*Please provide the following information, and submit to the NOAA DM Plan Repository.*

**Reference to Master DM Plan (if applicable)**

*As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.*

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

**1. General Description of Data to be Managed**

**1.1. Name of the Data, data collection Project, or data-producing Program:**
C-CAP Land Cover, Connecticut, 2016

**1.2. Summary description of the data:**
The NOAA Coastal Change Analysis Program (C-CAP) produces national standardized land cover and change products for the coastal regions of the U.S. C-CAP products inventory coastal intertidal areas, wetlands, and adjacent uplands with the goal of monitoring changes in these habitats. The timeframe for this metadata is summer 2016. These maps are developed utilizing high resolution National Agriculture Imagery Program (NAIP) imagery, and can be used to track changes in the landscape through time. The C-CAP program will use addtional image sources such as leaf off or tide controlled low tide imagery if it is available. This trend information gives important feedback to managers on the success or failure of management policies and programs and aid in developing a scientific understanding of the Earth system and its response to natural and human-induced changes. This understanding allows for the prediction of impacts due to these changes and the assessment of their cumulative effects, helping coastal resource managers make more informed regional decisions. NOAA C-CAP is a contributing member to the Multi-Resolution Land Characteristics consortium and C-CAP products are included as the coastal expression of land cover within the National Land Cover Database.

**1.3. Is this a one-time data collection, or an ongoing series of measurements?**
One-time data collection

**1.4. Actual or planned temporal coverage of the data:**
2016-08-15

**1.5. Actual or planned geographic coverage of the data:**
W: -73.73, E: -71.76694444444, N: 42.11083333333, S: 40.995

**1.6. Type(s) of data:**
*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*
Image (digital)

**1.7. Data collection method(s):**

*(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)*

**1.8. If data are from a NOAA Observing System of Record, indicate name of system:**

**1.8.1. If data are from another observing system, please specify:**

## 2. Point of Contact for this Data Management Plan (author or maintainer)

**2.1. Name:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.4. E-mail address:**

coastal.info@noaa.gov

**2.5. Phone number:**

(843) 740-1202

## 3. Responsible Party for Data Management

*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

**3.1. Name:**

**3.2. Title:**

Data Steward

## 4. Resources

*Programs must identify resources within their own budget for managing the data they produce.*

**4.1. Have resources for management of these data been identified?**

**4.2. Approximate percentage of the budget for these data devoted to data management ( specify percentage or "unknown"):**

## 5. Data Lineage and Quality

*NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.*

**5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible**

*(describe or provide URL of description):*

Process Steps:

- 2020-08-01 00:00:00 - This dataset was created by NOAA's Ocean Service, Office for Coastal Management (OCM).  Random Forest Classification:

The initial 1m spatial resolution 6 class high resolution land cover product was developed using a Geographic Object-Based Image Analysis (GEOBIA) processing framework. This involves taking each image to be classified and grouping the pixels based on spectral and spatial properties into regions of homogeneity called objects. The resulting objects are the primary units for analysis. Additionally, these objects introduce additional spectral, shape, textural and contextual information into the mapping process and are utilized as independent variables in a supervised classification. Each object is labeled using a Random Forest Classifier which is ensemble version of a Decision Tree. Training data for the initial 6 classes (Herbaceous, Bare, Impervious, Water, Forest and Shrub) were generated through photo interpretation. The resulting Random Forest model was applied to the input data sets to create the initial automated map. Impervious Surface refinement:   To create an impervious surface class with more spatial detail, 2012 impervious surface data (http://cteco.uconn.edu/projects/ms4/impervious2012.htm)  from the UConn Center for Land Use Education and Research (CLEAR) was incorporated into the land cover map. Updates from the random forest classification were isolated and retained through a series of spectral and contextual threshold models.   Forest refinement:  Forest features from the initial classification were refined using 2016 lidar data (http://cteco.uconn.edu/data/flight2016/index.htm) collected through The Capitol Region Council of Governments.  Point clouds were processed into normalized digital surface models to clean up the boundaries between forest, grass and shrub features.    Water Refinement:

Commission and omission errors associated with the Water class were addressed through manual interpretation and clean up in ERDAS Imagine. Once the review and edits were complete, the refined Water class was incorporated back into the land cover data set.

- 2020-08-01 00:00:00 - Water Refinement:

Commission and omission errors associated with the Water class were addressed through manual interpretation and clean up in ERDAS Imagine. Once the review and edits were complete, the refined Water class was incorporated back into the land cover data set.   Unconsolidated Shore: Unconsolidated substrate features were extracted primarily through unsupervised classification and manual editing in ERDAS Imagine. This process relied on tide contolled imagery collected by National Geodetic Survey (NGS). Once these features were inserted into the land cover additional object based algorithms were applied

to clean up the results.   Agriculture:  Cultivated land and Pasture/Hay features were mapped from the grassland and bare categories using a Convolutional Neural Network (CNN). The CNN was training using existing high resolution C-CAP data and NAIP imagery available in the region. Predictions made by the CNN were post-processed and inserted into the land cover which was finalized through internal QA and manual editing.   Wetlands:  Wetlands were derived through a modeling process which used ancillary data such as Soils (SSURGO), the National Wetlands Inventory (NWI) and topographic derivatives. Forest, shrub and grassland objects within the initial land cover that exhibited hydric characteristics based on the input ancillary layers were designated to their appropriate wetland category. The process relied mainly on the NWI to determine palustrine and estuarine distinctions.   Open Space Developed:   Managed grasses and other low lying vegetation associated with development were derived from the grassland category of the draft 2016 land cover through intersections with ancillary vector-based land use data as well as analysis of impervious surface coverage within those land use polygons. Herbaceous land cover areas that intersected select features from the OpenStreetMap landuse and points of interest layers were converted to Open Space Developed. Additionally, parcel features from CoreLogic parcel data were used along with relative area and adjacency thresholds of the impervious surface class to further map the Open Space Developed class. Manual edits were performed to fine tune the classifications.

**5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:**

**5.2. Quality control procedures employed (describe or provide URL of description):**

## 6. Data Documentation
*The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

**6.1. Does metadata comply with EDMC Data Documentation directive?**
No

**6.1.1. If metadata are non-existent or non-compliant, please explain:**
Missing/invalid information:
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed

- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.3. Data access methods or services offered
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

**6.2. Name of organization or facility providing metadata hosting:**
NMFS Office of Science and Technology

**6.2.1. If service is needed for metadata hosting, please indicate:**


**6.3. URL of metadata folder or data catalog, if known:**
https://www.fisheries.noaa.gov/inport/item/61289

**6.4. Process for producing and maintaining metadata**
*(describe or provide URL of description):*
Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf


**7. Data Access**
*NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

**7.1. Do these data comply with the Data Access directive?**


**7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?**


**7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:**


**7.2. Name of organization of facility providing data access:**
NOAA Office for Coastal Management (NOAA/OCM)

**7.2.1. If data hosting service is needed, please indicate:**

**7.2.2. URL of data access service, if known:**

**7.3. Data access methods or services offered:**

**7.4. Approximate delay between data collection and dissemination:**

**7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:**

## 8. Data Preservation and Protection

*The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.*

**8.1. Actual or planned long-term data archive location:**
*(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)*

**8.1.1. If World Data Center or Other, specify:**

**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:**

**8.2. Data storage facility prior to being sent to an archive facility (if any):**
Office for Coastal Management - Charleston, SC

**8.3. Approximate delay between data collection and submission to an archive facility:**

**8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?**
*Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection*

## 9. Additional Line Office or Staff Office Questions

*Line and Staff Offices may extend this template by inserting additional questions in this section.*