



**NOAA FISHERIES**

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

# NMFS Data Management Planning Procedural Directive (DRAFT)

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## Version History

Version #	Date	Person	Description
0.0	4/1/2013	Jim Sargent	NOAA DMP-PD to be used as a starting point
0.1	5/13/13	Jim Sargent	Draft presented to Information Architect
0.2	5/20/13	Jim Sargent	Incorporated Information Architect's suggestions
0.3	6/12/2013	Jim Sargent	Incorporated concepts of division and data set DMPs
0.4	6/17/13	Jim Sargent	Incorporated FIMAC Coor Team comments
0.5	3/10/2014	Mark Brady	Revision of most sections
0.6	3/11/2014	Mark Brady	Minor revisions
0.7	3/25/2014	Mark Brady	Changes based on FIMAC feedback
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## 1. Purpose

The National Marine Fisheries Service (NMFS) is a data driven organization. It pursues its mission by collecting, processing, analyzing, storing, using, sharing, and distributing data. NMFS reaches its scientific conclusions and manages valuable marine resources based on its data. Therefore, by enhancing the way that divisions manage data, NMFS can execute its mission with greater speed, accuracy, efficiency, cost savings, and confidence.

The details of NMFS' responsibilities, its funding, the natural environment, and technology are constantly in flux. In order to adapt to and even exploit such changes it is necessary to carry out a program of continual improvement in data management and hence continual improvement in the execution of NMFS's mission.

Data management plans will yield continual data management improvement. This directive and the corresponding [template](#)<sup>1</sup> also provide practical guidance on how to prepare a plan. A high degree of flexibility is provided to divisions in preparing their plans.

### **A note about terminology and acronyms used in this directive**

*NMFS* is the National Marine Fisheries Service

*Environmental data* is data that excludes personnel and administrative data.

The term *Best Practices* refers to the best practices originally described in the [NMFS Enterprise Data Management \(EDM\) Vision and Strategy](#)<sup>2</sup> and being iteratively developed on the [Best Practices wiki page](#)<sup>3</sup>.

A *data set* is a database, a collection of related data files, or any other collection of data. The emphasis in this directive is on environmental data.

A *DMP* is a Data Management Plan.

The term *Financial Management Center (FMC)* is used to denote any one of NMFS Science Centers, Regional Offices, or Headquarters Offices.

*Divisions* refers to the organizational units within FMCs. The term is used throughout this document to mean an actual division, or any other unit that has its own DMP.

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<sup>1</sup> *NMFS Data Management Plan Template*

<https://www.st.nmfs.noaa.gov/confluence/display/edm/NMFS+Data+Management+Plan+Template>

<sup>2</sup> *Fisheries EDM: Vision and Strategy*

<https://www.st.nmfs.noaa.gov/confluence/download/attachments/4063557/Fisheries%20EDM%20Vision%20%26%20Strategy%202.1.5.docx?version=1&modificationDate=1363706607000&api=v2>

<sup>3</sup> *NMFS EDM Best Practices*

<https://www.st.nmfs.noaa.gov/confluence/display/edm/NMFS+EDM+Best+Practices>

The term *Effectiveness Goals* refers to the Effectiveness Goals described in Appendix A. They are capability, speed, efficiency, accuracy, cost reduction, and confidence.

The *FIMAC* is the Fisheries Information Management Advisory Committee.

## 2. Comparing NOAA DMPs and NMFS DMPs

In 2009, NOAA established the [Data Management Planning Procedural Directive \(DMP-PD\)](#)<sup>4</sup> that directs managers of all environmental data production projects to have data management plans in place before starting to acquire data. The NOAA DMPs are associated with individual data sets and provide descriptions of the data, points of contact, quality control methods, documentation, data sharing, and data protection.

In contrast, a NMFS DMP is a data management improvement plan associated with an organizational unit, usually a division.

Both the NOAA DMPs and NMFS DMPs build on a foundation of standard data management best practices. The NMFS Best Practices also include practices that are unique to fisheries.

## 3. Who Should Have a DMP?

Each NMFS data stewarding division must have a DMP. A data stewarding division is defined as a NMFS division, which manages data sets, processes data, stores data, or provides data services. The data should be of an environmental nature; that is, it excludes personnel and administrative records.

FMCs may opt to have a DMP for the entire FMC. In this case, divisions within the FMC can inherit elements of the FMC's DMP. However, coverage of divisions by DMPs shall not be diminished by this approach.

In other cases, where branches within a division have distinct data management requirements, those branches may have DMPs. Such DMPs may inherit elements from division or FMC DMPs.

For simplicity, the term *division* will be used in the remainder of this document to mean any organizational unit that is associated with a DMP.

## 4. Directive

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<sup>4</sup> NOAA Data Management Planning Procedural Directive  
[https://www.nosc.noaa.gov/EDMC/documents/EDMC\\_PD-DMP\\_transmittal\\_v1.pdf](https://www.nosc.noaa.gov/EDMC/documents/EDMC_PD-DMP_transmittal_v1.pdf)

Each NMFS division shall create, follow, and update their Data Management Plans (DMPs) every two years.

In the context of this directive, a DMP is composed of the following:

- Author list.
- A list of datasets stewarded by the division.
- A description of data that is provided to the division by other organizations and the names of those organizations. When it collects data directly, via observation or human input, a division can be a provider of its own data.
- A description of data that the division provides and the corresponding data consumers. If a division analyzes its own data, it is a data consumer.
- A description of, or reference to, the data management [Best Practices](#) currently in use and their corresponding data sets.
- A list of desired Effectiveness Goals for the division. See Appendix A. Effectiveness Goals are chosen based on the performance demands within the division as well as the performance demands of the corresponding data consumers. They are also chosen based on related gaps in data management, where Best Practices can be applied. A minimum of one Effectiveness Goal should be selected.
- A list of long term and short term data management best practices to reach the chosen Effectiveness Goals. A short term practice is one that can be implemented within two years. A long term practice is one that requires more than two years to fully implement.
- A dataflow diagram describing the current state of data systems managed by the division. A description of the processing within each diagram node should also be provided. Processing descriptions should permit users of downstream data to clearly understand the algorithms involved. Dataflow diagrams must cover, at a minimum, the portion of each data management system impacted by newly implemented Best Practices. Over time, such dataflow diagrams should cover all of the data management systems within a division.
- Description of the target state using data flow diagrams. The target state diagram shows the system after implementation of Best Practices. The current state and target state dataflow diagrams together should clearly illustrate the effect of the newly introduced Best Practices on the data management system.
- An implementation schedule of best practices and metrics.
- A description of metrics to be applied, before and after application of new Best Practices. Preferably these metrics are quantitative measures of Effectiveness Goals, for example, a count of errors (-accuracy) or the time required to provide a data product to a consumer (1/speed). Where this is not possible, a proxy measure on Best Practices can be used, such as the percent of data sets with complete documentation.
- An analysis of results to be provided at the end of each DMP cycle. The analysis should discuss the impact of the Best Practices on metrics, what was learned through the DMP implementation, and effect on strategies going forward.

Each data stewarding division shall create a Division DMP and update it every two years to show improvements achieved in the past two years and to establish new objectives for the current cycle.

### **Review and Approval of DMPs**

DMPs shall be reviewed by Data Management Plan Review Teams to be established and chaired by the Information Management Coordinators (IMCs) for each FMC. Two additional review team members will be selected from the FIMAC. These two members will be from outside the division's FMC. DMPs are to be approved by the Division Chiefs and the FMC Directors. The Team will review all the DMPs in an FMC and provide recommendations to DMP authors.

Review and approval process:

1. Division Director appoints DMP Authoring Team
2. DMP Authoring Team writes DMP draft using [DMP template](#). It provides draft to review team and Information Architect.
3. Review Team reviews DMP and makes recommendations prior to approval. Information Architect may also make recommendations.
4. Authoring Team revises DMP as needed.
5. Authoring Team provides DMP to Division Director for review and approval. Division Director may request revisions prior to signing.
6. DMP provided to FMC Director or delegate for review and approval. FMC Director may request revisions prior to signing.

Throughout this process, revised versions of the DMP will be provided to the Review Team and Information Architect for review.

### **Storage of DMPs**

Approved DMPs will be submitted to the NMFS Office of Science and Technology [InPort](#)<sup>5</sup> Librarian for posting in the DMP repository. The DMP repository will be made available to IMCs within each FMC for the purpose of exchanging data management ideas across NMFS.

## **5. Flexibility and Scalability**

Divisions have varying effectiveness requirements, levels of data management development, and available resources. For these reasons, divisions are best able to determine what their needs are in terms of Effectiveness Goals and Best Practices.

Because divisions have varying resources and workloads, NMFS DMPs are scalable. This means that a division with limited available resources may opt to develop a modest DMP. DMPs with a single Effectiveness Goal and a single new Best Practice still provide a strategy for continual improvement. Focusing on the Efficiency Effectiveness Goal is recommended for divisions with limited resources.

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<sup>5</sup> *InPort* <https://inport.nmfs.noaa.gov/inport/>

Other divisions may want to exploit greater opportunities by developing more ambitious DMPs.

Whereas the NMFS DMP Procedural Directive is flexible, it also provides uniform standards in its Best Practices. Because it encourages the adoption of an increasing number of Best Practices, the DMP process naturally leads toward a consistent adoption of all Best Practices.

## 6. Timing

The schedule of DMP development and implementation is shown in Figure 1. The process starts with a minimum of one pilot DMP per FMC. It adds four additional DMPs per FMC per year until all data stewarding divisions are covered by a DMP. Ultimately, approximately 50% of DMPs will be updated, reviewed, and approved in odd years and approximately 50% in even years.

The review period for a DMP is January and February every other year. This duration allows for the scheduling of a number of DMP reviews by the review teams.

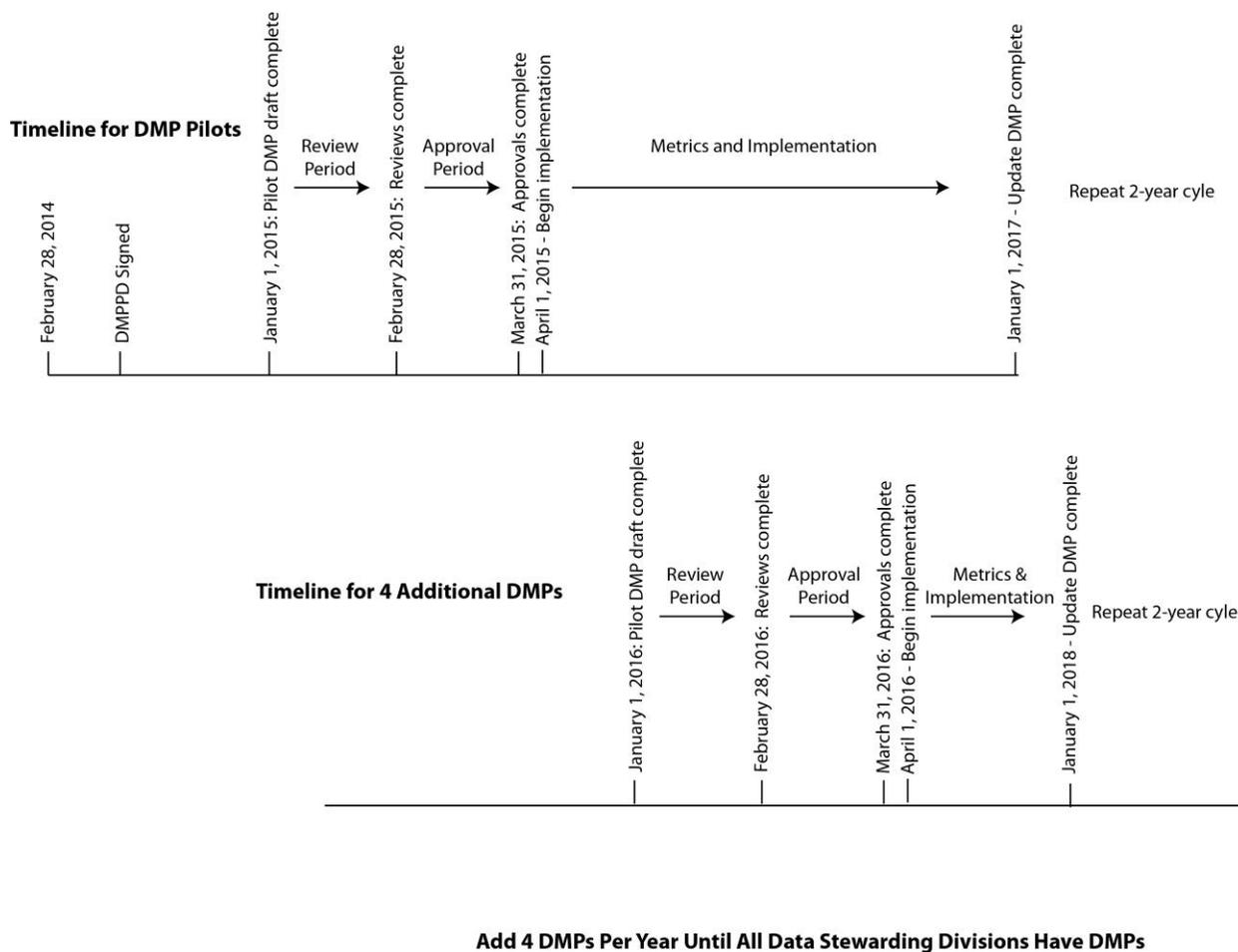


Figure 1. Timeline for DMP development.

## 7. Roles and Responsibilities

The following table identifies the roles and responsibilities for key stakeholders in implementing this directive:

<b>Role</b>	<b>Responsibilities</b>
<b>IMCs</b>	Establish and chair the FMC Data Management Plan Review Team.
	Coordinate development of DMPs.
	Provide DMPs to the Science & Technology InPort Librarian.
<b>FMC Data Management Plan Review Teams</b>	Review all DMPs for the FMC in collaboration with the Information Architect.
	Provide recommendations for revising Division DMPs to the Authoring Team prior to submission for approval.
<b>Division Chiefs</b>	Provide signatory approval of Division DMPs.
	Establish division’s Authoring Team.
<b>Regional Administrators, Science Center Directors, and HQ Office Directors</b>	Provide signatory approval of Division DMPs.

## 8. Developing DMPs: Guidance and Support

### 8.1 Additional Best Practices

Additional Best Practices may be developed by divisions to meet programmatic requirements. These Best Practices will be considered for NMFS-wide use.

### 8.2 Support Available

There are a number of sources to help develop and follow DMPs including:

**The Data Management Planning Wiki** – It will contain a list of answers to frequently asked questions (FAQs), a template, and other material for use in preparing DMPs.

**The NMFS Information Architect** – The Information Architect will answer questions and handle training requests regarding the writing or implementation of DMPs.

**Your Information Management Coordinator** - Your IMC will be the first responder to your questions and concerns about the directive, developing plans, and managing data sets using the plans. A list of NMFS IMCs can be found [here](#).

**Experts within Your FMC** - Typically, each FMC has its own corps of data management experts that understand dataflow diagrams, data management best practices, and other aspects of data management.

**Frequently Asked Questions** - A FAQ page is available at <https://www.st.nmfs.noaa.gov/confluence/display/edm/NMFS+Data+Management+Plan+FAQ>

**The NOAA Data Management Plan Repository** – As data management plans mature across NOAA, the repository will serve as a source of examples of proven plans, contact points, and other information for developing new plans.

## Appendix A. Effectiveness Goals

- **Capability** - refers to the ability to perform a particular analysis. This ability depends on data management practices and cannot be assumed.
- **Speed** - is important because data requestors want or need results as fast as possible. Also, completing tasks faster means freeing time for other essential tasks that would otherwise have to be postponed or left undone.
- **Efficiency** - means doing a task with fewer resources, doing more with the same resources, or doing more with less.
- **Accuracy** - Fishery analyses have value only if they are accurate.
- **Cost reduction** - is closely tied to efficiency, but deserves special emphasis in times of shrinking budgets.
- **Confidence** - NOAA, industry, and taxpayers must all have confidence in our analytical results.

## Appendix B. Sources, Dependencies, and Interfaces

The list of NMFS [Best Practices](#) is a living document maintained by the FIMAC.

Data management planning should be done in the context of other NMFS and NOAA policies, procedures, and best practices. Below are some examples:

[NAO 212-15: Management of Environmental Data and Information](#)

[Data Management Planning Procedural Directive](#)

[Data Documentation Procedural Directive](#)

[Grants Data Sharing Procedural Directive](#)

[Procedure for Scientific Records Appraisal and Archive Approval](#)

[NMFS Data and Information Management Policy Directive](#)

[NMFS Data Documentation Procedural Directive](#)