

Appendix 4. Detailed summary table of Region 4 I&M accomplishments for FY 2012 and projects to be initiated in FY 2013 by I&M 7-Year Plan focus groups. AD – Abiotic Data, AQB – Air Quality Biomonitoring, BBI – Baseline Biotic Inventories, BIM – Bird Inventory and Monitoring, DM – Data Management, EIP – Ecological Information Planning, ESARR – Endangered Species Act Refuge Reporting, FM – Fire Monitoring, ISIM – Invasive Species Inventory and Monitoring, MM – Marine Monitoring, PM – Phenological Monitoring, RCA – Refuge Conditions Assessment, RRP – Regional Refuge Portfolio, SLRM – Sea Level Rise Modeling, SSM – Surrogate Species Monitoring, SD – System Development, VHM - Vegetation and Habitat Mapping, WRIM – Water Resources Inventory and Monitoring, WCM – Wilderness Character Monitoring, WH – Wildlife Health

7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
Region 4 I&M Priorities			
EIP 1.0	Nationally, every Refuge will have begun the development of IMPs by the end of FY15.		<ul style="list-style-type: none"> • Initiate see EIP 1.4
EIP 1.1	During FY13, the I&M Team will help facilitate approval of the I&M Policy.	<ul style="list-style-type: none"> • Provided comments as requested. 	<ul style="list-style-type: none"> • Provide comment, input, and interpretation as needed.
EIP 1.2	Beginning in FY13, the I&M Team will work with regional and refuge staff to help Refuges prioritize resource management objectives and or conduct needs assessments in advance of developing an IMP.		<ul style="list-style-type: none"> • All regions will continue to assist refuges with prioritizing resource management objectives in advance of creating an IMP
EIP 1.3	By the end of December 2013, the I&M Team will have piloted the IMP process and format on at least two refuges to ensure the process in the I&M Policy is sound.		<ul style="list-style-type: none"> • Provide comment, input, and assistance as requested.
EIP 1.4	Initiation of IMPs will proceed as follows: 10% of stations will have initiated production of an IMP by the end of FY13, 40% by the end of FY14, and 100% of the stations will have initiated the IMP process by the end of FY15.		<ul style="list-style-type: none"> • Initiate IMP development on at least 4 refuges within Region 4 (ideally one refuge per I&M ecologist, pilot within the region to provide information on how to do IMPs for all R4 NWRs).
EIP 3.1	By the end of FY13, the I&M Survey Protocol team will finalize the Survey Protocol Handbook and provide several examples of protocols from which to work.		<ul style="list-style-type: none"> • Provide, comment, input and assistance as requested.

EIP 3.2	By the end of FY13, the landbird and marshbird protocol framework will be completed and available for site-specific application.		<ul style="list-style-type: none">• Participate on the Bird Team working groups as needed in order to complete the marshbird and landbird protocols to be posted in ServCat and available for site-specific application.
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7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
Region 4 I&M Priorities			
EIP 4.1	The I&M and Planning Chiefs will hold a joint meeting in December 2012 to identify at least one area where monitoring data could be used to better inform the next round of CCPs.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Attend the I&M-Planning joint meeting and identify at least one area where could better inform the next round of CCPs.
EIP R4	Review and provide comment to refuge HMPs	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Regional I&M staff will provide review and comment for draft HMP in coordination with R4 Planning Division. Review will focus on Section IV, Habitat Goals and Objectives, with emphasis on S.M.A.R.T. objectives and appropriate monitoring elements.
WRIM 1.1	By the end of FY13, the Water Team will develop guidance document for consistent implementation of WRIA application.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Participate in National Water Team to develop a guidance document for consistent WRIA implementation.
WRIM 1.2	By the end of FY13, the Water Team in collaboration with refuge staff, will enter data into the WRIA application for at least two NWRs per region, including relevant water resource geospatial information.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Enter data into the WRIA for refuges with completed or in-progress WRIAs.
WRIM 1.6	Nationally, complete 12 new WRIAs in FY13, increase number completed to 32 in FYs17-19.	<ul style="list-style-type: none"> • CAPE ROMAIN NWR – kickoff meeting for WRIA process was held March 6, 2012. Sharepoint site created and maintained for data dissemination. Initial WRIA data inventory draft summary for Cape Romain NWR WRIA including figures was provided to Regional Hydrologist for analysis June 2012. Analysis on-going and expected in early 2013. • Partners: Refuge staff, I&M, Regional Office, Ecological Services, Ecological Contaminants, State Agencies, USGS, NGOs, Contractors • CAHABA RIVER NWR – kickoff meeting for WRIA process held August 14, 2012. Sharepoint site created and maintained for data dissemination. Monthly conference calls. Inventory and analysis on-going, with draft expected in early 2013. • Partners: Refuge staff, I&M, Regional Office, Ecological Services, Ecological Contaminants, several State Agencies, municipalities, several NGOs, Contractors 	<ul style="list-style-type: none"> • Complete WRIAs initiated in FY 2012(CAHABA RIVER NWR and CAPE ROMAIN) • Initiate additional WRIAs as funding allows.

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Region 4 I&M Priorities			
WRIM 2.1	Beginning in FY13, the Water Resources and I&M Teams will identify those refuges with known or suspected issues with water quality, water quantity (including water rights), infrastructure issues with wetland management, and climate change concerns that would benefit from an HGM study. By the end of FY13, these teams will develop a schedule for implementation that ensures results can be used to inform CCP/HMP development.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Serve on national teams. Regionally identify criteria and prioritize refuges and fish hatcheries HGM needs.
WRIM R4	Regionally, complete baseline hydrogeomorphic (HGM) analysis at selected stations	<ul style="list-style-type: none"> • Cape Romain HGM started on March 6, 2012 and expected to be completed by early 2014. Work accomplished with multiple partners. Frequent progress reporting via conference calls and WebEx to maintain communication and move project forward. • White River HGM continue to make progress towards completion. • Data mining conducted at Cape Romain as part of HGM process in May 2012. • Partners: Refuge staff, I&M, Regional Office, Ecological Services, Ecological Contaminants, USGS, NGOs, Contractors. 	<ul style="list-style-type: none"> • Completed HGMs initiated in FY12.
WRIM 3.1	Beginning in FY13, I&M representative(s) and Water Resources Coordinator will work collaboratively with the Division of Environmental Quality to enhance the current CAP database to support communication with the WRIA application, which will promote CAP data integration into the WRIA process. This process is targeted for completion by the end of FY15.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Work as part of national team to initiate work to coordinate and collaborate CAP with WRIA.
WRIM R4	Regionally communicate CAP information to various audiences.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Work with ES to develop and disseminate a CAP fact sheet.
WRIM 4.1	By the end of FY13, the Water Team will identify national water monitoring objectives.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Participate on the National Water Team to identify national water monitoring objectives

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Region 4 I&M Priorities			
WRIM R4	Identify regional water monitoring objectives.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Work with internal and external partners to identify inventory and monitoring objectives (objectives matrix)
WRIM 4.5	Beginning in FY13, the Water Team will identify national-level protocols for water quantity and quality monitoring. The target completion date for this task is by the end of FY13.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Participate on National Water Team to identify national-level water monitoring protocols for implementation.
SD 1.1	By the end of FY13, NRPC I&M staff make the ServCat database module available to internal users.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Formulate a Regional plan of action identifying regional ServCat priorities and implementation strategy.
SD 2.2	Beginning in FY13, NRPC I&M staff will deliver at least two ServCat training sessions annually.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Participate in ServCat training sessions as needed.
SD 4.1	By the end of FY13, NRPC I&M staff make the PRIMR database module available to internal users.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Migrate current regional PRIMR data to centralized PRIMR.
SD 5.2	Beginning in FY13, NRPC I&M staff deliver at least two PRIMR training sessions annually.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Participate in PRIMR training sessions as needed.
DM 1.2	Beginning in FY13, 20% of the priority legacy documents identified in DM 1.1 will be entered into ServCat annually; task will be completed by the end of FY17.	<ul style="list-style-type: none"> • Provided national support in the effort to have all refuge annual narratives from 1970 saved digitally in the USFWS Service Catalog (ServCat). A repository for compiling, organizing, and making accessible recent and historic information that is important to refuge resource management. The information entered in the database is discoverable and retrievable using text and geospatial search tools. ServCat will complement the NCTC Conservation Library and will be an important collaboration tool for the Service and its partners. 	<ul style="list-style-type: none"> • Complete regional annual narrative location spreadsheet and work towards finding and uploading annual narratives. Continue to provide support to National Office for ServCat implementation.
DM R4	Document survey methods (old protocols) for eventual entry into ServCat with data where documentation is limited.	<ul style="list-style-type: none"> • NA 	Formulate a Regional plan of action identifying regional ServCat priorities and implementation strategy. Initiate upon roll-out of centralized ServCat (SD 1.1).
DM 1.3	By end of FY15, Regional I&M staff will be trained in creating ServCat records to assist with keeping ServCat records current. This task will be coordinated with Systems Development Objective 2.0.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Identify priority refuge datasets, review documentation on where and how data was collected, and develop survey narratives if needed.

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DM 3.2	By the end of FY14, 100% of stations will describe their current and proposed I&M survey activities in PRIMR and keep this information updated annually.	<ul style="list-style-type: none"> Data entered into the PRIMR database for SALCC and GCPO LCC geographies where biologists are located. Reports by refuge being generated, proofed and distributed as each refuge completed entering all information. 	<ul style="list-style-type: none"> Complete all regional PRIMR visits, validate information and generate reports for refuges and partners.
DM 4.2	Beginning in FY13, NRPC I&M staff and Data Managers generate customized reports as needed.	<ul style="list-style-type: none"> NA 	<ul style="list-style-type: none"> Conduct qa/qc of R4 PRIMR data.
DM R4	Conduct a Regional PRIMR crosswalk to identify protocol, database, analysis needs.	<ul style="list-style-type: none"> Developed PRIMR tool that links PRIMR database to a spatially explicit tool that enables a visual representation of where surveys are being conducted across the region and by whom. 	<ul style="list-style-type: none"> Develop and maintain a protocol-partner library. Identify and address initial questions raised from crosswalk.
ISIM 1.1	By the end of FY13, the Invasive Species – I&M working group will have undertaken the necessary investigative steps and completed a basic framework of the plan.	<ul style="list-style-type: none"> Jeff Herrod represented Region 4 in working group. 	<ul style="list-style-type: none"> Continue to participate in the IM working group to design a basic framework for an early-detection inventory and monitoring process for invasive plants.
ISIM 2.1	Use the I&M Invasive Species inventory pilot results, or other invasive plant inventory case studies, existing inventory protocols and published literature to develop a guide to conducting invasive plant inventories on refuge lands by end of FY 14. The guide will offer a framework and tools to help refuge managers prioritize invasive plant inventory and management efforts.	<ul style="list-style-type: none"> NA 	<ul style="list-style-type: none"> Provide comment, input, and representation as requested to evaluate the results of the pilot efforts that will include an assessment of the prioritization process and predictive modeling results.

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ISIM R4	Develop pilot projects focused on mapping and monitoring invasive plants and/or animals in at least two regions, with a long term vision of supporting an integrated landscape approach to the management of invasive species across the refuge system.	<ul style="list-style-type: none"> • Through FY 2012RFP, I&M funded fish community assessment work on Savannah NWR that including standard protocol development using multiple techniques to detect aquatic invasive species. Components of this work include early detection and rapid response, new technologies, and both internal and external education about AIS. Significant on-site technical and logistic support was provided. In August 2012, sampling efforts surveyed 22 km river miles along Little Back River in Savannah NWR, and approximately 12 km within impoundments on SAV. Based on preliminary results, 20 native species and one naturalized species (common carp) were detected. • Work conducted at Savannah NWR builds on work funded through I&M FY11 RFP conducted at A.R.M. Loxahatchee NWR, including standard protocol development, early detection and rapid response techniques for AIS, and development of eDNA markers for AIS species of concern and emerging threats to aquatic systems. • Partners include: Regional Office, I&M, Refuges, Fisheries, National Fish Hatcheries – Warm Springs & Welaka NFHs. 	<ul style="list-style-type: none"> • Complete edna project, communicate results and make methods available.
ISIM 3.1	ISIM 3.1 By end of FY13, the working group will produce an interim report on the results to date of the pilot project that includes a preliminary assessment of the prioritization process and predictive modelling, in addition to a recommendation of how the pilot data can be used by a refuge to inform an adaptive management monitoring effort.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Participate to develop guidance for conducting invasive plant inventories based on the pilot results.
ESA 2.1	ESA 2.1 By the end of FY13, refuges will report which ESA listed species are currently being monitored.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • All refuges will report which listed ESA species are currently being monitored.

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Region 4 I&M Priorities			
VHM 1.1	By the end of FY13, develop regional and national summaries of vegetation resources on Refuge lands using existing national datasets.	<ul style="list-style-type: none"> • Participated in National Vegetation Mapping team planning calls (Fall-Winter 2011/2012) • Reviewed vegetation mapping procedures with refuge staff from Pinckney Island, Harris Neck, and Okefenokee NWR (Winter-Spring 2012) • Attended work detail on Sumter NF (South Carolina) to discuss vegetation mapping products with the Carolina Vegetation Survey 	<ul style="list-style-type: none"> • Participate on national team to develop regional and national summaries of vegetation maps and data currently available on refuge lands and where gaps exist. • Regionally identify Vegetation Map needs for refuges (including questionnaire of existing status) • Link refuge veg map data to National Classification Standard (e.g., Ecological Systems)
VHM 1.2	By the end of FY13, ensure the datasets and summary reports are accessible to others.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Where appropriate, create ServCat records so the data is assessable and discoverable. •
VHM 2.0	By the end of FY15, in collaboration with the Geospatial Advisory Committee, the I&M Team will develop guidance for contracting, acquiring, or developing vegetative cover datasets.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • For VHM 2.0 participate on national team to develop guidance for acquiring and/or developing vegetative cover datasets.
VHM R4	Compile Carolina Vegetation Survey Metadata	<ul style="list-style-type: none"> • Compiled dataset from Carolina Vegetation Survey plots established on South Atlantic LCC NWR's. As of August 2012, there are a total of 245 high-quality, geospatially reference, and monumented vegetation-environment plots occurring across 17 refuges within the region. These plots represent 102 distinct National Vegetation Classification Standard community associations; associations represented the most include 1) longleaf pine-bluejack oak / southern wiregrass woodlands, 2) cypress-tupelo semipermanently flooded brownwater swamps, 3) maritime slash pine upland flatwoods, 4) Mid-Atlantic high salt marsh, 5) South Atlantic coastal plain longleaf flatwoods, 6) Southeastern Coastal Plain green ash-elm bottomland forests, and 7) Southern Atlantic Coast salt marsh. A total of 8021 taxon incidences and a total of 1417 taxon concepts are recorded. This species list has not yet been queried with rare species records from state or federal records. 	<ul style="list-style-type: none"> • Develop and distribute a factsheet detailing information from Carolina Vegetation Survey plots located on South Atlantic LCC refuges.
AD 1.1	By the end of FY13, NRPC I&M staff will provide instructions to I&M Staff, field stations and planners how to acquire these data independently.	<ul style="list-style-type: none"> • Surveyed all refuges in the southeastern Region to determine level of GIS/GPS skills, and determine status of their GIS data to facilitate next steps of roll-out. 	<ul style="list-style-type: none"> • Provide instruction to field stations on how to acquire the data.

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AD 1.2	By the end of FY13, NRPC I&M staff develop process to deliver these data to refuge field stations that do not have the capacity to acquire independently.	<ul style="list-style-type: none"> • Represented Region on the GAC and assisted in designing a brief survey to provide a high level understanding of the data resources and geospatial capabilities available to support Refuge System programmatic requirements. Provide assistance to refuges in their response to this DTS request. 	<ul style="list-style-type: none"> • Provide, comment, input and assistance as requested to develop a process to deliver data to field stations that lack the capacity to acquire the data independently.
AD 2.1	By end FY13, identify and prioritize additional abiotic datasets not identified in WH8.1, that are crucial for informing management decisions and supporting inventory and monitoring activities.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Provide, comment, input and assistance as requested to identify, prioritize and estimate costs for obtaining additional abiotic data not identified in WH8.1.
AD 2.2	By the end of FY13, estimate costs for acquiring high priority core abiotic data layers not currently available.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Provide, comment, input and assistance as requested.
AD 3.1	By the end of FY13, develop geospatial data standards for at least at least two enterprise abiotic datasets.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Provide, comment, input and assistance as requested to develop geospatial data standards for the datasets.
BIM 1.0	In collaboration with Migratory Birds, develop and initiate a strategy to integrate, standardize (where appropriate), and coordinate bird monitoring across the nation by the end of FY19.	<ul style="list-style-type: none"> • Region 4 I&M Coordinator co-lead I&M Bird Team, lead and participate in monthly conference calls. Goal of Team is to take a leadership role, in partnership with FWS migratory birds, in supporting coordinated bird monitoring on national wildlife refuges across the nation. The Team established a number of working groups in FY 2012 focused on bird groups and bird monitoring tools to address a number of questions and action items. 	<ul style="list-style-type: none"> • Continue to participate on national bird team.
BIM 1.2	By the end of FY14, the Bird Team will use PRIMR to identify avian inventory and monitoring needs common to multiple refuge stations or regions and identify potential gaps in inventories or monitoring.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • For Region 4, address task in regional PRIMR crosswalk.

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Region 4 I&M Priorities			
BIM 2.1	By the end of FY13, the Bird Team will identify, prioritize, and develop an implementation strategy to produce the national and/or regional protocol frameworks needed to inventory or monitor forest, grassland, marshbird, waterbirds, shrubland birds, and landbirds on refuges.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Bird Team and associated working groups to provide, comment, input and assistance to complete the marshbird and landbird protocol frameworks.
BIM 2.2	By the end of FY13, the Marshbird Steering Committee, a sub-team of the Bird Team, will convert the National Marshbird Protocol into a format that meets National I&M policy. This task requires coordination with the Ecological Information Planning Objective 3.0.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Bird Team and associated working groups to provide, comment, input and assistance to identify, prioritize, and develop an implementation strategy to produce protocol frameworks for other bird communities.
BIM 3.1	By the end of FY13, the Bird Team will work with the NRPC I&M staff to develop a process to facilitate import of scrubbed landbird and marshbird data, currently held by the USGS Patuxent Wildlife Research Center, into AKN.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Bird Team and associated working groups to provide, comment, input and assistance to develop a process to facilitate import of scrubbed landbird and marshbird data into AKN.
BIM 3.2	By the end of FY14, the Bird Team will work with the Integrated Waterbird Management and Monitoring project (IWMM) to develop a process for managing and sharing IWMM data with AKN.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Bird Team and associated working groups to provide, comment, input and assistance to develop a process for managing and sharing IWMM data with AKN.
BBI 1.1	By the end of FY13, the Inventories Team will identify, evaluate and prioritize the sources of existing species observation data that can be used to pre-populate a data information system for species observation.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Inventory team to identify, evaluate and prioritize the sources of existing species observation data.

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BBI 1.2	By the end of FY13, the Inventories Team will identify a process for populating the data information system and identify what steps can be completed while the data information system is being developed. This task requires coordination with System Development Objective 7.0 and Data Management Objective 5.0.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Inventory team to identify a process for populating the species data information system.
BBI 1.3	Using the species observation data from BBI 1.1, create a bird list from existing data for each station in preparation for validation. The Species Inventory team in collaboration with the Bird Team will complete this task by end of FY13.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue to serve on Inventory team to create a bird list from the sources previously identified in preparation for input and validation.
PM 1.1	By December 31, 2012 I&M will have analysed the phenologic survey results to determine the following: what phenologic data is being collected, what percentage of phenologic data is being collected by citizens, has the data been analyzed, where is the data being stored, and has it been used to guide management activities	<ul style="list-style-type: none"> • Answered refuge questions in regards to request (DCN: 052322); information to integrating phenology monitoring efforts with other bureaus and the broader scientific community to inform our understanding of climate related shifts. Results from the questionnaire will allow the national I&M Team to integrate observations and data management for greater efficiencies. 	<ul style="list-style-type: none"> • Assist if needed to analyze and report the data collected from the phenological survey.
PM 1.2	By the end of FY13, fully implement the FWS landing page on the NPN website to serve as a communication tool providing I&M specific information for refuge staff and providing an avenue to integrate "citizen scientists" with refuge monitoring.	<ul style="list-style-type: none"> • Southeast Regional representative served on National Phenology/Pollinator sub-team and developed a USFWS Factsheet on Nature's Notebook, a program through our partner, the National Phenology Network on phenological monitoring and tested these methods at Pea Island NWR. 	<ul style="list-style-type: none"> • Assist if needed to fully implement the FWS landing page on the NPN website.
PM 1.3	Through FY13, work with refuges to develop data management tools (input and out) that meet refuge needs for data entry, export, and summary statistics. Note – this will be an ongoing task that will require regional and national attention.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Provide comment, input, and interpretation as needed to develop relevant data management tools to assist refuge staff with data entry, export, and production of summary statistics for reports.

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PM R4	2012 Pollinator Challenge, coordinate pollinator monitoring activities throughout region	<ul style="list-style-type: none"> • Served as Regional Pollinator Coordinator on National Pollinator Team • Participated in National Pollinator Week activities (wrote National Blogs and collaborated with RO and WO for media releases). • Coordinated Pollinator Challenge activities: NWR, ES offices, National Hatcheries, and RO are all participating and have reported efforts. • Performed initial butterfly inventories both on Alligator River NWR and on partner land on nearby Kitty Hawk Woods (NERRS). • Developed 5 FWS Factsheets on Pollinator Challenge and citizen science monitoring programs. • Created pollinator gardens on 2 Service sites, collaborated with volunteers and Friends Group for fundraising and media events. • Collaborated regularly with NC Aquarium horticulturist for native plants for pollinator gardens on refuges/partner lands. 	<ul style="list-style-type: none"> •
AM 1.1	By the end of FY13, the I&M Team will define different levels of AM as practiced in the NWRS and identify the fundamental technical skills, tools and resources needed to support monitoring under an adaptive management framework across the NWRS.	<ul style="list-style-type: none"> • Pilot investigation within Southeast Region GCPO geography via AM question in Needs Assessment with answer options reflecting broad levels of AM. 	<ul style="list-style-type: none"> • List and define the different levels of AM as practiced in the NWRS; includes identifying necessary skills, tools and resources needed. (Note: we need one region to take the lead). Region 4 provide comment, input and assistance as needed.
WCM 1.1	By the end of FY14, NRPC I&M staff utilize Wilderness Fellows and trained refuge staff to develop a baseline of wilderness character measures for each refuge with designated wilderness	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Provide input and assistance as needed (NRPC lead this effort).
SSM 1.3	Beginning in FY13, where appropriate, the I&M Team will assist with the evaluation of assumptions underlying the choice of surrogate species.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Provide comment, input, and assistance as requested..
SSM R	Participate in regional surrogate species efforts	<ul style="list-style-type: none"> • Participated in RO, SA and GCPO LCC surrogate workshops 	<ul style="list-style-type: none"> • Participate in next steps (comment on guidance, serve on teams etc.)

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FM 2.2	FM 2.2 By the end of FY16, in collaboration with the Fire Team, identify and prioritize refuges with the largest need to conduct fire effects and other fuel treatment monitoring.	<ul style="list-style-type: none"> Region 4 compiled information from ongoing fuel treatment effects monitoring projects in refuge PRIMR DB's 	<ul style="list-style-type: none"> Region 4 using information from 2012 PRIMR DB's, summarize current/on-going fuel treatment/fire effects monitoring activities on regional refuges. Compile information on historical monitoring projects.
FM 2.3	FM 2.3 By the end of FY18, estimate the funding (includes staff time) necessary to implement a consistent monitoring approach on priority refuges.	<ul style="list-style-type: none"> Region 4 compiled cost and time allotment information from on-going fuel treatment projects in refuge PRIMR DB's. 	<ul style="list-style-type: none"> Region 4 develop cost table for Regional Fuel Treatment Effects Monitoring Plan
FM R4	Update Region 4 Fire Effects monitoring guide.	<ul style="list-style-type: none"> Update Regional Fire Effects Monitoring Guide: I&M worked closely with regional Fire Ecology staff to initiate revisions to the "Fuel and Fire Effects Monitoring Field Guide: USFWS Southeast Region" (2006). Visited multiple field stations (refuges) to discuss how they have historically implemented their fire effects monitoring surveys. Prioritized the list of surveys in the 2006 Field Guide, and consolidated similar methods from multiple surveys; thereby paving the way for a more efficient guidebook. 	<ul style="list-style-type: none"> Continue working together to develop and finalize monitoring guide. Develop PRIMR templates for fire monitoring. Participate in fuel treatment/fire effects monitoring training workshops
FM R4	By the end of FY16, design a monitoring approach to assess vegetation condition in response to fuel treatment applications	<ul style="list-style-type: none"> Attended FMO annual workshop and Monitoring Trends in Burn Severity workshop, and established monthly meetings with Regional Fire Ecology team (Fall/Winter 2011) Gathered vegetation/habitat spatial data and fire history data for Okefenokee NWR (Spring 2012) Reviewed 2006 Fire Atlas developed for Okefenokee NWR (Summer 2012) 	<ul style="list-style-type: none"> Develop field techniques to monitor tree seedling survival across fuel treatment units
FM R4	Overlay fire history maps with plant community information	<ul style="list-style-type: none"> Compiled fuel model, existing vegetation type, and fire regime groups on Okefenokee NWR and placed into a geospatial database (Fall 2012) 	<ul style="list-style-type: none">
FM R4	Improve fuels models.	<ul style="list-style-type: none"> NA 	<ul style="list-style-type: none"> Refine models by including vegetation composition and structure information by community type.

7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
Region 4 I&M Priorities			
SLR 2.0	Acquire baseline data needed to understand and model sea level rise and other climate related changes to coastal habitats.	<ul style="list-style-type: none"> • 60 RSET (rod surface elevation tables) stations were installed on 18 coastal refuges within the SALCC that will measure rates of sediment accretion and subsidence. • Data will be linked with NPS data and used by the SALCC to verify sea level rise models in addition to helping refuge managers identify critical areas where rates of loss are exceeding the ability of the habitat to respond and make decisions towards managing for future conditions. • This project brought together multiple partners (FWS, NPS, TNC, USGS, NOAA, SALCC) to ensure consistent protocols, implementation, and data management were occurring for data to be combined to address landscape scale questions. • Started planning the long-term monitoring component: training field station staff to take measurements (Fall 2012) and purchased equipment needed to put together four measuring kits to be shared among 18 refuges. • Worked closely with R2 I&M to plan RSET installs and monitoring on coastal refuges in LA and TX as part of SLAMM project. • Started gathering information to organize and understand existing and determine future needs for RSET stations on refuges in FL, AL, MS, and LA. • Partners: NWRs, FWS, NPS-I&M, TNC, USGS-Lafayette and Patuxent, NOAA, and SALCC. 	<ul style="list-style-type: none"> • Continue to provide technical assistance to SALCC SET project. • Train SALCC refuge staff to collect SET, marker horizon and porewater salinity data from SET sites. • Where necessary, assist refuges with SET data collection. • Perform data entry and QA/QC of SET data into NPS SECN database. • Approve vegetation protocol and start conducting vegetation monitoring in conjunction with SET monitoring on 18 coastal refuges. • Complete I&M report for SET project • Work with Atkins to install sea level rise gauge/sonde at Swanquarter NWR • Continue gathering information to organize and understand existing and determine future needs for RSET stations on refuges in FL, AL, MS, and LA. • Continue working closely with R2 I&M to plan RSET installs and monitoring on coastal refuges in LA and TX as part of SLAMM project. •
SLR 2.2	SLR 2.2 By the end of FY15, the I&M Team will identify and catalogue the current version of sediment elevation monitoring methodologies and protocols currently in use across the Service and by Partners. This task requires coordination with Ecological Information Planning Objective 2.0.	<ul style="list-style-type: none"> • R2 and 4 I&M coordinated I&M to identify and coauthor two projects funded by National I&M Office: 1) Evaluating SLAMM data inputs to improve and refine sea-level rise scenarios on refuges within the GCPLCC and 2) Consequences of sea-level rise and anthropogenic stressors on the loss and conversion of wetland habitats for whooping cranes, mottled ducks, and redhead ducks on the GCPLCC • Acquired all existing SLAMM reports for R4 refuges and started to organize information on existing SLAMM projects (to be completed in FY13) 	<ul style="list-style-type: none"> • Continue to participate on project.

7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
Region 4 I&M Priorities			
SLR 3.1	SLR 3.1 In collaboration with the Ocean and Marine National Coordinator, produce a document that details the results of SLAMM models run to date and provides recommendations for the next steps. The assessment should consider what, if any, additional monitoring information, such as sediment elevation and remote imagery (LiDAR), will improve SLAMM estimates at the local scale. This document should also consider other available sea level rise models. The team will complete assessment and recommendation by the end of FY15.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Continue and develop spreadsheet relating to SLAMM models already conducted.
MDM 1.0	By the end of FY18, provide baseline abiotic and biotic data needed to proactively evaluate potential impacts on refuge resources by anthropomorphic and natural catastrophes.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • The I&M team will work with refuge staff to validate the data compiled for the Oil and Gas data information system. Regions 2, 3, and 6 will participate. • Note this focus area needs revisions; suggest that baseline biotic related tasks be moved to BBI and abiotic tasks move to AD
WH 2.1	WH 2.1 By end of FY18, identify those refuges that need to develop disease contingency plans and assist with development to ensure plans are in place.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Assist Region 4 Migratory Bird program to compile information. In cooperation with Mig Bird program explore pilot use of R4 Mig Bird template Avian Mortality Response Plan. Initial pilot will likely involve 13 NWRs in MS.
WH 3.2	By the end of FY16, identify existing avian monitoring projects that overlap with sampling needs in the development of health parameter, avian species-specific, and pathogen-specific investigations. This task will be coordinated with the Bird Inventory and Monitoring Objective 4.0.	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Work with the R4 Migratory Bird program to provide input and test implementation of Wildlife Health Event Report being developed by the Univ. of Wisconsin-Madison. The concept for the use of this reporting system within refuges is to facilitate a rapid and efficient understanding of avian mortality events on or near refuges.

7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
Region 4 I&M Priorities			
R4	Recruit I&M staff	<ul style="list-style-type: none"> Staffing for the South Atlantic LCC geography of the Atlantic Zone was completed in FY 2012 with the addition of Theresa Thom as the Aquatic Ecologist co-located at Savannah NWR in January. The Gulf Zone, with emphasis on the GCPO LCC geography, has been partially staffed. 	<ul style="list-style-type: none"> Recruit I&M staff
R4	Regional Strategic Plan	<ul style="list-style-type: none"> Initiated development of an I&M objectives matrix to capture inventory and monitoring needs of and for refuges. Boxes of objectives include information from refuges needs assessments and needs of FWS programs and partners. Prioritization criteria planned; matrix and criteria will serve as a planning tool. This year worked closely with Migratory Bird partners to identify objective boxes. Partners: Migratory Birds, Regional I&M 	<ul style="list-style-type: none"> Complete Regional strategy
R4	Administration	<ul style="list-style-type: none"> Drafted a MOU/interagency agreement with NPS to integrate operations between FWS Region 4 I&M and the Southeast Coast Network. This document is necessary to outline the relationship between FWS and NPS (e.g., sharing office space). 	<ul style="list-style-type: none"> Complete MOU

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Region 4 I&M Priorities			
R4	<p>Support inventory and monitoring for adaptive management</p> <p>Multiple biotic and abiotic inventory and monitoring projects funded by the Regional I&M rfp.</p> <p>FY11 and FY 2012funded projects address refuge critical inventory and monitoring information needs and help plan and evaluate the effectiveness of conservation strategies implemented by the USFWS and conservation partners in the face of accelerating climate change and threats from other environmental stressors.</p>	<ul style="list-style-type: none"> • 35 R4 and 1 R3 Refuges and 3 ES offices were supported across the region in implementation of the Acoustical Bat Monitoring Protocol, including hosting 2 training workshops (Gulf & South Atlantic), technical support and trouble-shooting, and data management coordination and development. <hr/> <p>Cooperators: NWRs, USACE, ERDC, R3 Refuges, R5 I&M, State of Mississippi and USGS- Patuxent</p> <ul style="list-style-type: none"> • Bat monitoring for Rafinesque’s Big-eared bat and Southeastern myotis (state listed species) on Santee and Savannah NWRs was funded through FY2012 I&M RFP. Initial sampling was conducted in August and September 2012 on both refuges. Equipment and protocols used as part of FY11 I&M bat monitoring contributed significantly to FY 2012effort. I&M provided on-site logistical support and coordination with larger sampling effort(s). <hr/> <p>Cooperators: Santee and Savannah NWRs, Clemson University</p> <ul style="list-style-type: none"> • St. Catherine Creek NWR Aquatic Habitat Assessment in Support of Gulf Coastal Plains CPO LC • An objective analysis of 21 years of fire history at St. Marks NWR utilizing MTBS mapping protocol. • Inventory and Monitoring of the Aquatic Biota of Tallahatchie National Wildlife Refuge • Streamline forest data analysis on R4 refuges (White River NWR) • Flood impacts to Forest Habitat plots established on White River NWR • Support for Water Resource Inventory and Assessments (WRIA) and Hydrogeomorphic analyses (HGM) for Refuges in the Southeast • Survey and Monitoring of Sea Turtle Index Nesting Beaches on NWRs in the Southeast Region for Landscape Management and Global Conservation - includes NWRS in FL, GA, SC, and St Croix 	<ul style="list-style-type: none"> • Complete the projects selected in FY12. Awarded \$458,000 for 13 projects conducted on refuges with FY 2012funds. • Baseline hydrologic monitoring stations at proposed Mountain Bogs NWR • Development of a Sentinel Site for Monitoring Climate Change Impacts Collaboratively Operated by the ACE Basin National Wildlife Refuge and the ACE Basin National Estuarine Research Reserve • Inventory and Monitoring for Red-cockaded Woodpecker Nesting (Noxubee NWR) • Reassessment of population extensions and mapping of five federally endangered listed plants at La Tinaja, Laguna Cartagena National Wildlife Refuge • Baseline Monitoring of Indicator Species (butterflies) at Tallgrass Prairie and Chenier Habitats (SW Louisiana Complex) • Use of Coastal Pine Savanna by Yellow Rails (Mississippi Sandhill Crane NWR) • Baseline Survey for Bats, specifically Rafinesque’s Big-eared Bats (<i>Corynorhinus rafinesquii</i>) and Southeastern Myotis (<i>Myotis austroriparius</i>) on the Savannah NWR and Santee NWR • Implementation of environmental DNA surveys and integration of standardized protocols for a baseline biometric assessment of fishes in the Savannah National Wildlife Refuge and Little Back River • Baseline Population Inventory of Amphibians on the Mountain Longleaf NWR and Screening for the Amphibian Disease <i>Batrachochytrium dendrobatidis</i> • Coastal Georgia Aerial Project (Savannah Coastal Complex) • Taking advantage of hydrological extremes: A strategy for targeted water monitoring assessments DART (multiple refuges) • Development of a robust monitoring tool for aquatic species: applications of molecular techniques to imperiled herpetofauna of the Southeastern US • Bat occurrence relative to silvicultural treatments intended to yield Desired Forest Conditions for priority wildlife species (multiple refuges)

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Region 4 I&M Priorities			
		<p>Reports continued:</p> <ul style="list-style-type: none"> • Forest Habitat Evaluation at Atchafalaya NWR • Pine Savannah restoration monitoring –Tammany Holding Tract • Inventory of frog species in the South Carolina Sandhills with a focus on the pine barrens treefrog and the gopher frog • Clarks River National Wildlife Refuge LiDAR • Inventory and Monitoring of Vernal Pools on Dahomey National Wildlife Refuge • Comprehensive Shorebird Surveys on Front Beach Habitat within Cape Romain NWR • Monitoring productivity, dispersal, and habitat restoration/expansion in the Harris Neck NWR wood stork colony. • Groundwater Quality Monitoring at Logan Cave National Wildlife Refuge • LIDAR and Color digital Imagery for Lower Hatchie NWR • Development of biometric and environmental DNA standardized protocols for early detection and population assessment of aquatic invasive species for Arthur R. Marshall Loxahatchee National Wildlife Refuge. • Population dynamics of the king rail <i>Rallus elegans</i> (Mackay Island and Currituck NWRs) • Assess Wet Pine Savanna Response to Refuge Management MS Sandhill Crane • Bat Species Occurrence and Long-Term Bat Population Monitoring on Refuges using Acoustical Detection (multiple western NWRs) • Monitoring the Effects of Climate Change on Waterfowl Abundance in the Mississippi Alluvial Valley: optimizing sampling efficacy and efficiency Measuring Sea Level Rise Across the SALCC • Forest Habitat Inventory Equipment for Refuges • Inventory of Bottomland Hardwood Forests on the Roanoke River NWR and Establishment of Continuous Forest Inventory Plots • Herpetofaunal survey of Santee National Wildlife Refuge 	

7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
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R4	<p>Provide technical support for inventory and monitoring</p> <p>Provide assistance with study design, data management, data collection, analysis and reporting to refuges and partners. Work to link local objectives to LCC priorities and fulfill CCP and LCC objectives.</p>	<ul style="list-style-type: none"> • Participated in weekly surveys for turtle crawls and nest hatching events Pea Island NWR (May-Sept). Data is contributed with local volunteer efforts (NEST program) and NPS survey efforts to the larger state program (NC Wildlife Commission). • Conducted monthly SEANET beached bird surveys on Pea Island NWR. • Organized a training session for partners and volunteers to meet with the program coordinator (Sarah Courchesne, Tufts University). • Currently, there are 25+ routes in NC to date (1 NWR, multiple w/partners such as NERRS, Audubon, NC Aquarium, NC Coastal Federation, and many private citizens). • Collaborated w/Craig Harms, DVM at NCSU Center for Marine Sciences and Technologies for all necropsies. • Presented program/data to NC Waterbird Commission meeting with partners from NC State Parks, NC Wildlife Commission, and Audubon. • Participated in forest inventory work with Okefenokee NWR Forest Technicians (Summer 2012) • Discussed forest inventory work with St. Marks NWR Forest Technicians (Summer 2012) • 	<ul style="list-style-type: none"> • Continue to provide technical support for inventory and monitoring to refuges and other partners.
R4	<p>Develop and maintain partnerships</p> <p>Work closely with all LCCs serving on committees and working groups as priorities and processes are defined.</p>	<ul style="list-style-type: none"> • Serve as member of the SALCC consulting team. • Participated in weekly GCPO staff conference calls. • Participated in GCPO staff meetings (1 18 12), and Adaptation Science Workshop (9 18 12). • Assisted with interview process for GCPO GIS position (7 12). • Participated in SALCC third Thursday web-casts (though out year). • Part of team to develop surrogate species training agenda for SALCC geography (9 12). Moderated GCPO geography Surr Species workshop for USFWS and partners (7 12). Coordination meeting with MS Ecological Services Office (10 12). 	<ul style="list-style-type: none"> • Continue to work closely with LCCs.

7-Year Plan Task	Task Description	FY 2012 Accomplishments	FY 2013 Work Plan
Region 4 I&M Priorities			
R4	Communicate I&M information	<ul style="list-style-type: none"> • Multiple presentations by I&M staff to refuges and partners outlining the initiative: VA-NC Ecoteam meeting (12/11), Mig Bird Retreat (1/11), GCPO staff meeting (1/18), SEPIF (2/8), GCPO Steering Committee (4/11), S. Fl Ecoteam (5/23), FL aquatic partners (8/2), SCDNR and partners climate summit (9/13). • Assisted with organization of a regional HGM Webinar conducted on January 25, 2012. The recording is available at http://bcove.me/dwg3x5xy • Regional Fishnet site (Sharepoint) is working smoothly as a sharing space for I&M activities. Migrated information to new site and maintain site organization 	<ul style="list-style-type: none"> • Develop FY11 funded projects fact sheets • Continue to maintain and organize the regional Fishnet site • Complete and update project record documentation for current monitoring projects lead by I&M. • Send weekly accomplishments to Chuck for consideration in RDT staff notes. • Identify and populate a mechanism (Facebook page, R4 I&M website) to communicate activities to partners.