in the correct logical order (initially checked manually by scrolling through flights then checked using logical test formula); corrected if necessary.

10. Checked that all "s on" entries have an associated sighting; corrected if necessary.

11. Checked that all non "s on" entries do not have an associated sighting; corrected if necessary.

10. Species

Notes

Beluga whale is considered redundant since beluga means "white whale." Also, the report generation package queries "beluga" not "beluga whale."

Some records had data entered in the supplementary sighting data fields when the Species field was blank. These may have been sightings that were moved to another record, during which either not all data were transferred to the new record, or not all data were removed from the old record. However, it is more likely that they were simply false sightings, as usually only one or two of the supplementary data fields contained data. Because it is impossible to know whether or not the record is erroneous and should actually have data in the Species field, especially considering that the Species may have been removed during post-flight editing, all records with no Species but supplementary sighting data were assumed to be false sightings. Consequently, the supplementary\auxiliary sightings data were removed.

"Track" sightings do not have data in Totalno.

"kill site no bear", "no sight", "track-belukha\bowhead\polar bear\unknown cet\unknown pin" used up until 2007?

Data Review\Revisions

1. Changed "beluga whale" to "beluga."

2. Deleted "no sight" Species.

3. Checked the following for Species="." or blank: Entry<>"s on", Family<>1-5, enttag<>3.

4. Checked the following for Species with populated cells: Entry="s on", Family=1-5\blank, enttag=3\blank.

5. Deleted auxiliary data for Species="." or blank. (Note - deleted info from the following fields: Sightcue, Habitat, Behavior, Size, Totalno, Calfno, Clinometer, Sop, Swimdir, Swimspeed, Response, Repeat, Observer, Certainty, and Group).

11. Sightcue

Notes

Two numbers (9 and 10) existed as Sightcue values in the database. Ten was considered a typo and deleted. Nine was used in several records from 1979-1986. JTC cross checked a sighting from the 1985 technical report, and the behavior listed in the report was "DY" for display. Sightcues of 9 were changed to "display."

"Blow" was used for polar bears, walrus, and pinnipeds, and "body" was used for vessels in the earlier years; these Sightcues were left "as is."

 Data Review\Revisions

1. Checked that values are appropriate.

2. Checked that values make sense for the Species recorded.

3. Deleted Sightcue 10, and changed Sightcue 9 to "display."

12. Habitat

Notes

"On ice" and "on land" were categories prior to 2009. To consolidate redundant entries, these were changed to "on ice (near lead or on floe)" and "on land (barrier island or beach)" which were categories used in 2009. "Open ocean seaward of all land" appears to have been used only from 2007-2008. This was changed to "open water."

Habitats of "large\med-lg broken floe" for whales are okay.

Data Review\Revisions

1. Changed "on ice" to "on ice (near lead or on floe)."

2. Changed "on land" to "on land (barrier island or beach)."

3. Changed "open ocean seaward of all land" to "open water."

4. Checked that values make sense for the Species and auxiliary sighting data (e.g. if Habitat=on ice, then Icepercent\type<>0\no ice).

13. Behavior

Notes

Behaviors of breach for pinnipeds are okay.
Behaviors of cow\calf for polar bears and pinnipeds are okay.
Delete dead for small craft.
Delete run for seals, whales, and vessels.
Delete swim for vessels.

Investigated records where there were discrepancies between Behavior as cow\calf, Totalno and Calfno.
Looked at cases where:
-Behavior=cow\calf, Totalno=1
-Behavior=cow\calf, Totalno>1, Calfno=blank
-Calfno>Totalno
-Calfno of 1=Totalno of 1, Size=adult

Looked through published reports to find information about the presence or absence of calves.

There is one instance where a polar bear is swimming but Habitat is barrier island (possible if swimming in a small lagoon on the island, or near or around the island); left "as is."

Data Review\Revisions

1. Checked that values are appropriate.

2. Checked that values make sense for the Species and auxiliary sighting data.

3. Deleted "dead" for small craft, "run" for seals, whales and vessels, and "swim" for vessels.

4. Investigated and reconciled problematic Behavior, Totalno and Calfno data.

14. Size

Notes

Delete Size data from 2007-2009; Size was a field used prior to 2007. In 2007, the Group field was added instead, and it is not a reiteration of Size; the Size field should not be populated anymore.

Investigated records where there were discrepancies between Size as cow\calf, Totalno and Calfno.

Where Size=calf of year but Calfno=0\blank, entered "-1" for "not recorded" in Calfno.
Cow\calf pairs must have Totalno>1, and Calfno>=1.
If Size=adult and Totalno=1, then Calfno=0.
One record has Size=large adult, Totalno=1, and Calfno=2 for bowheads; cannot find any other info in reports; left "as is."

Data Review\Revisions

1. Deleted Size data from 2007-2009.

2. Checked that Size values coincided with sightings data (e.g. if Size=cow\calf pair, then Calfno>=1).

15. Totalno

Data Review\Revisions

1. Checked that "-1" and blanks do not have a Species or Entry="s on" unless the Species was "kill site no bear" or a "track-" sighting.

2. Checked that all sightings except "kill site no bear" and "track-" have Totalno>=1.

3. Checked that large group sizes were appropriate for Species.

16. Calfno

Notes

One record was left "as is" where Calfno>Totalno. ID82512 is a bowhead sighting with Totalno=1 and Calfno=2. No other information was found about the presence, absence, or number of calves, so the sighting was left "as is," and a comment was added to the notes.

Data Review\Revisions

1. Checked that Calfno<=Totalno.

2. Checked that Calfno=Totalno had appropriate Size values (i.e., immature or calf of year).

17. Clinometer

Notes

JTC has a formula to flag a subset of data to look for suspect Clinometer angles.

Data Review\Revisions

1. Checked that values range from 0-90.

18. Sop (Side of Plane)

Notes

Sop can only be cross checked against the right and left observers in 2008-2009 because the data recorder and Observer fields were not added until 2008. Used Sop logical test to cross check.

In 2009, a protocol was initiated in which only primary observers could have sightings while on transect. Sightings made by pilots, the data recorder or additional observers could not be made on transect. Under these circumstances, an end transect was entered, the sighting was recorded as being in search mode, then the survey resumed with a start transect.

In 2008, there are approximately 40 records where Sop and Observer are not in agreement. Both Sop and Observer must be chosen from the survey program drop down menus separately, and it is possible for either field to have been entered incorrectly. Consequently, these records cannot be reconciled and were left "as is."

Data Review\Revisions

1. Cross checked Sop with Observer in 2008-2009 data.

19. Swimdir

Notes

Compass heading directions (0-360) were used through 2006. Prior to 2007, it sounds as if clock directions were given to the pilots who looked at the aircraft compass and relayed a direction in magnetic north back to the recorder who entered this in the Swimdir field. These numbers were then corrected for the magnetic variation and entered as the direction in true north in the Swimdir_True field.

In 2007, this field changed to clock directions, and the actual swim direction (Swimdir_True) was calculated using the plane's heading, airhead_gps, which must have been relaying the heading in true north.

The metadata states that the clock directions were "magnetically corrected" to generate Swimdir_True values. This must apply to data prior to 2007.

See also Air_head, airhead_gps, Swimdir_True.

20. Swimspeed

Notes

This field seems like it was loosely defined in the past, and is rather subjective. Some records do not appear to coincide with other sightings data (e.g., polar bears walking but Swimspeed is still, cetaceans swimming but Swimspeed is still, animals dead but Swimspeed is fast, etc.). Because there is not enough information to reconcile the sightings data in these cases, and because interpretations of how to define this field may have differed, the data were left "as is." The only exception to this is for dead animals. Dead animals should not have a swim direction or speed.

Data Review\Revisions

1. Checked that dead animals do not have a swim speed or swim direction.

21. Observer

Notes

Left all initials and number codes "as is".

Data Review\Revisions

1. Corrected records after 2008 where shorthand initials were entered rather than the observer's full name. If initials matched the name in the ObsLeft\ObsRight field, then the observer's full name was entered.

22. General Weather

Notes

As of 2008, circumstances where vis=0 on both sides of the plane were designated deadhead. Prior to 2008, deadheads based on poor visibility were entered more inconsistently; circumstances where vis=0 on both sides were entered as time on transect, search or connect.

23. Icepercent\ Icetype

Notes

When Icepercent and Icetype do not coincide with one another, each case should be looked at separately to decide which field needs to be revised. The data preceding and following the discrepancy should be considered as well.

In general the field whose value is different than the preceding value, is the field that was most likely updated in the field and correct. The field whose value is the same as the preceding value but that does not coincide with other weather data, is the field that was most likely not updated and is therefore incorrect. In circumstances where it is not clear what the correct value is and to avoid making an assumption about what the revision should be (e.g., when Icepercent>0, but an Icetype was not entered), then -1 was entered to indicate "not recorded." When both fields have values that are different from the preceding data, then look at preceding and following data and use best judgment to determine which field needs to be revised, or replace both fields with -1. If both Icepercent and Icetype change, it is probably more likely that the recorder entered a number in the Icepercent field and that the Icetype was not changed and defaulted to "no ice"; will enter -1 under Icetype in these cases.

Data Review\Revisions

1. Checked the following:
-if Icepercent=0 then Icetype can only =blanks, n\a, lead, no ice
-if Icepercent=0 and Icetype=n\a, then FltType=1 or saved=0
-if Icepercent>0, then Icetype<>no ice unless FltType=1
-if Icetype=no ice, then Icepercent=0, unless FltType=1 or saved=0
-if Icetype<>no ice, then Icepercent>0

2. Changed frazzle to frazil.

3. Changed wx fields to n\a for deadheads (FltType=1).

24. Aerial_Survey

Notes

The following table lists original values found and years used:

Aerial_Survey Value	Years Used
BWASP	1987-2009
COMIDA	2009
Comida 3	2008
COMIDA1	2008
COMIDA2	2008
COMIDA3	2008
NOSC	1979-1991

The Aerial_Survey field was revised to include the primary agency responsible for the survey and the platform used. Examples of this convention are: MMS_Otter, NOSC_Otter, NOSC_Goose, SAIC_Otter, SAIC_Goose, NMML_Otter, NMML_Cmdr. In the future, we may want to rename this field with something more descriptive.

Data Review\Revisions

1. Changed "COMIDA1", "COMIDA2", "COMIDA3", "Comida 3" to "COMIDA."

2. Changed all fields to new "agency_platform" convention based on guidance from JTC (see historical_data_flt_number_changes_may2010.xls).

25. Swimdir_True

Notes

Appears in all years. Metadata states that this is the true north swim direction, and is Swimdir corrected for magnetic declination using the magvar_gps and magvar_dir fields produced by the gps unit.

Starting in 2007, this is calculated by converting Swimdir clock directions into corresponding 30 degree increments and then adding those degrees to airhead_gps.

In 2009, when 30 second automatic updates were added, the Swimdir_True field appears to trickle down to records without sightings, recalculating with each change in airhead_gps. The field appears to continue populating itself until a new Entry is made by the recorder.

It is not possible to cross check values prior to 2007 because the magnetic variation was not recorded.

See also Air_head, airhead_gps, Swimdir.

Data Review\Revisions

1. Deleted Swimdir_True for automatic updates and where it was not affiliated with a sighting.

2. For 2007-2009, calculated Swimdir_True values manually and cross checked with Swimdir_True values in database. Calculated values by converting Swimdir clock directions to degrees and adding to airhead_gps.

3. Deleted two values for sightings entered while circling.

26. airhead_gps

Notes

Appears in 2007-2009. Comes directly from the gps unit and appears to be the plane's heading in true north. Used to calculate Swimdir_True. Swimdir_True is calculated by converting Swimdir clock directions to corresponding 30 degree increments and then adding those degrees to airhead_gps.

See also Air_head, Swimdir, Swimdir_True.

27. Certainty (now Calf_Detect_Cert)

Data Review\Revisions

1. Checked that values were appropriate and affiliated with a sighting.

28. Group (Group Composition)

Notes

codes for lone or single animals – Totalno=1
codes for cow\calf, mom\pup pairs – Calfno=1
adults – Totalno>1
2009 codes 13-16, Family=1, and either Totalno or Final_group need to coincide

Original Code	Original Description	Change to 2009 Code	2009 Description	Totalno=
2	lone adult	13	single	1
3	lone subadult	13	single	1
4	lone calf	13	single	1
5	lone indiv	13	single	1
6	cow-calf pair	14	pair	2
9	2 indiv, unk age\sex\reprod status	14	pair	2
10	2 indiv, probable female & subadult	14	pair	2
11	2 indiv, male-female pair	14	pair	2
7	group of primarily cow\calf pairs	16	mixed group	>2
8	mixed group	16	mixed group	>2
12	adults	15	adult group	>1
32	2-5 animals	leave	multiple adults\mixed group	*
33	6-10 animals	leave	multiple adults\mixed group	*
34	11-20 animals	leave	multiple adults\mixed group	*

Original Code	Original Description	Change to 2009 Code	2009 Description	Totalno=
35	21-30 animals	leave	multiple adults\mixed group	*
36	>30 animals	leave	multiple adults\mixed group	*
		51	single adult\subadult	1
		52	female w\ cub(s)	Calfno>0
		53	mixed group	>1

*calves may not have been recorded; don't want to change entries to "multiple adults (code 38)" if calves may have been present but just not recorded

1. Checked that values were appropriate and coincided with the sighting data.

29. FltType

Notes

Flight type codes and years used:

Flight Type Value	Years Used (default is all years if not specified)
-1	2009 (to represent Null)**
1	
2	
3	1979-2008; 1979-2006 used for "end transect"
4	2007-2009 used for "end transect"
5	2009

**In 2009, automatic position updates were logged every 30 seconds and some data fields were programmed to trickle down. This was creating problems and the trickle down feature was removed. Consequently, COMIDA flights 201-214, 216-217 have data that were trickled down under the flight type field, whereas the remaining flights use -1. It appears as if the feature was removed by flight 215, but that perhaps flights 216-217 were edited to follow the original trickle down convention.

Entry = "end transect" was coded as 3 from 1979-2006.
Entry = "end transect" was coded as 4 from 2007-2009.
Entry = "resume transect" was used from 1979-2008.
Entry = "resume" was used starting in 2009 and coded as either 2 or 4.

Flight type codes and acceptable Entry values:

1	2	3	4	5
deadhead			divert	divert to circling
p on deadhead	p on transect	p on connect	p on search	p on circling
	start transect	end transect	end transect	
	resume		resume	
	resume transect		search	
	s on transect	s on connect	s on search	s on circling

Also see logical test spreadsheet (LogicalTestForAerialMaster_Entry&Flttype.xls) for a detailed look at how the FltType field should proceed.

Data Review\Revisions

1. Checked that all codes correspond with the Entry field; corrected if necessary.

2. Checked that codes proceed in the correct logical order using the logical order formula.

3. Checked that trickle down data in 2009 flights 201-214, 216-217 were correct using a separate logical order formula; corrected if necessary.

4. Checked that all records have a value.

30. Family (Species Grouping)

Notes

Family appears to be a new field starting in 2007. In 2009, a value of "-1" appeared as a null value.

Family Value	Years Used (default is all years if not specified)
-1	2009
0	2007-2009
1	2007-2009
2	2007-2009
3	2007-2009
4	2007-2009
5	2007-2009

Family Value	Entry
-1	.
0	No "s on" entries
1	"s on"
2	"s on"
3	"s on"
4	"s on"
5	"s on"

Data Review\Revisions

1. Checked that code -1 had Entry="." and no Species.

2. Checked that code 0 had Entry<>"s on" and no Species.

3. Checked that codes 1-5 had Entry="s on" and a Species.

4. Checked that codes corresponded to Species.

31. enttag (Entry Tag)

Notes

Enttag appears to be a new field starting in 2007. In 2009, a value of "-1" appeared as a null value.

Entry Tag Value	Years Used (default is all years if not specified)
-1	2009 (in unsaved records only)
1	2007-2009
2	2007-2009
3	2007-2009
4	2009 (in unsaved records only)
5	2007-2009

Data Review\Revisions

1. Checked that all codes correspond with the Entry field; corrected if necessary.

2. Checked that all records from 2007-2009 were populated.

32. PhotoTaken

Data Review\Revisions

1. Checked that code=1 corresponds with a sighting. (Note – in 2010, also used for photos of sea ice.)

33. LatTemp\LongTemp

Notes

These fields were added in 2009 to resolve mapping problems. Prior to the insertion of these fields, the summary map only plotted cetacean sightings that had Clinometer angles and resulting x\y of whale positions. The LatTemp\LongTemp fields were inserted so that all cetacean sightings would be plotted. The LatTemp\LongTemp fields pull positions from x\y of whale fields first. If the x\y of whale fields are null, positions are pulled from ArcLat\ArcLong.

Data Review\Revisions

1. Checked that LatTemp\LongTemp positions equaled either the x\y of whale fields or the ArcLat\ArcLong fields.

34. Final_group

Notes

This field was added in 2009. There are 2 records where Final_group<Totalno. These may have been conservative entries and were left as is.

Data Review\Revisions

1. Checked that Final_group is populated when Totalno is populated for 2009.

35. Low_estimate

Notes

Low_estimate <= High_estimate, unless High_estimate= -1

Data Review\Revisions

1. Checked that values are less than or equal to high estimate values.

36. High_estimate

Notes

High_estimate >= Low_estimate, unless High_estimate= -1

Data Review\Revisions

1. Checked that values are greater than or equal to low estimate values.

37. Calf_on_circle

Data Review\Revisions

1. Checked that values are less than or equal to Calfno values, and that calves while circling are accounted for in Calfno.