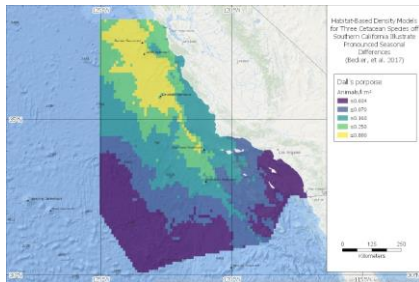# Winter/Spring Habitat-based Density Models for Three Cetacean Species off Southern California - Dall's Porpoise

Type   Shapefile

Tags   Cetacean, Marine Mammal, Eastern Pacific Ocean, California, Southern California Bight, Habitat-Based Density Model, Species Distribution Model, Dall's Porpoise, Phocoenoides dalli, Winter/Spring, California Cooperative Oceanic Fisheries Investigations, CalCOFI, Southwest Fisheries Science Center, SWFSC

Summary

These models have been used by the Navy and others to assess potential impacts on cetaceans in compliance with U.S. regulations such as the Endangered Species Act and Marine Mammal Protection Act, which require species-specific assessments of the number of animals potentially affected by their activities.

Description

We used a well-established Generalized Additive Modeling framework to develop cetacean SDMs based on 20 California Cooperative Oceanic Fisheries Investigations (CalCOFI) shipboard surveys conducted during winter and spring between 2005 and 2015. Models were fit for short-beaked common dolphin (*Delphinus delphis delphis*), Dall's porpoise (*Phocoenoides dalli*), and humpback whale (*Megaptera novaeangliae*). Model performance was evaluated based on a variety of established metrics, including the percentage of explained deviance, ratios of observed to predicted density, and visual inspection of predicted and observed distributions. Final models were used to produce spatial grids of average species density and spatially-explicit measures of uncertainty. Results provide the first fine scale (10 km) density predictions for these species during the cool seasons and reveal distribution patterns that are markedly different from summer/fall, thus providing novel insights into species ecology and quantitative data for the seasonal assessment of potential anthropogenic impacts.

Credits

Use limitations

The user must be aware of data conditions and ultimately bear responsibility for the appropriate use of the information with respect to possible errors, original map scale, collection methodology, currency of data, and other conditions specific to certain data.

Extent

West -125.055684   East   -117.122588

North 38.065782   South 30.070776

Scale Range

Maximum (zoomed in)   1:5,000

Minimum (zoomed out) 1:50,000,000

Topics and Keywords ►

Themes or categories of the resource   biota, environment, oceans

Content type   Downloadable Data
    Export to FGDC CSDGM XML format as Resource Description   No

Theme keywords   cetacean, distribution, density, short-beaked common dolphin, Dall's porpoise,
humpback whale, Delphinus delphis delphis, Phocoenoides dalli, Megaptera novaeangliae

Place keywords   Southern California Bight, California, Eastern Pacific Ocean

Citation ►

Title   Winter/Spring Habitat-based Density Models for Three Cetacean Species off Southern California
- Dall's Porpoise
Creation date   2018-01-08   00:00:00
Publication date   2018-01-08   00:00:00

Edition   2017

Presentation formats   ⇔ digital map
FGDC geospatial presentation format   vector digital data

Collection title   Southwest Fisheries Science Center

Citation Contacts ►

Responsible party - originator
Individual's name   Karin A. Forney, Ph.D.
Organization's name   Southwest Fisheries Science Center

Contact information
►

Phone
Voice   (831) 771-4155
Address
Type   both
Delivery point   7544 Sandholdt Rd
City   Moss Landing
Administrative area   CA
Postal code   95039
Country   US
e-mail address   karin.forney@noaa.gov

Responsible party - distributor
Individual's name   nil

Contact information
►
Online resource
Location   https://cetsound.noaa.gov
Access protocol   https
Name   Citation URL
Description   Online Resource
Function performed   information

Resource Details ►

Dataset languages   ⇔ English (UNITED STATES)
Dataset character set   utf8 - 8 bit UCS Transfer Format

Status   completed
Spatial representation type   ⇔ vector

Supplemental information
The objectives of the Becker et al. (2017) study were two-fold: 1) develop spatially-explicit density estimates for winter/spring to support management applications, and 2) compare model-predicted density and distribution patterns to previously developed summer/fall model results in the context of species ecology.

Processing environment   ⇔ Version 6.2 (Build 9200) ; Esri ArcGIS 10.6.1.9270

Credits
Elizabeth A. Becker, Karin A. Forney, Bruce J. Thayre, Amanda J. Debich, Gregory S. Campbell, Katherine Whitaker, Annie B. Douglas, Anita Gilles, Ryan Hoopes, and John A. Hildebrand. Frontiers in Marine Science, 4:121.

ArcGIS item properties
Name ⇔ Dalls_porpoise
Size ⇔ 1.128
Location ⇔ file://\\hqdata1\homes1\Tim.Haverland\projects\cetacean mapping\data\CalCOFI_WinterSpring_Becker et al. 2017_Shapefiles\V01\Dalls_porpoise.shp
Access protocol ⇔ Local Area Network

Extents ▶

Extent
Geographic extent
Bounding rectangle
West longitude -179.9999999999
East longitude -115.950441157234
South latitude 27.4689790695285
North latitude 43.0000193332257

Extent
Geographic extent
Bounding rectangle
Extent type
Extent used for searching
West longitude ⇔ -125.055684
East longitude ⇔ -117.122588
North latitude ⇔ 38.065782
South latitude ⇔ 30.070776
Extent contains the resource ⇔ Yes

Extent
Description
January-April 2005-2015

Temporal extent
Beginning date 2005-01-01 00:00:00
Ending date 2005-04-30 00:00:00

Temporal extent
Beginning date 2006-01-01 00:00:00
Ending date 2006-04-30 00:00:00

Temporal extent
Beginning date 2007-01-01 00:00:00
Ending date 2007-04-30 00:00:00

Temporal extent
Beginning date 2008-01-01 00:00:00
Ending date 2008-04-30 00:00:00

Temporal extent
Beginning date   2009-01-01   00:00:00
Ending date   2009-04-30   00:00:00

Temporal extent
Beginning date   2010-01-01   00:00:00
Ending date   2010-04-30   00:00:00

Temporal extent
Beginning date   2011-01-01   00:00:00
Ending date   2011-04-30   00:00:00

Temporal extent
Beginning date   2012-01-01   00:00:00
Ending date   2012-04-30   00:00:00

Temporal extent
Beginning date   2013-01-01   00:00:00
Ending date   2013-04-30   00:00:00

Temporal extent
Beginning date   2014-01-01   00:00:00
Ending date   2014-04-30   00:00:00

Temporal extent
Beginning date   2015-01-01   00:00:00
Ending date   2015-04-30   00:00:00

Extent in the item's coordinate system
West longitude   ⇔ -125.055684
East longitude   ⇔ -117.122588
South latitude   ⇔ 30.070776
North latitude   ⇔ 38.065782
Extent contains the resource   ⇔ Yes

Resource Points of Contact ▶

Point of contact - originator
Individual's name   Karin A. Forney, Ph.D.
Organization's name   Southwest Fisheries Science Center

Contact information
▶
Phone
Voice   (831) 771-4155

Address
Type   both
Delivery point   7544 Sandholdt Rd
City   Moss Landing
Administrative area   CA
Postal code   95039
Country   US
e-mail address   karin.forney@noaa.gov

Resource Maintenance ▶

Resource maintenance
Update frequency   as needed

Maintenance contact - originator
Individual's name   Karin A. Forney, Ph.D.
Organization's name   Southwest Fisheries Science Center

Contact information
▶
Phone
Voice   (831) 771-4155
Address
Type   both
Delivery point   7544 Sandholdt Rd
City   Moss Landing
Administrative area   CA
Postal code   95039
Country   US
e-mail address   karin.forney@noaa.gov

Resource Constraints ▶

Constraints
Limitations of use

> The user must be aware of data conditions and ultimately bear responsibility for the appropriate use of the information with respect to possible errors, original map scale, collection methodology, currency of data, and other conditions specific to certain data.

Legal constraints
Limitations of use

> *** No Warranty*** The user assumes the entire risk related to its use of these data. NMFS is providing these data "as is," and NMFS disclaims any and all warranties, whether express or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose. No warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. It is strongly recommended that careful attention be paid to the

contents of the metadata file associated with these data to evaluate dataset limitations, restrictions or intended use. In no event will NMFS be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of this data.

Spatial Reference ▶

ArcGIS coordinate system
Type ⇔ Geographic
Geographic coordinate reference ⇔ GCS_WGS_1984
Coordinate reference details ⇔
Geographic coordinate system
Well-known identifier 4326
X origin -400
Y origin -400
XY scale 11258999068426.238
Z origin -100000
Z scale 10000
M origin -100000
M scale 10000
XY tolerance 8.983152841195215e-09
Z tolerance 0.001
M tolerance 0.001
High precision true
Left longitude -180
Latest well-known identifier 4326
Well-known text
GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]], PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433],AUTHORITY["EPSG",4326]]

Reference system identifier
Dimension horizontal
Value ⇔ 4326
Codespace ⇔ EPSG
Version ⇔ 6.14(3.0.1)

Spatial Data Properties ▶

Vector
▶
Level of topology for this dataset ⇔ geometry only

Geometric objects
Feature class name Dalls_porpoise
Object type ⇔ composite

Object count   ⇔ 4852

ArcGIS Feature Class Properties
▶

Feature class name   Dalls_porpoise
Feature type   ⇔ Simple
Geometry type   ⇔ Polygon
Has topology   ⇔ FALSE
Feature count   ⇔ 4852
Spatial index   ⇔ FALSE
Linear referencing   ⇔ FALSE

Data Quality ▶

Scope of quality information
▶
Resource level   dataset

Lineage ▶

Lineage statement

For the area defined as the CalCOFI South Stratum: California Cooperative Oceanic Fisheries Investigations (CalCOFI) marine mammal density data were derived from habitat-based density models (HBDM) developed by marine mammal subject matter experts (SME). HBDM output data was migrated to GIS layers that were compliant with the Navy Marine Species Density Database (NMSDD) schema.

The area defined as the "SCI North" stratum was populated with a 0 density value as directed by the US Navy who has surveyed the area.

Process step
▶
When the process occurred   2015-05-01   00:00:00
Description

The NMSDD compliant grid layer, which required each cell to be 10^2 km, was produced using the ArcGIS Fishnet tool. The grid data layer was generated using the World Plate Carree projection so that each grid cell would line up with the points generated from any HBDM output. The gridded data layer was created to cover the entire study area. All fields required for the NMSDD were added.

Process contact - processor
Individual's name   Ryan Hoopes
Organization's name   Southwest Fisheries Science Center

Contact's position GIS Analyst

Contact information

▶

Phone
Voice 858-345-1956
Address
Type both
Delivery point 420 Stevens Ave
City Solana Beach
Administrative area California
Postal code 92075
Country US
e-mail address ryan.hoopes@mantech.com

Process step

▶

When the process occurred 2015-05-15 00:00:00
Description

The following fields were populated using ArcGIS ModelBuilder with inputs provided by subject matter experts (SME): SPECIES, SPECIES_2,STUDY, STRATUM, MODEL_TYPE, SEASON, AREA_SQKM, ABUNDANCE.

The AREA_SQKM field was populated by calculating square kilometers using the ArcGIS geometry calculator.Areas were calculated using the World Cylindrical Equal Area projection.

The ABUNDANCE field was populated by running a field calculation that multiplied the DENSITY and AREA_SQKM fields.

Process contact - processor
Individual's name Ryan Hoopes
Organization's name Southwest Fisheries Science Center
Contact's position GIS Analyst

Contact information

▶

Phone
Voice 858-345-1956
Address
Type both
Delivery point 420 Stevens Ave

City   Solana Beach
Administrative area   California
Postal code   92075
Country   US
e-mail address   ryan.hoopes@mantech.com

Process step
▶

When the process occurred   2015-05-20   00:00:00
Description
        Habitat-based Density Model Data:

        Original data in csv format produced from habitat-based density models (HBDM) were converted
        to a point shapefile using ArcGIS.

        A spatial join between the points generated from the HBDM csv output and the NMSDD grid data
        was created in ArcGIS in order to populate the appropriate NMSDD attribute fieds with the HBDM
        information.

        The following fields were calculated from the HBDM information: DENSITY, UNCERTAINTY,
        AREA_SQKM2, ABUNDANCE2.

        The UNCERTAINTY field represents the coefficient of variation (CV) value.

        The AREA_SQKM2 and ABUNDANCE2 fields are for Navy internal purposes only and are used to
        compare the HBDM and NMSDD grid areas since there could be slight variations due to spatial
        projections.

Process contact - processor
Individual's name   Ryan Hoopes
Organization's name   Southwest Fisheries Science Center
Contact's position   GIS Analyst

Contact information
▶

Phone
Voice   858-345-1956
Address
Type   both
Delivery point   420 Stevens Ave
City   Solana Beach
Administrative area   California
Postal code   92075
Country   US
e-mail address   ryan.hoopes@mantech.com

Process step

►

When the process occurred   2015-05-31   00:00:00
Description

Data Layer was projected to the WGS84 Global Coordinate System (GCS).

Data geometry was validated by running ArcGIS topology checks and the check/repair geometry tool.

Attribute values were validated by running a python script to ensure all fields were correctly populated.

Process contact - processor
Individual's name   Ryan Hoopes
Organization's name   Southwest Fisheries Science Center
Contact's position   GIS Analyst

Contact information

►

Phone
Voice   858-345-1956
Address
Type   both
Delivery point   420 Stevens Ave
City   Solana Beach
Administrative area   California
Postal code   92075
Country   US
e-mail address   ryan.hoopes@mantech.com

Process step

►

When the process occurred   2019-04-16   00:00:00
Description

For distributing data to the public via the CetSound project, we performed the following:
- Made a single shapefile for each species, instead of separate shapefiles for winter and spring
- Calculated STUDY column to "Becker, et al. 2017"
- Calculated SEASON column to "Winter/Spring". While this does not meet Navy standards (Fall, Winter, Spring, Summer), we felt it was important to note the extended season that the data apply to because we are using a single shapefile.
- Removed Navy-specific fields AREA_SQKM2 and ABUNDANCE2
- Removed Shape_Area and Shape_Leng fields
- Updated metadata with input from SME

Process contact - distributor
Individual's name   Tim Haverland
Organization's name   NMFS Office of Science and Technology
Contact's position   IT Specialist

Contact information
▶

Phone
Voice   301-427-8137
Address
Type   both
Delivery point   1315 East-West Highway
City   Silver Spring
Administrative area   MD
Postal code   20910
Country   US
e-mail address   tim.haverland@noaa.gov
Online resource
Location   https://cetsound.noaa.gov
Access protocol   https
Function performed   information

Source data
▶

Description
        CalCOFI 10x10km grid

Source medium name   hard disk

Source citation
▶

Title   CalCOFI 10x10km grid
Creation date   2015-01-01   00:00:00

Geoprocessing history ▶

Process
Process name
Date   2016-10-25   09:26:37
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CopyFeatures
Command issued

```
CopyFeatures "\\SOLSEATFP01\Groups\ESRI\MMDS\Phase
III\Projects\Data_Development\Updates\201610_Update\Data\Shapefiles\Template
_Grid_CalCOFI.shp" "\\SOLSEATFP01\Groups\ESRI\MMDS\Phase
III\Projects\Data_Development\Updates\201610_Update\Data\CalCOFI_Winter_Upda
te_201610.gdb\Template_Grid_CalCOFI" # 0 0 0
```
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   09:46:52
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI UID [OBJECTID] VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:03:55
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI STRATUM "CalCOFI South" VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:04:21
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI DENSITY NULL VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:04:28
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI UNCERTAINT NULL VB #
```
Include in lineage when exporting metadata   No

Process
Process name

Date 2016-10-25 10:04:33
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI MONTH_NUMB NULL VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:04:39
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI MONTH_NAME NULL VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:05:01
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI UNCER_QUAL NULL VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:05:08
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI MODEL_VERS NULL VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:05:18
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
```
CalculateField Template_Grid_CalCOFI AREA_SQKM2 NULL VB #
```
Include in lineage when exporting metadata   No

Process

Process name
Date   2016-10-25   10:05:24
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
`CalculateField Template_Grid_CalCOFI ABUNDANCE2 NULL VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:05:30
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
`CalculateField Template_Grid_CalCOFI ABUNDANCE NULL VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:06:18
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
`CalculateField Template_Grid_CalCOFI SPECIES NULL VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:06:25
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
`CalculateField Template_Grid_CalCOFI SPECIES_2 NULL VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   10:08:21
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
`CalculateField Short_beaked_common_dolphin_spring SPECIES "Short beaked
common dolphin" VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:08:33
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
```
CalculateField Short_beaked_common_dolphin_spring SPECIES_2 "Delphinus
delphis" VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:08:57
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
```
CalculateField Short_beaked_common_dolphin_spring SEASON "Spring" VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 10:28:19
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
```
CalculateField Short_beaked_common_dolphin_spring ABUNDANCE "[DENSITY] *
[AREA_SQKM]" VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 11:23:58
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
```
CalculateField Short_beaked_common_dolphin_spring ABUNDANCE "[DENSITY] *
[AREA_SQKM]" VB #
```
Include in lineage when exporting metadata   No

Process
Process name
Date 2016-10-25 11:25:21
Tool location c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued

CalculateField Short_beaked_common_dolphin_spring STUDY "Becker et al in prep" VB #

Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:25:37
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
CalculateField Short_beaked_common_dolphin_spring MODEL_TYPE "Habitat based density model" VB #

Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:27:46
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
CalculateField Humpback_whale_spring SPECIES "Humpback whale" VB #

Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:28:00
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
CalculateField Humpback_whale_spring SPECIES_2 "Megaptera novaeangliae" VB #

Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:31:38
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
CalculateField Humpback_whale_spring ABUNDANCE "[AREA_SQKM] * [DENSITY]" VB #

Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:34:42

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
`CalculateField Dalls_porpoise_spring SPECIES "Dalls porpoise" VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:35:06
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
`CalculateField Dalls_porpoise_spring SPECIES_2 "Phocoenoides dalli" VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-25   11:37:24
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
`CalculateField Dalls_porpoise_spring ABUNDANCE "[AREA_SQKM] * [DENSITY]" VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-27   13:01:46
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
`CalculateField Dalls_porpoise_spring UID Null VB #`
Include in lineage when exporting metadata   No

Process
Process name
Date   2016-10-27   13:14:42
Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
Command issued
`CalculateField Dalls_porpoise_winter SEASON "Winter" VB #`
Include in lineage when exporting metadata   No

Process
Process name

Date   2016-10-27   15:03:42

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField

Command issued

```
CalculateField Dalls_porpoise_spring SEASON "Spring" VB #
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2016-10-27   15:10:25

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\RepairGeometry

Command issued

```
RepairGeometry "\\SOLSEATFP01\Groups\ESRI\MMDS\Phase
III\Projects\Data_Development\Updates\201610_Update\Data\CalCOFI_Winter_Upda
te_201610.gdb\Dalls_porpoise_spring" DELETE_NULL
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2018-01-05   09:01:43

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField

Command issued

```
CalculateField "New Group Layer\Dalls_porpoise_spring" ABUNDANCE "[DENSITY]
* [AREA_SQKM]" VB #
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2018-01-05   09:01:53

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField

Command issued

```
CalculateField "New Group Layer\Dalls_porpoise_spring" ABUNDANCE2 NULL VB #
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2018-01-05   09:02:01

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField

Command issued

```
CalculateField "New Group Layer\Dalls_porpoise_spring" AREA_SQKM2 NULL VB #
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2018-04-30   15:11:41

Tool location   c:\program files (x86)\arcgis\desktop10.2\ArcToolbox\Toolboxes\Data Management
Tools.tbx\CopyFeatures

Command issued

```
CopyFeatures "E:\ESRI\MMDS\Phase
III\Projects\HSTT\Data_Development\Updates\20180105 Winter
Densitys\CalCOFI_WinterSpring_Update_20180105.gdb\Dalls_porpoise_winter"
"E:\ESRI\MMDS\Phase III\Projects\HSTT\Data_Development\Updates\20180105
Winter
Densitys\CalCOFI_WinterSpring_Update_Shapefiles\Dalls_porpoise_winter.shp" #
0 0 0
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2019-04-16   14:51:25

Tool location   c:\program files\arcgis\pro\Resources\ArcToolbox\toolboxes\Data Management
Tools.tbx\CopyFeatures

Command issued

```
CopyFeatures "Dall's porpoise winter" "H:\projects\cetacean
mapping\data\CalCOFI_WinterSpring_Becker et al.
2017_Shapefiles\V01\Dalls_porpoise.shp" # # # #
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2019-04-16   14:52:10

Tool location   c:\program files\arcgis\pro\Resources\ArcToolbox\toolboxes\Data Management
Tools.tbx\DeleteField

Command issued

```
DeleteField Dalls_porpoise ABUNDANCE2;AREA_SQKM2;Shape_Leng;Shape_Area
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2019-04-16   16:13:57

Tool location   c:\program files\arcgis\pro\Resources\ArcToolbox\toolboxes\Data Management
Tools.tbx\CalculateField

Command issued

```
CalculateField Dalls_porpoise STUDY 'Becker, et al. 2017' "Python 3" #
```

Include in lineage when exporting metadata   No

Process

Process name

Date   2019-04-16   16:34:59
Tool location   c:\program files\arcgis\pro\Resources\ArcToolbox\toolboxes\Data Management
Tools.tbx\CalculateField
Command issued
`CalculateField Dalls_porpoise SEASON "Winter/Spring" "Python 3" #`
Include in lineage when exporting metadata   No

Distribution ▶

Distributor

▶

Contact information - distributor
Individual's name   Tim Haverland
Organization's name   NMFS Office of Science and Technology
Contact's position   IT Specialist

Contact information

▶

Phone
Voice   301-427-8137
Address
Type   both
Delivery point   1315 East-West Highway
City   Silver Spring
Administrative area   MD
Postal code   20910
Country   US
e-mail address   tim.haverland@noaa.gov
Online resource
Location   https://cetsound.noaa.gov
Access protocol   https
Function performed   information

Distribution format
Name   ⇔ Shapefile
Version   v10.2
File decompression technique   zip

Transfer options
Transfer size   ⇔ 1.128

Online source

Location   https://cetsound.noaa.gov/packages/swfsc_CalCOFI_WinterSpring_Becker_et_al_2017.zip
Access protocol   https
Name   swfsc_CalCOFI_WinterSpring_Becker_et_al_2017
Description   Zipped shapefiles
Function performed   download

Fields ▶

Details for object Dalls_porpoise
▶

Type   ⇔ Feature Class
Row count   ⇔ 4852
Definition
    ESRI

Definition source
    ESRI

Field FID
▶

Alias   ⇔ FID
Data type   ⇔ OID
Width   ⇔ 4
Precision   ⇔ 0
Scale   ⇔ 0

Field description   ⇔
    Internal feature number.

Description source   ⇔
    Esri

Description of values   ⇔
    Sequential unique whole numbers that are automatically generated.

Field SHAPE
▶

Alias   ⇔ Shape
Data type   ⇔ Geometry
Width   ⇔ 0
Precision   ⇔ 0
Scale   ⇔ 0

Field description ⇔
   Feature geometry.

Description source ⇔
   Esri

Description of values ⇔
   Coordinates defining the features.

Field UID
►

Alias ⇔ UID
Data type ⇔ Integer
Width ⇔ 9
Precision ⇔ 9
Scale ⇔ 0

Field description
   Supposed to be a unique ID Field for species per study area, but has a value of 2000 for all
   species, so not a useful field

Description source
   Naval Undersea Warfare Center (NUWC)

Description of values
   Supposed to be a unique ID Field for species per study area, but has a value of 2000 for all
   species, so not a useful field

Field SPECIES
►

Alias ⇔ SPECIES
Data type ⇔ String
Width ⇔ 254
Precision ⇔ 0
Scale ⇔ 0

Field description
   Species common name

Description source
   Naval Undersea Warfare Center (NUWC)

Description of values
    Value assigned by staff

Field SPECIES_2

▶

Alias   ⟺ SPECIES_2
Data type   ⟺ String
Width   ⟺ 254
Precision   ⟺ 0
Scale   ⟺ 0

Field description
    Species scientific name

Description source
    Naval Undersea Warfare Center (NUWC)

Description of values
    Value assigned by staff

Field MONTH_NUMB

▶

Alias   ⟺ MONTH_NUMB
Data type   ⟺ Integer
Width   ⟺ 9
Precision   ⟺ 9
Scale   ⟺ 0

Field description
    Month number 01-12 Value of 0; This field NOT USED because densities are averaged over the
    survey period.

Description source
    Naval Undersea Warfare Center (NUWC)

Description of values
    Value of 0; This field NOT USED because densities are averaged over the survey period of multiple
    months.

Field MONTH_NAME

►

Alias ⇔ MONTH_NAME
Data type ⇔ String
Width ⇔ 50
Precision ⇔ 0
Scale ⇔ 0

Field description
Month name, e.g. January Empty NOT USED because densities are averaged over the survey period.

Description source
Naval Undersea Warfare Center (NUWC)

Description of values
Empty NOT USED because densities are averaged over the survey period of multiple months.

Field STUDY

►

Alias ⇔ STUDY
Data type ⇔ String
Width ⇔ 254
Precision ⇔ 0
Scale ⇔ 0

Field description
Source/study information

Description source
Naval Undersea Warfare Center (NUWC)

List of values
Value   Becker et al. 2017
Description   Becker et al. 2017
Enumerated domain value definition source   Southwest Fisheries Science Center

Value   Navy Survey
Description   Navy Survey
Enumerated domain value definition source   Naval Undersea Warfare Center (NUWC)

Field STRATUM

►

Alias ⇔ STRATUM
Data type ⇔ String
Width ⇔ 50
Precision ⇔ 0
Scale ⇔ 0

Field description
    Stratum name. (AKA: Area of Interest, study area etc.).

Description source
    Naval Undersea Warfare Center (NUWC)

List of values
Value   CalCOFI South
Description   CalCOFI South
Enumerated domain value definition source   Southwest Fisheries Science Center

Value   SCI North Harbor
Description   SCI North Harbor
Enumerated domain value definition source   Naval Undersea Warfare Center (NUWC)

Field MODEL_TYPE

▶

Alias ⇔ MODEL_TYPE
Data type ⇔ String
Width ⇔ 50
Precision ⇔ 0
Scale ⇔ 0

Field description
    Identifies what type of model was used to calculate density (For AFTT these were 'Spatial
    Extrapolation, Habitat based density model, etc. use recommendation from Elizabeth Becker)

Description source
    Naval Undersea Warfare Center (NUWC)

List of values
Value   Habitat based density model
Description   Habitat based density model
Enumerated domain value definition source   Southwest Fisheries Science Center

Value   Navy Direction
Description   Navy Direction
Enumerated domain value definition source   Naval Undersea Warfare Center (NUWC)

Field DENSITY

▶

Alias ⟺ DENSITY
Data type ⟺ Double
Width ⟺ 19
Precision ⟺ 0
Scale ⟺ 0

Field description
      Density value (animals/km^2)

Description source
      Naval Undersea Warfare Center (NUWC)

Description of values
      Use the attribute table statistic tool to get the range of values for this field.

Field UNCERTAINT

▶

Alias ⟺ UNCERTAINT
Data type ⟺ Double
Width ⟺ 19
Precision ⟺ 0
Scale ⟺ 0

Field description
      Numerical uncertainty value (CV)

Description source
      Southwest Fisheries Science Center

Description of values
      Use the attribute table statistic tool to get the range of values for this field.

Field UNCER_QUAL

▶

Alias ⟺ UNCER_QUAL
Data type ⟺ String
Width ⟺ 254

Precision   ⇔ 0
Scale   ⇔ 0

Field description
Qualitative uncertainty value (description of uncertainty when numerical value is not present or to describe additional qualitative information. Duke used this column to further define the type of model that was used which called back to other documentation that described how the model was run and how it performed);

Description source
Naval Undersea Warfare Center (NUWC)

Description of values
Not used; value always empty

Field MODEL_VERS
▶
Alias   ⇔ MODEL_VERS
Data type   ⇔ String
Width   ⇔ 50
Precision   ⇔ 0
Scale   ⇔ 0

Field description
Duke created field for tracking Duke models used as input- not needed for NAEMO modeling but may be used for your own internal model tracking

Description source
Naval Undersea Warfare Center (NUWC)

Description of values
Not used; value always empty

Field NAEMO_VERS
▶
Alias   ⇔ NAEMO_VERS
Data type   ⇔ Integer
Width   ⇔ 9
Precision   ⇔ 9
Scale   ⇔ 0

Identifies version of data - NAEMO specific. Populate as '01'

Description source
Naval Undersea Warfare Center (NUWC)

List of values
Value   1
Description   Always 1
Enumerated domain value definition source   Southwest Fisheries Science Center

Field SEASON
▶

Alias   ⇔ SEASON
Data type   ⇔ String
Width   ⇔ 50
Precision   ⇔ 0
Scale   ⇔ 0

Field description
To be populated to capture season information. Spring, Summer, Fall, Winter Not used; always empty due to data being averaged over multiple seasons (winter/spring)

Description source
Naval Undersea Warfare Center (NUWC)

List of values
Value   Winter/Spring
Description   January-April
Enumerated domain value definition source   Southwest Fisheries Science Center

Field AREA_SQKM
▶

Alias   ⇔ AREA_SQKM
Data type   ⇔ Single
Width   ⇔ 13
Precision   ⇔ 0
Scale   ⇔ 0

Field description
Area in square kilometers. Features must be projected, calculated and then reprojected to WGS84. Projection must be documented in metadata

Description source
    Naval Undersea Warfare Center (NUWC)

Description of values
    Use the attribute table statistic tool to get the range of values for this field.

Field ABUNDANCE
▶

Alias   ⇔ ABUNDANCE
Data type   ⇔ Double
Width   ⇔ 19
Precision   ⇔ 0
Scale   ⇔ 0

Field description
    DENSITY*AREA_SQKM

Description source
    Southwest Fisheries Science Center

Description of values
    Use the attribute table statistic tool to get the range of values for this field.

Metadata Details ▶

Metadata language   ⇔ English (UNITED STATES)
Metadata character set   utf8 - 8 bit UCS Transfer Format

Metadata identifier   gov.noaa.nmfs.inport:56126

Scope of the data described by the metadata   ⇔ dataset
Scope name   ⇔ dataset

Last update   ⇔ 2019-05-08

ArcGIS metadata properties
Metadata format   ArcGIS 1.0
Metadata style   ISO 19139 Metadata Implementation Specification
Standard or profile used to edit metadata   NAP

Created in ArcGIS for the item   2016-10-27   14:32:15
Last modified in ArcGIS for the item   2019-05-08   15:38:34

Automatic updates
Have been performed   Yes
Last update   2019-05-07   14:45:28

Metadata Contacts ▶

Metadata contact - distributor
Individual's name   Tim Haverland
Organization's name   NMFS Office of Science and Technology
Contact's position   IT Specialist

Contact information
▶
Phone
Voice   301-427-8137
Address
Type   both
Delivery point   1315 East-West Highway
City   Silver Spring
Administrative area   MD
Postal code   20910
Country   US
e-mail address   tim.haverland@noaa.gov
Online resource
Location   https://cetsound.noaa.gov
Access protocol   https
Function performed   information

Metadata Maintenance ▶

Maintenance
Update frequency   as needed

Maintenance contact - distributor
Individual's name   Tim Haverland
Organization's name   NMFS Office of Science and Technology
Contact's position   IT Specialist

Contact information
▶

Phone
Voice   301-427-8137
Address
Type   both
Delivery point   1315 East-West Highway
City   Silver Spring
Administrative area   MD
Postal code   20910
Country   US
e-mail address   tim.haverland@noaa.gov
Online resource
Location   https://cetsound.noaa.gov
Access protocol   https
Function performed   information

Thumbnail and Enclosures ▶

Thumbnail
Thumbnail type
Image file

Habitat-Based Density Models for Three Cetacean Species off Southern California Illustrate Pronounced Seasonal Differences (Becker, et al. 2017)

Dall's porpoise
Animals/km²
≤0.034
≤0.070
≤0.160
≤0.250
≤0.800