

To: Waterfowl Management Community

From: Dale Humburg, Chair, NAWMP Interim Integration Committee

Date: July 15, 2013

Subject: Draft Work Plan and Draft Revision of NAWMP Objectives

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Colleagues:

The 2012 Revision of the North American Waterfowl Management Plan (NAWMP) and associated Action Plan adopted three overarching goals:

- 1) Abundant and resilient waterfowl populations to support hunting and other uses without imperiling habitat.
- 2) Wetlands and related habitats sufficient to sustain waterfowl populations at desired levels, while providing places to recreate and ecological services that benefit society.
- 3) Growing numbers of waterfowl hunters, other conservationists and citizens who enjoy and actively support waterfowl and wetlands conservation.

An Interim Integration Committee (IIC), prescribed in the Action Plan, has been charged with facilitating the integration of waterfowl management and advancing many of the specific recommendations identified in the Revision and Action Plan.

Attached you will find a Draft Work Plan for the IIC and in turn, the waterfowl management community, which we will be discussing with the NAWMP Committee on August 21. We invite your review and suggestions with regard to this draft IIC Work Plan. If there are elements of the Work Plan that you are particularly anxious to see move ahead, or have other ideas you would like to contribute to the NAWMP Committee discussions in August, please contact any member of the NAWMP Committee (addresses appended) and share with the IIC as well. In sketching out key initial steps needed to proceed with NAWMP implementation we are initiating what is the first opportunity in an on-going process of engaging waterfowl management stakeholders. This plan identifies several implications for associated working groups (e.g., Human Dimensions Work Group), and additional comments on particular elements of this initial Work Plan will be welcome at any time until September 30<sup>th</sup>. As indicated, this will be an on-going process of engagement, and in doing so, we invite you to identify items to which you would be willing to contribute time, expertise, or other resources.

Note in particular that the IIC has taken a first step in proposing some values and measurable attributes for revised NAWMP population, people, and habitat objectives (pp 3-7 of the draft Work Plan). Furthermore, the Work Plan describes an iterative, multi-step process for vetting and refining these draft objectives. We invite your comments on these draft objectives, associate measurable attributes, and associated questions as soon as possible, but not later than March 2014. Please direct those comments to Dale Humburg, Chair of the IIC ([dhumburg@ducks.org](mailto:dhumburg@ducks.org)) who will pass them on to a NAWMP objectives task group.

As indicated in the attached Work Plan, a temporary NAWMP objectives task group will take those comments, along with reviews of existing data, and generate a second draft of NAWMP Plan objectives by June 2014 prior to summer meetings of the NAWMP Committee, Flyway Councils, Service Regulations Committee, etc. Those revised objectives will then inform a broad survey using social science methods to further assess the present values of waterfowl stakeholders about the objectives. This rigorous stakeholder engagement process will occur prior to making final recommendations to the NAWMP Committee and eventually the federal wildlife agencies that have ultimate trust responsibilities for migratory birds.

We understand that the 2012 Revision has set us on a challenging quest, but North American waterfowl management is at an important crossroads. We have a rare opportunity to re-focus our collective actions to sustain the birds and habitats and the tradition of waterfowling that we hold dear in the face of unprecedented social, economic and ecological changes. We look forward to your continuing collaboration in this vital work.

Sincerely,

Dale Humburg, Chair

NAWMP IIC

## **Implementing the 2012 NAWMP: An invitation for input from the waterfowl management community**

The three highest breeding duck population estimates on record have occurred during the last three years (2011-2013). Record numbers, however, do not reflect achieving conservation goals for waterfowl and their habitats, and the waterfowl management community must not be lulled into thinking that the threats to future populations are not present and likely more prevalent than ever. Wet breeding ground conditions belie the known deterioration of breeding waterfowl habitat due to wetland drainage and grassland loss. In other landscapes, emerging impacts to the once pristine boreal forest, water challenges in the south and west, and continued Gulf Coast marsh loss are examples of impacts that likely will affect ducks and geese and waterfowlers as well.

The NAWMP has served as a model of conservation planning and implementation for more than 25 years. The evolution of the plan has involved increasing the range of partnerships, expansion well beyond waterfowl, strengthening the biological foundation, and in the current iteration, deliberately integrating the elements of birds, habitat, and supporters. In each instance, the management community has been challenged with new views about how to achieve waterfowl conservation goals. The 2012 revision is no different in that explicit integration of waterfowl hunters and other waterfowl enthusiasts into management planning is a stretch beyond our traditional framework. However, without this increased focus, the relevance of waterfowl conservation will undoubtedly erode.

An Interim Integration Committee (IIC), formed by early 2013, has worked to identify initial highest priority work plan elements needed to guide plan implementation. The 2012 NAWMP Revision includes 7 recommendations designed to integrate the 3 fundamental goals of the plan, and the NAWMP Action Plan lays out key actions or steps towards addressing the recommendations by 2016 and beyond. In virtually all instances, implementation will be accomplished through existing task groups (e.g., HMWG, NSST, HDWG, flyway committees, etc.); however, collaboration across task groups will be essential to ensure integration. Going forward, the IIC will primarily focus on how individual tasks and work plan elements can be integrated to address Revision recommendations and the vision of “People Conserving Waterfowl and Wetlands.”

1. ***Develop, revise or reaffirm NAWMP objectives*** so that all facets of North American waterfowl management share a common benchmark;
2. ***Integrate waterfowl management*** to ensure programs are complementary, inform resource investments, and allow managers to understand and weigh tradeoffs among potential actions;
3. ***Increase adaptive capacity*** so structured learning expands as part of the culture of waterfowl management and program effectiveness increases;
4. ***Build support for waterfowl conservation*** by reconnecting people with nature through waterfowl, and by highlighting the environmental benefits associated with waterfowl habitat conservation;
5. ***Establish a Human Dimensions Working Group*** to support development of objectives for people and ensure those actions are informed by science;
6. ***Focus resources on important landscapes*** that have the greatest influence on waterfowl populations and those who hunt and view waterfowl;
7. ***Adapt harvest management strategies*** to support attainment of NAWMP objectives.

Initial progress towards implementing the 2012 NAWMP Revision requires a focus on the most important first steps that will best define actions by the waterfowl management community towards integration. Chief among these is the need to revisit the objectives that were established when the 1986 plan first set the stage for a continental model of waterfowl management planning. Additionally, agreement on the conceptual framework and models will be required early in the process so as to capture contemporary

knowledge, perspective, and experience gained during the first quarter century of NAWMP experience. Innovative management actions will be required in particular as objectives for waterfowl hunters and other supporters are integrated with those for populations, harvest, and habitat.

Although none have been fleshed out in great detail, pending input from the waterfowl management community, primary work plan elements are listed below (additional detail in appendices A and B), and more comprehensive development of the highest priority – re-visioning NAWMP objectives (pp 3-7) - closes out this initial outline in support of the 2012 NAWMP Revision implementation:

**Engaging stakeholders to re-visioning NAWMP Objectives:**

1. Propose measurable attributes and draft objectives for NAWMP.
2. Engage waterfowl conservation community in review and input.
3. Establish a task group to refine the draft objectives.
4. Use social science tools to solicit stakeholder and decision-maker input regarding NAWMP objectives and management actions.
5. Revise NAWMP objectives based on outcome of surveys, decision maker /stakeholder engagement.
6. Seek Plan Committee endorsement.
7. Seek approval by federal policy makers.
8. Conduct a Future of Waterfowl Management Summit II.

**Develop models and tools in support of NAWMP integration:**

1. Task a joint Central and Mississippi flyway, Atlantic Flyway, and Pacific Flyway work groups to collaborate on integrating objectives for mallard harvest management.
2. Concurrent with the review of mallard harvest management, explore alternatives for developing multi-species population and harvest objectives.
3. Continue progress towards completing species-specific annual-cycle models.
4. Develop a conceptual framework / models that reflect our current understanding of social processes associated with hunting, viewing, conservation & public support.
5. Develop and apply decision support tools to identify priority areas to deliver habitat conservation at multiple spatial scales incorporating both waterfowl population and human dimension considerations.
6. Develop a unifying framework to integrate objectives for populations, habitat, and supporters (possibly through a generalized life-cycle model).

**Implement management actions to advance integration of the NAWMP:**

1. Adaptively apply human dimensions tools and emerging knowledge to improve the effectiveness of conservation delivery for selected pilot projects.
2. Compile a synopsis of habitat conservation delivery case studies that applied HD / public engagement concepts.
3. Develop training content and implement web-based and hands-on training to increase the understanding and application of human dimensions concepts, methods, and tools.
4. Compile a review of EGS values provided by waterfowl landscapes at local scales.
5. Demonstrate the economic value of waterfowl conservation. Widely communicate these values to provide a tangible basis/rationale for increased support for waterfowl conservation.

**Monitor outcomes of management actions:**

1. Derive empirical measures of “vital rates” of waterfowl hunting (hunter population size, retention, recruitment, and turnover; i.e., a demographic interpretation of waterfowl hunting participation).

## Re-visioning NAWMP Objectives

In the 2012 NAWMP Action Plan, emphasis was placed on re-visioning plan objectives:

*Clear, measurable objectives are the foundation upon which an integrated system of management will be developed. Quantitative population objectives have inspired action and have been a centerpiece of NAWMP since its inception. It is now appropriate to revisit those objectives and reconsider them in light of the many changes that have occurred since they were formulated. Habitat objectives, which are traditionally established at the Joint Venture (JV) scale, will need to be reconsidered after new waterfowl population objectives are formulated. The context for habitat objectives should not only include a desired, continental carrying capacity for waterfowl, but environmental benefits and human values as well. Lastly, new objectives related to people – hunters, other dedicated users, and the public – must be developed and integrated into planning efforts and management actions.*

Toward this end, the Interim Integration Committee offers the following draft objectives as a “straw-man” starting point for discussion and is seeking review, feedback, and input from the waterfowl management community. Striking a balance between aspirational objectives that lead to conservation initiative and realistic measurable targets represents a challenge to conservation planners. Surrogate and intuitive measures (e.g., acres, hunter numbers, dollars) might necessarily be used initially; however, these should ultimately be replaced by more meaningful measures of desired planning outcomes (e.g., net landscape change, waterfowl tradition, maintained public support). In the process, draft objectives will need to be refined and further developed to incorporate into an integrated management system. Each draft objective is accompanied by a series of comments, questions and assumptions intended to stimulate discussion.

### Straw-man Objectives for Waterfowl Populations

**NAWMP Goal:** Abundant and resilient waterfowl populations to support hunting and other uses

**Premise:** Recent populations of most waterfowl species have been at desired levels.

**Draft Objective:** Duck populations within the range estimated during 1997-2012 (10 species reported from the Traditional Survey Area, see table below)

**Explanation:** Largely stable and liberal harvest opportunities occurred during 1997-2012, a period of fluctuating habitat conditions and populations. The upper bounds of this contemporary range of population estimates reflect the capacity of the landscape to support waterfowl under ideal environmental conditions – although in large measure, this was due to favorable environmental conditions rather than secure and dependable habitat status. The lower bound could be viewed as a minimum level for satisfying current human recreational desires and a threshold for triggering heightened conservation attention. Maintaining populations within this recent range will require favorable policy affecting waterfowl landscapes and continued direct conservation delivery by waterfowl partners. Substantial hunting and viewing opportunities, which contemporary hunters and viewers likely have come to expect, should not be expected to continue based on favorable environmental conditions alone.

### Desired Outcomes:

1. Waterfowl populations at biologically sustainable levels
2. Waterfowl populations sufficient to provide for an abundance of use and enjoyment by current and future citizens

**Considerations/assumptions:**

1. Assumption: Populations of waterfowl contribute to the feedback loop between hunters, viewers, and conservation support.
2. Assumption: Habitat extent and quality (carrying capacity) can be maintained, given the caveat that we have no control over the weather.
3. Assumption: Based on experience with managing duck populations in the 1997-2012 range and under associated liberal harvest regulations, a less risk-averse harvest management philosophy could be considered. Liberal hunting regulations and associated hunting and viewing opportunity have occurred since 1997 during a range of habitat conditions and population levels.
4. Assumption: Population objectives should be reviewed more often than in the past and be adjusted based on increased knowledge and changing priorities. This would entail an adaptive decision framework to include periodic reassessment of objectives (“double looping”), based on landscape change and on human desires (harvest management).
5. Assumption: Technical capacity is sufficient for assessment and management actions are sufficient to respond to system change.

**Key questions:**

1. Should objectives more explicitly address populations with increasing versus declining trends?
2. What should the anchor point be for the lower threshold (somewhere above biological sustainability)?
3. To what degree does harvest management serve to achieve population and people objectives?

BREEDING POPULATION ESTIMATES FROM TRADITIONAL SURVEY AREA											
Period	Mallard	Gadwall	American Wigeon	Green-winged Teal	Blue-winged Teal	Northern shoveler	Northern Pintail	Redhead	Canvasback	Scaup	Total Ducks
Long-term average	7,626	1,864	2,587	2,017	4,839	2,429	4,029	682	576	5,048	34,266
1970s Average	8,199	1,518	2,974	1,858	4,653	1,990	5,596	639	542	6,302	36,363
1997-2012 Average	8,589	3,003	2,488	2,769	6,397	3,763	3,025	916	644	3,911	39,127
Long-term Maximum	11,234	3,897	3,788	3,476	9,242	5,018	10,373	1,356	865	7,997	48,575
Long-term Minimum	4,961	502	1,737	723	2,776	1,269	1,790	323	360	3,247	25,039
1997-2012 Maximum	10,806	3,897	3,118	3,476	9,242	5,018	4,429	1,356	865	5,239	48,525
1997-2012 Minimum	6,755	2,179	1,981	2,087	4,073	2,318	1,790	565	487	3,247	31,181

	MAY PONDS			ACTIVE WATERFOWL HUNTERS					
	Canadian May Ponds (1961-2012)	U.S. May Ponds (1974-2012)	Total May Ponds (1974-2012)	Atlantic Flyway (1952-2011)	Mississippi Flyway (1952-2011)	Central Flyway (1952-2011)	Pacific Flyway (1952-2011)	Total Canada (1966-2011)	Total (1966-2011) Includes AK
Long-term average	3,457	1,650	5,099	272,485	628,394	282,391	252,408	321,051	1,728,714
1970s Average	4,295	1,504	6,016	366,954	761,696	351,849	327,784	463,771	2,283,697
1997-2012 Average	3,539	2,014	5,553	234,206	577,151	257,118	168,821	179,475	1,425,088
Long-term Maximum	6,390	3,240	8,231	406,627	880,130	454,057	450,471	524,946	2,430,066
Long-term Minimum	1,439	683	2,126	174,070	329,830	135,821	146,484	165,682	875,250
1997-2012 Maximum	5,061	3,240	8,132	253,500	668,994	297,638	208,127	213,178	1,625,082
1997-2012 Minimum	1,439	1,376	2,720	217,800	521,800	195,800	151,100	165,682	1,301,284

Note - HIP survey in the U.S. after 1998 for harvest and hunters  
 Note: "Long-term" varies depending on the metric

**Straw-man Objectives for Waterfowl Supporters**

**NAWMP Goal:** Growing numbers of waterfowl hunters, other conservationists and citizens who enjoy and actively support waterfowl and wetlands conservation.

**Premise:** The current number and demographic (e.g., age distribution) of waterfowl hunters may not sustain waterfowling traditions and overall public support for conservation is insufficient to sustain current habitat and populations. Support from hunters and non-hunters alike will be needed to achieve NAWMP objectives.

**Draft Objective:** Active duck and goose hunter numbers (as measured by federal surveys) that are stable or increasing from average levels during 1997-2012 (corresponds to period used to benchmark range of duck population objectives).

**Explanation:** As we consider the “roll-up” of state-specific and province-specific hunter number objectives to a continental objective, states/provinces with declining numbers may want to set their objective higher than current levels, while states/provinces with stable or increasing numbers may want to use the current level as objective. Active waterfowl hunter numbers is a relevant attribute (at least at a regional scale) and is currently available on an annual basis. However, additional, less frequently measured attributes will be needed to help assess the status of hunting traditions (e.g., hunter identity, social capacity, support for conservation, etc.).

**Draft Objective:** Stable or increasing numbers of waterfowl viewers, based on the range measured by the USFWS National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (possibly augmented with measures of visitation to refuges).

**Explanation:** Participation measures and an approach similar to hunter numbers could be used. Issues of sample sizes for future surveys need to be addressed in order to derive state-specific measures. Similar survey data for Canada need to be acquired.

**Draft Objective:** Increasing (  X   %) federal duck stamp revenue (from 1997-2012 average - assuming that new programs encourage or require duck stamp purchases for non-consumptive uses). Increase and maintain funding for NAWCA, Conservation Title of the Farm Bill, LWCF, and other waterfowl conservation funding (  X   levels by the year   X  ).

**Explanation:** Measures of broad support for waterfowl conservation (beyond waterfowl hunters) are not readily available; however, duck stamp sales might serve as a near-term surrogate measure. Improved reliability, however, at the scale where management actions are taking place (e.g., state) is needed. This measure may be combined with measures of membership and direct support for conservation organizations to create an overall index of waterfowl conservation support. The sale of duck stamps, a surrogate for a more direct measure of financial capital, should be complemented by other measures of support for conservation reflecting financial, social, and political capital.

**Draft Objective:** Increased (from some baseline level) nonmarket valuation of EGS (water quality, quantity, flood control, etc.) of waterfowl habitats and increased recognition by the general public that conservation of waterfowl and their habitats supports important EGS.

**Explanation:** Measured from surveys conducted at scales where public education / marketing / engagement programs are being implemented (e.g., urban refuge initiative developing standards of excellence for engagement on urban refuges that are supposed to be SMART, based on logic models). Measures and monitoring tools for this group may need to be developed and/or expanded.

**Draft Objective:** Increased numbers of landowners who are participating in habitat conservation programs – measured at a JV or more local scale in relation to different approaches.

**Explanation:** A primary measure of waterfowl conservation on private lands is landowner participation in various programs (thus, acres impacted and resulting landscape condition). Additionally, landowner motivations – assessed through various social science methods may be of interest for designing programs.

**Considerations/assumptions:**

1. Assumption: Maintaining waterfowl hunting “traditions” (and relation to the North American Model of Wildlife Conservation) is a fundamental objective (i.e., of value in and of itself).
2. Assumption: Consumptive and non-consumptive uses are also “means objectives” to engender support for conservation, which is necessary to accomplish habitat objectives and which in turn, are essential for accomplishing waterfowl population objectives.
3. Assumption: Harvest can have direct impacts on waterfowl population sizes and habitat conservation can have direct impacts on people objectives by providing access and opportunities for hunting and viewing. These linkages need to be considered in developing all NAWMP objectives and measurable attributes.
4. Assumption: Participation and traditions of waterfowl hunting are declining continentally, despite relatively high waterfowl populations and liberal hunting regulations, and non-consumptive uses may also be declining as well. While waterfowl managers may have little control over these trends, more efforts (including new, innovative ideas) need to be tried and evaluated in an informed management framework.
5. Assumption: Management actions and scales of monitoring will be different for different user groups. Attributes for this goal, which can be measured with adequate precision at spatial scales where management actions occur, will be needed. Most management actions for user objectives will likely occur at the state/province level (or more local), and effective management actions will likely differ among states/provinces. Measures from local and regional scales can be rolled up to assess continental-level objectives.

**Key questions:**

1. Although large-scale institutions already exist for managing waterfowl population and habitat programs, no over-arching group exists to help coordinate people-related models, management actions, and monitoring. What is the scale of waterfowl-related users and people-related objectives that should be implemented?
2. States/provinces, some federal programs, and NGOs have a large number of independent programs aimed at people objectives (hunter recruitment programs, public engagement programs, etc.). To what degree will flyways and joint ventures engage in implementing coordinated management actions and monitoring related to people objectives?

**Straw-man Objectives for Waterfowl Habitat**

**NAWMP Goal:** Wetlands and related habitats sufficient to sustain waterfowl populations at desired levels, while providing places to recreate and ecological services that benefit society.

**Premise:** Habitat – while sufficient today – is not secure and is being lost at an unacceptable rate.

**Draft Objective:** Re-assess habitat objectives and actions that are consistent at national and regional/local scales with revised NAWMP population and people objectives.

**Explanation:** Stepping down new population objectives will not be a trivial matter, and although greatly facilitated by already existing protocols will be significantly challenged by trends in land use

and landscape change. Sustaining habitat carrying capacity for continental waterfowl populations is challenging enough without adding the explicit goals for satisfying regional people objectives. However, for waterfowl conservation to be broadly relevant, the needs of human users/supporters, all birds, and perhaps strategic consideration of non-wildlife elements (e.g., ecological goods and services) will likely need to be considered. We will be challenged, as noted in the NAWMP Assessment, to find a way to estimate net habitat change at least in our most important waterfowl landscapes. Likewise, we need to recognize the logical linkage between habitat carrying capacity and waterfowl populations (acknowledging the impact of recent favorable weather/environmental conditions) if we expect to succeed in maintaining the recent range of breeding populations that we assume are needed to satisfy human desires and trust responsibilities.

To date, most JV partnerships have stepped down population objectives with only some regard to human considerations beyond human factors directly impacting habitat delivery. Integration of population and human objectives raise a number of considerations beyond the traditional mission of habitat delivery (most are listed below). Habitat conservation partnerships (largely through the joint ventures) have only begun to consider the implications of human objectives on joint venture mission and vice versa. Depending on the target audience(s), the challenge to habitat conservation varies from minimal (they already employ human dimensions considerations for habitat delivery) to very challenging (e.g., the role of habitat placement in maintaining hunter recruitment). Relative to human objectives there are many considerations related to the role of habitat in supporting these new objectives.

**Considerations/assumptions:**

1. Assumption: Objectives for waterfowl populations and waterfowl users/supporters will primarily be accomplished through habitat conservation delivery.
2. Assumption: There is a relationship between habitat conservation delivery and habitat conservation support among various audiences.
3. Assumption: Principle audiences will vary across landscapes (e.g., San Francisco Bay Joint Venture versus Prairie Pothole Joint Venture) and within landscape boundaries (sparsely populated versus metropolitan portions of joint ventures).
4. Assumption: Objectives for hunters, viewers and supporters will necessitate different habitat management approaches for each audience and in each landscape.
5. Assumption: Support from the general public will involve habitat management for objectives beyond traditional foci of waterfowl habitat and waterfowl hunters (e.g., ecological goods and services)

**Key questions:**

1. In light of landscape trends and relative to their traditional mission, how should habitat conservation partnerships (joint ventures in particular) consider deploying human dimensions frameworks and techniques to advance habitat delivery?
2. How will coupling NAWMP population and human objectives impact the habitat conservation actions needed to support these dual objectives and what tradeoffs will need to be considered?
3. Which audiences (e.g., waterfowl hunters, viewers and supporters) should be considered priority within different landscapes? Are certain audiences a priority across landscapes?
4. Will go-to funding sources such as NAWCA be able to assist with targeting of habitat according to new objectives (e.g., hunters, viewers, etc.)?
5. To what degree are waterfowl habitat strategies also compatible/consistent with strategies for ecological goods and services (scale and approach)?

## NORTH AMERICAN WATERFOWL MANAGEMENT PLAN

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May 16, 2013

## Appendix A. Draft work plan elements to implement the 2012 NAWMP Revision

Work Plan	Timeline	Cost	Responsibility
Engage the waterfowl management community throughout the process of NAWMP Revision implementation	Continuous	Integrated into existing meetings and correspondence	All
Propose measurable attributes and draft objectives for NAWMP revision and engage waterfowl conservation community in review and input.	Initiate in July 2013 and complete by March 2014	Staff time	IIC members
IIC collaborate with advisory groups to identify the membership of a task group (including representatives of the IIC and subject matter experts) to refine the draft objectives, based on input provided during flyway, JV, NSST, PC, JV, meetings and in review of available data regarding numbers and trends in waterfowl populations, habitat, hunting, viewing and public support.	Assign task group by September 2013 and complete review and develop recommendations by July 2014	Staff time and travel (supporting agencies fund travel; \$10K for logistics and travel assistance as needed)	IIC in collaboration with the task group
Use social science tools (e.g., focus groups, surveys that include choice modeling methods, etc.) to solicit stakeholder and decision-maker input regarding NAWMP objectives and management actions (includes a review of literature regarding what hunters and viewers most desire in their experiences, expectations for waterfowl populations and habitat, as well as the general public's perceptions of ecological goods and services associated with waterfowl and wetland management).  Develop and conduct survey(s) (potentially as a follow-up to the National Duck Hunter Survey) to determine values / preferences associated with NAWMPs multiple objectives and potential management actions of waterfowl hunters, waterfowl viewers, general public, and / or decision-makers	Initiate by July 2014	Cost dependent on stakeholder groups surveyed and sample sizes (desired precision and scale of inference – up to \$250,000K)	HDWG
Revise NAWMP objectives: <ol style="list-style-type: none"> <li>1. Based on outcome of surveys, decision maker /stakeholder engagement, and choice modeling, develop and propose final revised NAWMP objectives</li> <li>2. Plan Committee endorses revised objectives</li> <li>3. Federal policy makers approve revised objectives</li> </ol>	Complete prior to the next NAWMP update	Staff time	1.IIC and task group 2.Plan Committee 3.Secretary/Minister
Task a joint Central and Mississippi flyway work group and Atlantic Flyway and Pacific Flyway work groups to collaborate on integrating objectives for mallard harvest management and develop the explicit linkage to user objectives and habitat capacity (including habitat for users)	Initiate after 2013 summer flyway meetings	Staff (travel cost supported by participating flyways / agencies)	Central, Mississippi, Atlantic, and Pacific flyways, HMWG, HDWG, and associated JVs
Concurrent with the review of mallard harvest management, explore alternatives for	Modeling is on-	Staff time plus	Collaborative effort with

<p>developing multi-species population and harvest objectives and apply outcomes from revisiting mallard objectives and species life-cycle modeling to contribute to multi-species population / harvest modeling efforts.</p> <ol style="list-style-type: none"> <li>1. Continue progress towards completing species-specific annual-cycle models.</li> <li>2. Conduct workshops to engage broad representation across the waterfowl management community in the development and application of modeling</li> </ol>	<p>going through pintail, scaup, and black duck work groups and Atlantic Flyway review of multi-species management.</p>	<p>\$90,000/yr for 2 years to support workshops and post-doc (Travel and logistics support as needed - \$10K)</p>	<p>flyways, HDWG, NSST, and HMWG</p>
<p>Develop a conceptual framework / models that reflect our current understanding of social processes associated with hunting, viewing, conservation &amp; public support.</p>	<p>2014 (initial scoping exists - May 2013 -</p>	<p>(\$20,000 - \$40,000).</p>	<p>HDWG</p>
<p>Demonstrate the development and application of decision support tools to identify priority areas to deliver habitat conservation at multiple spatial scales incorporating both waterfowl population and human dimension considerations.</p> <ol style="list-style-type: none"> <li>1. Refine map that reflects spatial priorities for habitat conservation to benefit waterfowl demographics</li> <li>2. Develop examples of regional-scale (e.g., JV-scale) decision support tools to provide guidance for habitat conservation activities to achieve resource user goals of the 2012 NAWMP</li> <li>3. Demonstrate incorporation of biological and sociological spatial data to identify regions for targeting resources to achieve multiple NAWMP goals</li> </ol>	<p>Initiate summer 2013; primary work 2014</p>	<p>Staff, in-kind HD expert travel, \$3,400 GIS support, \$18,000</p>	<p>NSST Mapping Committee</p>
<p>Develop a unifying framework to integrate current information, hypotheses, and uncertainties into waterfowl management actions designed to achieve objectives for populations, habitat, and supporters (possibly through a generalized life-cycle model) as a starting point for linked harvest, habitat, and HD objectives.</p>	<p>Initiate in 2014 after NAWMP objectives are revised (draft); duration of about 2 years</p>	<p>Staff, ~\$90,000 for post-doc to complete model and sensitivity analysis (\$10K travel and logistics support as needed)</p>	<p>IIC to facilitate with involvement from advisory groups</p>
<p>Adaptively apply human dimensions tools and emerging knowledge to improve the effectiveness of conservation delivery for selected pilot projects.</p>	<p>Initiate June 2013 (PLJV) and replicate as experience is gained from pilot workshops</p>	<p>\$50-\$100K per flyway</p>	<p>Selected joint ventures (initial pilot in PLJV) in collaboration with HDWG</p>
<p>Compile a synopsis of habitat conservation delivery case studies that applied HD / public engagement concepts (potentially including those related to EGS) to help inform waterfowl habitat conservation policy and delivery.</p>	<p>Complete within 6-8 months of initiation</p>	<p>\$70,000 - \$100,000 (short-term contract)</p>	<p>HDWG in collaboration with selected joint ventures</p>

Develop training content and implement web-based and hands-on training to increase the understanding and application of human dimensions concepts, methods, and tools in waterfowl habitat, harvest, and population management.	Conduct over a period of 3 years – follows formation of HDWG	Variable depending on scale - TBD	HDWG and FWS (HD Branch)
Compile a review of the ecological goods and services (EGS) values provided by waterfowl landscapes at local scales.	Initiate in August 2013	TBD	NSST
Demonstrate the economic value of waterfowl conservation. Initial effort based on the 2011 National Survey of Fishing, Hunting, and Wildlife-Related Recreation, quantify the economic importance of migratory bird hunting and habitat conservation and add complementary data from Canadian Wildlife Service (in press). Widely communicate these values to provide a tangible basis/rationale for increased support for waterfowl conservation.	Time line dependent on funding - Initiate October 2013, complete within 1 year	\$89,000	Public Engagement Team (PET) in collaboration with HDWG
Derive empirical measures of “vital rates” of waterfowl hunting (hunter population size, retention, recruitment, and turnover; i.e., a demographic interpretation of waterfowl hunting participation). Conduct multi-state modeling, to integrate waterfowl hunter participation data with waterfowl supporter data (possibly POS data merged with NGO data) to determine the relationship between hunting and support.	Time line dependent on funding - Initiate January 2014, complete within 1 year	\$160,000 (dependent on numbers of states/provinces selected – full proposal requested for a multi-state grant)	HDWG
Conduct a “Future of Waterfowl Management II Summit” designed to engage stakeholders in review of progress towards improving coherence of waterfowl habitat and harvest management (purpose of the 2008 summit) and integration of stakeholders (hunters and waterfowl supporters) into waterfowl management.	No earlier than 2015 but prior to the next NAWMP update	TBD	Coordinated by IIC and PC
Schedule IIC meetings and conference calls to track progress and adapt changes in NAWMP revision implementation as progress occurs.	2 face-to-face meetings/year, periodic conference calls	Meeting facilitation and travel support for IIC (\$30,000)	IIC
Maintain IIC support (chair), collaborative work space, and facilitation for the IIC and HDWG and facilitate implementation and communication	Continuous	TBD	Cooperative agreement / contract

**Appendix B. Sequence of NAWMP Revision Implementation**

	2013						2014												2015											
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Engage stakeholders</b>	Engage the waterfowl management community throughout the process of NAWMP Revision																								Future of Waterfowl Management Summit					
<b>Revise NAWMP objectives</b>	Propose measurable attributes and draft objectives for NAWMP revision																													
	Identify the membership of a task group to refine the draft objectives																													
	Use social science tools to solicit stakeholder and decision-maker input regarding NAWMP objectives and management actions (includes literature review)																													
	Propose final revised NAWMP objectives																													
	Plan Committee endorsement of revised objectives																													
	Federal policy makers approve revised objectives																													
<b>Develop models and tools in support of NAWMP integration</b>	Joint Central and Mississippi flyway, Atlantic Flyway and Pacific Flyway work groups collaborate to integrate objectives for mallard harvest management and develop the explicit linkage to user objectives and habitat capacity																													
	Concurrent with the review of mallard harvest management, explore alternatives for developing multi-species population and harvest objectives																													
	Develop a conceptual framework / models that reflect our current understanding of social processes associated with hunting, viewing, conservation, and public support																													
	Develop and apply decision support tools to identify priority areas to deliver habitat conservation at multiple spatial scales incorporating both waterfowl population and human dimension considerations.																													
	Develop a unifying framework to integrate current information, hypotheses, and uncertainties into waterfowl management actions designed to achieve objectives for populations, habitat, and supporters																													
<b>Implement management actions</b>	Adaptively apply human dimensions tools and emerging knowledge to improve the effectiveness of conservation delivery for selected pilot projects.																													
	Compile a review of the ecological goods and services (EGS) values provided by waterfowl landscapes at local scales.																													
	Develop training content and implement web-based and hands-on training to increase the understanding and application of human dimensions concepts, methods, and tools in waterfowl habitat, harvest, and population management.																													
	Compile a synopsis of habitat conservation delivery case studies that applied HD concepts including those related to EGS																													
	Demonstrate the economic value of waterfowl conservation. Initial effort based on the 2011 National Survey of Fishing, Hunting, and Wildlife-Related Recreation																													
<b>Monitor outcomes of management actions</b>	Derive empirical measures of "vital rates" of waterfowl hunting																													