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**Reference Database  
Marine Mammal Literature**

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## ABSTRACT

A comprehensive Reference Database has been designed for the marine mammal literature. The system uses INMAGIC programming (Cambridge, MA) to file, store, search, retrieve, and format the data records. The database was organized to be complementary to features developed by William E. Schevill for his library of older cetacean literature, and it uses direct association of species with some 300 indexed subjects, observation dates, locations, etc. Every component and detail of the references and annotations are available for rapid search by a wide variety of simple and complex strategies. In addition, separately indexed fields provide immediate retrieval of author, editor, year, journal, type of publication, language, genus/species (searchable by order/suborder and family as well), major subject, subject, picture, observation date, geographic location (including area name and latitude/longitude), as well as the location and library call numbers of the document referred to. Codes have been adapted for ease in identifying and searching species, subjects, journals, languages, and geographic areas. These codes may be used separately or in connection with the associated terms and texts. It is anticipated that the Reference Database will be a continuing resource for marine mammal research.



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Introduction to the Reference Database --

The Reference Database has been organized to create a flexible and searchable compilation of marine mammal literature references. The database was designed to be complementary to the features developed by W. E. Schevill for his collection of the older cetacean literature. The database also has evolved to fit the capabilities of available computer information systems. It has benefitted by comparisons with other specialized literature collections. The result is a relatively simple, easily searched reference database. It features direct association of species to indexed subjects, with every component or alphanumeric entry in the record available for searching by a wide variety of simple and complex strategies. The database is used with PC computers (IBM compatible) with INMAGIC software (INMAGIC Inc., Cambridge, MA), either with only two floppy-disk drives using smaller numbers of references, or with hard disk memory for larger numbers of references. See requirements listed below.

The Reference Database (1) permits records of any length, (2) allows up to 75 user-defined fields (current database uses about 25), (3) provides for unlimited numbers of defined subfields within each field, (4) indexes 40 separate fields (in addition to the indexing of subfields within this structure), (5) indexes immediately as each data record is entered, (6) allows independent sorting of each of the fields or subfields, (7) supports search strategies developed with Boolean operators (and, or, not) and nested arguments, (8) permits searches limited by qualifiers (greater than, less than, equal to, from/to), (9) provides for convenient right-hand truncation in search statements, (10) saves and combines search results, (11) allows a wide variety of user-defined formats for display or reordering of data, (12) prints any number of selected records in any of these formats, (13) lists any of the indexed terms or fields with their frequency of occurrence, and (14) permits the use of extended characters (italics, foreign language) in printing records, (15) provides for the development of flexible on-line thesaurus of terms, search operators, and definitions for help in searching the records, (16) permits rapid copying of data records to standard ASCII files (for use with other databases, or manipulation with word processing programs), (17) allows importation of ASCII records created elsewhere.

The Reference Database for marine mammal literature allows rapid, very detailed searches by author, editor, year, journal, type of publication, language, genus/species (searchable by order/suborder and family as well), major subject, subject, picture, geographic locations (including area names and latitude/longitude), as well as the location of the document that is referred to. Species can be connected directly

to subjects and locations. Terms, and text words including stems of words or partial phrases and parts of alphanumeric entries may be used in searching. In addition, codes have been adapted for ease in identifying and searching species, subjects, journals, languages, and geographic areas. These codes may be used separately or in connection with the associated terms and text.

The organization of the model for the database was by William E. Schevill. Comparisons and assessments of data management software suitable to this organization of literature references was largely by Karen E. Moore. Adaptation of the reference database requirements to the INMAGIC program was mostly by James E. Bird. General oversight of computer handling of the database and program interactions has been by Peter L. Tyack. William A. Watkins has been responsible for the current format, compilation, and general documentation of the database. Barbara E. Rosenheck has the oversight of current data entries. It is our hope that this Reference Database will be a continuing resource for marine mammal research.

Funding for the beginning components of the Reference Database for marine mammal literature has been provided by Woods Hole Oceanographic for laboratory support, Marine Mammal Commission (MM4465702-4) for the INMAGIC program software and additional computer memory, and the National Marine Fisheries Service (40EANF702277) for the beginning database entries.



Equipment Requirements for the Reference Database --

The Reference Database has been configured for convenient use in the marine mammal bioacoustics laboratory at the Woods Hole Oceanographic Institution. However, the INMAGIC software is available for a considerable range of computers (from the Wang PC to DEC VAX).

We use the following arrangement:

(1) IBM compatible PC computer. Our current system uses Compaq computers with MS-DOS 2.12 operating system. The INMAGIC program is used on a computer with (A) two disk drives and at least 256K memory, or (B) on a computer with a hard disk. (see Start INMAGIC below).

(2) INMAGIC (XXMAGIC for extended characters) software to run and maintain the reference database -- INMAGIC, INC., 238 Broadway, Cambridge, MA 02139, Phone (617) 661-8124. Cost for the software varies with the number of units, the first one was over \$800, but group rates and discounts for 25 units would bring the price down to about \$300.

(3) Copy of the data records for the Reference Database. The database has been configured to be used with either a PC computer with dual disk-drives alone or with a hard disk. We anticipate that copies of data files could be made available on standard floppy disks. The size of the database limits convenient use with just the floppy-disks, however, the database may be divide and used in smaller components, for example, species groups. See following section on "INMAGIC Start" for details of beginning, and operational procedures.

(4) A printer is needed to print references and the search results. A dot-matrix or "laser" printer is needed for use with extended characters.

Start Using the Database and INMAGIC Program --

A brief introduction to entering and using the Marine Mammal Reference Database and the INMAGIC program.

Two forms of the INMAGIC program are currently in use at WHOI with the Reference Database for PC computers (IBM compatible); one for a computer with a hard disk containing much or all of the database, and a second with the program installed on dual floppy-disks (5.25-inch) containing smaller numbers of references.

HARD DISK:

- (1) Turn on the hard disk (if separate from computer).
- (2) Turn on the computer (with disk drives open).
- (3) Bring up the INMAGIC sub-directory (XXMAGIC is the 8-bit IBM extended-character version of INMAGIC in use at WHOI).
- (4) Choose SELECT from the INMAGIC Main Menu for searching the Database, selecting references, and printing selections.  
Or - Choose MAINTAIN from the Main Menu for working within the Database to edit or add to the records.
- (5) When requested, type the current filename to enter the database (for example, CETACEA1). The temporary work file can be named anything (up to 8 characters).
- (6) To leave the current work, abandon any changes, and return to a menu, type [Ctrl/C] [RET]. To save the work that has been changed or added, press the [F2] key. For exit from menus, type E [Ret]
- (7) CAUTION: ALWAYS RETURN TO MAIN MENU BEFORE LEAVING INMAGIC  
-- otherwise, the database could be harmed.

FLOPPY-DISKS:

- (1) In drive A, insert XXMAGIC System Disk (#1 Boot).
- (2) In drive B, insert XXMAGIC Program Disk (#2 Program).
- (3) Turn on computer -- both disks will be loaded into the computer. The #1 System disk will remain in drive A.
- (4) Remove #2 Program disk from drive B and replace with the Data disk containing record files (CETACEA1, for example).
- (5) Choose SELECT from the INMAGIC Main Menu for searching the Database, selecting references, and printing selections.  
Or - Choose MAINTAIN from the Main Menu for working within the Database to edit or add to the records.
- (6) When requested, type the drive and current filename to enter the database (for example, B:CETACEA1). The temporary work file can be named anything (up to 8 characters).
- (7) To leave the current work, abandon any changes, and return to a menu, type [Ctrl/C] [RET]. To save the work that has been changed or added, press the [F2] key. Type E [Ret] for exit from menus.
- (8) CAUTION: ALWAYS RETURN TO MAIN MENU BEFORE LEAVING INMAGIC  
-- otherwise, the database could be harmed.



To return to the database from DOS, repeat the process, indicating the drive (path) and program as needed. For use with floppy-disks: put #1 System disk in drive A and #2 Program disk in drive B, and then type B:XXMAGIC. At the Main Menu, replace #2 Program disk in drive B with the Data disk, and when requested, type the filename (such as, B:CETACEA1) to access the database.

For work within the Reference Database, choose MAINTAIN at the Main Menu. Then, to add new records or modify existing records, choose COMPOSE from the MAINTAIN menu. The retrieval code (record number, RECNO) will identify the record to be modified, or number a new record to be entered. The current record or a blank new record format will be displayed, with all fields names indicated in appropriate order. Entry of changes or of new data is straight forward (refer to INMAGIC program manual for details of editor functions, etc.) Entries may be made at each field prompt (preassigned and named by the Data Structure: CITA, YEAR, AUTHOR, EDITOR, etc.). The line of text will automatically wrap to the next line within fields, and subfields are easily added with the use of the F10 key. Additional subfields accommodate different search terms that can be indexed, such as when the record contains more than one author (or editor, genus/species, subject, geographic location, etc.). For example, after the complete citation has been entered, searchable fields are specified for each author, the first author in the AUTHOR/1 subfield (label AU/1), second author in the AUTHOR/2 subfield, third in the AUTHOR/3 subfield, etc. Movement to other fields is by the [RET] key or by the arrow keys, with conventional cursor movement. Deletions are by the [DEL] key which back-spaces as it deletes. Changes or additions can be repeated as often as desired. The completed record is saved by pressing the [F2] key, and INMAGIC automatically indexes and sorts the fields as the record is added to the Reference Database.



## Searching the Reference Database --

There are relatively simple ways to find any alphanumeric notation in any portion of a reference of the database. The most rapid searches are of the indexed fields. The database may be searched with a variety of simple and complex search strategies. Search results may be sorted, displayed, and printed in a wide variety of formats defined by the user as desired. See INMAGIC manual for details of strategies, commands, and relationships for searching the database.

To search the Reference Database and select particular references, choose SELECT at the Main Menu. If not already identified, indicate the filename and path for the database records (for example, CETACEA1 or B:CETACEA1 as in section on Start INMAGIC, page 5) and identify a temporary work file (up to 8 characters). The prompt (\*) is then displayed to indicate that the INMAGIC program is ready to search the database.

Help information about search commands and relationships are available by pressing the Return [Ret] key (see below), providing rapid reminders of such commands as GET and DISPLAY. Search commands may be combined with search relations such as STARTS-WITH (ST), CONTAINS-WORD (CW), and CONTAINS-STEM (CS).

The LIST command will list the contents of searchable (indexed) fields in the database, for example, of authors (L AU), editors (L ED), subjects (L SJ), or geographic location (L GA) to provide an alphabetical list of all authors (or editors, subject headings, geographic locations, etc.) in these fields of the reference database. This list may be limited by combining with alphanumeric search relations such as STARTS WITH (ST) or FROM..TO. Notations given in the results of this list are prefaced by a number representing their occurrence in that field of the database.

## -----SELECT Command Choices-----

GET	- start a new search	NEW	- describe new search
AND	- narrow the search (inclusion)	OLD	- re-enter old search
NOT	- narrow the search (exclusion)	REPEAT	- re-execute old search
OR	- broaden the search	STORE	- save search results
		UNSTORE	- erase stored search
DISPLAY	- show results on screen	QUERY	- show stored searches
PRINT	- print results in report		
WRITE	- place results in outside file	STRUCTURE	- show data structure
		LIST	- show keys in index
TEACH	- display tutorial	FILES	- show disk directory
EXIT	- return to MAIN menu		

For additional information, type ? followed by name of command. Help is also available for these topics (type ? followed by topic):

BOOLEAN (searching with complex commands)  
 WORDS (searching with CW and CS relations)  
 COMPARING (searching with EQ, ST, GT, GE, LT, LE, FROM..TO)

\*



Each Subject Heading used in the database is tied directly to species by a code assigned to each subject and each species, so that a LIST of the SUBJECT field ("L SJ") of a portion of the database might produce the following result:

```

3 FEEDING 404AB1A
2 FEEDING 404AB1A 404AC2A
1 INTELLIGENCE 545AB1A
    
```

This list indicates three records were found on feeding (code 404) by Eschrichtius robustus (code AB1A), two records on feeding in both E. robustus and Megaptera novaeangliae (AC2A), and one record on intelligence (code 545) in E. robustus.

A search statement using the GET command may be used to locate particular records. For example, for records discussing cetacean pigmentation, the search statement could be as follows: G SJ CW PIGMENTATION (GET SUBJECT CONTAINS-WORD PIGMENTATION). The result of this search might be this:

```

FOUND 6 PIGMENTATION IN SUBJECT
[Search] #1 NUMBER OF RECORDS :6
    
```

The result of this search #1 can then be seen by using the DISPLAY command at the ready prompt (\*): D #1 (DISPLAY search #1). Each of these complete references (records) with all species and subject headings will then be displayed, sequentially, either as complete record entries, or in any selected format with the information re-arranged. The original information used for the search statement will be highlighted.

If a paper by Schevill on pigmentation (code 233) in E. robustus (code AB1A) were desired, that particular record could be selected by including the AUTHOR field in the search: G AU CW SCHEVILL A SJ CW 233AB1A (GET AUTHOR CONTAINS-WORD SCHEVILL AND SUBJECT CONTAINS-WORD 233AB1A). If the year of publication were known to be 1980, then the search could be narrowed further by adding the YEAR field to the search: G AU CW SCHEVILL A YR CW 1980 A SJ CW 233AB1A (GET AUTHOR CONTAINS-WORD SCHEVILL AND YEAR CONTAINS-WORD 1980 AND SUBJECT CONTAINS-WORD 233AB1A).

The design of the database takes advantage of INMAGIC's right hand truncation. For example, to find records specifically on feeding in Balaenoptera edeni, the search statement could use the codes for feeding and B. edeni, like this: G SJ CW 404AC1C (GET SUBJECT CONTAINS-WORD 404AC1C). A less specific search for feeding in rorquals generally could leave off the last character of the species code and use the search relation CS (CONTAINS STEM): G SJ CS 404AC1 (GET SUBJECT CONTAINS-STEM 404AC1) -- 404 is the code for feeding and AC1C the code for B. edeni. While an even more general search for feeding in the Balaenopteridae could leave off the last two characters of the genus/species code: G SJ CS 404AC (GET SUBJECT CONTAINS-STEM 404AC).

Organization of the Database Records --

The entries in each record of the Reference Database are organized for convenience in making the entries, in searching of the indexed fields, and in reorganization of the references for display or printing:

Each record is given a unique number (RECNO).

The complete citation is entered in a standard bibliographic format.

Separate fields are used for entering author, year, title, source, publisher, etc. to allow reordering of the citation for printing and for separate indexing of some fields for rapid field searches.

Codes for journal, type of publication, and language are indicated.

Genus/species names and alphanumeric codes are entered for all species in the reference -- order/suborder, family, genus, and species are indicated in each code.

Major subject (separate field), and any number of additional subjects (another field with subfields) are entered and directly related to species by using the subject and species codes.

Pictures that are important in the document are noted and related to subject and species by the codes.

Date of observations are indicated and associated with species by the codes.

Geographic locations are indicated by area code, geographic name, and latitude/longitude when appropriate. These are all related to species by the codes.

Notes, and annotations may be included, and are related to species.

Location of the specific document (reprint, book, journal, etc.) and call numbers for particular collections or libraries are indicated.

Most fields in the records are indexed and may be searched separately to provide very rapid selection of these records. Fields such as citation (CITA) and notes (NOTES) are not indexed, but these too may be searched for any words, sentences, or alphanumeric combination. A search of non-indexed entries is much slower.

A list of "Subject Headings" and "Species" with their codes are provided to assist in establishing search relationships.



List of Database Fields --

The entries for each reference are recorded in fields that are indexed and stored in the database. Each field is given a name and a shorter label. The field order within the database structure is pre-defined and assigned index, sort, and emphasis codes for the Reference Database (see Data Structure, p 19). A brief description is given below for each field in the record structure for the Reference Database:

Field name (label) -- description:

RECNO (RN) -- Record number is a unique number given to each record in the database. This number serves as a retrieval key for that particular record. This field is indexed.

CITA (CI) -- Full reference citation is given in a standard format. Authors' last names are given first and capitalized.

AUTHOR (AU) -- Each author (last name first) is listed in a separate subfield in the order that they appear on the document. This field is indexed.

YEAR (YR) -- Year of publication. This field is indexed.

DATE (DA) -- Additional information about publication date of the document, such as month. Also, the modification date of the record entry ("Mod" month and year, in parentheses) of the last changes to a record are put in this field to facilitate recognition of the latest database changes.

TITLE (TI) -- Title of the document.

SOURCE (SO) -- Full journal name or title of edited volume containing the document.

VOLUME (VL) -- Volume and series of journal or number of report.

ISSUE (IS) -- Issue and "part" number of journal containing the document.

PAGES (PP) -- Pagination of the document. In documents which contain intervening, unrelated pages, only the pages of the document are entered.

EDITOR (ED) -- Each editor is listed (last name first) in a separate subfield in the order that they appear on the document. This field is indexed.

EDITON (ET) -- Edition of publication is noted if 2nd or later.

- PUBCO (PC) -- Publishing company name includes the full name (for example, University of California Press). Not applicable to serials.
- PULO (PL) -- Publisher's location includes city, state or country, with two-letter abbreviations for the States of the U.S. Not applicable to serials.
- CODEN (CO) -- Coden is a standardized alphanumeric code for journals (BioSciences Information Service). This field is indexed.
- TYPE (TY) -- Type of record is indicated by letter code (journal, book, report, -- see list of record types). This field is indexed.
- LANGU (LG) -- Language of the document (see language code list). This field is indexed.
- GENSP (GS) -- Genus/Species include the scientific names of genera and species, with alphanumeric codes which include Order/suborder and Family. See section on Organization of the Species list. This field is indexed.
- TAXO (TX) -- Taxonomy notes and genus/species names used by the author which are synonyms of current names.
- SUBMJ (SM) -- Major subject of the document is entered in this field. See List of Subject Headings. Species are never subjects, but are tied to subjects by code. This field is indexed.
- SUBJ (SJ) -- Subjects are assigned to the document, and listed in separate subfields. The major subject is repeated in this list. See List of Subject Headings. Species are never subjects, but are tied to subjects by code. This field is indexed.
- PICTU (PI) -- Pictures of note are indicated, including good drawings and photographs of activities by different species (subjects and species are indicated). This field is indexed.
- OBSDATE (OD) -- Date (year and month) of the field observation of the animals reported in the document is directly associated with species by the codes. Year and month are entered separately to allow searching the year and month separately (for example an entry for a gray whale sighting on 10 Oct 1910: 1910AB1A OCTAB1A). To avoid confusion between year and month of different sightings, these should be searched separately. This field is indexed.



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GEOA (GA) -- Geographic location A uses the sea area code from Aquatic Sciences and Fisheries Information System's Geographic Authority List. The species code is appended to the location code. This field is indexed.

GEOB (GB) -- Geographic location B is the name of the area or body of water, at times associated with land. This field is indexed.

GEOC (GC) -- Geographic location C is the latitude and longitude in degrees. The species code is appended to each latitude and longitude to allow separate searches that define an area. This field is indexed.

NOTES (NT) -- Notes on the content of the document appear in this field.

LOCATE (LO) -- Location of a copy of the document is noted if appropriate. Filing numbers and subjects of the documents in various collections are indicated along with call numbers. Library of Congress numbers are also given. This field is indexed, see further description (page 18).

Most records of the Reference Database will not have entries in all of these fields, and only those records that have information will be displayed (in SELECT). However, the entire data structure is available (in MAINTAIN) for editing or entering new information.

The last two fields (listed below) represent a special use of the database for on-line help. They include a thesaurus of subject headings and species names, with their codes, to be used in searching the Reference Database. These two fields will never appear in the list of field entries for a specific document, but they are separate documents that may be accessed from the database (by selecting the QUEST and/or DEFINE fields for searching).

QUEST (QU) -- Question: this field contains subject headings and their appropriate synonyms, as well as scientific names of species. This field is indexed.

DEFINE (DF) -- Define: this field contains definitions of subjects, helps, and sample search strategies.

Comments on Specific Fields --

RECNO -- Record Number (label RN) -- The record number is unique to each record, and is assigned as the entry is made to serve as a retrieval code for that record. Record numbers generally are not related to any other aspect of the references. The exception is the collection of older literature by W. E. Schevill in which his document numbers have been retained as the identifying record numbers (1 to approximately 3200). These record numbers are noted on the copies of the documents in local libraries.

SOURCE -- The SOURCE field (label SO) is not indexed, but provides the full title of the journal or volume for use in compilation of print formats. Indexing of Journals is provided by the CODEN.

CODEN -- Journal identification code (label CO) -- Journals are identified by a six-character identifier (such as JCRSEK for the Journal of Coastal Research) assigned by the International CODEN Service (Chemical Abstracts Service, P.O. Box 3012, Columbus, OH 43210). This field is indexed so that a record can be found if, for example, only the subject and journal name are known. A list of journals and their corresponding CODEN is given in "Serial Sources for the BIOSIS Data Base" published by BioSciences Information Service, Philadelphia, PA 19103, on file with the Reference Database.

PICTU -- The picture field (label PI) is indexed and related to subjects and species by means of the alphanumeric codes. This field allows searching the database for documents which contain accurate, clear photos, drawings, or diagrams of marine mammals and related subjects. For whales, this could include ventral views, aerial displays, underwater photos, parasites, feeding activity, pigmentation patterns, prey species, diagnostic photos of skulls, stranded animals, fetuses, etc. For example, a photograph of a feeding humpback whale would be entered in the Picture field (PICTU) with both the subject and species codes, 404 (feeding) and AC2A (Megaptera novaeangliae).



TYPE -- Document type (label TY) is a letter code based on the Aquatic Sciences and Fisheries Information System (ASFIS). These include codes that indicate Document Type, Bibliographic Level, and Literary Style. References may have more than one code for document type:

- B Monographs, non-serial documents, complete when issued.
- H Sound recordings (phonograph records, audio cassettes and tapes, etc.).
- J Journal (serial) publication, from refereed scientific journals.
- K Conference proceedings or meeting reports. Also includes abstracts of papers presented at or submitted to conferences or meetings. (eg. individual abstracts from the biennial conferences on the biology of marine mammals) (excludes IWC documents). Mostly not published.
- L Papers from edited, published scientific volumes (such as from Winn & Olla, 1972. Behavior of Marine Animals, Current Perspectives in Research).
- M Unpublished papers, such as typescripts of papers submitted for publication, student reports, etc.
- I IWC documents. Includes all IWC documents, whether published in IWC volumes (special issues, annual reports, etc.) or submitted to the scientific committee and never published.
- P Popular publications (articles or books).
- Q Training manuals and other documents written primarily for training programs, such as P. M. Payne's marine mammal and seabird observer training manual for NMFS.
- R Scientific and technical reports (NTIS, MMS, NOSC, OCSEAP, AEWC, NMFS, WHOI etc. -- the so-called "gray" literature).
- U Dissertations, theses, or other treatises written to qualify for a university or other type of degree (p. 19, ASFIS).
- W Laws, statutes, regulatory reports, including Marine Mammal Commission annual reports.
- Z Bibliographies, or documents primarily for literature citations, used only to indicate bibliography as the important part of the text (p. 19 ASFIS).



LANGU -- Language codes (label LG) for the Reference Database are adapted from the two-letter codes used by the Aquatic Sciences and Fisheries Information System (ASFIS) with the following exceptions:

- (1) No code is used for documents in English.
- (2) "X" is prefixed to the two-letter language codes for documents in other languages (except English). For example, the code for Russian is XRU.
- (3) "Y" is added to the two-letter language code to indicate an abstract or summary in another language (YEN would be used for an English language abstract). For example, a Russian language document with an English abstract has the following code: XRU YEN. Abstracts in other languages also use the "Y" plus the two-letter code for that language.

Thus, no entry is needed for the majority of references which are in English, but the database can be searched for English language papers by using the negative search relation -- GET LANGUAGE NOT CONTAINS-STEM X (G LG NO CS X).

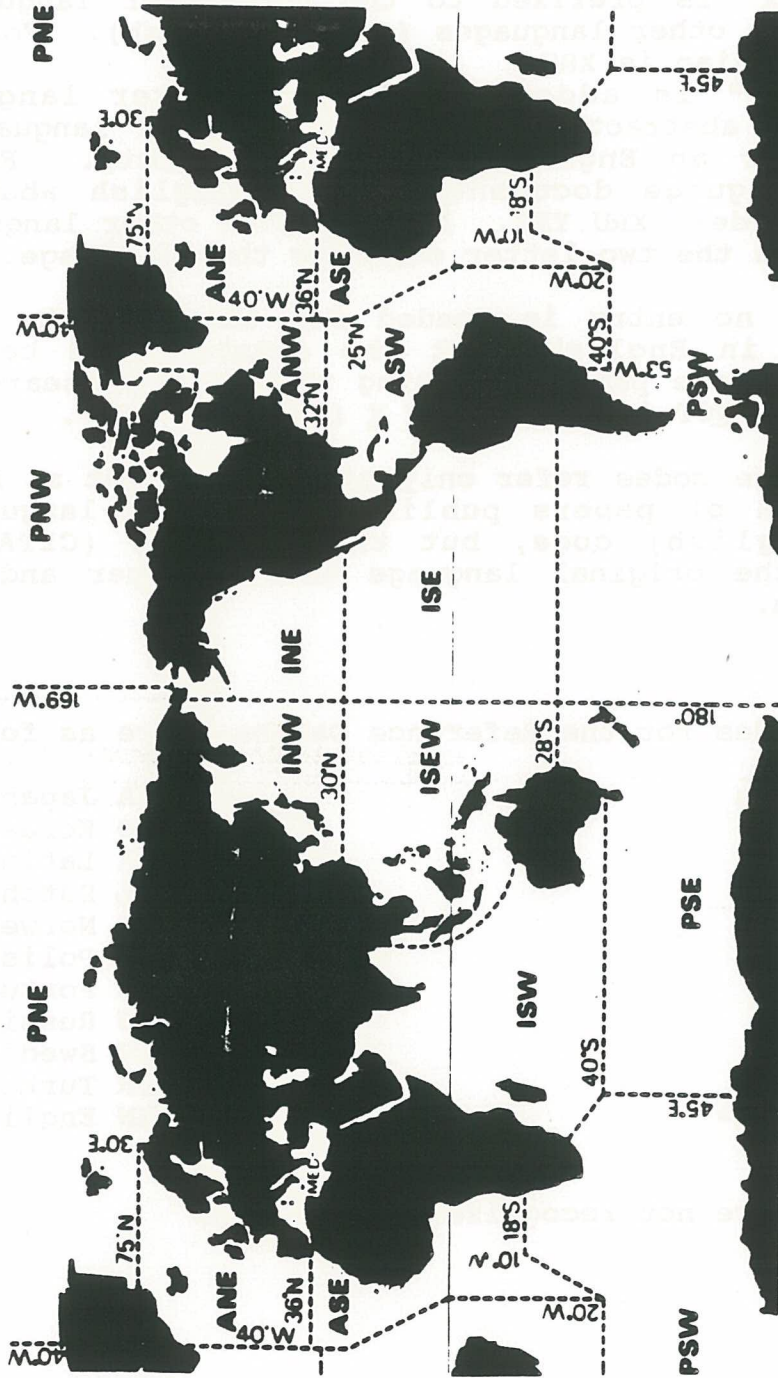
Language codes refer only to the document at hand. English translation of papers published in other languages have the blank (English) code, but the CITATION (CITA) field will indicate the original language of the paper and its original publication.

Language codes for the Reference Database are as follows:

XAF Afrikaans	XJA Japanese
XAR Arabic	XKO Korean
XCH Chinese	XLA Latin*
XCS Czech	XNL Dutch
XDA Danish	XNO Norwegian
XDE German	XPL Polish
XEE Estonian	XPT Portuguese
XES Spanish	XRU Russian
XFI Finnish	XSV Swedish
XFR French	XTR Turkish
XIC Icelandic*	YEN English abstract
XIT Italian	

\*IC and LA are not recognized ASFIS codes

ASFIS Map of Geographic Areas



GEOA -- Geographic Location A (label GA) - The location of the work described in the reference is indexed by geographic codes generally following those of the Aquatic Sciences and Fisheries Information System (ASFIS):

ANE	Northeast Atlantic
ANW	Northwest Atlantic
ASE	Southeast Atlantic
ASW	Southwest Atlantic
INE	Northeast Pacific
INW	Northwest Pacific
ISE	Southeast Pacific
ISEW	Southwest Pacific
ISW	Indian Ocean
MED	Mediterranean
PNE	Eastern Arctic Ocean
PNW	Western Arctic Ocean
PSE	Eastern Antarctic Ocean
PSW	Western Antarctic Ocean
CSL*	Coastal Waters
FSR*	Freshwater
COS*	Cosmopolitan

\* not ASFIS codes

The species codes are combined with the ocean area codes. For example, a paper on Megaptera novaeangliae in the Indian Ocean is indexed with the codes ISWAC2A (ISW for the Indian Ocean and AC2A for Megaptera novaeangliae).

GEOB -- Geographic Location B (label GB) - The location of the work described in the reference may be further indicated by using the names of the geographic areas. These follow ASFIS Authority Lists for Seas, Undersea Features, Currents, Inter-territorial Inland Waters, and Inland and Coastal areas. For example, a document that appears in the GEOA field with the code PNWAA1A (Western Arctic Ocean, Balaena mysticetus), may also have the name "Beaufort Sea" in the GEOB field. Often the ASFIS list gives names that include a large area, so these may be combined with more specific identification of geographic areas. For example, Vancouver Island is not given in the ASFIS Geographic Authority List, so papers concerning Eschrichtius robustus near Vancouver Island could use the location "British Columbia" from ASFIS and a more specific identification of "Vancouver Island".



GEOC -- Geographic Location C (label GC) - Latitude and longitude are entered in this (GEOC) field when they are indicated in the document. Latitude and longitude are given in degrees "N" or "S" for latitude, and "E" or "W" for longitude (two digits for latitude degrees and three digits for longitude degrees). The entries are connected directly with species by their codes. The latitude and longitude coordinates provide a means of searching for specific locations or for larger areas by using a range of latitudes or longitudes, separately. To avoid confusion between the coordinates of different locations, latitudes and longitudes should be search separately.

LOCATE -- Location of the documents (label LO) - The physical locations of documents referred to in the Reference Database are indicated by the Location Field (LOCATE), at the end of each record. One or more of the following codes are used for local Woods Hole collections:

PLT -- P. L. Tyack's reprint collection, arranged by author and date.

Shiv -- The bookshelves in Shiverick House at WHOI. For example, Reports of the International Whaling Commission. Often these "Shiverick" documents are a part of the MBL Library collection kept at Shiverick. A subfield gives the MBL Library call number.

WAW -- W.A. Watkins' library, arranged by subject, author, and date. The filing subject is noted in the database (LOCATE) field.

WES -- W. E. Schevill's library, arranged by accession number (the same number as the database record Retrieval Code).

MBL -- Marine Biological Laboratory, the joint Woods Hole library collection supported by MBL, WHOI, and NMFS, and housed at the Lilly Building of the MBL. The MBL Library call number is given in a subfield.

Library of Congress Number is given when appropriate.

The Location Field is indexed so that document searches can be restricted to a particular library or collection.

The Data Structure for the Reference Database is as follows:

Field LABEL	Field NAME	INDEX	SORT	EMPHASIS
RN	RECNO	T	2	1
CI	CITA	N		
AU	AUTHOR	Y	5	1
YR	YEAR	Y	5	1
DA	DATE	N		
TI	TITLE	N		
SO	SOURCE	N		
VO	VOLUME	N		
IS	ISSUE	N		
PP	PAGES	N		
ED	EDITOR	Y	5	1
ET	EDITON	N		
PC	PUBCO	N		
PL	PUBLOC	N		
CO	CODEN	T	5	1
TY	TYPE	T	5	1
LG	LANGU	T	5	1
GS	GENSP	Y	5	1
TX	TAXO	Y	5	1
SM	SUBJMJ	Y	5	1
SJ	SUBJ	Y	5	1
PI	PICTU	Y	5	1
OD	OBSDATE	Y	5	1
GA	GEOA	Y	5	1
GB	GEOB	Y	5	1
GC	GEOC	Y	5	1
NT	NOTES	N		
LO	LOCATE	T	5	1
QU	QUEST	Y	5	1
DF	DEFINE	N		

See INMAGIC manual for descriptions of categories for indexing, sorting, and emphasis.

## Examples of Database Record Entries --

RECNO 4024  
 CITA/1 Mate, B. R., and Harvey, J. T. 1984. Ocean movements of radio-tagged gray whales. In: M. L. Jones, S. L. Swartz, and S. Leatherwood (eds.), Academic Press, Orlando, FL, p. 577-589.  
 AUTHOR/1 Mate, Bruce R.,  
 AUTHOR/2 Harvey, James T.,  
 YEAR/1 1984.  
 DATE/1  
 TITLE/1 Ocean movements of radio-tagged gray whales.  
 SOURCE/1 The gray whale *Eschrichtius robustus*.  
 VOLUME/1  
 ISSUE/1  
 PAGES/1 p. 577-589.  
 EDITOR/1 Jones, Mary Lou,  
 EDITOR/2 Swartz, Steven L.,  
 EDITOR/3 Leatherwood, Stephen,  
 EDITOR/1  
 PUBCO/1 Academic Press,  
 PUBLOC/1 Orlando, FL  
 CODEN/1  
 TYPE/1 L  
 LANGU/1  
 GENSP/1 *Eschrichtius robustus* AB1A  
 TAXO/1  
 SUBJMJ/1 Tracking 664AB1A  
 SUBJ/1 Feeding 404AB1A  
 SUBJ/2 Migration 641AB1A  
 SUBJ/3 Speed 780AB1A  
 SUBJ/4 Tagging 753AB1A  
 SUBJ/5 Tracking 664AB1A  
 PICTU/1  
 OBSDATE/1 1979AB1A FebAB1A MarAB1A AprAB1A  
 OBSDATE/2 1980AB1A FebAB1A MarAB1A AprAB1A  
 GEOA/1 INEAB1A  
 GEOA/2 ISEAB1A  
 GEOB/1 Baja California, Mexico AB1A  
 GEOB/2 California AB1A  
 GEOB/3 Oregon AB1A  
 GEOB/4 Unimak Pass, AK AB1A  
 GEOC/1  
 NOTES/1 AB1A *Eschrichtius robustus*: 18 whales tagged -- "barnacle" and "umbrella" tags. Average distance travelled northward = 85 km/day, up to 129 km/day last 29 days.  
 LOCATE/1 Shiv  
 LOCATE/2 QL 737 C425 J66  
 QUEST/1  
 DEFINE/1

Reference Database -- Page 21

RECNO 1562  
 CITA/1 DUDLEY, Paul, 1726. An essay upon the natural history of whales,  
 with a particular account of the ambergris found in the sperma ceti  
 whale. Phil. Trans. Roy. Soc. London, 33, (387), pp. 256-269.  
 AUTHOR/1 Dudley, Paul,  
 YEAR/1 1726.  
 DATE/1  
 TITLE/1 An essay upon the natural history of whales, with a particular  
 account of the ambergris found in the sperma ceti whale.  
 SOURCE/1 Phil trans. Roy. Soc. London,  
 VOLUME/1 33, (387),  
 ISSUE/1  
 PAGES/1 pp. 256-269.  
 EDITOR/1  
 EDITON/1  
 PUBCO/1  
 PUBLOC/1  
 CODEN/1 PTRBAE  
 TYPE/1 J  
 LANGU/1  
 GENSP/1 Balaenoptera physalus AC1F  
 GENSP/2 Eschrichtius robustus AB1A  
 GENSP/3 Eubalaena glacialis AA3A  
 GENSP/4 Megaptera novaeangliae AC2A  
 GENSP/5 Physeter catodon BA2A  
 GENSP/6 Orcinus orca BE7A  
 TAXO/1 Balaena gibbosa Exxleben AB1A  
 SUBJMJ/1 Fats Oils Waxes 401AB1A 401AC1F 401AA3A 401AC2A 401BA2A  
 SUBJMJ/2 Ambergris 810BA2A  
 SUBJ/1 Baleen 129AB1A 129AA3A 129AC1F 129AC2A  
 SUBJ/2 Blow 153AA3A 153AC1F 153BA2A  
 SUBJ/3 Cyamids 269AC2A  
 SUBJ/4 Eye 880BA2A 880AA3A  
 SUBJ/5 Fats Oils Waxes 401AB1A 401AC1F 401AA3A 401AC2A 401BA2A  
 SUBJ/6 Field marks 413AB1A  
 SUBJ/7 Fish as food 425AC1F  
 SUBJ/8 Flippers 419AC2A  
 SUBJ/9 Genitalia 453AA3A  
 SUBJ/10 Lactation 469AA3A  
 SUBJ/11 Plankton as food 433AA3A  
 SUBJ/12 Predation 973BE7A  
 SUBJ/13 Skim feeding 407AA3A  
 SUBJ/14 Squid as food 437BA2A  
 SUBJ/15 Teeth 755BA2A  
 SUBJ/16 Ventral grooves 673AC1F 673AC2A  
 SUBJ/17 Whaling historical 924AC1F 924AA1A 924AA3A 924AC2A 924BA2A  
 SUBJ/18 Yarns 367AB1A 367BE7A 367BA2A  
 PICTU/1  
 OBSDATE/1  
 GEOD/1 ANEAB1A  
 GEOB/1  
 GEOD/1  
 NOTES/1 AB1A "The Scrag Whale is near a kin to the Finback, but, instead  
 of a Fin upon his Back, the Ridge of the after-part of his back is  
 scragged with half a dozen knobs or nuckles; he is nearest the right  
 whale in figure and for quantity of oil; his bone is white, but  
 won't split." p. 258.  
 WES  
 LOCATE/1  
 QUEST/1  
 DEFINE/1  
 \$



## Format of Printed Records --

Each record in the Reference Database may be rearranged as desired for printing. The record fields may be sorted and presented in any order, and the data within fields and subfields also may be sorted and indexed to print sequentially. The (Report) Layout Commands are extensive and permit nearly any arrangement of the data from each record (see INMAGIC manual).

The flexibility of format design provided by the INMAGIC program is indicated by the following examples. Examples of layout instructions and printing commands (in SELECT) are given (pages 23 and 24) for "report" formats used to print pages or 3x5 cards.

The first example (page 23) is a format for a page of 66 lines with 70 characters per line. The record layout instructions for this particular printout (labeled PAGE1) provide for the retrieval code (RECNO) on the first line, the citation (CITA) on the third line, followed by a list of notes (NOTES), genus species (GENSP), subjects (SUBJ), and taxonomic information (TAXO). This is only a part of the data entered in the record, and it is limited to one page (@ NEWPAGE). All of the data in each record can be reorganized and printed with similar format designs.

The next example (page 24) is a format for a 3" x 5" card. The print instructions (in SELECT) include the "EXPLODED" command for separating subfields and for using the format labeled CARD2. This format for a card of 18 lines with 47 characters per line provides for the alphabetical listing of authors (@INDEX, from an EXPLODED subfield list) at the top of sequential cards, the record number (RECNO), the citation (CITA), and then lists of the genus species (GENSP), and the first few subjects (SUBJ). This reference (RECNO 3135) has three authors and so three cards are printed.



Reference Database -- Page 23

INMAGIC - DEFINE Report Format

Name of format: PAGE1  
Name of data structure: CETACEA1  
Date created: 11/12/87  
Date last modified: 11/12/87

A. PAGE DEFINITION

Enter physical page length (number of lines): 66  
Enter top margin (number of lines): 6  
Enter bottom margin (number of lines): 6  
Enter maximum page width (number of characters): 70  
Enter number of blank lines between records: 0  
Enter whether record may be broken across pages (Y/N): N  
Enter whether underline characters should print as spaces (Y/N): N  
Enter whether to pause between pages (Y/N): Y

B. USER QUESTION DEFINITIONS

C. CALCULATION DEFINITIONS

D. PAGE LAYOUT

E. RECORD LAYOUT

1. @PARAGRAPH
2. RECNO, LINE 1, COLUMN 67 - 70
3. CITA, LINE 4, COLUMN 10 - 70
4. @LIST
5. NOTES, LINE + 3, COLUMN 10 - 70
6. GENSP, LINE + 2, COLUMN 15 - 70
7. SUBJ, LINE + 2, COLUMN 15 - 70
8. TAXO, LINE + 2, COLUMN 15 - 70
9. @NEWPAGE

INMAGIC - SELECT

Enter command, or press RETURN for list of commands.

\* GET RECNO = 3079

#4 number of records: 1

\* PRINT #4 USING PAGE1

3079

MANZER, J. I., 1954. Observations on the gray whale. Jour. Mamm., 35, (3), pp. 444-445.

AB1A Rhachianectes glaucus: Between 9/II/ and 9/IV, 1952, 31 whales; evidently none were reported S. of San Diego, & northernmost one was off Coos Bay, Oregon (43 25N) on 9/IV. All whales seen were N-bound, and all between 1.5 and 10.0 miles "from the nearest point of land".

Eschrichtius robustus AB1A

Field observation 451AB1A  
Geographic distribution 455AB1A  
Migration 641AB1A  
Seasonal occurrence 897AB1A  
Social behavior 957AB1A

Rhachianectes glaucus

INMAGIC - DEFINE Report Format

Name of format: B:CARD2  
 Name of data structure: CETACEA1  
 Date created: 11/10/87  
 Date last modified: 11/16/87

A. PAGE DEFINITION

Enter physical page length (number of lines): 18  
 Enter top margin (number of lines): 0  
 Enter bottom margin (number of lines): 0  
 Enter maximum page width (number of characters): 47  
 Enter number of blank lines between records: 0  
 Enter whether record may be broken across pages (Y/N): N  
 Enter whether underline characters should print as spaces (Y/N): N  
 Enter whether to pause between pages (Y/N): Y

B. USER QUESTION DEFINITIONS

C. CALCULATION DEFINITIONS

D. PAGE LAYOUT

E. RECORD LAYOUT

1. @INDEX, LINE 1, COLUMN 1 - 30, ONLY KEYTOP, MAXLINE 1
2. @PARAGRAPH
3. RECNO, LINE SAME 1, COLUMN 44 - 47
4. CITA, LINE 3, COLUMN 1 - 47
5. @LIST
6. GENSP, LINE + 1, COLUMN 5 - 40
7. SUBJ, LINE + 1, COLUMN 5 - 40
8. @NEWPAGE

INMAGIC - SELECT

Enter command, or press RETURN for list of commands.

\* PRINT #1 EXPLODED BY AUTHOR USING CARD2

	Gentry, R. L.,	3135
	KOOYMAN, G. L., NORRIS, K.S., and GENTRY, R. L., 1975. Spout of the gray whale: its physical characteristics. Science, 190, p. 908-910, table, fig.	
Esc	Kooyman, G. L.,	3135
Blow	KOOYMAN, G. L., NORRIS, K.S., and GENTRY, R. L., 1975. Spout of the gray whale: its physical characteristics. Science, 190, p. 908-910, table, fig.	
Dim		
Growth		
Nose		
Respiration		
Seasonal		
Esc	Norris, K. S.,	3135
Blow	KOOYMAN, G. L., NORRIS, K.S., and GENTRY, R. L., 1975. Spout of the gray whale: its physical characteristics. Science, 190, p. 908-910, table, fig.	
Dim		
Growth		
Nose		
Respiration		
Seasonal		
	Eschrichtius robustus	AB1A
	Blow	153AB1A
	Dimensions	303AB1A
	Growth rate	465AB1A
	Nose	689AB1A
	Respiration system	861AB1A
	Seasonal occurrence	897AB1A

Organization of the Species List --

The list of species for the Reference Database is arranged alphabetically and coded by (1) order/suborder, (2) family, (3) genus, and (4) species. Alphanumeric codes have been assigned to each species referenced in the data base. Initially, these have been assigned in ascending (alphanumeric) order, with spaces for taxonomic revision when needed.

The first place of the species code is a letter representing the order or suborder. The letter "A" denotes the suborder Mysticeti and includes 11 species. The letter "B" denotes the suborder Odontoceti and includes 68 species. The letter "C" denotes the order Carnivora, including 37 species of pinnipeds, sea otters, and polar bear. The letter "D" denotes Sirenia and includes 5 species. Other orders and suborders are included in general categories that are also coded by letter (E-Z).

The second place of the marine mammal species code is a letter representing the family. For example, the Species List indicates the Balaenopteridae as code "AC" -- or suborder Mysticeti "A" and family Balaenopteridae "C". The code for Ziphiidae is "BC" -- or suborder Odontoceti "B", family Ziphiidae "C".

The third place of the species code is a number of one or two digits representing the genus. For example, the code for Mesoplodon is "BC2" -- or suborder Odontoceti "B", family Ziphiidae "C", genus Mesoplodon "3". The code for Kogia is "BA1" -- or suborder Odontoceti "B", family Physeteridae "A", genus Kogia "1". The code for the genus Stenella is "BD15" (suborder Odontoceti "B", family Delphinidae "D", and genus Stenella "15").

The last place of the species code is a letter representing species. For example, the code for Kogia breviceps is "BA1A" (suborder Odontoceti "B", family Physeteridae "A", genus Kogia "1", species breviceps "A"). The code for Kogia simus is "BA1B". The code for Cephalorhynchus hectori is "BD1D" (suborder Odontoceti "B", family Delphinidae "D", genus Cephalorhynchus "1", species hectori "D"). A reference about finback whales will have "Balaenoptera physalus AC1F" in the genus/species field.



*List of Species and Their Codes*

**SPECIES LIST**

**INMAGIC DATABASE**

**MARINE MAMMAL LITERATURE**

## SPECIES LIST -- 1

## Mysticeti ----- A

## Balaenidae ----- AA

<u>Balaena mysticetus</u> Linnaeus 1758	AA1A
<u>Caperea marginata</u> (Gray) 1846	AA2A
<u>Eubalaena glacialis</u> (Borowski) 1781	AA3A
<u>Eubalaena australis</u> (Desmoulins) 1822	AA3B

## Eschrichtiidae ---- AB

<u>Eschrichtius robustus</u> (Lilljeborg) 1861	AB1A
--	------

## Balaenopteridae --- AC

<u>Balaenoptera acutorostrata</u> Lacépède 1804	AC1A
<u>Balaenoptera borealis</u> Lesson 1828	AC1B
<u>Balaenoptera edeni</u> Anderson 1878	AC1C
<u>Balaenoptera musculus</u> (Linnaeus) 1758	AC1E
<u>Balaenoptera physalus</u> (Linnaeus) 1758	AC1F
<u>Megaptera novaeangliae</u> (Borowski) 1781	AC2A

## Odontoceti ----- B

## Physeteridae ----- BA

<u>Kogia breviceps</u> (Blainville) 1838	BA1A
<u>Kogia simus</u> (Owen) 1866	BA1B
<u>Physeter catodon</u> Linnaeus 1758	BA2A

## Monodontidae ----- BB

<u>Delphinapterus leucas</u> (Pallas) 1776	BB1A
<u>Monodon monoceros</u> Linnaeus 1758	BB2A

## Ziphiidae ----- BC

<u>Berardius arnuxii</u> Duvernoy 1851	BC1A
<u>Berardius bairdii</u> (Stejneger) 1883	BC1B
<u>Hyperoodon ampullatus</u> (Forster) 1770	BC2A
<u>Hyperoodon planifrons</u> Flower 1882	BC2B
<u>Indopacetus pacificus</u> (Longman) 1926	BC3D
<u>Mesoplodon bidens</u> (Sowerby) 1804	BC5A
<u>Mesoplodon bowdoini</u> Andrews 1908	BC5B
<u>Mesoplodon carlhubbsi</u> Moore 1963	BC5C
<u>Mesoplodon densirostris</u> (Blainville) 1817	BC5D
<u>Mesoplodon europaeus</u> Gervais 1855	BC5E
<u>Mesoplodon gervaisi</u> (Deslongchamps) 1866	BC5G
<u>Mesoplodon ginkgodens</u> Nishiwaki and Kamiya 1958	BC5H
<u>Mesoplodon grayi</u> von Haast 1876	BC5J
<u>Mesoplodon hectori</u> (Gray) 1871	BC5K
<u>Mesoplodon layardii</u> (Gray) 1865	BC5L
<u>Mesoplodon mirus</u> True 1913	BC5M
<u>Mesoplodon stejnegeri</u> True 1885	BC5S
<u>Tasmacetus shepherdii</u> Oliver 1937	BC7A
<u>Ziphius cavirostris</u> G. Cuvier 1823	BC9A



## SPECIES LIST -- 2

## Delphinidae ----- BD

<u>Cephalorhynchus commersonii</u> Lacépède 1804	BD1A
<u>Cephalorhynchus eutropia</u> (Gray) 1846(9?)	BD1B
<u>Cephalorhynchus heavisidii</u> (Gray) 1828	BD1C
<u>Cephalorhynchus hectori</u> van Beneden 1881	BD1D
<u>Delphinus bairdii</u> Dall 1873	BD3A
<u>Delphinus delphis</u> Linnaeus 1758	BD3B
<u>Grampus griseus</u> (Cuvier) 1812	BD4A
<u>Lagenorhynchus acutus</u> (Gray) 1828	BD6A
<u>Lagenorhynchus albirostris</u> Gray 1846	BD6B
<u>Lagenorhynchus australis</u> (Peale) 1848	BD6C
<u>Lagenorhynchus cruciger</u> (Quoy and Gaimard) 1824	BD6E
<u>Lagenorhynchus hosei</u> Fraser 1957	BD6F
<u>Lagenorhynchus obliquidens</u> Gill 1865	BD6G
<u>Lagenorhynchus obscurus</u> (Gray) 1828	BD6H
<u>Lissodelphis borealis</u> (Peale) 1848	BD8A
<u>Lissodelphis peronii</u> (Lacépède) 1804	BD8B
<u>Peponocephala electra</u> (Gray) 1846	BD10A
<u>Sotalia borneensis</u> Lydekker 1901	BD12A
<u>Sotalia fluviatilis</u> (Gervais) 1855	BD12B
<u>Sousa chinensis</u> (Osbeck) 1765	BD13A
<u>Sousa tēuszii</u> (Kukenthal) 1892	BD13C
<u>Stenella attenuata</u> (Gray) 1846	BD15A
<u>Stenella clymene</u> Gray 1850	BD15B
<u>Stenella coeruleoalba</u> (Meyen) 1833	BD15C
<u>Stenella frontalis</u> (G. Cuvier) 1829	BD15F
<u>Stenella longirostris</u> (Gray) 1828	BD15L
<u>Steno bredanensis</u> (Cuvier) 1828	BD17A
<u>Tursiops aduncus</u> (Ehrenberg) 1832	BD19A
<u>Tursiops catalenia</u> (Gray) 1868	BD19B
<u>Tursiops gillii</u> Dall 1873	BD19C
<u>Tursiops truncatus</u> (Montagu) 1821	BD19D

## Globicephalidae - BE

<u>Feresa attenuata</u> Gray 1874	BE1A
<u>Globicephala edwardii</u> Smith 1934	BE3A
<u>Globicephala macrorhynchus</u> (Gray) 1846	BE3B
<u>Globicephala melaena</u> (Traill) 1809	BE3C
<u>Globicephala scammoni</u> Cope 1869	BE3D
<u>Orcaella brevirostris</u> (Owen) 1866	BE5A
<u>Orcaella fluminalis</u> Anderson 1871	BE5B
<u>Orcinus orca</u> (Linnaeus) 1758	BE7A
<u>Pseudorca crassidens</u> (Owen) 1846	BE9A

## Phocoenidae ---- BF

<u>Australophocaena dioptrica</u> Lahille 1912	BF1A
<u>Phocoena phocoena</u> (Linnaeus) 1758	BF2A
<u>Phocoena spinipinnis</u> Burmeister 1865	BF2B
<u>Phocoena sinus</u> Norris and McFarland 1958	BF2C
<u>Phocoenoides dalli</u> (True) 1885	BF4A
<u>Neophocaena phocaenoides</u> (G. Cuvier) 1829	BF6A

## SPECIES LIST -- 3

## Susuidae ----- BG

<u>Susu gangetica</u> Lebeck 1801	BG1A
<u>Susu indii</u> Blyth 1859	BG1B
<u>Inia geoffrensis</u> Blainville 1817	BG2A
<u>Lipotes vexillifer</u> Miller 1918	BG3A
<u>Pontoporia blainvillei</u> (Gervais) 1844	BG4A

## Carnivora ----- C

## Otariidae ----- CA

<u>Arctocephalus australis</u> (Zimmerman) 1783	CA1A
<u>Arctocephalus forsteri</u> Lesson 1828	CA1F
<u>Arctocephalus galapagoensis</u> Heller 1904	CA1G
<u>Arctocephalus gazella</u> Peters 1875	CA1H
<u>Arctocephalus philippii</u> Peters 1866	CA1P
<u>Arctocephalus pusillus</u> (Schreber) 1776	CA1R
<u>Arctocephalus townsendi</u> Merriam 1897	CA1T
<u>Arctocephalus tropicalis</u> (Gray) 1872	CA1W
<u>Callorhinus ursinus</u> (Linnaeus) 1758	CA2A
<u>Eumetopias jubatus</u> (Schreber) 1776	CA3B
<u>Neophoca cinerea</u> (Peron) 1816	CA4A
<u>Otaria flavescens</u> (Shaw) 1800	CA6A
<u>Phocarcos hookeri</u> (Gray) 1844	CA8A
<u>Zalophus californianus</u> (Lesson) 1828	CA9A

## Odobenidae ----- CB

<u>Odobenus rosmarus</u> (Linnaeus) 1758	CB1A
--	------

## Phocidae ----- CC

<u>Cystophora cristata</u> (Erxleben) 1777	CC1A
<u>Erignathus barbatus</u> (Erxleben) 1777	CC2A
<u>Halichoerus grypus</u> (Fabricius) 1791	CC3A
<u>Hydrurga leptonyx</u> (Blainville) 1820	CC4A
<u>Leptonychotes weddelli</u> (Lesson) 1826	CC5A
<u>Lobodon carcinophagus</u> (Hombron & Jacquinot) 1842	CC6A
<u>Monachus monachus</u> (Hermann) 1779	CC8A
<u>Monachus schauinslandi</u> Matschie 1905	CC8B
<u>Monachus tropicalis</u> Gray 1850	CC8C
<u>Mirounga angustirostris</u> Gill 1866	CC10A
<u>Mirounga leonina</u> (Linnaeus) 1758	CC10B
<u>Phoca caspica</u> Gmelin 1788	CC12C
<u>Phoca fasciata</u> Zimmermann 1783	CC12F
<u>Phoca groenlandica</u> Erxleben 1777	CC12G
<u>Phoca hispida</u> Schreber 1775	CC12H
<u>Phoca largha</u> Pallas 1811	CC12L
<u>Phoca sibirica</u> Gmelin 1788	CC12S
<u>Phoca vitulina</u> Linnaeus 1758	CC12V
<u>Ommatophoca rossii</u> Gray 1844	CC14A

## Mustelidae ----- CD

<u>Enhydra lutris</u> (Linnaeus) 1758	CD1A
<u>Lutra felina</u> Molina 1782	CD2B



SPECIES LIST -- 4

Ursidae ----- CE  
Ursus maritimus Phipps 1774 CE1A

Sirenia ----- D

Dugongidae ----- DA  
Dugong dugong Muller 1776 DA1A  
Hydrodamalis gigas Zimmermann 1780 DA2B

Trichechidae ----- DB  
Trichechus inunguis (Natterer) 1883 DB1A  
Trichechus manatus Linnaeus 1758 DB1B  
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General (non-cetacean) marine mammal -- X  
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*Subject Headings and Their Codes*

Subject headings (underlined) and subject terms (in all caps) are listed below.

SUBJECT HEADINGS  
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Non-underlined headings are for reference only. Underlined headings are for reference only. The list is arranged alphabetically by subject heading.

**SUBJECT HEADINGS**

**INMAGIC DATABASE**

**MARINE MAMMAL LITERATURE REFERENCES**

1. Marine Mammals  
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MARINE MAMMAL LITERATURE**

Woods Hole Oceanographic Institution

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BT = Broad Term,    NT = Narrow Term,    RT = Related Term

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  BT Food 422  
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- Mammary Glands  
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    Hearing 487  
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    See noise, various subjects.
- Mating 621  
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  RT Competition 235  
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  -- commercial consumption.
- Melon 629  
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    Sound directionality 985  
    Sound production 444  
    Spermaceti 464

BT = Broad Term,    NT = Narrow Term,    RT = Related Term

- Memory 633  
-- psychophysical tests of memory.  
RT Brain 173  
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    Individual recognition 531  
    Intelligence 545  
    Learning 582  
    Vocal learning 548
- Metabolism 637  
RT Energetics 369  
    Food 422  
    Respiration rates 857
- Migration 641
- Milk  
    Lactation 569  
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- Mimicry  
    Imitation 517
- Mixed species 645  
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-- includes tongue, rostral adaptations.  
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- Noise industrial 533  
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- Olfaction 705  
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     RT Acoustic location 170  
         Echolocation 345  
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         Sound directionality 985  
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- Osmoregulation 713
- Osteology 717  
     NT Age estimation bone 390  
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- Ovaries  
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-- sounds produced with air mechanisms.

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Echolocation 345  
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RT Acoustic communication 900  
Fish sounds 417  
Harmonic 473  
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-- propagation.  
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RT Diel 293

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-- a separate database field (PI).  
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- Population models 785  
 RT Mark recapture 609  
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Recruitment 449  
Sex ratio 921  
Stock assessment 725  
Stock management 955
- Population trends 528  
 RT Population models 785  
Recruitment 449  
Sealing 893  
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- Predation 793  
 -- predation by animals.  
 RT Mammals as food 429  
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- Predator avoidance 797  
 RT Agonistic behavior 570  
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## Recognition

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BT Reproduction 845

RT Gestation 457

Multiplets 661

Recruitment 449

Sexual maturity 989



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- Reproductive system 849  
 -- includes ovaries, testes.  
 NT Genitalia 453  
   Gestation 457  
   Mating 621  
 BT Reproduction 845  
 RT Sexual behavior 929  
   Sexual maturity 989
- Respiration  
   Blow 153  
   Lungs 317  
   Respiration rate 857  
   Respiration system 861
- Respiration rate 857  
 -- blow rates and numbers, surface time,  
 RT Blow 153  
   Metabolism 637  
   Respiratory system 861  
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- Respiratory system 861  
 -- includes anatomy, tidal volume.  
 NT Blowhole 157  
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RT Feeding 404, various subjects  
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Sex ratio 921

- RT Genetics 452
- Multiplets 661
- Mortality 657
- Population models 785
- Recruitment 449

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- excluding copulation.
- NT Mating 621
- copulation.
- RT Reproduction 845
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Sexual dimorphism 933

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- RT Growth rate 465
- Reproduction 845

Shark marine mammal 941

- BT Mixed species 645
- RT Predator avoidance 797
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- NT Whale watching 841
- RT Aircraft effects 905
- Noise effects industrial 537
- Noise ship 277

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- In air vision 523
- Underwater vision 445
- Visual communication 237
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- Field observations 451
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- NT Coda 225
- BT Phonation 761
- RT Individual identification 529
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- Dimensions 305
- Weight in air 418
- Weight in water 819
- Whaling statistics 167

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 BT Feeding 404  
 RT Food 422  
     Plankton as food 433
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 RT Blubber 161  
     Callosities 165  
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     Hydrodynamic 505  
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 BT Osteology 717
- Sleep 927  
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     Parental 617  
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- Social learning 956  
 BT Learning 582, various subjects  
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 RT Dominance hierarchy 333  
     Social behavior 957
- Social play 958  
 NT Object interaction 693  
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- Sonar 961  
 -- sound echo-ranging by humans.  
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  - Sound projector 805
  - Sound propagation 444
  - Sound source level 555
  - Splashes 163
  - Swim bladder 888
  - Tank acoustics 111
  - Target strength 342
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- Sound channel
- Oceanographic features 697
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- Sound directionality 985
- directional propagation of sound.
- RT Echolocation 345
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  - Phonation 761
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## Sound gear

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Sound directionality 985

Sound propagation 444

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-- mechanisms of sound production by animals.

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Phonation 761, various subjects

Playback 781

Sound directionality 985

Sound propagation 444

Splashes 163

Sound projector 805

RT Playback 781

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RT Oceanographic features 697

Sound production 997

Sound projector 805

## Sound scattering

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Sonar 961

Swim bladder 888

Target strength 342

Sound source level 555

-- measure of absolute sound levels.

RT Instrument calibration 185

Phonation 761

Sound production 997

Sound projector 805

Sound propagation 444

Target strength 342

## Sound velocity

Oceanographic features 697

Sound propagation 444



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## Source level

Sound propagation 444

Sound source level 555

Target strength 342

## Special gear

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-- movement.

RT Locomotion 597

Wave riding 160

Spermaceti 464

BT Fats oils waxes 401

RT Melon 629

Splashes 163

RT Aerial behavior 250

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-- pitchpoling.

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BT Food 422

RT Ambergris 810

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Phonation 761

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-- abundance estimates, stock delineation.

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RT Census techniques 205

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Mortality 657

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Population trends 528

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Stock management 955

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Stranding live 665  
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  Touch 800

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  -- includes "Discovery marking".  
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      Individual identification 529 (natural marks)  
      Telemetry 828  
  BT Tracking 664  
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  -- tail stock, the "small", "peduncle".  
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- Taste 469  
  See senses, various subjects.  
  RT Chemoreception 213  
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    Scientific Nomenclature 685  
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- Taxonomy  
  Systematics 978  
  Taxonomic Diagnosis 287
- Teeth 755  
  NT Age estimation teeth 530  
  RT Osteology 717
- Telemetry 828  
  -- transfer of information from a distance, usually by other means than the primary signal of a device.  
  BT Tagging 753  
  RT Satellite 873  
    Tracking 664
- Temperature  
  Body temperature 159  
  Water temperature 539
- Teratology 811  
  -- abnormal formations in marine mammals.  
  BT Pathology 749
- Territoriality 700  
  RT Competition 235  
    Geographic distribution 455  
    Home range 493  
    Seasonal occurrence 897
- Testes  
  Genitalia 453  
  Sexual maturity 989  
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  RT Equipment special 375  
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- Thermoregulation 583  
-- see physiology, various subjects.  
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- Throat (and mouth) 249  
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    Mouth 660  
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- Tidal volume  
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- Tongue  
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    Ventral grooves 673
- Touch 800  
RT Vibrissae 631  
-- see senses, various subjects.
- Tracking 664  
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- Training 915  
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- Tuna marine mammal 357  
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-- see visual, various subjects.  
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## Velocity

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-- not a subject category. See listing of vernacular names in Species List and search for scientific name in Genus/Species (GS) Field.

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Visual communication 237

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NT Eye 880

Vocal learning 548

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## Vocalization

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Voice 377

-- distinctive sound features produced by innate vocal mechanism characteristics, not cetacean signature signals.

RT Individual identification 529  
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BT Oceanographic features 697  
RT Thermoregulation 583

## Wave noise

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BT = Broad Term, NT = Narrow Term, RT = Related Term

- Wave riding 160  
 RT Locomotion 597  
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     Juvenile 557  
     Lactation 569  
     Parental 617
- Weight in air 418  
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Whale watching 841  
 BT Ship effects 300
- Whaling 938  
 NT Whaling historical/logbooks 924  
     Whaling quotas 794  
     Whaling statistics 167  
     Whaling quotas 794  
     Whaling statistics 167  
     Whaling techniques 432  
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     Cetacean general 171  
     Population trends 528  
     Sealing 893
- Whaling commission  
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 BT Whaling 938  
 RT Population trends 528  
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- Whistle 395  
 BT Phonation 761
- Wind  
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- Yarn 367  
 -- Myths, sea stories.  
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*Alphabetical List of Subject Headings and Codes*

**ALPHABETICAL LISTING OF SUBJECT HEADINGS**

**For the Reference Database**



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490 Age estimation tag returns  
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570 Agonistic behavior  
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750 Allometry  
760 Allomaternal  
770 Altruism  
810 Ambergris  
850 Ambient noise  
890 Amplifier  
325 Anatomy  
930 Anesthesia  
101 Asymmetry  
105 Attraction  
109 Audiogram  
121 Auditory Physiology  
125 Avoidance  
129 Baleen  
137 Barnacles  
312 Behavior  
139 Behavioral ecology  
423 Benthos as food  
141 Biochemistry  
143 Biogeography  
145 Bioluminescence  
605 Bird marine mammal  
745 Birth  
149 Blindness  
917 Blood  
153 Blow  
157 Blowhole  
161 Blubber  
159 Body temperature  
173 Brain  
177 Breaching  
181 Bubble feeding  
174 Call  
165 Callosities

SUBJECT HEADINGS -- Alphabetical list 2

- 677 Captive release
- 193 Captivity
- 197 Capture techniques
- 201 Care giving
- 205 Census techniques
- 171 Cetacean general
- 209 Chemical communication
- 213 Chemoreception
- 217 Circuit
- 221 Click
- 225 Coda
- 229 Cognition
- 397 Collector's troubles
- 235 Competition
- 245 Contaminants
- 247 Cooperation
- 402 coordinated feeding
- 261 Critical bandwidth
- 269 Cyamids
- 285 Dermal hardening
- 289 Dialect
- 293 Diel
- 295 Diet
- 301 Digestive system
- 305 Dimensions
- 993 Directional hearing
- 309 Distress call
- 281 Dive depth
- 321 Diving
- 329 Dolphin porpoise
- 333 Dominance hierarchy
- 113 Ear
- 345 Echolocation
- 349 Ectoparasites
- 353 EIS
- 361 Endocrine system
- 365 Endoparasites
- 369 Energetics
- 371 Entrapment
- 375 Equipment special
- 381 Evoked potentials
- 385 Evolution
- 389 Excretion
- 393 Extinction
- 880 Eye
- 401 Fats oils waxes
- 404 Feeding
- 405 Fetus
- 409 Field identification guide
- 413 Field marks
- 451 Field Observations

SUBJECT HEADINGS -- Alphabetical list 3

337 Fin (and dorsal carina)  
425 Fish as food  
415 Fish hearing  
417 Fish sounds  
419 Flippers  
421 Flukes  
424 Fluking  
422 Food  
452 Genetics  
453 Genitalia  
455 Geographic distribution  
335 Geologic noise  
457 Gestation  
461 Grooming  
465 Growth rate  
241 Habitat conservation  
471 Hair  
473 Harmonic  
477 Harpoon  
481 Haul-out  
485 Healing  
487 Hearing  
489 Heart  
493 Home range  
497 Hormone  
881 Human marine mammal interaction  
501 Hybrid  
505 Hydrodynamic  
507 Hydrodynamic sound  
509 Hydrophone  
513 Ice  
877 Ice entrapment  
517 Imitation  
521 In air hearing  
522 In air sounds  
523 In air vision  
525 Incidental catch  
529 Individual identification  
531 Individual recognition  
185 Instrument calibration  
545 Intelligence  
553 IWC  
557 Juvenile  
883 Karyotype  
561 Keys  
565 Kidney  
569 Lactation  
577 Larynx  
581 Lateral line  
582 Learning  
884 Lifespan



SUBJECT HEADINGS -- Alphabetical list 4

593 Literature Review  
597 Locomotion  
317 Lung  
406 Lunge feeding  
602 Magnetic  
429 Mammals or other as food  
609 Mark recapture  
613 Masking  
621 Mating  
625 Meat  
629 Melon  
633 Memory  
637 Metabolism  
641 Migration  
645 Mixed species  
254 Molt  
657 Mortality  
660 Mouth  
661 Multiplets  
669 Muscles  
315 Neonate  
681 Nervous system  
650 Noise aircraft  
537 Noise effects industrial  
533 Noise industrial  
909 Noise seismic exploration  
277 Noise ship  
689 Nose  
697 Oceanographic features  
705 Olfaction  
709 Orientation  
713 Osmoregulation  
717 Osteology  
721 Otoliths  
733 Paleontology  
617 Parental  
749 Pathology  
319 Pelvis  
701 Petroleum effects  
761 Phonation  
273 Photo period  
765 Photography techniques  
233 Pigmentation  
777 Pinger  
118 Pinniped general  
433 Plankton as food  
693 Play with objects  
781 Playback  
785 Population models  
528 Population trends  
793 Predation

SUBJECT HEADINGS -- Alphabetical list 5

797 Predator avoidance  
801 Predator defense  
821 Rain  
829 Recording system  
449 Recruitment  
837 Remora  
845 Reproduction  
189 Reproductive interval  
849 Reproductive system  
857 Respiration rate  
861 Respiratory system  
863 Resting behavior  
169 Review  
873 Satellite  
885 Scattering layer  
889 Schooling  
685 Scientific nomenclature  
893 Sealing  
897 Seasonal occurrence  
909 Seismic noise  
921 Sex ratio  
925 Sex determination  
929 Sexual behavior  
933 Sexual dimorphism  
989 Sexual maturity  
941 Shark marine mammal  
300 Ship effects  
953 Signature signal  
407 Skim Feeding  
373 Skin  
257 Skull  
927 Sleep  
957 Social behavior  
956 Social learning  
959 Social organization  
958 Social play  
961 Sonar  
965 Song  
973 Sonobuoy  
985 Sound directionality  
997 Sound production  
805 Sound projector  
444 Sound propagation  
555 Sound source level  
780 Speed  
464 Spermaceti  
163 Splashes  
437 Squid as food  
725 Stock assessment  
955 Stock management  
486 Stomach contents

SUBJECT HEADINGS -- Alphabetical list 6

931 Stranding dead  
665 Stranding live  
408 Suction feeding  
888 Swim bladder  
222 Symbiosis  
978 Systematics  
753 Tagging  
869 Tail  
111 Tank Acoustics  
342 Target Strength  
469 Taste  
287 Taxonomic diagnosis  
755 Teeth  
828 Telemetry  
811 Teratology  
700 Territorial  
112 Theodolite  
583 Thermoregulation  
249 Throat  
238 Tides  
800 Touch  
664 Tracking  
915 Training  
357 Tuna marine mammal  
817 Underwater blow  
445 Underwater vision  
223 Vascular system  
673 Ventral grooves  
210 Vestigial organs  
631 Vibrissae  
265 Video  
215 Viscera  
237 Visual communication  
825 Visual physiology  
548 Vocal learning  
377 Voice  
539 Water temperature  
160 Wave riding  
742 Weaning  
418 Weight in air  
819 Weight in water  
841 Whale watching  
938 Whaling  
924 Whaling historical/logbooks  
794 Whaling quotas  
167 Whaling statistics  
432 Whaling techniques  
395 Whistle  
367 Yarn



*Numerical List of Subject Heading Codes*

NUMERICAL SEQUENCE OF SUBJECT HEADINGS

For the Reference Database

NUMERICAL SEQUENCE OF SUBJECT HEADINGS -- 1

101	<u>Asymmetry</u>
105	<u>Attraction</u>
109	<u>Audiogram</u>
111	<u>Tank Acoustics</u>
112	<u>Theodolite</u>
113	<u>Ear</u>
118	<u>Pinniped general</u>
121	<u>Auditory Physiology</u>
125	<u>Avoidance</u>
129	<u>Baleen</u>
130	<u>Acoustic lens</u>
137	<u>Barnacles</u>
139	<u>Behavioral ecology</u>
141	<u>Biochemistry</u>
143	<u>Biogeography</u>
145	<u>Bioluminescence</u>
149	<u>Blindness</u>
153	<u>Blow</u>
157	<u>Blowhole</u>
159	<u>Body temperature</u>
160	<u>Wave riding</u>
161	<u>Blubber</u>
163	<u>Splashes</u>
165	<u>Callosities</u>
167	<u>Whaling statistics</u>
169	<u>Review</u>
170	<u>Acoustic location</u>
171	<u>Cetacean general</u>
173	<u>Brain</u>
174	<u>Call</u>
177	<u>Breaching</u>
181	<u>Bubble feeding</u>
185	<u>Instrument calibration</u>
189	<u>Reproductive interval</u>
193	<u>Captivity</u>
197	<u>Capture techniques</u>
201	<u>Care giving</u>
205	<u>Census techniques</u>
209	<u>Chemical communication</u>
210	<u>Vestigial organs</u>
213	<u>Chemoreception</u>
215	<u>Viscera</u>
217	<u>Circuit</u>
221	<u>Click</u>
222	<u>Symbiosis</u>
223	<u>Vascular system</u>
225	<u>Coda</u>
229	<u>Cognition</u>
233	<u>Pigmentation</u>
235	<u>Competition</u>



NUMERICAL SEQUENCE OF SUBJECT HEADINGS -- 2

- 237 Visual communication
- 238 Tides
- 241 Habitat conservation
- 245 Contaminants
- 247 Cooperation
- 249 Throat
- 250 Aerial behavior
- 254 Molt
- 257 Skull
- 261 Critical bandwidth
- 265 Video
- 269 Cyamids
- 273 Photo period
- 277 Noise ship
- 281 Dive depth
- 285 Dermal hardening
- 287 Taxonomic Diagnosis
- 289 Dialect
- 293 Diel
- 295 Diet
- 300 Ship effects
- 301 Digestive system
- 305 Dimensions
- 309 Distress call
- 312 Behavior
- 314 Age and growth
- 315 Neonate
- 317 Lung
- 319 Pelvis
- 321 Diving
- 325 Anatomy
- 329 Dolphin porpoise
- 333 Dominance hierarchy
- 335 Geologic noise
- 337 Dorsal fin (and dorsal carina)
- 342 Target Strength
- 345 Echolocation
- 349 Ectoparasites
- 353 EIS
- 357 Tuna marine mammal
- 361 Endocrine system
- 365 Endoparasites
- 367 Yarn
- 369 Energetics
- 370 Age estimation baleen
- 371 Entrapment
- 373 Skin
- 375 Equipment special
- 377 Voice
- 381 Evoked potentials
- 385 Evolution

NUMERICAL SEQUENCE OF SUBJECT HEADINGS -- 3

- 389 Excretion
- 390 Age estimation bone
- 393 Extinction
- 395 Whistle
- 397 Collector's troubles
- 400 Acoustic analysis techniques
- 401 Fats oils waxes
- 402 Coordinated feeding
- 404 Feeding
- 405 Fetus
- 406 Lunge feeding
- 407 Skim Feeding
- 408 Suction feeding
- 409 Field identification guide
- 410 Age estimation corpora lutea
- 413 Field marks
- 415 Fish hearing
- 417 Fish sounds
- 418 Weight in air
- 419 Flippers
- 421 Flukes
- 422 Food
- 423 Benthos as food
- 424 Fluking
- 425 Fish as food
- 429 Mammals or other as food
- 432 Whaling techniques
- 433 Plankton as food
- 437 Squid as food
- 444 Sound propagation
- 445 Underwater vision
- 449 Recruitment
- 450 Age estimation ear plug
- 451 Field Observations
- 452 Genetics
- 453 Genitalia
- 455 Geographic distribution
- 457 Gestation
- 461 Grooming
- 464 Spermaceti
- 465 Growth rate
- 469 Taste
- 471 Hair
- 473 Harmonic
- 477 Harpoon
- 481 Haul-out
- 485 Healing
- 486 Stomach contents
- 487 Hearing
- 489 Heart
- 490 Age estimation tag returns

NUMERICAL SEQUENCE OF SUBJECT HEADINGS -- 4

493 Home range  
497 Hormone  
528 Population trends  
533 Noise industrial  
537 Noise effects industrial  
500 Acoustic census  
501 Hybrid  
505 Hydrodynamic  
507 Hydrodynamic sound  
509 Hydrophone  
513 Ice  
517 Imitation  
521 In air hearing  
522 In air sounds  
523 In air vision  
525 Incidental catch  
529 Individual identification  
530 Age estimation teeth  
531 Individual recognition  
539 Water temperature  
545 Intelligence  
548 Vocal learning  
553 IWC  
555 Sound source level  
557 Juvenile  
561 Keys  
565 Kidney  
569 Lactation  
570 Agonistic behavior  
577 Larynx  
581 Lateral line  
582 Learning  
583 Thermoregulation  
593 Literature Review  
597 Locomotion  
602 Magnetic  
605 Bird marine mammal  
609 Mark recapture  
613 Masking  
617 Parental  
621 Mating  
625 Meat  
629 Melon  
631 Vibrissae  
633 Memory  
637 Metabolism  
641 Migration  
645 Mixed species  
650 Noise aircraft  
657 Mortality  
660 Mouth



- 661 Multiplets
- 664 Tracking
- 665 Stranding live
- 669 Muscles
- 673 Ventral grooves
- 677 Captive release
- 681 Nervous system
- 685 Scientific nomenclature
- 689 Nose
- 693 Play with objects
- 697 Oceanographic features
- 700 Territorial
- 701 Petroleum effects
- 705 Olfaction
- 709 Orientation
- 713 Osmoregulation
- 717 Osteology
- 721 Otoliths
- 725 Stock assessment
- 730 Albinism
- 733 Paleontology
- 742 Weaning
- 745 Birth
- 749 Pathology
- 750 Allometry
- 753 Tagging
- 755 Teeth
- 760 Allomaternal
- 761 Phonation
- 765 Photography techniques
- 770 Altruism
- 777 Pinger
- 780 Speed
- 781 Playback
- 785 Population models
- 793 Predation
- 794 Whaling quotas
- 797 Predator avoidance
- 800 Touch
- 801 Predator defense
- 805 Sound projector
- 810 Ambergris
- 811 Teratology
- 817 Underwater blow
- 819 Weight in water
- 821 Rain
- 825 Visual physiology
- 828 Telemetry
- 829 Recording system
- 833 Karyotype
- 837 Remora

NUMERICAL SEQUENCE OF SUBJECT HEADINGS -- 6

841 Whale watching  
845 Reproduction  
849 Reproductive system  
850 Ambient noise  
857 Respiration rate  
861 Respiratory system  
863 Resting behavior  
869 Tail  
873 Satellite  
877 Ice entrapment  
880 Eye  
881 Human marine mammal interaction  
884 Lifespan  
885 Scattering layer  
888 Swim bladder  
889 Schooling  
890 Amplifier  
893 Sealing  
897 Seasonal occurrence  
900 Acoustic communication  
905 Aircraft effects  
909 Noise seismic exploration  
915 Training  
917 Blood  
921 Sex ratio  
924 Whaling historical/logbooks  
925 Sex determination  
927 Sleep  
929 Sexual behavior  
930 Anesthesia  
931 Stranding dead  
933 Sexual dimorphism  
938 Whaling  
941 Shark marine mammal  
953 Signature signal  
955 Stock management  
956 Social learning  
957 Social behavior  
958 Social play  
959 Social organization  
961 Sonar  
965 Song  
973 Sonobuoy  
975 Social behavior  
978 Systematics  
985 Sound directionality  
989 Sexual maturity  
993 Directional hearing  
997 Sound production

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