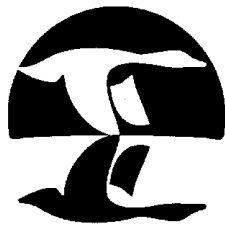


# Sea Duck Joint Venture Implementation Plan 2016-2018







*North American Waterfowl  
Management Plan*

*Plan nord-américain de  
gestion de la sauvagine*

*Plan de Manejo de Aves  
Acuáticas de Norteamérica*

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*King and Common Eiders, Point Barrow, Alaska; Tim Bowman*

# Sea Duck Joint Venture Implementation Plan

January 2016 through December 2018

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## **OBJECTIVE**

The objective of the Sea Duck Joint Venture (SDJV) Implementation Plan is to describe current SDJV priorities, identify deliverables, set out time lines, and identify the individual(s) responsible for implementation of priority tasks outlined in the SDJV Strategic Plan over the period January 2016 through December 2018. The Implementation Plan also reports on progress toward addressing tasks during the previous two years. The 3-year Implementation Plan is a living document that is revisited annually and revised to reflect changing SDJV priorities, mandates, and progress toward objectives. This document revises the plan published in April 2015.

## **INTRODUCTION**

This Implementation Plan steps down the SDJV 2014-2018 Strategic Plan, providing more specific direction and priorities over a shorter, 3-year, time frame. It is intended to be a flexible, dynamic document that is reviewed and revised annually to reflect progress toward addressing science priorities and adapted to address new initiatives.

The Implementation Plan is reviewed each year by the SDJV Continental Technical Team (CTT) at their annual fall meeting. The CTT makes preliminary recommendations for revisions to the Plan and presents them to the Management Board during the joint CTT-Management Board fall meeting. A subcommittee, composed of SDJV Coordinators, CTT and Management Board co-chairs drafts a revision to present to the Management Board prior to a spring teleconference.

## **PRIORITIES 2016 – 2018**

Priorities set out in this Implementation Plan are designed to help meet the SDJV mission, which is to "...promote the conservation of all North American sea ducks through partnerships by providing greater knowledge and understanding for effective management." The 2014-2018 strategic plan reflects a significant shift in focus for the SDJV, from a broad-based science program to a more focused program intended to provide information most needed by managers to make informed decisions. The strategic plan identifies the SDJV's highest priorities as: 1) estimate parameters needed to manage and ensure sustainability of sea duck harvest, 2) better understand habitat use and needs, and 3) ensure that the SDJV maximizes learning from research that has already been done. The plan also prioritizes among species; the highest priority species are surf scoter, black scoter, white-winged scoter, long-tailed duck, and American common eider.

A summary of recent accomplishments and tasks for the next three years are described below for SDJV science initiatives as well as for administrative, outreach, and communication programs.

## **POPULATION DELINEATION**

At the inception of the SDJV, the lack of understanding about population delineation was seen as one of the highest priority topics for future work. Identifying links among breeding, molting, staging, and wintering areas will help improve the design of monitoring surveys and interpretation of trends, and more effectively direct management actions including harvest management. Many SDJV partners have used satellite telemetry to document migration patterns of sea ducks and determining temporal and spatial linkages throughout the annual cycle. Satellite telemetry also yields a wealth

of data on seasonal site and habitat use, thus informing habitat conservation efforts. Genetics and stable isotopes have also provided insights into how populations are structured, and multiple complementary approaches (satellite telemetry, genetics, isotopes, banding) may provide the best portrayal of population delineation. An ongoing analysis of PTT data and sample size requirements, scheduled for completion in 2016, will hopefully provide some insights into sample size requirements for satellite telemetry studies.

The Population Delineation subcommittee now consists of Sean Boyd – Chair (EC-WLSD) and includes SDJV CTT members Scott Gilliland (CWS), Chris Dwyer (USFWS), John Pearce (USGS), Grant Gilchrist (EC-WLSD), Tim Bowman (USFWS), and other invited scientists, as needed. In 2016, the SDJV will continue its efforts to inform population delineation and collect movement, winter habitat use, and breeding location data using satellite telemetry for black scoter and surf scoter wintering in the Pacific, white-winged scoter on a continental scale, and long-tailed duck in eastern North America. A comprehensive review of current knowledge on delineation approaches, findings from past research, sample size requirements, and information gaps was a topic of the CTT meeting in fall 2015 and will again be the theme of a workshop at the CTT meeting in fall 2016. A strategy for moving forward with population delineation projects will be devised following the fall 2016 meeting.

### ACCOMPLISHMENTS: 2014-2015

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME:
Advise agencies, JV's etc., responsible for habitat conservation about results of population delineation studies	Identificaiton of important areas	SDJV Coordinators and flyway reps on CTT	Recurring activity	Annual progress report for Atlantic and Great Lakes Migration Study provided to Atlantic Flyway technical reps and also posted on SDJV web site
Compile annual report on cumulative results and data from Atlantic and Great Lakes Sea Duck Migration Study	Check progress; identify remaining gaps and need for re-direction	Tim Bowman in concert with PIs and database manager	Annually, or as new results dictate	Last report completed June 2015
Update telemetry database for Atlantic and Great Lakes study	Availability of most current research results	Database and mapping coordinator	Annually	Ongoing via contractor: Biodiversity Research Institute
Conduct analyses of PTT sample size requirements using hypothetical data and existing data sets	Guidance on effort required for all satellite telemetry studies	Contracted via Pacific Wildlife Foundation, BC	Annual report due Sept 29, 2013	Not completed/ delayed; new contractor identified Feb 2015.
Mark Surf Scoters with PTTs in Douglas Channel (Kitimat), BC	Delineation of Pacific Scoter populations	Boyd, WS	Marking done in April 2014. Report completed by 2016.	Annual progress report posted on SDJV web site

Mark white-winged scoters with PTTs on Atlantic coastal wintering areas	Delineation of Atlantic-wintering WWSC; characterize habitat use	Lucas Savoy, BRI, and Univ. Rhode Island	Annual progress reports by Sept 28	In 2014, marked 3 adult female WWSC; in November 2015, marked 22 adult female WWSC
Mark long-tailed ducks with PTTs on Atlantic coastal wintering areas	Delineation of Atlantic-wintering LTDU; characterize habitat use	Lucas Savoy, BRI, and Univ. Rhode Island	Annual progress reports by Sept 28	In November-December 2015, marked 15 adult female LTDU
Conduct pilot study to assess trapping potential for LTDU in Lake Michigan	Delineation of of LTDU wintering on Great Lakes	USGS Midwest Research Center, Kevin Kenow.	Annual progress reports by Sept 28	Pilot study was successful; team was able to capture LTDU by mist-netting and nightlighting
Mark Pacific black scoters with PTTs on spring staging areas on Alaska Peninsula	Delineation of Pacific black scoters from key wintering area	Alaska Dept Fish and Game	Annual progress reports by Sept 28	Weather issues prevented meeting goal; marked one adult female. Second attempt planned for 2016
Synthesize available information about population delineation for all sea duck species	Ensure results of studies are available	Various	Initial workshop fall 2015	Part of initial workshop at fall 2015 SDJV meeting

**WORK PLAN (2016-2018): Core Annual Tasks**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
Advise agencies, JV's etc., responsible for habitat conservation and harvest management about results of satellite tracking studies	Protection of important areas; more informed decisions about harvest management	SDJV U.S. Coordinator and flyway reps on CTT	Recurring activity accomplished through posted reports, executive summaries, and flyway meetings
Re-evaluate progress and design of Atlantic and Great Lakes study after completion of 2016 trapping sessions; develop strategy to address remaining priority gaps	Evaluate original study design to ensure goals are being met in most cost effective way.	CTT	Review after completion of each field season (dates will vary among years) and analysis of sample size requirements
Compile annual report on cumulative results and data from Atlantic and Great Lakes Sea Duck Migration Study	Provide information to partners and stakeholders; identify remaining gaps and need for re-direction	Tim Bowman in concert with PIs and database manager	Annually, or as new results dictate
Update telemetry database for Atlantic and Great Lakes study	Availability of most current research results	Database and mapping coordinator	Ongoing via contractor BRI
Collect feather samples fom harvested birds via parts collection surveys in U.S. and Canada	Obtain tissues needed for isotopic and/or genetic analyses	Sarah Sonsthagen, Tim Bowman	Continue sampling until sample size goals have been met for all species; begin pilot analyses opportunistically and

through RFP

**WORK PLAN (2016-2018): Unique In-Year Tasks**

<b>TASK/DELIVERABLE</b>	<b>NEED BEING SERVED</b>	<b>LEAD</b>	<b>BENCHMARKS / COMPLETION DATES</b>
<b>2016</b>			
Conduct analyses of PTT sample size requirements using hypothetical data and existing data sets	Guidance on marking effort required for all satellite telemetry studies	Contract via Pacific Wildlife Foundation, BC	Report expected early fall 2016
Re-evaluate previous results from population delineation studies (satellite telemetry, genetics, isotopes, banding); develop strategy to address remaining priority gaps	Evaluate approaches to ensure goals are being met in most cost effective way.	CTT – workshop at fall 2016 meeting	Incorporate strategy into 2017-2019 Implementation Plan
Implement satellite telemetry study of white-winged scoters and long-tailed ducks along southern New England coast	Work to fill gaps for delineation of high priority species	University of Rhode Island	Deploy PTTs as per recommendations from Steering Committee and CTT; Captures planned Feb-Mar 2016
Investigate delineation of Pacific Barrow's goldeneye populations using genetic markers	ID population structure and complement sat telemetry results with another technique	Sarah Sonsthagen, USGS Alaska Science Center	Complete progress report by Sept 28, 2016
Satellite telemetry of Pacific Black Scoters in Alaska	Work to fill gaps for Pacific scoters	Alaska Dept Fish and Game	Captures April 2016 (successful); progress report by Sept 28, 2016
Mark adult female LTDU wintering in Lake Michigan	Work to fill gaps for Great Lakes LTDU	USGS Midwest Research Center, Kevin Kenow	Captures planned Feb-April 2016; progress report by Sept 28, 2016
<b>2017</b>			
Satellite telemetry of Surf Scoter and White-winged Scoters in Alaska	Work to fill geographic gaps and increase sample size for Pacific scoters	Alaska Dept Fish and Game	Captures April 2017; progress report by Sept 28, 2017
Investigate husbandry techniques to improve survival rates of sea ducks implanted with PTTs (esp. SUSC and LTDU)	Increase survival and effective PTT sample sizes; address concerns about animal welfare.	TBD, possibly via RFP	TBD.
<b>2018</b>			
Satellite telemetry of Surf Scoter and White-winged Scoters in Alaska	Work to fill geographic gaps for delineation and meet minimum sample size for Pacific scoters	Alaska Dept Fish and Game	Captures April 2018; progress report by Sept 28, 2018



## MONITORING

The SDJV has emphasized the importance of documenting the distribution and relative abundance of sea duck populations as a precursor to establishing population objectives, determining population trends, predicting potential effects of threats and climate change, and evaluating the effects of management actions including harvest. Monitoring for many sea duck species remains inadequate for these purposes. The SDJV has so far focused on developing and testing alternative survey methodology, with the expectation that once developed, surveys would be administered by wildlife agencies in the U.S. and Canada – an expectation that has not materialized due largely to tightening budgets. The Monitoring Subcommittee is currently chaired by Scott Gilliland (CWS) and includes Emily Silverman (USFWS), Eric Taylor (USFWS), Tim Bowman (USFWS), Don Kraege (WDFW), Chris Dwyer (USFWS), Eric Reed (CWS), Shannon Badzinski (CWS), and Anthony Roberts (USFWS). In fall 2015, the subcommittee was tasked with reviewing the 2007 SDJV report, *Recommendations for Monitoring Distribution, Abundance, and Trends for North American Sea Ducks*, and to identify current monitoring priorities and strategies.

The priorities of the SDJV have been to develop programs to monitor long-term trend, abundance and distribution of sea ducks:

- at a sufficiently large geographic scale to permit detection of broad-scale changes in distribution or densities that may result from habitat changes, such as those induced by climate change.
- for manageable discrete population units that may be subject to specific threats, and for which conservation actions could be taken and evaluated.
- cost-effectively, while providing the greatest possible confidence in the survey results.
- to provide information on distribution and abundance to developers so that they can reduce or mitigate their effects on sea duck populations (e.g. new and expanded offshore wind, tidal, and oil energy development).
- To provide managers with information needed for harvest and habitat management.

The SDJV has explored several survey alternatives and methodologies and has laid the foundation for operational surveys. Much of this work has followed guidance in the 2007 SDJV report *Recommendations for Monitoring North American Sea Ducks* ([http://seaduckjv.org/wp-content/uploads/2015/01/sea\\_duck\\_monitoring\\_report\\_web1.pdf](http://seaduckjv.org/wp-content/uploads/2015/01/sea_duck_monitoring_report_web1.pdf)). In 2016, the SDJV will review this report, summarize work done since that report was written, and develop a new general sea duck monitoring strategy that builds on the 2007 report. A one-day workshop was held at Patuxent WRC immediately prior to the North American Duck Symposium, February 2016 that helped develop a framework for this strategy.

### ACCOMPLISHMENTS: 2014-2105

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME
Implement priority	Evaluate feasibility	Various PIs	Progress Reports	All but one

monitoring projects	of various options for monitoring sea ducks		for funded projects due end of September.	survey/project (Pacific winter sea duck survey) completed as planned
Conduct a reconnaissance survey of the Barrenlands area west of Hudson Bay	Determine distribution and relative densities of sea ducks and other waterfowl	USFWS (Walt Rhodes lead)	Expect report February 2016	Survey was completed in 2014 and expanded in 2015.
Conduct Pacific common eider breeding surveys in central arctic Canada	Determine relative densities, estimates, for comparison with historical data	CWS	Survey June 2015 and 2016; Progress reports end of September	Survey conducted in both 2014 and 2015. Progress report posted on SDJV web site
Complete Sea Duck Aerial Detection Rate study	Enable scaling of abundance indices to actual abundance	USFWS, Washington Dept Fish and Wildlife		Preliminary data analysis completed, presented at sea duck conference in Iceland and at NADS 2016. Analyses ongoing
Evaluate "crowdsourcing" methods to assist with processing and analyses of aerial photographic data sets	Part of study to estimate aerial detection rates	USFWS	Progress report end of August 2015	Project is ongoing; progress report posted on SDJV web site
Pacific winter sea duck survey	Document distribution and relative abundance at coarse scale	USFWS (Walt Rhodes lead)	Reconnaissance conducted in northern BC during 2015 to evaluate feasibility	Initial plans being formulated to evaluate risks
Conduct Eider Spring Migration Survey at Point Barrow, Alaska	Estimate numbers of COEI and KIEI for northern Alaska and western Canada	Wildlife Conservation Society, North Slope Borough	Survey April-June 2015; Progress report end of August 2015	Progress report with prelim results posted on SDJV web site

**WORK PLAN (2016-2018): Core Annual Tasks**

<b>TASK/DELIVERABLE</b>	<b>NEED BEING SERVED</b>	<b>LEAD</b>	<b>BENCHMARKS / COMPLETION DATES</b>
Implement priority monitoring projects	Evaluate feasibility and utility of alternatives for monitoring sea ducks	Various PIs	Progress Reports for funded projects due end of September.

As monitoring programs are established, continue to evaluate species population objectives for validity, and determine whether any new species could have objectives determined	Provide information to guide conservation of sea ducks at smallest scale possible	CTT Population Objectives subcommittee	Periodically
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**WORK PLAN (2016-2018): Unique In-Year Tasks**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
<b>2016</b>			
Conduct Eider Spring Migration Survey at Point Barrow, Alaska	Estimate numbers of COEI and KIEI for northern Alaska and western Canada	Wildlife Conservation Society, North Slope Borough	Survey April-June 2016; Progress report end of September 2016
Review current status of sea duck surveys and methodology and recommend general monitoring strategy for next 3+ years	Ensure monitoring meets the needs of waterfowl managers	Monitoring subcommittee, CTT and others as appropriate	1-day workshop to be held in conjunction with North American Duck Symposium, February 2016; recommendations report completed prior to fall meeting
<b>2017</b>			
Survey remaining unsurveyed areas of BC coast as part of Pacific Coast Winter Sea Duck Survey Phase 2.	Document distribution and relative abundance at coarse scale	USFWS, Washington Dept Fish and Wildlife	February 2017
Begin analyses of data from Pacific Coast Winter Sea Duck Survey	Evaluate recent reconnaissance survey information and recommend study design for potential operational survey	USFWS MBM HQ	Report by December 2017
<b>2018</b>			
No specific monitoring projects currently planned			

## HARVEST MANAGEMENT

To help address the needs of decision-makers, a Harvest Management Subcommittee was established in 2011. CTT members on the Harvest Management Subcommittee include: Chris Dwyer (USFWS, chair), Jay Osenkowski (RI DF&W), Dan McAuley (USGS, PWRC), Scott Gilliland (CWS), Grant Gilchrist (EC, NWRC), Eric Taylor (USFWS), Don Kraege (WA DF&W), Emily Silverman (USFWS), and Nic McLellan (DU Canada). Additional members of the subcommittee from the harvest management community include: Randy Milton (NS DNR), Brad Allen (ME IF&W), Kelsey Sullivan (ME IF&W), Mark Koneff (USFWS), Eric Reed (CWS), Paul Padding (USFWS), Kathy Fleming (USFWS), Ken Richkus (USFWS), Barb Avers (MI DNR), Jim Kelley (USFWS), Guthrie Zimmerman (USFWS), Steve Olson (USFWS), Todd Sanders (USFWS) and Andre Breault (CWS). The purpose of this subcommittee was to: 1) engage the harvest management community (sport and subsistence) to estimate the harvest potential of priority sea duck populations and, 2) determine the priority information needed to support harvest management decision-making that the SDJV can address through focused research and/or monitoring program development. Priority populations included black, surf and white-winged scoters, American common eiders and long-tailed ducks. The geographic scope includes the Atlantic, Mississippi and Pacific Flyways. The subcommittee was intended to provide support to, and work through, existing harvest management processes in place through the Flyway Councils and the Harvest Management Working Group rather than to provide independent recommendations and actions regarding sea duck harvest management.

A report authored Koneff et al., *Implications of Demographic Uncertainty for Harvest Management of North American Sea Ducks*, was released for review by SDJV and flyway representatives, and others, in November 2015. The report highlighted the uncertainties in model parameters and identified parameters for which higher accuracy and precision would most improve the models. The report was endorsed by the SDJV Management Board as a first step in identifying research and monitoring needs for the SDJV in the context of better informing harvest management decisions.

### ACCOMPLISHMENTS: 2014-2015

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME
Identify priority actions and next steps in harvest management assessment	Inform sea duck harvest management decision-making community	Harvest Management Subcommittee	Report to CTT and MB on the prospectus, priority actions and proposed timelines during fall meetings	Completed
Compile relevant demographic and survey information to use in conducting an assessment of the harvest potential of scoters, long-tailed ducks and American common eiders	Inform sea duck harvest management decision-making community	Harvest Management Subcommittee	Report to CTT, MB, relevant flyway technical committees and the Harvest Management Working Group on progress and results	Completed
Conduct an expert elicitation process to review	Inform sea duck harvest	Harvest Management	Expert opinion received and	Completed

demographic and survey information being used, and obtain input on parameter uncertainty values among sea duck experts	management decision-making community	Subcommittee	incorporated into the final modelling effort by March, 2015	
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### WORK PLAN (2016-2018): Core Annual Tasks

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
Develop timeline for action items and incorporate into planning documents	Provide scientific information to managers to facilitate decisions about harvest management sea ducks	Harvest Management Subcommittee	In progress
As monitoring programs are established or improved, continue to work with the harvest management community to evaluate whether species population objectives are warranted.	Provide information to managers to guide conservation of sea ducks at smallest scale possible	CTT Population Objectives subcommittee	As needed and during continued evaluation of progress toward filling high priority information gaps.
Support the communication needs of the harvest management community as needed	Sea duck harvest management decision-making community, sea duck hunters/guides and the interested public.	Harvest Management Subcommittee	Provide information as needed to support agency outreach for management decisions made based on the science, and as described in the SDJV Communications Plan

### WORK PLAN (2016-2018): Unique In-Year Tasks

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
<b>2016</b>			
Make recommendations for addressing information needs/priorities through the SDJV RFP process or other funding initiatives	Determine feasibility and capacity for the SDJV to address information needs. Researchers, universities, agencies are made aware of priority information needs relative to managing harvest of sea ducks	Harvest Management Subcommittee	Develop a plan for integration, costs and timelines into the research and monitoring plan updates, and the Implementation Plan
Deliver harvest assessment report to flyway councils and technical sections and solicit feedback	Ensure SDJV is helping to provide information most needed to improve harvest management of sea ducks	Harvest Management Subcommittee	Distribute report spring/summer 2016, request feedback by November 1, 2016
Improve estimates of harvest for American Common Eider using genetics techniques to discriminate	Inform efforts to manage harvest	USGS Alaska Science Center and USFWS Region 5	Progress report end of September 2016

among geographic areas in the Species Composition Survey (parts collection)			
<b>2017</b>			
Conduct an <i>Expected Value of Information</i> analysis for the harvest assessment	Provide guidance to researchers and managers on what information is most important	Harvest Management Subcommittee; authors of harvest assessment report	Complete analysis and distribute draft report to SDJV CTT and Mgt Board by October 1, 2017

## HABITAT CONSERVATION

While the SDJV partnership has made progress in understanding where important sea duck habitats are, what times of the year they are used and for how long, and what proportion of certain populations use those areas, information on seasonal habitat use and abundance has not yet been consolidated into a centralized database that is easily accessible to waterfowl managers, habitat conservationists, and industries that need this information to prioritize sea duck habitat management. In 2013, a Sea Duck Habitat Management and Conservation Subcommittee was formed to lay out a strategy to better address habitat needs and identify priority actions for North American sea ducks. The Habitat Management and Conservation Subcommittee includes CTT members Nic McClellan (DUC, chair), Tim Bowman (USFWS), Sean Boyd (EC S&T), Shannon Badzinski (CWS), Chris Dwyer (USFWS), Christine Lepage (CWS), Anthony Roberts (USFWS), and Management Board members Tom Rothe (PBJV) and Marc Wimer (USGS). In addition, other representatives from Habitat Joint Ventures will be engaged to determine information needs of the habitat Joint Ventures and habitat management communities as well as to identify opportunities whereby the SDJV may inform or influence land use and other policy issues.

The Habitat Management and Conservation Subcommittee envisioned a three-step process moving forward: 1) develop a static “Key Sites” atlas that delineates and describes the most important sea duck areas in North America, 2) engage an entity to develop a web-based queryable geospatial database that includes data on seasonal sea duck use, and 3) encourage studies to determine what makes habitats important to sea ducks and whether certain habitats are limiting populations of sea ducks.

### ACCOMPLISHMENTS: 2014-2015

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME
Engage appropriate stakeholders to identify what information is most needed to protect and manage sea duck habitats	Ensure best available science is made available to habitat conservationists,	Habitat Management & Conservation Subcommittee		Feedback from Habitat JV coordinators received in 2014. Other

	industry, and marine spatial planners.			needs identified in Communicaitons Plan
Begin development of a sea duck "key sites" atlas	Make readily available static maps that provide planners information on areas most important to sea ducks including seasonal importance	Habitat Management & Conservation Subcommittee	Initial workshop at fall 2014 CTT meeting	Contractor hired to lead mapping workshop in Oct 2014; data currently being compiled and reviewed by area experts
Identify existing data sources that can be used to better inform habitat conservation and protection efforts; characterize strengths and limitations of available data sets	Ensure best available science is made available to habitat conservationists, industry, and marine spatial planners.	Habitat Management & Conservation Subcommittee	Initial list of data sources and contacts compiled by September 2015	CTT members identified potential key sites and associated info on sea duck abundance during fall 2015 meeting

**WORK PLAN (2016-2018): Core Annual Tasks**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
Review strategy and timeline for addressing information needs relative to habitat conservation	Ensure that SDJV is working towards obtaining information needed by the sea duck habitat conservation and policy development communities	Habitat Management & Conservation Subcommittee	Report to CTT and MB on progress, priority actions and proposed timelines - reviewed annually
Send annual SDJV newsletter and periodic targeted communications to coastal and Great Lakes habitat JVs	Keep habitat JVs informed of SDJV research and monitoring; engage habitat JVs in sea duck habitat conservation	Habitat Management & Conservation Subcommittee	Annual report in spring. Update on Key Sites and geospatial database efforts as they develop

**WORK PLAN (2016-2018): Unique In-Year Tasks**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
<b>2016</b>			
Continue to develop a sea duck "key sites" atlas	Make readily available static maps and site narratives that provide planners with information on areas most important to sea ducks including seasonal importance	Habitat Management & Conservation Subcommittee	Maps and metadata reviewed by experts by October 2016. Site narratives begun as soon as possible. Initial subset of maps and metadata reviewed by constituents by October 2016. Progress reports to CTT

			and MB in spring and fall 2016
Identify and engage organizations that have the skills and capacity to integrate sea duck data into a geospatial database	Provide accessibility to geo-referenced information already collected and provide links to LCCs, Habitat Joint Ventures, and other audiences	Habitat Management & Conservation Subcommittee	By December 2016, identify what capabilities we and our constituencies need and at what scale and identify entities that could provide services
Include a sea duck habitat mapping update at NADS special sea duck session	Inform conservation community about SDJV efforts to map sea duck “key sites” and intent to develop geospatial database of sea duck distribution and abundance data	Habitat Management & Conservation Subcommittee	Update at North American Duck Symposium, February 2016
<b>2017</b>			
Publication of a sea duck “key sites” atlas	Make readily available static maps that provide planners information on areas most important to sea ducks including seasonal importance	Habitat Management & Conservation Subcommittee	Maps are reviewed and site narratives are written by experts and posted on SDJV web site as they are completed. Completion by March 2017
Write a scope of work for development or integration of a web-based geospatial database of sea duck spatial and temporal distribution and relative abundance information	Provide accessibility to information already collected and provide links to LCCs, Habitat Joint Ventures, and other audiences	Habitat Management & Conservation Subcommittee	Scope of work written by March 2017
<b>2018</b>			
Work with contractor to develop queryable geospatial database	Ensure best available science is made available to habitat conservationists, industry, and marine spatial planners.	Habitat Management & Conservation Subcommittee	TBD

## OTHER RESEARCH

To support the science needed to meet the objectives of the SDJV, the U.S. Fish and Wildlife Service has made available funds to support research on behalf of the SDJV. From 2002 to 2010, the SDJV annually issued a Request for Proposals (RFP) that solicited research addressing a broad array of information needs described in the SDJV Strategic Plan. This process resulted in significant advances in our understanding about sea duck migration patterns, habitat use, biology, and ecology. Beginning in 2011, the SDJV focused on a smaller set of topics and discontinued the RFP, but recognized that many other knowledge gaps remained that may help identify limiting factors for sea ducks.

During the time frame of this implementation plan, we anticipate that much of the SDJV funding will be directed to the priority topics of harvest management and habitat conservation, including studies of population delineation and monitoring that support those topics and provide requisite baseline information. The CTT and Management Board would



also like to make funding available for broader research that addresses priorities of the SDJV, capitalizes on opportunities offered by partners, and further leverages SDJV funds. We anticipate that there will be a competitive request for proposals for FY2017, as well as self-directed studies that address priorities outlined in this plan (see Table 1).

**ACCOMPLISHMENTS: 2014-2015**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME
Revise Implementation Plan to reflect current research priorities	Effectively communicate research priorities and conservation actions with partners	CTT and Mgt Board sub-group	Begin revisions in Oct/Nov each year. Present to Mgt Board prior to spring teleconference for finalization	Implementation Plan 2015-2017 completed
Improve access of sea duck management community to services for disease detection and surveillance	Address current backlog of response to previous disease events, and improve understanding of conservation risks posed by diseases	Chris Dwyer and Grant Gilchrist	Briefing document describing partner-based efforts to address disease issues affecting sea ducks. Present to CTT/MB in Fall	Info on Wellfleet Bay virus was distributed at CTT/MB fall meeting

**WORK PLAN (2016-2018): Core Annual Tasks**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
Revise Implementation Plan to reflect current research priorities	Effectively communicate research priorities and conservation actions with partners	CTT and Mgt Board sub-group	Begin revisions in Oct-Dec each year. Present draft to Mgt Board prior to spring teleconference for finalization
Implement research program addressing new priorities and focal areas	Ensure that the research program culminates in strong foundation for conservation actions	CTT	Decisions made by December each year

**WORK PLAN (2016-2018): Unique In-Year Tasks**

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
<b>2016</b>			
Re-evaluate priorities and focal areas for research program	Ensure that the research program culminates in strong foundation for conservation actions	CTT subcommittees and Mgt Board	Incorporate into revision of Implementation Plan 2016-2018

Post a competitive RFP addressing sea duck research priorities	Address priority knowledge gaps and capitalize on partnership opportunities	CTT and Mgt Board	RFP to be posted in July 2016; funding decisions made during fall CTT and Mgt Board meetings
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## COMMUNICATION AND OUTREACH

A Strategic Communications Plan was completed in March 2015 (Dayer 2015; <http://seaduckjv.org/science-resources/#planningdocuments>). The plan is focused on helping the SDJV address four goals, or outcomes:

- Goal 1. The SDJV contributes to scientific information about sea ducks and their habitats that is readily available and used by stakeholders.
- Goal 2. SDJV partners collaborate on research and monitoring to address sea duck conservation and management needs.
- Goal 3. SDJV priority actions are implemented that advance sea duck conservation and management.
- Goal 4. The SDJV is widely recognized as the leading conservation program for sea ducks and has a strong and informed constituency for sea ducks.

### ACCOMPLISHMENTS: 2014-2015

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME
Work with agency outreach specialists to identify priority communication and education needs of SDJV	Create an outreach plan for the SDJV, rather than using an ad hoc approach	Mgt Board co-chairs have lead; USFWS outreach officer identified at HQ, also in Region 5	December 2012; Outreach plan is drafted, initial products prepared	Strategic Communications Plan completed March 2015
Improve communication and increase awareness of SDJV progress and accomplishments within the waterfowl community	Creates an easily accessible summary of annual work completed or supported, to help compare progress against priorities	Coordinators	Annual report / newsletter highlighting key findings; post on web by January 2012	Annual report not completed; annual reports on Atlantic and Great Lakes Migration study completed and distributed to partners in Feb 2014 and June 2015
Interact with Communications/Outreach group on Association of JV Management Boards	Ensure that messages about SDJV priorities are included in outreach materials	Carey Smith represented SDJV on AJVMB	Ongoing	Provided SDJV highlights to outreach team re: JV Fact sheet

Interact with National Science Support Team	Ensure that the needs of sea ducks are incorporated into NAWMP Science Team activities	CTT and Mgt Board members on NSST	Annually	Ongoing; provided input into population objectives and mapping of significant sea duck areas
Interact with LCC planning, climate change and other initiatives	Ensure sea duck needs are addressed	Chris Dwyer, USFWS Region 5 Mgt Board rep, Tim Bowman  Richard Elliot, Sean Boyd, Christine Lepage, Scott Gilliland	Use this information to brief CWS Regional Directors who are sitting on the LCC Boards.	Interacting with LCCs on an individual basis.  Environment Canada has representation on LCC Boards and Technical Committees, interacting with LCCs on individual basis as opportunities arise
Facilitate an international sea duck conference every 3 years	Facilitate information exchange and priority-setting in the research community at large	SDJV members of conference organizing committees, past and present	Conference scheduled for September, 2014 in Reykjavik, Iceland	Conference held Sept 2014 in Iceland
Maintenance and improvements to SDJV web site	Web site serves as clearinghouse for sea duck information, research updates, and news	Tim Bowman	Ongoing	On track; web site overhaul completed April 2015; continually making improvements
Revise Sea Duck Information Series to reflect current state of knowledge	General up-to-date information about all sea duck species. Distributed as hardcopy series and on web.	Tim Bowman and CTT	Ongoing	Most revisions made, a few more needed and underway
Provide an update on SDJV for Habitat Matters publication	Improve communication and foster partnerships	Canadian Coordinator	Ongoing	Completed; 2014 article about Aerial Survey Training Guide. 2015 article about Barrow's Goldeneye work in Pacific

### WORK PLAN (2016-2018): Core Annual Tasks

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION
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			<b>DATES</b>
Work with agency outreach specialists to identify priority communication and education needs of SDJV	Outreach efforts targeted to specific issues or audiences	Mgt Board co-chairs have lead	Assignments to be made based on project subject matter and scope
Improve communication and increase awareness of SDJV progress and accomplishments within the waterfowl community	Creates an easily accessible summary of annual work completed or supported, and results of studies	Coordinators	Annual report / newsletter and/or e-blast highlighting key findings by summer 2016
Circulate the RFP to the largest audience possible	Ensure awareness of funding opportunities to capitalize on partnership opportunities and further leverage SDJV funds	All CTT members to circulate the RFP to their regional distribution list (academics, state or provincial partners, etc.)	When warranted, an RFP for the SDJV is posted on the web and circulated to diverse constituencies.
Facilitate communication and information sharing among sea duck managers and researchers internationally	Share scientific information, help facilitate research partnerships, policy development	Coordinators, conference planning committee	6 <sup>th</sup> International sea duck conference planned for 2017; distribute annual report; reports by flyway reps to flyway councils
Maintain and Improve SDJV web site	Web site serves as clearinghouse for sea duck information, research updates, and news	Tim Bowman	Ongoing updates as needed
Provide an update on SDJV for Habitat Matters publication	Improve communication and foster partnerships	Canadian Coordinator	Ongoing
Provide progress reports and results of SDJV research and monitoring programs to BOEM, NOAA and other relevant agencies	Ensure that consideration is given to sea duck habitat use and requirements in the development and assessment of offshore wind farms and Coastal and Marine Spatial Planning activities	Tim Bowman, CTT and Mgt Board Members as applicable	Report for Atlantic and Great Lakes Migration Study is circulated to all partners and posted on web site

### **WORK PLAN (2016-2018): Unique In-Year Tasks**

<b>TASK/DELIVERABLE</b>	<b>NEED BEING SERVED</b>	<b>LEAD</b>	<b>BENCHMARKS / COMPLETION DATES</b>
<b>2016</b>			
Work with agency outreach specialists to identify and produce outreach products focused on specific issues	Outreach efforts targeted to specific issues or audiences (e.g., sea duck hunting, key habitat maps)	Assignments to be made based on project subject matter and scope	Completion dates based on project subject matter and scope
Revise Sea Duck Information Series to reflect current state	General up-to-date information about all sea	Tim Bowman and CTT	Finish revision of all species status

of knowledge	duck species. Distributed as hardcopy series and on web		summaries by September 2016
Interact with Communications/Outreach group on Association of JV Management Boards	Ensure that messages about SDJV priorities and accomplishments are included in outreach materials as appropriate	Currently no SDJV rep to AJVMB	Determine whether SDJV wants to identify a rep by spring 2016
Develop talking points for use by Management Board, CTT, and others	Communicate concisely SDJV purpose and key facts	Tim Bowman	Incorporate into web site banner photos by March 2016. Develop wallet-sized cards by July 2016
<b>2017</b>			
6 <sup>th</sup> International Sea Duck Conference, San Francisco, CA	Share scientific information, help facilitate research partnerships, policy development	Members of conference planning committee; presenters	6 <sup>th</sup> International sea duck conference to be held on February 2017
Work with agency outreach specialists to identify and produce outreach products focused on specific issues	Outreach efforts targeted to specific issues or audiences (e.g., sea duck hunting, key habitat maps)	Assignments to be made based on project subject matter and scope	Completion dates based on project subject matter and scope
<b>2018</b>			
Work with agency outreach specialists to identify and produce outreach products focused on specific issues	Outreach efforts targeted to specific issues or audiences (e.g., sea duck hunting, key habitat maps)	Assignments to be made based on project subject matter and scope	Completion dates based on project subject matter and scope

## ADMINISTRATION AND COORDINATION

The administration of the SDJV is the responsibility of the Management Board and is achieved through direction from the Management Board to the two National Coordinators and the co-chairs of the CTT as well as assignments to sub-committees of the Board and CTT. It is incumbent upon the Management Board, Coordinators, CTT co-chairs and relevant committees to develop and undertake an annual, on-going process to ensure that the Joint Venture focuses on the highest priority research and monitoring needs that can inform conservation management decisions. Progress toward achieving measureable objectives and focusing the SDJV research and monitoring programs should be discussed on a frequent basis to ensure that the SDJV continues to move strategically toward meeting the needs of managers, decision-makers and Habitat Joint Ventures.

### ACCOMPLISHMENTS: 2014-2015

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES	OUTCOME
Review Strategic priorities to be focused	Ensure that research and	Mgt Board and CTT co-	Review at November CTT	

on by JV. Refine their integration into Implementation Plans	monitoring programs are addressing most pressing conservation and management needs	chairs and sub-committees, and Coordinators.	meeting; present draft at March Mgt Board meeting.	Discussed at joint CTT/MB meeting Nov2014 and 2015. Priorities integrated into this plan
Post RFPs in appropriate ornithological and public outlets	Ensure awareness of funding opportunities and priorities	Tim Bowman	In years when research funds are available for allocation, the RFP is posted in July	General RFP not warranted in 2014; completed in 2015
Process and distribute proposals for CTT review and scoring	Ensure adequate review time and consistency	Tim Bowman	October, annually	Completed
Solicit and post on web all annual reports from SDJV-sponsored research and monitoring projects	Information is effectively communicated with SDJV and waterfowl managers received to permit evaluation of SDJV approach	Tim Bowman	October annually	Completed
Prepare summary of funding and other recommendations for Mgt Board review	Ensure effective communication among JV entities	Tim Bowman	Annually, prior to Mgt Board fall meeting	Completed
Notify successful applicants for research and monitoring projects	Administrative	Tim Bowman	By 10 January annually	Completed
Process contracts, purchase orders, and coop agreements in support of SDJV funded projects	Administrative	Tim Bowman	January-April annually	Completed
Facilitate and coordinate purchase of satellite transmitters for SDJV projects as required	Capitalize on efficiencies related to bulk discounts	Tim Bowman	January-April annually	Completed
Prepare summary notes and briefing documents for CTT and Mgt Board meetings	Ensure adequate communication among JV staff	Coordinators - Tim Bowman, Patricia Edwards and Richard Cotter	As needed	Completed
Secure adequate meeting space, logistics, and arrange	Ensure effective communication	Tim Bowman; hosting staff	As needed	Completed

teleconferencing in support of CTT and Mgt Board meetings	and efficiency			
Annual Financial Report to USFWS Division of Bird Habitat Conservation	Document use and leveraging of all SDJV funds	Tim Bowman	December annually	Completed
Annual financial summary to NTS Canada	Document use and leveraging of SDJV funds in Canada only	Canadian coordinator – Richard Cotter	December annually	Completed

### WORK PLAN (2016-2018): Core Annual Tasks

TASK/DELIVERABLE	NEED BEING SERVED	LEAD	BENCHMARKS / COMPLETION DATES
Review Strategic priorities to be focused on by JV. Refine and integrate into Implementation Plans	Ensure that research, monitoring, and outreach programs are addressing most pressing conservation and management needs	Mgt Board and CTT co-chairs and sub-committees, and Coordinators	Review at fall CTT meeting; present draft to Mgt Board for spring teleconference
Post RFPs in appropriate ornithological and public outlets	Ensure awareness of funding opportunities and priorities	Tim Bowman	In years when warranted, post RFP in July
Process and distribute proposals for CTT review and scoring	Ensure adequate review time and consistency	Tim Bowman	October, annually
Solicit and post on web all annual reports from SDJV-sponsored research and monitoring projects	Information is effectively communicated with SDJV and waterfowl managers received to permit evaluation of SDJV approach	Tim Bowman	October annually
Prepare summary of funding and other recommendations for Mgt Board review	Ensure effective communication among JV entities	Tim Bowman	Compiled after fall CTT meeting annually, presented to Mgt Board at their next meeting
Notify successful applicants for research and monitoring projects	Administrative	Tim Bowman	By 10 January annually
Process contracts, purchase orders, grants, and coop agreements in support of SDJV funded projects	Administrative	Tim Bowman	January-July annually
Provide debriefings to unsuccessful applicants	Constructive feedback to researchers; done only on request by applicant	Tim Bowman & USFWS contracting	In January, if required
Facilitate purchase of satellite transmitters for SDJV projects as required	Capitalize on efficiencies related to bulk discounts	Tim Bowman	January-April annually
Prepare summary notes and briefing documents	Ensure adequate communication among JV	Coordinators - Tim Bowman,	As needed

for CTT and Mgt Board meetings	staff	Richard Cotter	
Secure adequate meeting space, logistics, and arrange teleconferencing in support of CTT and Mgt Board meetings	Ensure effective communication and efficiency	Tim Bowman; hosting staff	As needed
Annual Financial Report to USFWS Division of Bird Habitat Conservation	Document use and leveraging of all SDJV funds	Tim Bowman	December annually
Annual financial summary to NTS Canada	Document use and leveraging of SDJV funds in Canada only	Canadian coordinator – Richard Cotter	December annually

<b>Table 1. High priority science needs.</b>	
	<b><u>Mechanism(s) for addressing</u></b>
<b>Science Needs that will be considered for funding in FY17</b>	
1. Develop or refine techniques to estimate detection probabilities, misidentification rates, and count biases during aerial sea duck surveys	Competitive RFP or Non-competitive solicitation (agency)
2. Support for the Waterfowl Breeding Population and Habitat Survey review including analyzing data with respect to reallocation of survey effort	Non-competitive solicitation (agency)
3. Develop efficient methods for automating counts of birds in aerial photographs of large flocks, including birds with varying distribution and density patterns, and uniform vs dimorphic plumage	Competitive RFP or Non-competitive solicitation (agency)
4. Determine population monitoring and information needs for management and conservation of sea ducks on the Great Lakes	Competitive RFP or Non-competitive solicitation (agency)
5. Evaluate and modify veterinary and/or husbandry techniques to improve survival of sea ducks, particularly Surf Scoter, White-winged Scoter, and Long-tailed Duck, marked with implantable transmitters	Competitive RFP in or Non-competitive solicitation (agency)
6. Demonstrate the spatial resolution of stable isotope analysis of sea duck feather samples to determine breeding and molting areas in the absence of reference samples, particularly for scoters and Long-tailed Duck	Competitive RFP



<p>7. Determine if recruitment is a problem for the American Common Eider (ACOEI) and if so, identify the limitations. This broad topic includes elements that could affect fecundity (e.g. breeding propensity, clutch size, nest success, hatching success), duckling survival (direct: duckling predation; indirect: habitat, disease, etc.), etc.</p>	<p>Competitive RFP</p>
<p>8. Determine whether sufficient population structure exists across the range of priority sea duck species to assess whether their populations should be managed as stocks or sub-populations, and ensure that research directed at reducing uncertainty in key demographic rates for population modeling efforts are applied at the appropriate geographic scales</p>	<p>Competitive RFP or Non-competitive solicitation (agency)</p>
<p>9. Conduct satellite telemetry projects for Surf and White-winged Scoter on the Pacific coast to determine the following: a) linkages among breeding, molting, staging and wintering areas, b) key migration corridors and timing of migration, c) important habitats/sites used during the above stages, d) level of inter-annual return rates to breeding, molting and wintering habitats, and e) determine the magnitude of overlap in breeding distribution between Atlantic and Pacific wintering populations</p>	<p>Part of ongoing multi-year project in Alaska, FY17 and FY18</p>
<p>10. Conduct satellite telemetry projects for White-winged Scoter and Long-tailed Duck on the Atlantic coast and Great Lakes to determine the following: a) linkages among breeding, molting, staging and wintering areas, b) key migration corridors and timing of migration, c) important habitats/sites used during the above stages, d) level of inter-annual return rates to breeding, molting and wintering habitats, and e) determine the magnitude of overlap in breeding distribution between Atlantic and Pacific wintering populations</p>	<p>Part of ongoing multi-year projects in New England and Lake Michigan, FY17 and FY18</p>
<p><b>Science needs that remain high priority, but either do not require SDJV funding in FY17 or will not be pursued in FY17</b></p>	
<p>11. Based on experimental winter sea duck surveys conducted in 2008-11, design mid-coast Atlantic survey to assess distribution and abundance of Surf scoters and Long-tailed Duck and solicit feedback from the management and conservation communities.</p>	<p>Non-competitive solicitation (agency)</p>
<p>12. Analyze existing tissue samples for key contaminant levels in sea ducks to document species- and geographic variation and identify potential contaminant problems, or lack thereof</p>	<p>Non-competitive solicitation (samples held by BRI)</p>
<p>13. Develop a proof-of-concept model/procedure for estimating sea duck carrying capacity on wintering areas</p>	<p>Competitive RFP</p>
<p>14. Review 2007 SDJV monitoring report and develop</p>	<p>Ongoing internal SDJV</p>

strategy for addressing monitoring needs and information gaps for sea ducks	effort
15. Test feasibility of determining age and sex ratios (over a broad range) using ground surveys and/or aerial photos on fall/wintering areas to obtain an index of annual productivity for some species (e.g., Surf Scoter, Black Scoter)	Competitive RFP or Non-competitive solicitation (agency)
16. Assess and improve both subsistence harvest estimates and fall sport harvest surveys, including enhanced parts collection surveys to provide more precise estimates of harvest and to determine age and sex ratios	Non-competitive solicitation (agency)
17. Conduct a needs assessment for population delineation of all sea duck species; identify information gaps and strategy to address	Ongoing internal SDJV effort; will be focus of fall 2016 meeting
18. Determine important factors (weather, predators, food, etc.) affecting survival and reproductive success (fitness) of scoters and Long-tailed Ducks throughout species ranges	Competitive RFP
19. Determine annual survival rates for scoters (Surf, White-winged, or Black) wintering on the Pacific and Atlantic coasts, with emphasis on adult birds	Competitive RFP
20. Evaluate monitoring programs for American Common Eider targeted at key periods during the annual cycle (breeding, molting, wintering) to determine which approach will provide information on trend and abundance necessary for management of the subspecies in the most cost effective manner	Competitive RFP or Non-competitive solicitation (agency)
21. Improve estimates of harvest for American Common Eider by improving the sample for eider hunters in current national harvest surveys (including consideration of a hunter outreach program to increase hunter participation in the survey)	Non-competitive solicitation (agency)
22. Improve estimates of harvest for American Common Eider using genetics techniques to discriminate among geographic areas in the Species Composition Survey (parts collection)	Non-competitive solicitation (agency)
23. Identify and characterize attributes of key seasonal use areas for Long-tailed Duck (e.g., winter, staging) at flyway or continental scale	Competitive RFP
24. Characterize molting habitats for Atlantic Black Scoter, identify the factors responsible for their selection, and predict how climate change may impact molting habitats and distribution of molting birds	Competitive RFP or Non-competitive solicitation (agency)
25. Analyze existing feather samples using stable isotope analyses to help determine wintering and molting areas for Pacific Black Scoters that breed in Alaska north of the Seward Peninsula, where satellite telemetry has proved impossible	Non-competitive solicitation (agency)