

**Program Observation
Requirements Document
(PORD)**

for

Ocean *In situ* Observation Requirements

**National Marine Fisheries Service
(NMFS)**

November 9, 2012

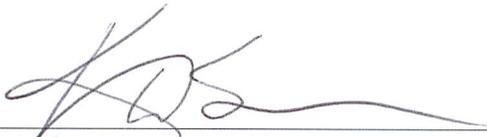
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Signature Page

NOSC Endorsement

The NOSC has received the National Marine Fisheries Service's Observation Requirements with Goal Lead and Line Office concurrence, and is satisfied with the Level-of-Validation provided for the Priority-1 Ocean *In Situ* Priority 1 Observation Requirements.



Dr. Kathryn Sullivan
Chair, NOSC

12/7/12

Date

✓

Endorsed



Mary Kicza
Vice Chair, NOSC

12/13/12

Date

✓

Endorsed



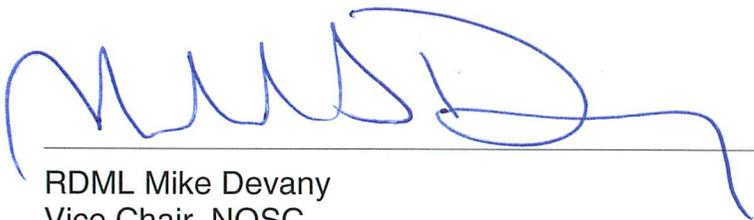
Laura K. Furgione
Vice Chair, NOSC

12/4/12

Date

✓

Endorsed



RDML Mike Devany
Vice Chair, NOSC

11/29/12

Date

✓

Endorsed

Goal and Line Office Concurrence

The National Marine Fisheries Service's Line Office and Healthy Oceans Goal's Lead concur with the Observation Requirements and are satisfied with the Level-of-Validation provided by the Priority-1 Ocean *In Situ* Priority 1 Observation Requirements.



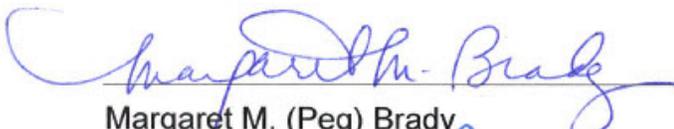
Samuel D. Rauch III
Deputy Assistant Administrator for Regulatory Programs, performing the functions and duties of the Assistant Administrator for Fisheries

11/19/12

Date

✓

Validated



Margaret M. (Peg) Brady
Healthy Ocean Goal Lead

16 Nov 12

Date

✓

Validated



Richard Merrick
Scientific Programs and Chief Science Advisor, Director

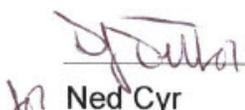
11/15/2012

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Validated

Program Membership Concurrence



Ned Cyr
Science & Technology; Director

11/15/12

Date

✓

Concurred



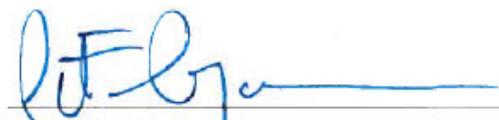
Allen Shimada
Science & Technology; NMFS Research Vessel Coordinator

11/15/12

Date

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Concurred



Felipe Arzayus
Science & Technology; NMFS Ecosystem Science Team Lead

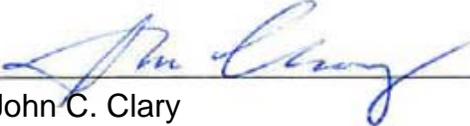
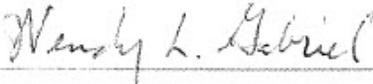
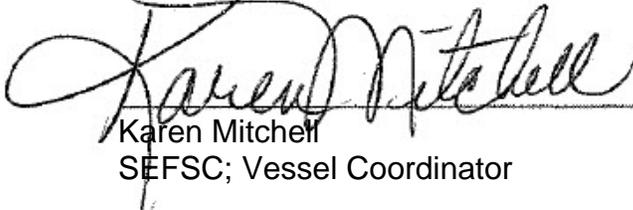
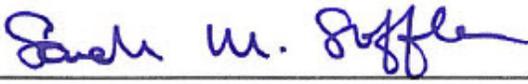
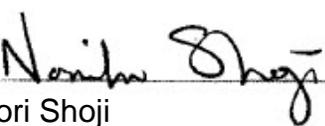
11/9/2012

Date

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Concurred

Program Membership Concurrence (continued)

 <hr/> John C. Clary AFSC; Vessel Coordinator	13 Nov 12 <hr/> Date	 <hr/> Concurred
 <hr/> Wendy Gabriel NEFSC; Fisheries and Ecosystems Monitoring and Analysis Division, Chief	13 Nov 12 <hr/> Date	 <hr/> Concurred
 <hr/> Karen Mitchell SEFSC; Vessel Coordinator	11/13/12 <hr/> Date	 <hr/> Concurred
 <hr/> Rick Brown NWFSC; Vessel Coordinator	11/13/12 <hr/> Date	<hr/> Concurred
 <hr/> Roger Hewitt SWFSC; Vessel Coordinator	11/13/12 <hr/> Date	 <hr/> Concurred
 <hr/> Sarah Shoffler SWFSC; Fishery Biologist	11/9/12 <hr/> Date	 <hr/> Concurred
 <hr/> Nori Shoji PIFSC; Science Operations Lead	15 Nov 12 <hr/> Date	 <hr/> Concurred

1. Document Overview

NOAA's Ocean *In Situ* requirements validation process creates a baseline of objectively verifiable requirements based on:

- Documentation via mandates, scientific studies, or ongoing research, and/or
- Consensus among Program Members, Program Managers, Goal Leads, and Line Office AAs

With these, NOAA can better set priorities based on mission needs and stakeholder input. The validated requirements can then be the basis for justification and gap analysis of NOAA observing systems satisfying those requirements, positioning NOAA to operate the right mix of assets and options to meet at-sea sampling requirements now and in the future.

The National Weather Service (NWS) worked closely with the Technology, Planning, and Integration for Observations (TPIO) Office, Office of Marine and Aviation Operation (OMAO), and Subject Matter Experts (SMEs) to document their list of Ocean *In Situ* requirements.

TPIO, on behalf of the NOAA Observing Systems Council (NOSC), follows a standard process when documenting observation, system-independent, requirements with NOAA Line Offices. This template includes the priority of each requirement based on its importance to the group mission:

- Mission Critical (Priority-1)
- Mission Optimal (Priority-2)
- Mission Enhancing (Priority-3)

Specific attributes for each Priority-1 requirement are then documented and validated. In support of generation of the NOAA Fleet Plan in late 2012, the NOSC's Observation Requirements process was modified for application to more system specific Ocean *In Situ* requirements. The validation process for each Line Office's Ocean *In Situ* requirements has been applied to the 1) observational need; 2) geographic coverage and 3) sampling frequency. In addition, the number of Days At Sea (DAS) associated with each requirement is also provided to assist with the NOAA Fleet Plan. The requirements list and attributes are verified by the Line Offices representatives and SMEs who then provide validation documentation to support each Priority-1 requirement and its specified attributes values. Validation is important as it provides independent confirmation of the needs of the program either through the results of scientific studies, operational use, or subject matter experts. Both the Line Office representatives and TPIO assess the applicability of the documents and prepare a summary of the validation of Priority-1 requirements. The NOAA Line Office obtains their leadership concurrence and presents the requirements summary to the NOSC for their endorsement of the validation process.

2. Observation Requirements Summary

NOAA's National Marine Fisheries Service (NMFS) conducts a broad range of scientific activities, including research and development that are required to meet legislative mandates including the Magnuson-Stevens Reauthorization Act, the Marine Mammal Protection Act, the Endangered Species Act, and the Coral Reef Conservation Act. Through these and other mandates, NMFS is responsible for managing U.S. living marine resources using the best available scientific information. NMFS maintains Science Centers and Regional Offices, with respective scientific and management responsibilities, in ecologically diverse regions of the U.S. Exclusive Economic Zone ranging from polar to tropical environments. Each region has unique features and challenges within a complex resource management arena. The six NMFS Science Centers provide the scientific underpinning for management actions taken to protect, recover, and sustain living marine resources and ecosystems. To meet these responsibilities, the Science Centers conduct a broad spectrum of scientific activities including research, development, model development and application, and basic data collection, as well as a suite of scientific support activities required to meet legislative mandates.

The primary responsibility of the Science Centers is to provide scientific data, analysis, and technical advice to a variety of entities to support living marine resource management. These entities include NMFS itself, other federal and state agencies, fishery management councils and commissions, research colleagues, non-governmental organizations, and international fishery and protected species treaty organizations in which the U.S. participates. NMFS Science Centers routinely monitor and assess populations and habitats of relevant fish, invertebrate, marine mammal and turtle resources, as well as evaluate fisheries, and the human communities that rely on these resources. Obligations include quota monitoring and analyses required by legal and regulatory processes; provision of basic biological information necessary to evaluate the implication of management actions on marine ecosystems, fishery stocks and protected species; and information on social and economic impacts on the human community. NMFS Science Centers support monitoring and assessment by maintaining long-term survey databases that include ancillary oceanographic, environmental, and biological data essential to stock assessments and the development of multispecies and ecosystem assessments. Visual surveys for protected species, primarily marine mammals and turtles, are also conducted. Information is used to develop fishery management plans, fishery ecosystem plans, and species recovery plans.

This scientific support also includes maintaining fishery observer programs and the collection, maintenance, and analysis of commercial and recreational data on landings, bycatch, and effort; predicting ecological and socioeconomic effects of management proposals; and participation in international, national, and regional scientific working groups. The Science Centers also have a responsibility to develop an understanding of how ocean ecosystems and human communities may respond to natural and anthropogenic forcing (e.g., climate change and market dynamics). This requires determining the current status of ecosystems and understanding how ecosystems will respond to drivers such as temperature, acidification, sea ice loss,

or sea level rise. Equally important are scientific activities to understand how human communities that rely on these ecosystems will respond to changes that affect their livelihood, such as altered productivity of fisheries or aquaculture operations.

NMFS Science Centers develop, adapt, and improve analytical tools to perform retrospective and prospective management strategy evaluations, socioeconomic surveys, and model-based evaluations of species dynamics, habitat change, and communities. The Science Centers also transition cutting-edge research for application to operational activities including use of acoustic technologies for non-invasive monitoring of species, remotely operated aerial and oceanic vehicles, manned submersibles, biopsy samples to assess of health and condition of marine mammals, and newly-developed molecular genetics methods to determine population structure.

The National Marine Fisheries Service (NMFS) and NOAA's Healthy Ocean and Coastal Goal (CG) have a total of 186 Priority 1 Ocean *In Situ* Priority 1 Observation Requirements to address its mission. This document provides the list of requirements for the following NMFS programs:

2.1 Alaska Fisheries Science Center (AFSC)

2.1.1 Program Summary

The mission of the Alaska Fisheries Science Center is to plan, develop, and manage scientific research programs which generate the best scientific data available for understanding, managing, and conserving the region's living marine resources and the environmental quality essential for their existence.

2.1.2 Validation Assessment for Priority-1 Requirements

NMFS representatives and TPIO representatives worked jointly to review the submitted documentation, and identify the "level of validation" for the Priority-1 Observation Requirement.

Table 1: AFSC Validation Assessment for Priority-1 Requirements

#	Validation Assessment	Observation Requirement	Geo Coverage	Samp-ling	Mean DAS FY10-25	Validation Docs
NMF.AK.001	Validated	Walleye Pollock Bering Sea (Bogoslof) Pre-spawning Survey	Alaska Complex	2 yr	8	12
NMF.AK.002	Validated	Walleye Pollock EBS Summer Survey	Alaska Complex	2 yr	65	12
NMF.AK.003	Validated	Walleye Pollock Shumagin/Sanak (GOA) Pre-spawning Survey	Alaska Complex	1 yr	12	12
NMF.AK.004	Validated	Walleye Pollock Shelikof/Chirikof Shelf-break (GOA) Pre-spawning Survey	Alaska Complex	1 yr	15	12

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.AK.005	Validated	Walleye Pollock GOA Summer Survey	Alaska Complex	2 yr	65	12
NMF.AK.006	Validated	Ice Seal Ecology	Alaska Complex	1 yr	42	7, 61 (SME)
NMF.AK.007	Validated	Eco-FOCI Fall Ecosystem Observations, Larval and Juvenile Groundfish and Forage Fish Survey	Alaska Complex	biannual yr	0	3, 52
NMF.AK.008	Validated	Eco-FOCI Late Larval Pollock Survey	Alaska Complex	1 yr	11	2, 53
NMF.AK.009	Validated	Bering Arctic Subarctic Integrated Survey (BASIS)	Alaska Complex	1 yr	40	4, 5, 52
NMF.AK.010	Validated	Eastern Bering Sea Shelf Crab & Groundfish Bottom Trawl Survey - Vessel 1	Alaska Complex	1 yr	65	24, 32, 52
NMF.AK.011	Validated	Eastern Bering Sea Shelf Crab & Groundfish Bottom Trawl Survey - Vessel 2	Alaska Complex	1 yr	65	24, 32, 52
NMF.AK.012	Validated	Biennial Bering Sea Continental Slope Bottom Trawl Survey	Alaska Complex	1 yr	70	23, 31, 52
NMF.AK.013	Validated	Biennial Aleutian Islands Shelf Bottom Trawl Survey - Charter Vessel #1	Alaska Complex	1 yr	70	26, 30, 52
NMF.AK.014	Validated	Biennial Aleutian Islands Shelf Bottom Trawl Survey - Charter Vessel #2	Alaska Complex	1 yr	70	26, 30, 52
NMF.AK.015	Validated	Biennial Gulf of Alaska Shelf Bottom Trawl Survey - Charter Vessel #1	Alaska Complex	1 yr	75	25, 33, 53
NMF.AK.016	Validated	Biennial Gulf of Alaska Shelf Bottom Trawl Survey - Charter Vessel #2	Alaska Complex	1 yr	75	25, 53
NMF.AK.017	Validated	Biennial Gulf of Alaska Shelf Bottom Trawl Survey - Charter Vessel #3	Alaska Complex	1 yr	75	25, 53
NMF.AK.018	Validated	Chukchi Sea Bottom Trawl Survey	Alaska Complex	1 yr	40	19
NMF.AK.019	Validated	Northern Bering Sea Bottom Trawl Survey	Alaska Complex	1 yr	40	19, 27
NMF.AK.020	Validated	GOA/EBS Longline Stock Assessment Survey	Alaska Complex	1 yr	85	42, 52
NMF.AK.021	Validated	Bycatch Reduction Research	Alaska Complex	1 yr	20	20, 37, 62 (SME)

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.AK.022	Validated	Southeast Alaska Porpoise Study	Alaska Complex	1 yr	14	6, 8, 21
NMF.AK.023	Validated	Spring Eco-FOCI Ecosystem Observations	Alaska Complex	1 yr	20	1, 10, 16, 50, 51
NMF.AK.024	Validated	NBSRA Trawl Effects	Alaska Complex	1 yr	30	38, 62 (SME)
NMF.AK.025	Validated	Habitat Impact Reduction Research	Alaska Complex	1 yr	20	38, 62 (SME)
NMF.AK.026	Validated	BASIS North	Alaska Complex	1 yr	50	4, 19
NMF.AK.027	Validated	Southeast Coastal Monitoring (SECM)	Alaska Complex	1 yr	25	17, 34, 43
NMF.AK.028	Validated	GOA IERP (Middle Trophic Level)	Alaska Complex	1 yr	36	5, 58
NMF.AK.029	Validated	Stock Assessment in Untrawlable Habitat Areas	Alaska Complex	1 yr	14	28, 48, 55, 62 (SME)
NMF.AK.030	Validated	Acoustic Research and Development	Alaska Complex	1 yr	14	13, 14, 46, 54, 62 (SME)
NMF.AK.031	Validated	Aleutian Islands pollock acoustic survey	Alaska Complex	1 yr	21	52, 59, 60
NMF.AK.032	Validated	Bering Sea Pacific cod and other groundfish trawl survey	Alaska Complex	1 yr	28	52, 59, 60
NMF.AK.033	Validated	Bering-Chukchi Large Whale Study	Alaska Complex	1 yr	30	41
NMF.AK.034	Validated	Aleutian Harbor Seal Ecology	Alaska Complex	1 yr	42	7, 49
NMF.AK.035	Validated	FISHPAC Integrated Habitat Assessments	Alaska Complex	1 yr	21	36, 39, 62 (SME)
NMF.AK.036	Validated	Steller Sea Lion (SSL) Captures for health information	Alaska Complex	1 yr	20	7, 45
NMF.AK.037	Validated	Steller Sea Lion (SSL) brand resights / inventory	Alaska Complex	1 yr	15	7, 45
NMF.AK.038	Validated	Steller Sea Lion (SSL) brand resights / inventory + pups	Alaska Complex	1 yr	20	7, 45

Note: DAS numbers were not validated but were submitted by programs to indicated needed days at sea for each survey.

Legend: Level of Validation

- Validated
- Validated with SME Statement
- Not Validated (insufficient documentation)

2.1.3 Validation Documents Submitted

Program and Technology Planning and Integration Office (TPIO) representatives worked jointly to identify references to validate both the need for an observation requirement and its specific measurement attributes. These validation documents support one or more of the Priority-1 Requirements as shown in Table 1 above. For occurrences where validation documents could not be identified, Program Subject Matter Experts (SME) justifications are provided.

The following Validation Documents have been submitted in support of the National Marine Fisheries Service Priority 1 Observation Requirements.

Table 2: AFSC Validation Documents provided to support Priority-1 Requirements

Doc #	Document Title
1	AFSC FY12 Activity Plan - Recruitment and Prediction. IV. Recruitment Processes of Alaska Groundfish. Doc reviewed and approved by AFSC Board of Directors (attached).
2	AFSC FY12 Activity Plan, reviewed and approved by AFSC Board of Directors, req 44 DAS to complete entire entire spring ecosystem observation cruises. See
3	AFSC FY12 Activity Plan, reviewed/approved by AFSC Board of Directors; requests 50 DAS. See
4	AFSC's Project/Activity Plan for this specific project as additional validation documentation, pages 1-7. Although this document is not externally "peer reviewed", it is peer reviewed in the sense that all of the AFSC's division directors review all of the AFSC's activity/projects plans. (filenames: BASIS activity plan (FY12) and BASIS North Survey: AFSC Activity Plan FY13; Northeastern Bering Sea and Chukchi Sea Assessment)
5	AFSC's Project/Activity Plan for this specific project as additional validation documentation, pages 1-7. Although this document is not externally "peer reviewed", it is peer reviewed in the sense that all of the AFSC's division directors review all of the AFSC's activity/projects plans. (filename: Basis North activity plan)
6	AFSC's ProjectActivity Plan for the Southeast Alaska Cetacean Vessel Survey provides additional validation documentation for this survey, pages 1-4. (filename: Southeast Alaska Porpoise Study activity plan)
7	Allen, B. M., and R. P. Angliss. 2011. Alaska marine mammal stock assessments, 2010. U.S. Dep. Commer., NOAA Tech. Memo. NMFS AFSC-223, 292 pp.
8	Allen, B.M. and Angliss, R.P. 2010. Harbor porpoise (<i>Phocoena phocoena</i>); Southeast Alaska stock. Alaska marine mammal stock assessments, 2010. U.S. Dep. Commerce, NOAA-Tech. Memo NMFS-AFSC-223.
9	Bachelor et al 2009, Density-dependent, landscape, and climate effects on spawning distribution of walley pollock. IN: Marine Ecology Progress Series 391:1-12.
10	Bachelor et al, 2012, Do walleye pollock exhibit flexibility in where and when they spawn based on variability in water temperature? Deep-Sea Res. II, 65-70:208-216
11	Connors ME, Munro P, Neidetcher S (2004) Pacific cod pot studies 2002-2003, p 131.
12	Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, Annex Part 1; Stock assessment and fishery evaluation report for the groundfish resources of the Bering Sea/Aleutian Islands regions. North Pac. Fish. Mgmt. Council, Anchorage, AK (November 2011)

Doc #	Document Title
13	De ROBERTIS, A., and C. D. WILSON. 2011. Silent ships do not always encounter more fish (revisited): Comparison of acoustic backscatter from walleye pollock recorded by a noise-reduced and a conventional research vessel in the eastern Bering Sea. ICES J. Mar. Sci. 68:2229-2239.
14	De ROBERTIS, A., C. WILSON, and N. J. WILLAMSON. 2012. Do silent ships see more fish? Comparison of a noise-reduced and a conventional research vessel in Alaska, p. 331-334, in A. N. Popper, and A. Hawkins (editors), The Effects of Noise on Aquatic Life, Advances in Experimental Medicine and Biology Vol. 730.
15	Doyle et al, 2009, Larval fish abundance and physical forcing in the GoA, 1981-2003, Progress in Oceanography 80:163-187.
16	Ecosystem Considerations for 2011. AppendiC of the BSAI/GOA Stock Assessment and Fishery Evaluation Reports. North Pac. Fish. Mgmt. Council, Anchorage (December 2011)
17	Eggers, Carroll. 2012. Run forecasts and harvest projections for 2012 Alaska salmon fisheries and review of the 2011 season http://www.adfg.alaska.gov/FedAidPDFs/SP12-01.pdf (pages 48-52)
18	Heintz et al (attached); see Hunt et al, 2010, Bering Sea pp 196-267, In: Marine Ecosystems of the North Pacific Ocean, 2003-2008, PISCES Special Publication 4, 393 pp
19	Hollowed, A.B., R.P. Angliss, M.F. Sigler, B.A. Megrey, and D.H. Ito. 2007. http://www.afsc.noaa.gov/Publications/ProcRpt/PR2007-05.pdf . Implementation Plan for Loss of Sea Ice (LOSI) Program, AFSC Processed Report 2007-05, 48 p. Alaska Fish. Sci Cent., NoAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115
20	http://fishbull.noaa.gov/1082/rose.pdf , page 137-39
21	http://swfsc.noaa.gov/textblock.aspx?Division=PRD&id=1514&ParentMenuId=276
22	http://www.afsc.noaa.gov/nmml/cetacean/
23	http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-197.pdf . BSAI Grdfish and Invertebrates Survey, 2008, page 1-5
24	http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-204.pdf . Page 1-6
25	http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-208.pdf GOA Bottom trawl Survey
26	http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-215.pdf . Page 1-4
27	http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-227.pdf which includes a description of the Northern Bering Sea (NBS) survey in 2010 and number of days on P 1-12
28	http://www.afsc.noaa.gov/Quarterly/amj2007/divrptsRACE3.htm
29	http://www.afsc.noaa.gov/RACE/surveys/cruise_archives/cruises2006/results_FW-FISHPAC2006.pdf , page 5-6
30	http://www.afsc.noaa.gov/REFM/docs/2011/BSAIturbot.pdf for use in stock assessments.page11-14
31	http://www.afsc.noaa.gov/REFM/docs/2011/BSAIturbot.pdf as an example in use in stock assessments., page 5
32	http://www.afsc.noaa.gov/REFM/docs/2011/EBSpollock.pdf as an example of use in stock assessments. Page 9

Doc #	Document Title
33	http://www.afsc.noaa.gov/REFM/docs/2011/GOApollo.pdf for use in stock assessments. Page 55-56
34	http://www.fishwatch.gov/seafood_profiles/species/salmon/species_pages/pink_salmon.htm (see LOOKING AHEAD in right hand column, and THIS JUST IN for 2011)
35	Ivashchenko, Y.V. and Clapham, P.J. 2012. Soviet catches of bowhead and right whales in the North Pacific and Okhotsk Sea. <i>Endangered Species Research</i> (in press).
36	Lomnický, J. and R.A. McConnaughey. 2008. Integrating charting and acoustic habitat research. <i>Sea Technology</i> 49(8):10-15 - demonstrates habitat and hydrographic data can be simultaneously collected using acoustic systems on NOAA ship <i>Fairweather</i> .
37	Magnuson-Stevens Fisheries Conservation and Management Act
38	Magnuson-Stevens Fisheries Conservation and Management Act and North Pacific Fishery Management Council Minutes 182nd Plenary Session, June 6-12, 2007 http://www.alaskafisheries.noaa.gov/npfmc/PDFdocuments/minutes/607Council.pdf
39	McConnaughey, R.A. and S.E. Syrjala. 2009. Statistical relationships between the distributions of groundfish and crabs in the eastern Bering Sea and processed returns from a single-beam echo sounder. <i>ICES J. Mar. Sci.</i> 66: 1425-1432 - demonstrates seabed characteristics affect the distribution and abundance of groundfish and benthic invertebrates and can be efficiently measured with shipborne sonars.
40	McDermott SF, Fritz LW, Haist V (2005) Estimating movement and abundance of atka mackerel (<i>pleurogrammus monopterygius</i>) with tag-release-recapture data. <i>Fisheries Oceanography</i> 14 (Supl. 1):113-130
41	NMFS 2010 Endangered Species Act-Section 7 Consultation Biological Opinion; for pollock, Libby Logerwell FIT Lead and SME
42	NOAA Fisheries Protocols for Longline Surveys: http://www.st.nmfs.noaa.gov/st4/protocol/Longline%20Protocols.pdf (pages 36-36, 45)
43	Orsi, J. A., E. A. Fergusson, M. V. Sturdevant, W. R. Heard, and E. V. Farley, Jr.. 2011. Annual Survey of Juvenile Salmon, Ecologically-Related Species, and Environmental Factors in the Marine Waters of Southeastern Alaska, May-August 2010. NAFC Doc. 1342, 87 pp. (Available at http://www.npafc.org).. See pages 2-3 "In 2010, SECM sampling was conducted in the northern region of SEAK for the 14th consecutive year to continue annual monitoring, explore juvenile salmon abundance relationships with biophysical parameters, and support models to forecast adult pink salmon returns.
44	Raring, N. W., and D. E. Stevenson. 2010. A brief survey of the mesopelagic fishes of the Gulf of Alaska. <i>Calif. Fish Game</i> 96:188-200, http://www.dfg.ca.gov/publications/journal/contents.html .
45	Recent biological opinions addressing effects of groundfish fisheries on Steller sea lions. www.afsc.noaa.gov/publication/techmemos
46	RESSLER, P. H., A. De ROBERTIS, J. D. WARREN, J. N. SMITH, and S. KOTWICKI. 2012. Developing an acoustic survey of euphausiids to understand trophic interactions in the Bering Sea ecosystem. <i>Deep-Sea Res. II</i> 65-70:184-195. De ROBERTIS, A., and C. D. WILSON. 2011.
47	Results of the March 2007 Echo Integration - Trawl Survey of Walleye Pollock Conducted in the SE Aleutian Basin Near Bogoslof Is. Cruise MF2007-03
48	ROOPER, C. N., G. R. HOFF, and A. De ROBERTIS. 2010. Assessing habitat utilization and rockfish (<i>Sebastes</i> spp.) biomass on an isolated rocky ridge using acoustics and stereo image analysis. <i>Can. J. Fish. Aquat. Sci.</i> 67:1658-1670.

Doc #	Document Title
49	Ship Surveys for Protected Species ALL REGIONS http://swfsc.noaa.gov/textblock.aspx?Division=PRD&id=1514&ParentMenuId=276
50	Smart et al, 2012, Influence of environment on walleye pollock eggs, larvae and juveniles in the southeastern Bering Sea. <i>Deep-Sea Res. II</i> , 65-70, 196-207;
51	Stabeno et al, 2012, Comparison of warm and cold years on the southeastern Bering Sea shelf and some implications for the ecosystem. <i>Deep-Sea Res. II</i> 65-70:31-45;
52	Stock assessment and fishery evaluation report for the groundfish resources of the Bering Sea/Aleutian Islands regions. North Pac. Fish. Mgmt. Council, Anchorage, AK (November 2011)
53	Stock assessment and fishery evaluation report for the groundfish resources of the Gulf of Alaska. North Pac. Fish. Mgmt. Council, Anchorage, AK (November 2011)
54	Underwater radiated noise measurements of a noise-reduced research vessel: Comparison between a US Navy noise range and a simple hydrophone mooring. <i>Proc. Meetings Acoust.</i> 12, 07003. 15 p.
55	WILLIAMS, K., C. N. ROOPER, and R. TOWLER. 2010. Use of stereo camera systems for assessment of rockfish abundance in untrawlable areas and for recording pollock behavior during midwater trawls. <i>Fish. Bull.</i> , U.S. 108:352-362.
56	Winter, A., Foy, R.J. and Trussel, M. 2007. Factors influencing the mortality of tagged walleye pollock captured using a trawl net. NPRB Final Report Project 506
57	YANG, M-S. 2011 Diet of nineteen mesopelagic fishes in the Gulf of Alaska, 67 p. NTIS No. PB2012-102005.
58	Moss, Shotwell. 2010 Surviving the Gauntlet: a comparative study of the pelagic, demersal, and spatial linkages that determine groundfish recruitment and diversity in the Gulf of Alaska ecosystem. Funded North Pacific Research Board proposal.
59	http://www.afsc.noaa.gov/REFM/docs/2011/Aipollock.pdf
60	http://www.fakr.noaa.gov/protectedresources/stellers/esa/biop/final/
61	AFSC_SME Ice Seal_NMML.pdf
62	AFSC_RACE_SMEs-Rev.pdf

2.2 Northeast Fisheries Science Center (NEFSC)

2.2.1 Program Summary

The Center plans, develops, and manages a multidisciplinary program of basic and applied research to: (1) better understand living marine resources of the Northeast Continental Shelf Ecosystem from the Gulf of Maine to Cape Hatteras, and the habitat quality essential for their existence and continued productivity; and (2) describe and provide to management, industry, and the public, options for the conservation and utilization of living marine resources, and for the restoration and maintenance of marine environmental quality.

2.2.2 Validation Assessment for Priority-1 Requirements

NMFS representatives and TPIO representatives worked jointly to review the submitted documentation, and identify the “level of validation” for the Priority-1 Observation Requirement.

Table 1: NEFSC Validation Assessment for Priority-1 Requirements

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.NE.001	Validated	NMFS-ST-NEFSC At Sea Data Collection, Autumn Multispecies Bottom Trawl Survey	North Atlantic	1 yr	60	9, 33, 34
NMF.NE.002	Validated	NMFS-ST-NEFSC At Sea Data Collection, Spring Multispecies Bottom Trawl Survey	North Atlantic	1 yr	60	9, 32, 33
NMF.NE.003	Validated	Atlantic Southeast Protected Species Assessment Survey (Summer)	North Atlantic	3 yr	60	12, 14, 19, 21, 22, 23, 24
NMF.NE.004	Validated	Cooperative SEFSC and NEFSC Survey	North Atlantic	1 yr	45	1, 38, 51(SME)
NMF.NE.005	Validated	Atlantic Herring Hydroacoustic Survey	North Atlantic	1 yr	40	18, 47(SME), 48(SME), 54
NMF.NE.006	Validated	Acoustics Research	North Atlantic	1 yr	12	27, 52, 53
NMF.NE.007	Validated	Cetacean Biology	North Atlantic	1 yr	30	12, 19, 51(SME)
NMF.NE.008	Validated	Summer Cetcean and Turtle Abundance	North Atlantic	2 yr	60	12, 14, 19, 21, 22, 23, 24
NMF.NE.009	Validated	N. Right Whale Biology	North Atlantic	1 yr	30	19, 20
NMF.NE.010	Validated	Habitat Mapping	North Atlantic	1 yr	12	2, 3, 11, 42, 43, 45
NMF.NE.011	Validated	Benthic Habitat	North Atlantic	1 yr	20	4, 5, 11, 41, 45, 56
NMF.NE.012	Validated	Integrated Benthic and Sea Scallop Resource Assessment Survey	North Atlantic	Annual, no breaks in time series.	60	31
NMF.NE.013	Validated	Surf Clam & Ocean Quahog Dredge Survey	North Atlantic	3 yr	15	10

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.NE.014	Validated	Apex Predators Program Coastal Shark Longline Survey [Ex #74 in FY11]	North Atlantic	2 yr	45	26, 46, 47 (SME)
NMF.NE.015	Validated	Apex Predators Program Pelagic Shark Longline Survey [Ex #75 in FY11]	North Atlantic	2 yr	45	26, 47 (SME)
NMF.NE.016	Validated	NERACOOS Mooring Maintenance	North Atlantic	1 yr	12	58 (SME)
NMF.NE.017	Validated	Ecosystem Monitoring	North Atlantic	1 yr	70	7, 47 (SME)
NMF.NE.018	Validated	Northern Shrimp Bottom Trawl Survey	North Atlantic	1 yr	15	33, 47(SME), 59
NMF.NE.019	Validated	Trawl Survey Standardization and Technology Development	North Atlantic	1 yr	24	6, 15, 17, 28, 44(SME), 51(SME)
NMF.NE.020	Validated	Hydroacoustic Mackerel Survey	North Atlantic	1 yr	24	8,13, 16
NMF.NE.021	Validated	Deepwater BioDiversity	North Atlantic	1 yr	12	47 (SME)
NMF.NE.022	Validated	Distributions, Ecology, and Biology of Deep Coral Habitats and Associated Fauna	North Atlantic	1 yr	16	37, 51(SME)
NMF.NE.023	Validated	Cooperative Atlantic States Shark Pupping And Nursery (COASTSPAN)	North Atlantic	1 yr	15	26, 47 (SME), 57
NMF.NE.024	Validated	LMRCSC	North Atlantic	1 yr	20	29, 30, 34, 50(SME)

Note: DAS numbers were not validated but were submitted by programs to indicated needed days at sea for each survey.

Legend: Level of Validation

- Validated
- Validated with SME Statement
- Not Validated (insufficient documentation)

2.2.3 Validation Documents Submitted

Program and Technology Planning and Integration Office (TPIO) representatives worked jointly to identify references to validate both the need for an observation requirement and its specific measurement attributes. These validation documents support one or more of the Priority-1 Requirements as shown in Table 1 above. For

occurrences where validation documents could not be identified, Program Subject Matter Experts (SME) justifications are provided.

The following Validation Documents have been submitted in support of the NMFS Program's Priority 1 Observation Requirements.

Table 2: NEFSC Validation Documents provided to support Priority-1 Requirements

Doc #	Document Title
1	Frid, C. J. L., Paramor, O. A. L., and Scott, C. L. 2006. Ecosystem-based management of fisheries: is science limiting? ICES Journal of Marine Science, 63: 1567-1572.
2	Guida et al. 2011 https://afs.confex.com/afs/2011/webprogram/Paper7151.html
3	Guida, V.G. 2009. Evaluation of the Kongsberg ME70 Multibeam Sonar aboard F/V Henry B. Bigelow used during Bathymetric Mapping of Benthic Habitats in Summer 2008. White Paper Report, Northeast Fisheries Science Center, J.J. Howard Laboratory, Highlands, NJ. 21 pp.
4	Guida, V.G. 2008. Report on the NOAA invasive colonial tunicate research and management planning workshop, Providence, RI Sept. 10-11, 2008. 17 pp.
5	Guida, V.G., Valentine, P.C., and Gallea, L. in preparation. Quadri-diurnal water temperature changes in seabed habitats caused by tidal front movements in August on the Northern Edge of Georges Bank.
6	http://datras.ices.dk/Documents/Manuals/Addendum_1_Manual_for_the_IBTS_Revision_VIII.pdf
7	http://icesjms.oxfordjournals.org/content/67/4/617.short
8	http://icesjms.oxfordjournals.org/content/67/8/1749.full
9	http://journal.nafo.int/J14/murawski.pdf , Multispecies Size Composition: A Conservative Property of Exploited Fishery Systems? S. A. Murawski and J. S. Idoine National Marine Fisheries Service, Northeast Fisheries Center Woods Hole, Massachusetts 02543, USA
10	http://nefsc.noaa.gov/publications/crd/crd1003 NEFSC Ref Doc 10-03 NE Regional Stock Assessment Report
11	http://spo.nwr.noaa.gov/tm/TM108.pdf : throughout document, p. 65
12	http://swfsc.noaa.gov/textblock.aspx?Division=PRD&id=1514&ParentMenuId=276 , Ship Surveys for Protected Species ALL REGIONS
13	http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2012/2012_031-eng.pdf
14	http://www.fws.gov/northflorida/SeaTurtles/2008_Recovery_Plan/20081231_Final%20NW%20Loggerhead%20Recovery%20Plan_signed.pdf
15	http://www.ices.dk/reports/RMC/2007/IBTSWG/ibtswg07.pdf
16	http://www.mafmc.org/fmp/msb_files/2012_Specs/SSC_Report_25-26_May_2011.pdf , Report of the May, 2011 Meeting of the [MAFMC] Statistical and Scientific Committee, p 7-8
17	http://www.mafmc.org/vision/Final_Visioning_Report.pdf
18	http://www.nefsc.noaa.gov/publications/crd/crd0406/#7 , Overholtz et al. 2004. Stock Assessment of the Gulf of Maine- Georges Bank Atlantic Herring Complex, 2003. Northeast Fisheries Science Center Reference Document 04-06

Doc #	Document Title
19	http://www.nefsc.noaa.gov/publications/tm/tm219/331_AP4.pdf , NOAA Technical Memorandum NMFS-NE-219 U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2010
20	http://www.nefsc.noaa.gov/read/protsp/mainpage/index.html , Ship Surveys for Protected Species
21	http://www.nmfs.noaa.gov/pr/pdfs/recovery/kempstridley_revision2.pdf
22	http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_green_atlantic.pdf
23	http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_hawksbill_atlantic.pdf
24	http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_leatherback_atlantic.pdf
25	http://www.nmfs.noaa.gov/pr/sars/
26	http://www.sefsc.noaa.gov/sedar/ , SEDAR 21, 2012, Stock Assessment Report for Blacknose, Dusky and Sandbar Sharks
27	http://www.st.nmfs.noaa.gov/st5/publication/econ , Fisheries Economics of the U.S.
28	http://www.st.nmfs.noaa.gov/st7/advanced_sampling/AnnualReport.html , 2009
29	http://www.umes.edu/cms300uploadedFiles/Newsletter%2011.pdf , Living Marine Resources Cooperative Science Center
30	http://www.umes.edu/LMRCSC/Default.aspx?id=39478
31	NEFSC 50th NE Regional Stock Assessment Workshop Ref Doc #1009
32	NEFSC 53rd NE Regional Stock Assessment Workshop March 2012. Ref Doc #1205
33	NEFSC Assessment or Data Updates of 13 NE Grndfish Stocks through 2010 Ref Doc #1206
34	NEFSC cruise reports: AL05-01, DE06-01, DE07-02, DE08-01, DE09-01, DE10-02, DE11-01, DE12-01
35	NEFSC_cetacean_and_turtle_abundance.pdf
36	NEFSC_N_Right_whale_biology.pdf
37	NOAA Strategic Plan for Deep-Sea Coral and Sponge Ecosystems
38	Norse, E.A. 2010. Ecosystem -based spatial planning and management of marine fisheries : Why and how? Bull. Mar. Sci. 86(2):179-195.
39	Northeast Deep-Sea Coral Workshop Report (Aug 2011)
40	Philip J. Politis, Joseph T. DeAlteris, Russell W. Brown, Archie T. Morrison III. 2012. Effects of sea-state on the physical performance of a survey bottom trawl. Fisheries Research 123: 26-36.
41	Reid, R., Almeida, F., Valentine, P., Arlen, L., Cross, J., Guida, V., Link, J., McMillan, D., Murawski, S., Packer, D., Vitaliano, J., & Paulson, A. 2005. The effectiveness of marine protected areas on fish and benthic fauna: The Georges Bank Closed Area I example. Am. Fish. Soc. Symp. 41: 601-602
42	Rona et al. 2008 http://adsabs.harvard.edu/abs/2008AGUFMOS51A1238R
43	Rona et al. 2009 http://adsabs.harvard.edu/abs/2009AGUFMEP43A0636R
44	SME graph "NEFSC_Trawl_comparison-standardization.pdf"

Doc #	Document Title
45	SME graph of historical DAS "NEFSC_Habitat_Mapping_and Benthic_Habitat_cruiseperiods-1.pdf"
46	SME graph of historical DAS "NEFSC-Apex_predators_coastal_shark.pdf"
47	SME Memorandum V2 for NEFSC EcoMon surveys
48	SME plot "NEFSC_Results_of_herring_acoustic_survey.pdf" and "NEFSC_Atlanticherring_acoustics.pdf"
49	SME statement (table) Deep water diversity
50	SME statement for LMRCSC
51	SME statement from NEFSC of 9/28/12
52	SME: graph of DAS over time "NEFSC_Atlanticherring_acoustics.pdf"
53	SME: graph of cruise start/finish dates "NEFSC_Pelagic_acoustics_research.pdf"
54	TRAC Status Report 2009/041
55	U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2010
56	Valentine, P.C., Collie, J.S., Reid, R.N., Asch, R., Guida, V.G., and Blackwood, D., 2007. The occurrence of the colonial ascidian <i>Didemnum</i> sp. on Georges Bank gravel habitat – ecological observations and potential effects on groundfish and scallop fisheries: <i>J. Exp. Mar. Biol. Ecol.</i> 342: 179-181.
57	2006 SEDAR 11 Stock Assessment Report for Large Coastal Shark Complex, Blacktip and Sandbar Shark at http://www.sefcs.noaa.gov/sedar See SEDAR 11-HMS Large Coastal Sharks
58	NEFSC SME Table NERACOOS DAS
59	NEFSC SME Northern Shrimp Survey

2.3 Southeast Fisheries Science Center (SEFSC)

2.3.1 Program Summary

Southeast Region covers the eight coastal states of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana and Texas, the inland states of Arkansas, Iowa, Kansas, Kentucky, Missouri, Nebraska, New Mexico, Oklahoma and Tennessee, as well as the Commonwealth of Puerto Rico and the U.S. Virgin Islands.

2.3.2 Validation Assessment for Priority-1 Requirements

NMFS representatives and TPIO representatives worked jointly to review the submitted documentation, and identify the “level of validation” for the Priority-1 Observation Requirement.

Table 1: SEFSC Validation Assessment for Priority-1 Requirements

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.SE.001	Validated	Ecosystem Assessment Winter	Gulf of Mexico	1 yr	60	1, 2, 3, 20
NMF.SE.002	Validated	Ecosystem Assessment Spring	Gulf of Mexico	1 yr	60	1, 2, 3, 20
NMF.SE.003	Validated	Ecosystem Assessment Summer	Gulf of Mexico	1 yr	60	1, 2, 3, 20
NMF.SE.004	Validated	Ecosystem Assessment Fall	Gulf of Mexico	1 yr	60	1, 2, 3, 20
NMF.SE.005	Validated	Summer Offshore Plankton	Gulf of Mexico	1 yr	34	4, 5, 2, 20
NMF.SE.006	Validated	Caribbean Reef Fish Video and Hydroacoustic Survey	Caribbean	2 yr	50	2, 6, 20
NMF.SE.007	Validated	Caribbean Reef Fish Assessment	Caribbean	2 yr	50	2, 6, 20
NMF.SE.008	Validated	NMFS-ST SEAMAP At Sea Data Collection, Fall Groundfish Survey	Gulf of Mexico	1 yr	41	2, 5, 7, 20
NMF.SE.009	Validated	NMFS-ST SEAMAP At Sea Data Collection, Summer Groundfish Survey	Gulf of Mexico	1 yr	43	2, 5, 7, 20
NMF.SE.010	Validated	Shark/Red Snapper Bottom Longline Survey- Winter	Gulf of Mexico	1 yr	64	2, 8, 9, 20
NMF.SE.011	Validated	Shark/Red Snapper Bottom Longline Survey- Spring	South Atlantic/ Gulf of Mexico	1 yr	60	2, 8, 9, 20
NMF.SE.012	Validated	Shark/Red Snapper Bottom Longline Survey- Summer	South Atlantic/ Gulf of Mexico	1 yr	60	2, 8, 9, 20
NMF.SE.013	Validated	Shark/Red Snapper Bottom Longline Survey- Fall	South Atlantic/ Gulf of Mexico	1 yr	60	2, 8, 9, 20
NMF.SE.014	Validated	Pelagic Acoustic Fall Trawl Survey	Gulf of Mexico	1 yr	41	2, 10, 11, 12, 20
NMF.SE.015	Validated	GOM SEAMAP Reef Fish Video & Hydroacoustic Survey	Gulf of Mexico	1 yr	60	13, 14, 15, 20
NMF.SE.016	Validated	SEAMAP Fall Ichthyoplankton Survey	Gulf of Mexico	1 yr	60	2, 4, 5, 16, 20
NMF.SE.017	Validated	SEAMAP Spring Ichthyoplankton Survey	Gulf of Mexico	1 yr	60	2, 4, 5, 16, 20
NMF.SE.018	Validated	Caribbean Plankton Survey	Caribbean	1 yr	30	17, 2, 20
NMF.SE.019	Validated	SEAMAP Winter Ichthyoplankton Survey	Gulf of Mexico	1 yr	30	2, 4, 5, 20

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.SE.020	Validated	Southeast Protected Species Assessment Survey (Summer)	Gulf of Mexico / South Atlantic / Caribbean	1 yr	60	18, 19, 21, 22, 23
NMF.SE.021	Validated	Southeast Protected Species Assessment Survey (Winter)	Gulf of Mexico / South Atlantic / Caribbean	1 yr	60	18, 19, 21, 22, 23
NMF.SE.022	Validated	NE GOM Vertical Line	Gulf of Mexico	1 yr	60	99, 100
NMF.SE.023	Validated	Large Pelagic Longline with Satellite Tagging-Spring	South Atlantic/ Gulf of Mexico	1 yr	30	25, 89, 115 (SME)
NMF.SE.024	Validated	Large Pelagic Longline with Satellite Tagging-Fall	South Atlantic/ Gulf of Mexico	1 yr	30	25, 89, 115 (SME)
NMF.SE.025	Validated	South Atlantic MPA	South Atlantic	1 yr	20	92, 114 (SME)
NMF.SE.026	Validated	Gulf of Mexico Deep Coral - Spring	GOM	1 yr	20	141
NMF.SE.027	Validated	Gulf of Mexico Deep Coral - Summer	GOM	1 yr	20	141
NMF.SE.028	Validated	South Atlantic Deep Coral - Spring	South Atlantic	1 yr	20	141, 142
NMF.SE.029	Validated	South Atlantic Deep Coral - Summer	South Atlantic	1 yr	20	141, 142
NMF.SE.030	Validated	Panama City Laboratory trap/video reef fish survey	Gulf of Mexico	1 yr	40	53, 97, 143, 144
NMF.SE.031	Validated	SouthEast Fisheries Independent Survey (SEFIS)	South Atlantic	1 yr	30	93, 106
NMF.SE.032	Validated	SouthEast Fisheries Independent Survey (SEFIS) - Charter	South Atlantic	1 yr	50	93, 106
NMF.SE.033	Validated	MARMAP Atlantic Reef Fish Survey	South Atlantic	1 yr	60	93, 124, 146, 59
NMF.SE.034	Validated	South Atlantic Ichthyoplankton – Winter/Spring	South Atlantic	1 yr	30	93
NMF.SE.035	Validated	South Atlantic Ichthyoplankton – Summer/Fall	South Atlantic	1 yr	30	93
NMF.SE.036	Validated	South Atlantic Ecosystem Assessment	South Atlantic	1 yr	30	1, 2, 20, 3
NMF.SE.037	Validated	Deepwater / continental slope survey	South Atlantic	1 yr	40	93

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.SE.038	Validated	TED Usability Fishery Dependent	Gulf of Mexico/South Atlantic	1 yr	50	3, 47, 112 (SME), 116
NMF.SE.039	Validated	TED Certification	Gulf of Mexico	1 yr	21	3, 47, 112 (SME), 116
NMF.SE.040	Validated	Reef Fish Visual Census (RVC) Surveys (Divers)	Gulf of Mexico / Caribbean	1 yr	30	96, 97, 147, 148
NMF.SE.041	Validated	TED Efficiency Evaluations; Wild Turtles	Gulf of Mexico/South Atlantic	1 yr	14	3, 47, 112 (SME), 116
NMF.SE.042	Validated	NE Gulf of Mexico MPA	Gulf of Mexico	1 yr	75	48, 84, 86, 117, 118, 119
NMF.SE.043	Validated	BRD Evaluations	Gulf of Mexico/South Atlantic	1 yr	14	3, 42, 112 (SME), 116
NMF.SE.044	Validated	Proof of Concept Evaluations: Trawl Bycatch Detection Technology	Gulf of Mexico/South Atlantic	1 yr	14	47, 112 (SME)
NMF.SE.045	Validated	Commercial Longline Gear Evaluations	Gulf of Mexico	1 yr	30	3, 47, 112 (SME), 116
NMF.SE.046	Validated	Sea Turtles in the Florida Keys National Marine Sanctuary	Gulf of Mexico	1 yr	10	36, 110 (SME)
NMF.SE.047	Validated	AMMAPS Canaveral Sea Turtle Satellite Tagging	South Atlantic	1 yr	20	36,47, 149
NMF.SE.048	Validated	Sea Turtle Abundance Trawl Study	South Atlantic/Gulf of Mexico	1 yr	560	36, 56, 57, 110 (SME)
NMF.SE.049	Validated	In-water Turtle Surveys	South Atlantic/Gulf of Mexico	1 yr	40	36, 110 (SME)
NMF.SE.050	Validated	Leatherback Satellite Tagging	South Atlantic/Gulf of Mexico	1 yr	15	36, 110 (SME)
NMF.SE.051	Validated	Gear Selectivity Experiments (Optical gears and passive gears)	South Atlantic/Gulf of Mexico	1 yr	60	107 (SME), 140
NMF.SE.052	Validated	Gear Development Surveys/Optical trawl	Gulf of Mexico	1 yr	15	107 (SME), 135, 139
NMF.SE.053	Validated	Gear Selectivity Experiments (Hook selectivity)	Gulf of Mexico	1 yr	30	107 (SME), 137, 138

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.SE.054	Validated	Gear Selectivity Experiments (Optical gears and passive gears) (40 ft Shrimp Trawl)	Gulf of Mexico	1 yr	15	107 (SME), 135, 136
NMF.SE.055	Validated	Gear Selectivity Experiments (open Trawl)	Gulf of Mexico	1 yr	15	107 (SME), 135, 136
NMF.SE.056	Validated	AUV testing and comparison with ROV	Gulf of Mexico	1 yr	21	107 (SME), 133, 134
NMF.SE.057	Validated	In-Situ Ichthyoplankton Imaging System (ISIIS) pilot study	Gulf of Mexico	1 yr	15	113 (SME), 130, 131, 132
NMF.SE.058	Validated	Ship-Supported Fisheries LIDAR Surveys	Gulf of Mexico	1 yr	25	45
NMF.SE.059	Validated	Pilot Passive Acoustic Surveys for Fisheries, Marine Mammal, and Ecosystem Management	Gulf of Mexico	1 yr	60	54, 90, 123
NMF.SE.060	Validated	Mesopelagic Living Marine Resource Surveys	Gulf of Mexico	1 yr	120	38, 46, 120, 121
NMF.SE.061	Validated	Acoustic tagging pilot study	Southeast US & Mexico	1 yr	190	108 (SME), 129
NMF.SE.062	Validated	Genetic tagging pilot study	Southeast US & Mexico	1 yr	375	108 (SME), 128
NMF.SE.063	Validated	Caribbean trap survey	Caribbean	1 yr	120	65, 96, 109 (SME), 127
NMF.SE.065	Validated	Experimental acoustics	South Atlantic/Gulf of Mexico	1 yr	20	93
NMF.SE.066	Validated	Cooperative Gulf of Mexico Shark Pupping and Nursery (GULFSPAN) Survey	Gulf of Mexico	1 yr	15	40, 48, 58
NMF.SE.067	Validated	Smalltooth Sawfish Abundance Survey	Southwest Florida - Everglades National Park and Ten Thousand Islands National Wildlife Refuge	1 yr	66	126

Note: DAS numbers were not validated but were submitted by programs to indicated needed days at sea for each survey.

Legend: Level of Validation

- Validated
- Validated with SME Statement
- Not Validated (insufficient documentation)

2.3.3 Validation Documents Submitted

Program and Technology Planning and Integration Office (TPIO) representatives worked jointly to identify references to validate both the need for an observation requirement and its specific measurement attributes. These validation documents support one or more of the Priority-1 Requirements as shown in Table 1 above. For occurrences where validation documents could not be identified, Program Subject Matter Experts (SME) justifications are provided.

The following Validation Documents have been submitted in support of the NMFS Program's Priority 1 Observation Requirements.

Table 2: SEFSC Validation Documents provided to support Priority-1 Requirements

Doc #	Document Title
1	SEFSC_Strategic_Plan_2006_FINAL_04282005.pdf
2	MS_Labs Scott, G., Porch C, Nance, J., Prager, M. and Restrepo, V. 2008. Internal Review of the SEFSC Ship-Based Resource Surveys Program, final report
3	Magnuson-Stevens Fishery Conservation and Management Act Public Law 94-265, 16 U.S.C. 1881d. http://www.nmfs.noaa.gov/msa2005/docs/MSA_amended_msa%20_20070112_FINAL.pdf
4	Improving the Collection, Management, and Use of Marine Fisheries Data - Ocean Studies Board, National Research Council (http://www.nap.edu/catalog/9969.html)
5	2006 - 2010 SEAMAP Management Plan, Griffin and Paine, (www.masgc.org/gmrp/plans/SEAMAP.pdf)
6	SEDAR 2011. SEDAR 26. Stock Assessment
7	SEDAR 2006. SEDAR 9, Stock assessment Report, Gray triggerfish. http://www.sefsc.noaa.gov/sedar/download/SEDAR9_SAR1%20Gray%20Triggerfish.pdf?id=DOCUMENT
8	SEDAR 2011. SEDAR 21, Stock assessment Report, HMS Sandbar Shark.
9	SEDAR 2012. SEDAR 29. Stock Assessment, HMS Gulf of Mexico Blacktip Shark
10	Ingram, G. Walter. SEDAR7_DW10: Data Summary of Red Snapper (<i>Lutjanus campechanus</i>) Collected During Small Pelagic Trawl Surveys, 1988-1996. http://www.sefsc.noaa.gov/sedar/download/SEDAR7_DW10.pdf?id=DOCUMENT
11	Ingram, G. Walter. SEDAR 9-DW22: Data Summary of Gray Triggerfish (<i>Balistes capriscus</i>), Vermilion Snapper (<i>Rhomboplites aurorubens</i>), and Greater Amberjack (<i>Seriola dumerilii</i>) collected During Small Pelagic Trawl Surveys, 1988-1996. http://www.sefsc.noaa.gov/sedar/download/SEDAR9-DW22%20doc%20smallpel.pdf?id=DOCUMENT
12	Ingram, G. Walter. SEDAR16-DW20: Data Summary of King Mackerel (<i>Scomberomorus cavalla</i>) Collected During Small Pelagic Trawl Surveys in the U.S. Gulf of Mexico, 1988-1996 and 2002-2007. http://www.sefsc.noaa.gov/sedar/download/S16_DW_20.pdf?id=DOCUMENT
13	Long-Term Gulf of Mexico Fishery-Independent Monitoring Plan (pg. 4, 8, 27-31).
14	SEDAR 2006. SEDAR 10 NOAA Fisheries Reef Fish Video Surveys: Yearly indices of abundance for Gag

Doc #	Document Title
15	SEDAR 10. 2006. Stock assessment report: Gulf of Mexico Gag Grouper. Section II. Data Workshop. Charleston, SC. 79p., http://www.sefsc.noaa.gov/sedar/download/S12SAR1%20Gulf%20Red%20Grouper%20C%20completev2.pdf?id=DOCUMENT
16	Hunter, J.R. and N.C.-H. Lo. 1993. Ichthyoplankton methods for estimating fish biomass Introduction and terminology. Bull. Mar. Sci. 53(2)723-727. (http://www.ingentaconnect.com/content/umrsmas/bullmar/1993/00000053/00000002/art00013)
17	Conservation genetics and management of yellowtail snapper, <i>Ocyurus chrysurus</i> , in the US Caribbean and South Florida, Fisheries Management and Ecology, 2012, 19
18	Atlantic Marine Mammal Stk Assess_2010_TM219
19	GAO Rpt NMFS Improvements to Protect MM from Commercial FishersDec2008
20	MS_Labs_Internal_Review_SEFSC_Resource_Surveys_Annexes.pdf
21	Marine Mammal Protection Act Sect. 117. 16 USC Ch. 31 http://www.nmfs.noaa.gov/pr/laws/mmpa/fulltext.htm#section117
22	Requirements plan of US protected marine species_SARs_TM_NMFS_SPO-63, 112 p. http://www.nmfs.noaa.gov/pr/pdfs/sars/improvement_plan.pdf
23	Wade and Angliss 1997. Guidelines for Assessing MM Stocks. NOAA TM NMFS-OPR-12 http://www.nmfs.noaa.gov/pr/pdfs/sars/gamms_report.pdf
24	2012_MPA_Report_to_GMFMC.pdf
25	11 NOAA Highly Migratory Species (HMS) fishery management plans or amendments (includes sharks, tuna, billfish and other pelagic fishes).
26	2003_MPA_Report_to_GMFMC.pdf
27	2005_MPA_Report_to_SAFMC.pdf
28	2006_MPA_Report_to_SAFMC.pdf
29	2007_MPA_Report_to_GMFMC.pdf
30	2008_MPA_Report_to_SAFMC.pdf
31	2009_MPA_Expansion_Report_to_GMFMC.pdf
32	2009_MPA_Report_to_SAFMC.pdf
33	2010_MPA_Report_to_GMFMC.pdf
34	2010_MPA_Report_to_SAFMC.pdf
35	2012_SAFMC_Research_Priorities.pdf
36	Assessment of Sea-turtle Status and trends: Integrating Demography and Abundance. 2010 Committee on Sea turtle Population Assessment Methods; National Research Council http://www.nap.edu/catalog/12889.html
38	Battaglia et al. 2012. Feeding habits of the Atlantic bluefin tuna, <i>Thunnus thynnus</i> (L. 1758), in the central Mediterranean Sea (Strait of Messina). Helgoland Marine Research Url: http://dx.doi.org/10.1007/s10152-012-0307-2 Doi: 10.1007/s10152-012-0307-2
39	Beaufort_Final_Report_-_Review_of_Fishery-Independent_Survey_Programs.pdf
40	Beaufort_SAFIMP_Workshop_Final_Report.pdf

Doc #	Document Title
41	Bethea, D.M., K. Smith , J.K. Carlson, M.J. Ajemian, R.D. Grubbs, and J. Imhoff (2011) Shark nursery grounds and essential fish habitat studies. Gulfspan Gulf of Mexico-FY10. An Internal Report to NOAA's Highly Migratory Species Division. Sustainable Fisheries Division Contribution No. PCB-11/01.
42	Bycatch Reduction device Testing Protocol; Federal Register / Vol. 64, No. 133 / Tuesday, July 13, 1999 / Rules and Regulations, 50 CFR Part 622
43	Caribbean Fisheries Data Evaluation. January 26-29, 2009, San Juan, Puerto Rico. 183
44	Carlson JK, Brusher JH (1999), An index of abundance for juvenile coastal species of sharks from the northeast Gulf of Mexico. Mar. Fish. Rev. 61(3)
45	Churnside, J. H., D. A. Demer, et al. (2003). "A comparison of lidar and echosounder measurements of fish schools in the Gulf of Mexico." <i>Ices Journal of Marine Science</i> 60(1): 147-154. (http://icesjms.oxfordjournals.org/content/60/1/147.full.pdf)
46	Davis, R. W., Fargion, G. S., May, N., Leming, T. D., Baumgartner, M., Evans, W. E., Hansen, L. J. and Mullin, K. (1998), PHYSICAL HABITAT OF CETACEANS ALONG THE CONTINENTAL SLOPE IN THE NORTHCENTRAL AND WESTERN GULF OF MEXICO. <i>Marine Mammal Science</i> , 14: 490–507. doi: 10.1111/j.1748-7692.1998.tb00738.x (http://onlinelibrary.wiley.com/doi/10.1111/j.1748-7692.1998.tb00738.x/abstract)
47	Endangered Species Act - Section 7 Consultation, Biological Opinion, Shrimp Trawling in the U.S. and Sea Turtle Regulations. Dec. 2, 2002
48	Further Studies on the Susceptibility of Reef Fish to Surface Trolling in a NE Gulf of Mexico Marine Protected Area. A report to the Gulf of Mexico Fishery Management Council. 25 October 2006. Andrew David
49	GulfSPAN_Carlson_and_Brusher_1999_index_Shark abundance_coastal_species.pdf
50	GULFSPAN_PC LabFY10_Final_11-01.pdf
51	Hunter_ Winter Ichthyoplankton_art13.pdf
52	Ingram, G. Walter. SEDAR16-DW08: Abundance indices of King Mackerel, <i>Scomberomorus cavalla</i> , Collected in Fall SEAMAP Groundfish Surveys in the Western U.S. Gulf of Mexico (1972-2007)
53	Ingram, W. 2009. Summary of the fishery-independent NMFS PC Lab trap-camera survey of gag and red grouper in the northeast Gulf of Mexico. SEDAR-UPDATE-05
54	Johnson, M. P. and P. L. Tyack (2003). "A Digital Acoustic Recording Tag for Measuring the Response of Wild Marine Mammals to Sound." <i>IEEE Journal of Oceanic Engineering</i> 28(1): 3-12. (http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=1190131&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D1190131)
55	kempsridley_revision2.pdf
56	Leatherback Turtle Expert Working Group Report http://www.sefsc.noaa.gov/turtles/TM_555_DcTEWG.pdf
57	Loggerhead Turtle Expert Working Group Report http://www.sefsc.noaa.gov/turtles/TM_575_TEWG.pdf
58	Magnuson-Stevens Fishery Conservation and Management Act Public Law 94-265 Section 405. Incidental Harvest Research 16 U.S.C. 1881d. http://www.nmfs.noaa.gov/msa2005/docs/MSA_amended_msa%20_20070112_FINAL.pdf
59	MARMAP_Red Snapper_sampling_plan_draft_5.1.09[1].doc

Doc #	Document Title
60	Miami_Mammals_gamms2005.pdf
61	Miami_Mammals_gao-09-78_TRT_Report.pdf
62	Miami_Mammals_PR_SAIP.pdf
63	Midwater Fish in Ctr Equatorial Atl_MB_85_3_313[1].pdf
64	MS Labs EBM_Norse_2010.pdf
65	MS Labs 2011-2015 SEAMAP Management Plan Web.pdf
67	MS_Labs_Churnside_et_al_2012._Fishery_applications_of_optical_technologies._ICE S_Cooperative_Research_Report_No._312._91_pp.[1].pdf
68	MS_Labs_Doray_et_al_2011._In-situ_measurements_of_individual_acoustic_backscatter_with_concurrent_optical_identification[1].pdf
69	MS_Labs_Gledhill_et_al_(Rademacher)_1996_Evaluation_of_video_and_acoustic_index_methods_for_assessing_reef_fish_populations.pdf
70	MS_Labs_Gledhill_gag_index_update_2008.pdf
71	MS_Labs_Harvey_et_al_2004._A_comparison_of_underwater_visual_distance_estimates[1].pdf
72	MS_Labs_Koenig_et_al._(Gledhill)_2000_protection_of_fish_spawning_habitat_on_shelf_edge_reefs_of_florida.pdf
73	MS_Labs_lyczkowski-shultz_hanisko_2007.pdf
74	MS_Labs_Millar_1992_Estimating_the_size-selectivity_of_fishing_gear_by_conditioning_on_the_total_catch.pdf
75	MS Labs NE-SE Coop Surveys- Norse_2010.pdf
77	MS_Labs_SEFSC_Seidel_Harv._1_1989_TED_Panel_Recommendation.pdf
78	MS_Labs_SEFSC_Seidel_Harv._2_BRD_testing_Protocol_CFR_1999.pdf
79	MS_Labs_Shortis_et_al_2009_A_review_of_underwater_stereo_image_measurement_for_marine_biology.pdf
80	MS_Labs_Sommerton-Gledhill-2004.pdf
81	NE_GOM_2003_MPA_Report_to_GMFMC.pdf
82	NE_GOM_2006_Fishing_Rpt_MPA_to_GMFMC.pdf
83	SEDAR7-DW1: Nichols, S. Derivation of Red Snapper Time Series from SEAMAP and Groundfish Trawl Surveys. http://www.sefsc.noaa.gov/sedar/download/SEDAR7_DW1.pdf?id=DOCUMENT
84	NOAA Fisheries research on Northern Gulf of Mexico MPAs. A progress report to the Gulf of Mexico Fishery Management Council. Andrew David and Matthew Campbell.
85	Northeast Gulf of Mexico Marine Reserve Program. A report to the Gulf of Mexico Fishery Management Council. October 2007. Andrew David and Christopher Gledhill.
86	Northeast Gulf of Mexico Reserve Program: Monitoring changes in reef fish populations. A report to the Gulf of Mexico Fishery Management Council. February 2010. Christopher Gledhill and Andrew David
88	PC_Lab_STS_Recovery_Plan-Final-011309.pdf

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89	Pelagic Long Line Surveys HMS FMP.pdf
90	Phillip S. Lobel (2002). Diversity of Fish Spawning Sounds and the Application of Passive Acoustic Monitoring. Bioacoustics 12(2-3):286-289 (http://www.tandfonline.com/doi/abs/10.1080/09524622.2002.9753724)
91	Richardson, et al, 2009, Development of long-term larval indices for Atlantic herring on the northeast US continental shelf
92	SAFMC Research Priorities 2012 Amendment 14 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (1983) www.safmc.net/Portals/6/Library/FMP/SnapGroup/FinalAmend14_071807.pdf
93	SAIMP Williams, E.H. and J. H. Carmichael. 2009. Final Report: South Atlantic Fishery Independent Monitoring Program Workshop. South Atlantic Fishery Management Council Report, 85 p.
94	SEAMAP Winter Ichth OSB NRC 9969[1].pdf
95	SEAMAP Mgmt Pln_2006-10 Winter Ichth_[2].pdf
96	SEDAR 3 (Southeast Data, Assessment, and Review) Procedures Workshop 3
97	SEDAR 12. 2006. Stock assessment report: Gulf of Mexico Red Grouper. Section II. Data Workshop. Charleston, SC. 99p., and Devries DW-8 http://www.sefsc.noaa.gov/sedar/download/S12SAR1%20Gulf%20Red%20Grouper%20Completev2.pdf?id=DOCUMENT
99	SEDAR 2012. Campbell M.D., A.G. Pollack, T. Henwood, J. Provaznik, M. Cook. Summary report of the red snapper (<i>Lutjanus campechanus</i>) catch during the 2011 expanded annual stock assessment (EASA).
100	SEDAR 31, DW26 : Moser, M.D., A.G. Pollack, G.W. Ingram Jr., C.T. Gledhill. 2012. Developing a survey methodology for sampling red snapper, <i>Lutjanus campechanus</i> , at oil and gas platform structures in the northern Gulf of Mexico: Results of an annual bandit reel survey
101	SEDAR 26_Queen_SnapperSAR.pdf
102	SEDAR_24_SAR_October_2010_26[1].pdf
103	SEDAR31-DW07- Fitzhugh_et_al._EASA_Survey_2011- _Red_Snapper_Reproduction[1].pdf
104	SEDAR31-DW17- _Campbell_et_al._Summary_report_of_the_2011_expanded_annual_stock_assessment_(SEDAR)[1].pdf
105	SEDAR31-DW26- Moser_et_al._Developing_a_Bandit_Reel_Survey_FINAL.pdf
106	SEFIS sh1119cruisereport[1].pdf
107	SME 051thru056_Gear Selectivity CGledhill.pdf
108	SME 061and2_Tagging Surveys.pdf
109	SME 063_Carib Trap Survey CPorch.pdf
110	SME Memo Turtles_SASSO.pdf
112	SME statement revised SEFSC Gear Evaluations Harvesting (1).docx
113	SME Valid SEFSC ISIIS JLamkin.pdf
114	SME_SEFSC_2012_for_SAB_MPA_project

Doc #	Document Title
115	SME SEFSC Longline Projects MS Labs M. Grace
116	Southeast Region Bycatch Implementation Plan Action Items (FY10 and FY11), http://www.nmfs.noaa.gov/by_catch/docs/ser2010_11.pdf
117	Stacey Harter and Andrew David, June 2009, Examination of proposed additional closed areas on the West Florida Shelf. A report to the Gulf of Mexico Fishery Management Council.
118	Survey of Fish Assemblages and Habitat within Two Marine Protected Areas on the West Florida Shelf; A report to the Gulf of Mexico Fishery Management Council. May 12, 2003. Christopher Gledhill and Andrew David.
119	Susceptibility of Reef Fish to Fishing in NE Gulf of Mexico Marine Protected Areas. A report to the Gulf of Mexico Fishery Management Council. 14 July 2003. Andrew David
120	Sutton, Tracey T.; Hopkins, Thomas L.. 1996. Species Composition, Abundance, and Vertical Distribution of the Stomiid (Pisces: Stomiiformes) Fish Assemblage of the Gulf of Mexico. <i>Bul. Mar. Sci.</i> 59(3):530-542 (http://www.ingentaconnect.com/content/umrsmas/bullmar/1996/00000059/00000003/art00007)
121	Sutton, Tracey T.; Hopkins.. 1996. Trophic ecology of the Stomiid (Pisces: Stomiidae) fish assemblage of the eastern Gulf of Mexico: Strategies, selectivity and impact of a top mesopelagic predator group. <i>Mar. Biol.</i> 127(2):179-192. DOI: 10.1007/BF00942102 (http://www.springerlink.com/content/x158u70p16g23956/)
122	unit05_Atlantic Highly Migratory Pelagic Species.pdf, Atlantic Highly Migratory Pelagic Fisheries
123	Wiggins, S. M., and Hildebrand, J. A. 2007. High-frequency Acoustic Recording Package (HARP) for broad-band, long-term marine mammal monitoring, in Symposium on Underwater Technology and Workshop on Scientific Use of Submarine Cables and Related Technologies, 2007, pp. 551-557. (http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=4231090&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D4231090)
124	http://www.st.nmfs.noaa.gov/plankton/data/marmapr/html_src/cruises.html
125	2006_Fishing_Report_MPA_to_GMFMC.pdf
126	Bethea, D.M., K. Smith, J.K. Carlson, and L.D. Hollensead (2011) NOAA NMFS SMALLTOOTH SAWFISH MONITORING REPORT-FY11: Relative Abundance and Essential Fish Habitat Studies for Smalltooth Sawfish, <i>Prisits pectinata</i> , in Southwest Florida, USA. Sustainable Fisheries Division Contribution No. PCB-11/11.
127	SEDAR SP3-07 Consolidated Caribbean SEDAR Research Recommendations. Ed. Julie A Neer, SEDAR Coordinator.
128	Tenningen, E., J. H. Churnside, et al. (2006). "Lidar target-strength measurements on Northeast Atlantic mackerel (<i>Scomber scombrus</i>)." <i>Ices Journal of Marine Science</i> 63(4): 677-682 (http://icesjms.oxfordjournals.org/content/63/4/677.short)
129	Consolidated SEDAR Workshop Recommendations for research, Monitoring and SEDAR Procedures. http://www.sefsc.noaa.gov/sedar/download/Consolidated%20Research%20Recommendations%20August%202011.pdf?id=DOCUMENT
130	Cowen RK and Guigand CM. 2008. In situ Ichthyoplankton Imaging System (ISIIS): system design and preliminary results. <i>Limnol. Oceanogr. Methods.</i> 6:126-132 (PDF)

Doc #	Document Title
131	G Tsechpenakis, CM Guigand, and RK Cowen. 2008. Machine Vision assisted In Situ Ichthyoplankton Imaging System. <i>Sea Technology</i> , 49(12), pp. 15-20
132	G Tsechpenakis, CM Guigand, and RK Cowen. 2007. Image analysis techniques to accompany a new In Situ Ichthyoplankton Imaging System (ISIIS). IEEE OCEANS, Aberdeen , Scotland http://peas.rsmas.miami.edu/groups/larval-fish/isiis%20website/isiispage1.htm
133	Somerton, D.A., and Gledhill, C.T. 2005. Report of the National Marine Fisheries Service workshop on underwater video analysis. NOAA Technical Memorandum NMFS-F/SPO-68. 77 pp.
134	McClatchie, S., R.E.Thorne, P.Grimes and S. Hanchet. 2000. Ground truth and target identification for fisheries acoustics. <i>Fisheries Research</i> 47(2-3):173-191
135	Dickson, W. 1992. Estimation of the capture efficiency of trawl gear. I: Development of a theoretical model. <i>Fisheries Research</i> 16(3): 239-252.
136	Millar, R.B. 1992. Estimating the size-selectivity of fishing gear by conditioning on the total catch. <i>J. American Statistical Association</i> 87(420):962-968.
137	Lokkeborg, S, and A.Bjoldal. 1992. Species and size selectivity in longline fishing: a review. <i>Fisheries Research</i> 13(3):311-322.
138	Stergiou, K.I., and K. Erzini. 2002. Comparative fixed gear studies in the Cyclades (Aegean Sea): size selectivity of small-hook longlines and monofilament gill nets. <i>Fisheries Research</i> 58(1):25-40.
139	Ryan, T.E., R.J.Klower and G.J. Macaulay. 2009. Measurement and visual verification of fish target strength using an acoustic-optical system attached to a trawl net.
140	Churnside, J., Jech, M., and Tenningen, E. (Eds). 2012. Fishery applications of optical technologies. ICES Cooperative Research Report No. 312. 91 pp.
141	Deep Sea Coral Rsch_Tech Prgm 2012 Report to Cong_fy12DSCrtc.pdf
142	Comprehensive Eco Based Amendment for SA Region CE-BA1 FINAL (Oct 2009).pdf
143	Sedar10_SAR2 GOM Gag Assessment Report_2006.pdf
144	NMFS, SEFSC. 2012. Long-term Gulf of Mexico fishery-independent monitoring plan. DWH Restoration proposal. 52 p.
145	DeVries, D.A. 2009. A summary of red snapper data from the fishery-independent NMFS Panama City Lab trap-camera survey in the northeast Gulf of Mexico, 2004-2008. Panama City Laboratory Contribution 09-17. 7 p.
146	http://www.sefsc.noaa.gov/labs/beaufort/ecosystems/sefis/
147	Reef Fisheries_Research_SE_040_109_2011_Smith_Ault_etal.pdf
148	SEDAR6_SAR2_hogfishall.pdf
149	Loggerhead Turtle Expert Working Group Report_TM_575_TEWG.pdf

2.4 Northwest Fisheries Science Center (NWFSC)

2.4.1 Program Summary

The Northwest Fisheries Science Center studies living marine resources (e.g., salmon, groundfish, and killer whales) and their habitats in the Northeast Pacific

Ocean-primarily off the coasts of Washington and Oregon and in freshwater rivers and streams in Washington, Oregon, Idaho, and Montana. The Center seeks to better understand living marine resources and their ecosystems to assist resource managers in making sound decisions that build sustainable fisheries, recover endangered and threatened species, and sustain healthy ecosystems, and reduce human health risks

2.4.2 Validation Assessment for Priority-1 Requirements

NMFS representatives and TPIO representatives worked jointly to review the submitted documentation, and identify the “level of validation” for the Priority-1 Observation Requirement.

Table 1: NWFSC Validation Assessment for Priority-1 Requirements

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.NW.001	Validated	NMFS-ST NWFSC At Sea Data Collection, Pacific Hake Survey and Assessment Improvement (HSAI), Acoustic survey	Western	1 yr	70	5
NMF.NW.002	Validated	West Coast Groundfish Bottom Trawl Survey	Western	1 yr	220	8
NMF.NW.003	Validated	Fish Surveys in Protected or Untrawlable Areas	Western	1 yr	30	23, 17, 20
NMF.NW.004	Validated	California Current Salmon Survey	Western	1 yr	14	16, 19
NMF.NW.005	Validated	SRKW Critical Habitat Assessment & Marine Mammal Data Collection (Oct-Dec)	Western	1 yr	15	22, 9
NMF.NW.006	Validated	SRKW Critical Habitat Assessment & Marine Mammal Data Collection (July)	Western	1 yr	15	22, 9
NMF.NW.007	Validated	West Coast Juvenile Salmon Recruitment Survey for Fisheries, Ecosystem and Climate research	Western	1 yr	60	1, 24
NMF.NW.008	Validated	Northern California Current (NCC) Ecosystem Forecasting Survey for Ecosystem, Climate and Fisheries research	Western	1 yr	30	2, 11, 15
NMF.NW.009	Validated	NCC HAB Oceanographic and Habitat Research Survey	Western	1 yr	8	4, 13, 6, 12, 14 (SME)

Note: DAS numbers were not validated but were submitted by programs to indicated needed days at sea for each survey.

Legend: Level of Validation

- Validated
- Validated with SME Statement
- Not Validated (insufficient documentation)

2.4.3 Validation Documents Submitted

Program and Technology Planning and Integration Office (TPIO) representatives worked jointly to identify references to validate both the need for an observation requirement and its specific measurement attributes. These validation documents support one or more of the Priority-1 Requirements as shown in Table 1 above. For occurrences where validation documents could not be identified, Program Subject Matter Experts (SME) justifications are provided.

The following Validation Documents have been submitted in support of the NMFS Program’s Priority 1 Observation Requirements.

Table 2: NWFSC Validation Documents provided to support Priority-1 Requirements

Doc #	Document Title
1	Bonniville Power Administration Publication - Understanding salmon survival in the ocean September 2010
2	Climate Impacts on U.S. Living Marine Resources: NMFS Concerns, Activities and needs. Aug 2008, K.E. Osgood, NOAA Technical Memorandum NMFS-NWFSC-92,
3	Groundfish Stock Assessments, STAR Panel Reports, STAT Team Reports, and Rebuilding Analyses by SPECIES, Pacific Fishery Management Web Site, Groundfish: http://www.pcouncil.org/groundfish/stock-assessments/by-species/
4	Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA, Public Law 108-456)
5	http://www.cio.noaa.gov/Policy_Programs/prplans/ID202_Hake_Whiting_peer_review_report.pdf , Joint U.S.-Canada Scientific Review Group Report, Seattle , WA February 22 - 24, 2012.
6	http://www.ecohabpnw.org/plan.html outline the need for cruises.
7	http://www.economics.noaa.gov/?goal=ecosystems&file=events/overfishing&view=benefits . From column BA
8	http://www.nwfsc.noaa.gov/assets/25/6656_01152008_153323_GroundfishSurvey2004TM87FinalSA.pdf
9	http://www.nwfsc.noaa.gov/publications/documents/SRKW%20Newsletter%202011.pdf , Southern Resident Killer Whales Research Update, September 2011 validates the need and the annual nature of the survey
10	http://www.pacificwhiting.org/images/US_Canada_Hake_Agreement.pdf
11	Integrated Ecosystem , Ocean Ecosystem Indicators of Salmon Marine Survival in the Northern California Current Assessments: Developing the Scientific Basis for Ecosystem-Based Management of the Ocean Levin et al

Doc #	Document Title
12	Jochens, A.E., Malone, T., Stumpf, R., Hickey, B.M., Jones, B., Morrison, R., Dyble, J., Carter, M., Trainer, V.L. 2011. Integrated Ocean Observing System in Support of Forecasting Harmful Algal Blooms. Marine Technology Society. 44(6), 99-121. Paper not provided.
13	NOAA PNW HAB Bulletin, IOOS (determination of optimal placement of oceanographic sensors to provide early warning to coastal communities). Offshore cruises provide some of the data included in this product
14	NWFSC SME 009 NCC_HAB Expert Statement.PDF received and provides validation of need, frequency, and DAS mentioned.25 September 2012
15	Peterson, W., June 2008, Integrated Ecosystem Assessments
16	Peterson, W., Ocean Conditions and Salmon Survival in the California Current. Doc provided by NWFSC Rick Brown
17	Research on Untrawlable Portions of Bottom Trawl Survey Areas Conducted in Gulf of Alaska http://www.afsc.noaa.gov/Quarterly/amj2007/divrptsRACE3.htm , See file: NWFSC_TPIO_Links_Additions062812.docx
18	Rooper, C. N., G. R. Hoff, and A. De Robertis. 2010. Assessing habitat utilization and rockfish (<i>Sebastes</i> spp.) biomass on an isolated rocky ridge using acoustics and stereo image analysis. Can. J. Fish. Aquat. Sci. 67:1658-1670.
19	Salmon Treaty, BPA, Central Valley
20	SME statement on untrawlable surveys received from Elizabeth Clarke on 28 Sept.
22	Southern Resident Killer Whale Research Plan, August 2006, NOAA Publication, NWFSC
23	Williams, K., C. N. Rooper, and R. Towler. 2010. Use of stereo camera systems for assessment of rockfish abundance in untrawlable areas and for recording pollock behavior during midwater trawls. Fish. Bull., U.S. 108:352-362.
24	Brodeur Coordinated Salmon Research

2.5 Southwest Fisheries Science Center (SWFSC)

2.5.1 Program Summary

NOAA Fisheries Service's Southwest Fisheries Science Center (SWFSC) conducts cutting-edge scientific research to support the management and conservation of domestic and international living marine resources. Established in 1964 to study and manage the sardine and tuna fisheries of the U.S. west coast, the SWFSC provides scientific advice, manages fisheries and conserves protected species along the U.S. west coast, throughout the Pacific Ocean and in the Southern Ocean off Antarctica.

2.5.2 Validation Assessment for Priority-1 Requirements

NMFS representatives and TPIO representatives worked jointly to review the submitted documentation, and identify the "level of validation" for the Priority-1 Observation Requirement.

Table 1: SWFSC Validation Assessment for Priority-1 Requirements

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.SW.001	Validated	NMFS-ST Juvenile Rockfish Survey, Shared Survey with NWFSC for California Current North.	Western: California Current South	1 yr	60	47, 55
NMF.SW.002	Validated	Oregon, California, Washington Marine Mammal Stock Assessment Survey (ORCAWALE)[AKA West Coast Marine Mammal]	Western EEZ	5 yr	120	12, 33
NMF.SW.003	Validated	Spring CalCOFI + Spring Sardine Survey (southern portion)	Western	1 yr	40	48
NMF.SW.004	Validated	Winter CalCOFI	Western	1 yr	40	48
NMF.SW.005	Validated	Summer CalCOFI	Western	1 yr	40	48
NMF.SW.006	Validated	Fall CalCOFI	Western	1 yr	40	48
NMF.SW.007	Validated	Spring CPS	Western EEZ	1 yr	40	48
NMF.SW.008	Validated	Summer CPS	Western EEZ	1 yr	40	34, 48, 51
NMF.SW.009	Validated	Summer Juvenile Salmon	Western EEZ	1 yr	15	3, 29, 38
NMF.SW.010	Validated	Fall Juvenile Salmon	Western EEZ	1 yr	15	3, 29, 38
NMF.SW.011	Validated	CCA Ichthyoplankton Survey	Southern California	1 yr	30	20
NMF.SW.012	Validated	HMS Longline	Western EEZ	1 yr	30	47
NMF.SW.013	Validated	Thresher Shark	Western EEZ	1 yr	20	47
NMF.SW.014	Validated	Market Squid Spawning Survey	California	1 yr	20	39
NMF.SW.015	Validated	Fin Whale Stock Structure Survey	North Pacific	1 yr	120	13, 41
NMF.SW.016	Validated	US AMLR(Antarctic) Survey	Antarctica	1 yr	30	21-28, 4
NMF.SW.017	Validated	Optical-acoustic survey for adult Rockfish (COAST) (Untrawlable)	Western	1 yr	60	9, 17, 21, 41, 50

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.SW.018	Validated	Submersible Line Transect survey for adult Rockfish	Western EEZ	1 yr	20	9, 53
NMF.SW.019	Validated	Rockfish Habitat Surveys (including deepsea corals)	Western EEZ	1 yr	20	6, 30, 36, 52
NMF.SW.020	Validated	PacOOS - Northern CA (Trinidad line, FED)	Western	6-10 times yr	20	1, 40
NMF.SW.021	Validated	PacOOS - Northern CA (Bodega line, FED)	Western	6-10 times yr	20	1, 40
NMF.SW.022	Validated	Swordfish and Leatherback Turtle Habitat Overlap and utilization	Western EEZ	1 yr for 2 yrs then skip 5 years	45	2, 42
NMF.SW.023	Validated	US-Mexico Transboundary Marine Mammals	Western EEZ	5 yr	40	14, 22, 32
NMF.SW.024	Validated	Eastern Tropical Pacific (ETP) Marine Mammal Survey (Ship 1)	ETP	5 yr	120	7, 18, 25, 32, 37, 57
NMF.SW.025	Validated	Eastern Tropical Pacific (ETP) Marine Mammal Survey (Ship 2)	ETP	5 yr	120	7, 18, 25, 32, 37, 57
NMF.SW.026	Validated	ETP Dolphin Stock Structure	ETP	2016 yr	120	8, 31
NMF.SW.027	Validated	ESA-Listed: Humpback whale abundance and stock structure (SPLASH)	North Pacific	see notes yr	120	13, 56, 57
NMF.SW.028	Validated	ESA-Listed: Blue whale abundance and stock structure	North Pacific	see notes yr	120	13, 56, 57
NMF.SW.029	Validated	ESA-Listed: Sperm whale abundance and stock structure	North Pacific	see notes yr	120	13, 56, 57
NMF.SW.030	Validated	ETP coastal spotted dolphin abundance	ETP	see notes yr	120	13, 56, 57

Note: DAS numbers were not validated but were submitted by programs to indicated needed days at sea for each survey.

Legend: Level of Validation

- Validated
- Validated with SME Statement
- Not Validated (insufficient documentation)

2.5.3 Validation Documents Submitted

Program and Technology Planning and Integration Office (TPIO) representatives worked jointly to identify references to validate both the need for an observation requirement and its specific measurement attributes. These validation documents support one or more of the Priority-1 Requirements as shown in Table 1 above. For occurrences where validation documents could not be identified, Program Subject Matter Experts (SME) justifications are provided.

The following Validation Documents have been submitted in support of the NMFS Program's Priority 1 Observation Requirements.

Table 2: SWFSC Validation Documents provided to support Priority-1 Requirements

Doc #	Document Title
1	ACCEO Development Guidelines, http://www.pacoos.org/ACCEO/Guideline.pdf
2	Arnold, G., and H. Dewar. 2001. Electronic tags in marine fisheries research: A 30-year perspective. In: Sibert, J. R., and J. L. Nielsen (eds.). Electronic tagging and tracking in marine fisheries. Dordrecht, The Netherlands: Kluwer Academic Publishers. p. 7-64. Pages 2, 13-14
3	Brodeur, R. D., R. L. Emmett, J. P. Fisher, E. Casillas, D. J. Teel, and T. W. Miller. 2004. Juvenile salmonid distribution, growth, condition, origin, and environmental and species associations in the Northern California Current. Fishery Bulletin 102:25-46.
4	CCAMLR Conservation Measures that call for surveys -- CMs 21-01, 32-02, 32-03, 32-08, 32-10, 32-11, 32-12, 32-13, 32-14, 32-15, 32-16, 32-17, and ANNEX 51-04/B.
5	Contributions to PaCOOS quarterly and annual updates (http://www.pacoos.org/QuarterlyClimaticEcol.htm)
6	COP. 2004. An ocean blueprint for the 21st century. Final report. U.S. Commission on Ocean Policy, Washington, DC, 676 p
7	Cruise reports http://swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=267&id=11378
8	Department of State letter of validation (DOS to Eric Schwaab_Star 2011_cancellation.pdf)
9	Dick, E. J., Ralston, S., and Pearson, D. 2007. Status of cowcod, <i>Sebastes levis</i> , in the Southern California Bight. In: Status of the Pacific Coast Groundfish Fishery through 2007, Stock Assessment and Fishery Evaluation: Stock Assessments and Rebuilding Analyses. Pacific Fishery Management Council, Portland, OR. www.pccouncil.org/bb/2007/E6_STARs_SAs.html . Page 14, Research and Data Needs
10	Dick, E.J., S. Ralston, and D. Pearson. 2009. Updated status of cowcod, <i>Sebastes levis</i> , in the Southern California Bight. Pacific Fisheries Management Council, Portland, OR. June 2009. Page 5.
12	DRAFT U.S. PACIFIC MARINE MAMMAL STOCK ASSESSMENTS: 2011, http://www.nmfs.noaa.gov/pr/pdfs/sars/po2011_draft.pdf
13	Endangered Species Act; Humpback Whale Recovery Plan 2010 (http://www.nmfs.noaa.gov/pr/recovery/plans.htm)
14	Endangered Species Act; Letters from Marine Mammal Commission dated 2 November 2010; 24 September 2009

Doc #	Document Title
15	Escorza-Trevino, S., F.I., Archer, M. Rosales, A. Lang & A.E. Dizon. 2005. Genetic differentiation and intraspecific structure of Eastern Tropical Pacific spotted dolphins, <i>Stenella attenuata</i> , revealed by DNA analyses. <i>Conservation Genetics</i> . 6:587–600
16	ETP_Reserach_Cruise_Overview_Final_PRD_SWFSC.pdf
17	Field, J. C., E. J. Dick and A. D. MacCall. 2007. Stock assessment model for the shortbelly rockfish, <i>Sebastes jordani</i> , in the California Current. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-405, 83 p. http://swfsc.noaa.gov/uploadedFiles/Operating_units/FED/Groundfish_Analysis/Shortbelly%20Assessment%20-%20Tech%20Memo.pdf ; Needs pp #s. Pages 2, 7
18	http://swfsc.noaa.gov/prd-star.aspx This research is mandated domestically by the Marine Mammal Protection Act, and it provides critical support to the Agreement on the International Dolphin Conservation Program.
19	http://swfsc.noaa.gov/prd-star.aspx This research is mandated domestically by the Marine Mammal Protection Act, and it provides critical support to the Agreement on the International Dolphin Conservation Program. - Section 304 of the Marine Mammal Protection Act requires that NOAA Fisheries undertake research “projects to carry out stock assessments for those marine mammal species and stocks taken in the purse seine fishery for yellowfin tuna in the eastern tropical Pacific Ocean, including species or stocks not within waters under the jurisdiction of the United States.”
20	http://www.pcouncil.org/wp-content/uploads/G4a_ATT13_STATUS_BLACKGILL_SEPT2011BB.pdf
21	Jagielo, T. H., A. Hoffman, J. Tagart, and M. Zimmermann. 2003. Demersal groundfish densities in trawlable and untrawlable habitats off Washington: implications for the estimation of habitat bias in trawl surveys. <i>Fishery Bulletin</i> (101):545-565. pages 545, 555, 561
22	Letter from Cottingham (MMC_D_Cottingham_DRAFT2009mmsar_comments.pdf)
23	Letter from Denzil Miller (CCAMLR Secretariat) to Secretary Gutierrez (DOC) 3 August 2006
24	Letter from Evan Bloom (DOS) to Susan Sherrell (NOAA) dated 8 Oct 2009
25	Letter from Marine Mammal Commission dated 1 June 2009; Letter from Department of State dated 21 April 2011
26	Letter from Members of Congress to William Hogarth (NMFS) dated 1 August 2003
27	Letter from Polly Penhale (NSF) to Paul Doremus (NOAA)
28	Letter from Ron Naveen (Oceanites) to Paul Doremus (NOAA) dated 6 March 2006
29	MacFarlane, R. B., S. Ralston, C. Royer, and E. C. Norton. 2005. Juvenile chinook salmon (<i>Oncorhynchus tshawytscha</i>) growth on the central California coast during the 1998 El Niño and 1999 La Niña. <i>Fisheries Oceanography</i> 14(5):321-332.
30	Magnuson Stevens Reauthorization Act. 2006. Essential Fish Habitat provisions through the Sustainable Fisheries Act of 1996. U.S. Public Law 104-297 and EFH Final Rule, 67 FR 2375
31	Marine Mammal Commission letter – 2009 (2009 Dolphin and Ecosystem Research.pdf)
32	Marine Mammal Protection Act
33	Marine Mammal Protection Act (MMPA), 1994 amendments

Doc #	Document Title
34	Multi-decadal oceanic ecological datasets and their application in marine policy and management. Trends in Ecology and Evolution 25 (2010); 602–610 (http://www.cell.com/trends/ecology-evolution/abstract/S0169-5347(10)00162-X)
35	NMFS. 2001. Marine fisheries stock assessment improvement plan (SAIP): Report of the National Marine Fisheries Service National Task Force for Improving Fish Stock Assessments. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-56, 69 p. available at http://www.st.nmfs.noaa.gov/
36	NMFS. 2005. Pacific Coast groundfish fishery management plan; essential fish habitat designation and minimization of adverse impacts; final environmental impact statement. NMFS Northwest Regional Office, Seattle, WA.
37	NOAA Ship Recapitalization Plan (https://mail.google.com/mail/u/0/?ui=2&view=bsp&ver=ohhl4rw8mbn4)
38	Orsi, J. A., J. A. Harding, S. S. Pool, R. D. Brodeur, L. J. Haldorson, J. M. Murphy, J. H. Moss, J. E. V. Farley, R. M. Sweeting, J. F. T. Morris, M. Trudel, R. J. Beamish, R. L. Emmett, and E. A. Fergusson. 2007. Epipelagic fish assemblages associated with juvenile Pacific salmon in neritic waters of the California Current and the Alaska Current. Pages 105-156 in C. B. Grimes, R. D. Brodeur, L. J. Haldorson, and S. M. McKinnell, editors. The ecology of juvenile salmon in the northeast Pacific Ocean: regional comparisons. American Fisheries Society Symposium 57. Page 106, page 145.
39	Pacific Fisheries Management Council 2002. Coastal Pelagic Species Fishery Management Plan, Amendment 10: http://www.pcouncil.org/coastal-pelagic-species/fishery-management-plan-and-amendments/amendment-10/
40	PaCOOS Science Plan http://www.pacoos.org/SCI_PLAN/LJ-04-06c.pdf
41	PFMC (Pacific Fishery Management Council). 2008. Pacific Coast Groundfish Fishery Stock Assessment and Fishery Evaluation, Volume 1. Pacific Fishery Management Council, Portland, OR. March 2008. Page 22
42	PMFC Highly Migratory Species SAFE Document
43	Reiss et al. 2004. Population dynamics of <i>Loligo opalescens</i> in the southern California Bight. CalCOFI Reports, Vol. 45, 87-97. http://www.calcofi.org/publications/calcofireports/v45/Vol_45_Reiss.pdf
44	Report of the Thirtieth Meeting of the CCAMLR
45	Report of the Twenty Eighth Meeting of the CCAMLR Scientific Committee
46	Report of the Twenty Fifth Meeting of the CCAMLR Scientific Committee -- paragraphs 15.1-15.9
47	Research and Data Needs, Pacific Fishery Management Council 2008, http://www.pcouncil.org/wp-content/uploads/Res_Data_Needs_2008_Final_OCT08.pdf
48	Review of the CalCOFI Research Program (http://swfsc.noaa.gov/uploadedFiles/Operating_units/FRD/ShipOps/CalCOFI_Review_2010.pdf)
49	Science in support of ecosystem-based management for the US West Coast and beyond. Biological Conservation. 143: 576-587 (http://www.naturalcapitalproject.org/pubs/Lester_et_al_2010_BiolCons.pdf)
50	Stanley, R.D., R. Kieser, K. Cooke, A.M. Surry, and B. Mose. 2000. Estimation of a widow rockfish (<i>Sebastes entomelas</i>) shoal off British Columbia, Canada as a joint exercise between stock assessment staff and the fishing industry. ICES Journal of Marine Science 57: 1035-1049. http://icesjms.oxfordjournals.org/content/57/4/1035.full.pdf ; Page 1048

Doc #	Document Title
51	State of the California Current 2010-2011. Regionally variable responses to a strong (but fleeting?) La Niña. CalCOFI Reports 52: 36-68, http://www.calcofi.org/publications/calcofireports/v52/Vol_52_36-68.StateofCurrent.pdf
52	Status of the Chilipepper Rockfish, <i>Sebastes goodei</i> , in 2007 http://www.pcouncil.org/wp-content/uploads/ChilipepperJan2009final.pdf . Page 4, para 1.
53	Stock Assessment Review (STAR) Panel. 2001. Report of the Stock Assessment Review (STAR) panel for market squid. Panel Report from Stock Assessment Review (STAR) meeting, NOAA/NMFS/SWFSC, May 14-17, 2001. 18 p.
54	Stock Assessment Review Panel (STAR). 2005. Cowcod. STAR Panel Report to Pacific Fisheries Management Council. (M. Dorn, Chair). 9p. page 2, para 3, line 6-7. Page 2, para 3, line 11. Page 6,
55	The 2007 Assessment of Blue Rockfish (<i>Sebastes mystinus</i>) in California. JANUARY 2008, Meisha Key, Alec D. MacCall, John Field, Debbie Aseltine-Neilson, Kirk Lynn, http://www.pcouncil.org/groundfish/stock-assessments/by-species/blue-rockfish/
56	U.S. PACIFIC MARINE MAMMAL STOCK ASSESSMENT REPORTS - section Cetaceans US West Coast., http://swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=148&id=1247) See Appendix 2, page 334 of 2011 report.
57	U.S. PACIFIC MARINE MAMMAL STOCK ASSESSMENT REPORTS - see all stocks SWFSC assesses in these reports, (http://swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=148&id=1247)

2.6 Pacific Islands Fisheries Science Center (PIFSC)

2.6.1 Program Summary

The Pacific Islands Fisheries Science Center is headquartered in Honolulu, Hawaii. The Center has taken a leading role in marine research on ecosystems, both in the insular and pelagic environments. It is implementing a multidisciplinary research strategy including an ecosystem observation system and scientific analysis to support ecosystem approaches to management and restoration of living marine resources. It conducts a wide range of activities including resource surveys and stock assessments, Fishery Monitoring, economic and sociological studies, oceanographic research and monitoring, critical habitat evaluation, life history and ecology studies, and advanced oceanographic and ecosystem modeling and simulations.

2.6.2 Validation Assessment for Priority-1 Requirements

NMFS representatives and TPIO representatives worked jointly to review the submitted documentation, and identify the “level of validation” for the Priority-1 Observation Requirement.

Table 1: PIFSC Validation Assessment for Priority-1 Requirements

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.PI.001	Validated	PIFSC Hawaiian Archipelago Insular Survey	Hawaiian Archipelago	1 yr	100	9, 10, 12 (SME)
NMF.PI.002	Validated	PIFSC American Samoa Insular Survey	American Samoa	3 yr	100	9, 10, 12 (SME)
NMF.PI.003	Validated	PIFSC Marianas Archipelago Insular Survey	Marianas	3 yr	100	9, 10, 12 (SME)
NMF.PI.007	Validated	Larval Billfish Survey - Life History	Main Hawaiian Islands	1 yr	15	5 (SME), 9, 10
NMF.PI.008	Validated	Bottomfish Sampling and Life History - to define critical nursery habitat.	Main Hawaiian Islands	1 yr	15	5 (SME),9, 10
NMF.PI.009	Validated	Hawaiian Islands Cetacean Population Assessment Survey	Hawaiian Archipelago	90 days every 3 to 5 yr	200	2, 10, 13, 15 (SME), 26
NMF.PI.010	Validated	High Seas Cetacean Population Assessment Survey	High Seas Central & Western Pacific	1 yr	90	2, 10, 26
NMF.PI.011	Validated	American Samoa Cetacean Population Assessment Survey	American Samoa	90 days every 3 to 5 yr	73	6, 10, 13 (SME), 15
NMF.PI.012	Validated	Mariana Islands Cetacean Population Assessment Survey	Marianas	90 days every 3 to 5 yr	130	6, 10, 13, 15 (SME)
NMF.PI.013	Validated	Juvenile Survival Enhancement Research and Foraging Ecology Research	NWHI Hawaiian Islands	1 yr	21	17 (SME), 19, 21
NMF.PI.014	Validated	Hawaiian Monk Seal Population Assessment and Monitoring	NWHI Hawaiian Islands	1 yr	48	17 (SME), 19, 21
NMF.PI.015	Validated	North-Central Pacific Fishery Oceanography- Ecosystem Assessment	North-Central Pacific	1 yr	28	4, 11, 14, 27
NMF.PI.016	Validated	South-Central Pacific Fishery Oceanography - Ecosystem Assessment	South-Central Pacific	3 yr	28	1, 4,11, 27
NMF.PI.017	Validated	Western Pacific Fishery Oceanography and definition of critical habitat	Western Pacific	3 yr	28	4, 11, 14, 27
NMF.PI.018	Validated	Integrated Ecosystem Assessment (IEA) Survey	Kona Coast, Island of Hawaii	2 yr	16	3, 8, 16 (SME)

#	Validation Assessment	Observation Requirement	Geo Coverage	Sampling	Mean DAS FY10-25	Validation Docs
NMF.PI.019	Validated	Marine Debris Cleanup-Habitat Restoration (Northwestern Hawaiian Islands)	NWHI Hawaiian Islands	1 yr	112	21

Note: DAS numbers were not validated but were submitted by programs to indicated needed days at sea for each survey.

Legend: Level of Validation

- Validated
- Validated with SME Statement
- Not Validated (insufficient documentation)

2.6.3 Validation Documents Submitted

Program and Technology Planning and Integration Office (TPIO) representatives worked jointly to identify references to validate both the need for an observation requirement and its specific measurement attributes. These validation documents support one or more of the Priority-1 Requirements as shown in Table 1 above. For occurrences where validation documents could not be identified, Program Subject Matter Experts (SME) justifications are provided.

The following Validation Documents have been submitted in support of the NMFS Program’s Priority 1 Observation Requirements.

Table 2: PIFSC Validation Documents provided to support Priority-1 Requirements

Doc #	Document Title
1	Domokos, R. 2009. Environmental effects on forage and longline fishery performance for albacore (Thunnus alalunga) in the American
2	False killer whale Take Reduction Plan, (http://www.nmfs.noaa.gov/pr/interactions/trt/falsekillerwhale.htm);
3	Fisheries and the Environment (FATE) An Ecosystem-Based Approach to Fisheries Management (http://fate.nmfs.noaa.gov/documents/FATE_SCIENCE%20PLAN2008final.pdf)
4	Hawaiian Archipelago Marine Ecosystem Research (HAMER). 2008. NOAA Tech. Memo. NMFS-PIFSC-14;
5	LHP SME Cruise Validation-Humphreys_revised (1)
6	MMC Letters & Comments documents
7	NMFS 2nd Quarter 2012 Summary of Stock Status for FSSI Stocks http://www.nmfs.noaa.gov/sfa/statusoffisheries/2012/second/Q2_2012_FSSI_nonFSSIstocks.pdf)
8	NOAA Technical Memorandum NMFS-F/SPO-96 (http://spo.nmfs.noaa.gov/tm/TM96Web.pdf)

Doc #	Document Title
9	NOAA Technical Memorandum NMFS-SPO-56 (http://www.st.nmfs.noaa.gov/StockAssessment/index.html)
10	Pacific SRG Council recommendations
11	Periodic Marine Ecosystem Status Reports compiled by the North Pacific Marine Science Organization (PICES)
12	PIFSC_SME_FY13_PIR_Insular_Survey_Justification_Memo[1]
13	PIFSC_SME CetaceanFOG_Seki-et al-02
14	PIFSC_SME Pacific surveys083012
15	PIFSC_SME_Cetacean & Ecosystem Assessment Surveys. Pdf
16	PIFSC_SME_Kona IEA survey
17	PIFSC_SME_PSD_HMS Monk Seals
18	Polovina, J.J., Howell, E., Kobayashi, D.R. & Seki, M.P. 2001. The Transition Zone Chlorophyll Front, a dynamic, global feature defining migration and forage habitat for marine resources. <i>Progr. Oceanogr.</i> 49:469-483.
19	Recovery of the Hawaiian Monk Seal (<i>Monachus schauinslandi</i>): A Review of Conservation Efforts, 1972 to 2010, and Thoughts for the Future
20	Recovery of the Hawaiian Monk Seal (<i>Monachus schauinslandi</i>): A Review of Conservation Efforts, 1972 to 2010, and Thoughts for the Future (http://www.aquaticmammalsjournal.org/attachments/article/538/37_3_Lowry.pdf);
21	Recovery Plan for the Hawaiian Monk Seal (http://www.nmfs.noaa.gov/pr/pdfs/recovery/hawaiianmonkseal.pdf)
22	Samoa Exclusive Economic Zone. <i>Fisheries Oceanography</i> 18(6): 419-438
23	Seki, M.P., J.J. Polovina, D.R. Kobayashi, R.R. Bidigare, and G.T. Mitchum. 2002. An oceanographic characterization of swordfish longline fishing grounds in the Subtropical North Pacific. <i>Fish. Oceanogr.</i> 11(5):251-266
24	Shark Predation on Hawaiian Monk Seals: Workshop II & Post-Workshop Developments, November 5-6, 2008. (http://www.pifsc.noaa.gov/library/pubs/tech/NOAA_Tech_Memo_PIFSC_21.pdf)
25	Translocation as a tool for conservation of the Hawaiian monk seal. <i>Biological Conservation</i> (PDF Attached)
26	U.S. PACIFIC MARINE MAMMAL STOCK ASSESSMENTS: 2011 (http://www.nmfs.noaa.gov/pr/pdfs/sars/po2011.pdf)
27	WPRFMC 5-year Research Priorities under the MSRA