Implementing the 2012 NAWMP Revision: 2017 Update (May)

The fundamental revision of the North American Waterfowl Management Plan (NAWMP or Plan) in 2012 added an explicit goal for waterfowl conservation supporters, complementing existing goals for sustainable populations and sufficient habitat. Adding goals and objectives for supporters increased potential relevance of the Plan; however, it also presented a level of complexity that was not entirely anticipated. Simultaneous consideration of multiple objectives, although implicit before, now is a specific focus for habitat and harvest management affecting hunters and other users of the waterfowl resource. The waterfowl management community has implemented several efforts to advance seven recommendations outlined in the 2012 NAWMP Revision and the subsequent Action Plan. Progress, briefly summarized below, has focused on clarified objectives, some key integration challenges, a commitment to informed management decisions, and possible amendments to the institutions and processes of waterfowl management. The challenge to waterfowl managers is to continue progress in these areas while also considering next steps that will be emphasized in a 2018 update of the Plan.

Recommendation: *Develop, revise or reaffirm NAWMP objectives so that all facets of North American waterfowl management share a common benchmark.*

The Plan Committee approved revised objectives in 2014. Further work has been completed by the NAWMP Science Support Team (NSST) to "step-down" population objectives to Joint Venture scales for conservation planning during the non-breeding period. Supporter objectives established at national levels have received only initial discussions and usually at smaller scales, and habitat necessary to support both populations and users has yet to be widely addressed despite efforts among some Joint Ventures.

Unfinished business: The IIC worked with the waterfowl management community to produce revised NAWMP objectives which the Plan Committee approved in September 2014; work remaining includes:

- Promote the adoption and application of continental duck objectives that have been "stepped-down" to JV scales as the basis for a consistent approach to conservation planning during non-breeding period. This should not be interpreted as a mandate for various JV or states; instead the process provides a common "starting point" among JVs for planning based on more contemporary waterfowl population data. Emerging efforts by a few JVs provide insights into the uncertainties involved as regional objectives are translated into management actions. A workshop to apply this experience to on-going step-down efforts would be useful. (IIC, NSST, population experts)
- Use Canadian harvest data to "step-down" duck population objectives to regional scales for Canadian JVs that are engaged in conservation planning for waterfowl during the non-breeding period.
- Explore whether continental or national objectives for some users (e.g., hunters) can be "stepped-down" to finer scales and/or rolled up to continental or national objectives. This process undoubtedly will take on a different form at national and regional scales. Ultimately, emerging information about stakeholders' values should be used to inform and or modify population objectives to meet current and future demand. (HDWG, NSST Landscape Priority Committee)

- Revise continental and "step-down" objectives for geese, swans, and species / populations outside of surveyed areas. Criteria necessary for model-based objectives should include well understood population dynamics and sufficient monitoring programs. Objectives should also be consistent with habitat and public use goals. For less-understood species, use of conceptual models and alternative approaches will be necessary. (species joint ventures and various flyway species committees)
- Resolve questions about whether long-term population averages are realistic for use in establishing NAWMP objectives for some species (e.g., harvest management decisions for scaup) considering the impact of "unrealistic spikes" in year-specific estimates. (IIC, collaborating with species experts)
- Develop specific attributes related to private lands conservation programs that are relevant to the scale at which the programs are delivered. (JVs, states, USDA)
- Consider a process and a desirable time interval for future adjustments to NAWMP objectives (2018 Update).

Desired outcome: Information from stakeholder surveys and new biological insights are used to reassess Plan objectives based on a schedule and process for periodic review. Initial perspectives will be gained by the FoW2; however, most progress likely will be through the 2018 Update.

Recommendation: *Focus resources on important landscapes that have the greatest influence on waterfowl populations and those who hunt and view waterfowl.*

A Priority Landscapes Committee (NSST) is working with USGS researchers to develop a scalable decision support tool to assist in identification of landscape priorities. A post-doctoral associate has been hired to help advance a formal framework for high priority waterfowl management decisions. These researchers bring significant GIS and decision analysis skills to this effort, which is needed to lead the collection, development, analysis, and representation of spatial data.

Unfinished business: An NSST committee coordinated development of a map that was appended to the 2012 Revision (pg. 42). Concern about consistency in approaches across joint ventures, variability in the quality of data used, and lack of HD information incorporated into the process led to a recommendation to develop a scalable decision support tool to identify landscape priorities.

- Initial work entails development of spatial landscape attributes and objectives related to waterfowl populations, users, threats, and opportunities (NSST – Priority Landscapes Committee, USGS, IIC - initial presentation at FoW2).
- Dr. Jim Lyons (USGS) has hired a post-doctoral associate to bring additional GIS and decision analysis skills to this effort, which should significantly advance a formal decision framework(s) related to high priority waterfowl management decisions.
- In consultation with the NSST committee, USGS researchers will lead the collection, development, analysis, and representation of spatial data. Increased coordination with HDWG will be necessary to ensure social attributes are adequately considered.

- The assumptions made in this mapping effort will, in many cases, form hypotheses about relationships that should be tested through future monitoring and evaluation efforts.

Desired outcome: A consistent approach (common "starting point") across JVs for defining landscape priorities (attributes related to waterfowl populations, supporters, threats, and opportunities). Formal decision support frameworks that demonstrate the application of various weighted attributes in the context of highest priority waterfowl conservation decisions (initial work by FoW2 and completed during 2018 Update period).

Recommendation: *Adapt harvest management strategies to support attainment of NAWMP objectives.*

Long-standing uncertainty and disagreement about harvest management objectives and the theme of "coherence" introduced by the Joint Task Group are in review by the Flyway Councils and USFWS. The role of the Plan objective for mallards (Mid-continent; potential recommendation to USFWS in 2018), consideration of multiple species (Atlantic Flyway; potential recommendation to USFWS in June 2017), the inclusion of "people" goals, and efforts to recruit / retain hunters are being explored.

Unfinished business: Continued debate about harvest management objectives was acknowledged in the 2012 Revision. The Joint Task Group (JTG) offered a framework for linking objectives for continental habitat carrying capacity and harvest; however, inclusion of a "people" goal in the 2012 Revision presented additional complexity (although also the context for much of the historical debate). There has been discomfort with a harvest objective of maximizing long-term cumulative harvest since the AHM approach was initiated. The "coherence" of a "right-shoulder" yield curve approach, while strongly promoted, continues to raise questions about interpretation and translation from harvest management to NAWMP objectives (e.g., is an equilibrium population size calculated from a yield curve appropriate to use as a NAWMP objective?; how is the K determined from a yield curve translated and applied to NAWMP habitat objectives and programs?).

- The Central and Mississippi flyways and USFWS are updating Midcontinent mallard AHM components, including making technical updates to the model set, reconsideration of objectives and regulatory packages (including for other species), and an assessment of metrics and monitoring needs for tracking hunter participation (recommendation planned for 2018, with implementation in 2019 or 2020 – USFWS, Central and Mississippi flyways).
- Complete work on multi-stock harvest management (USFWS, Atlantic Flyway; for review during 2016/17; possible recommendation in 2017)
- Consider technical modifications to AHM in Pacific Flyway (USFWS, Pacific Flyway).
- Utilize information from stakeholder surveys to inform objectives and trade-offs between harvest management effects on birds versus hunters. Consider information emerging from recruitment, retention, and reactivation workshops (collaboration with the CAHSS Hunter Recruitment, Retention, and Reactivation (R3) effort) to develop predictions of hunter response to management actions.

- Consider the impact of the NAWMP objective as a constraint to the harvest management objective (in the context of revisiting overall harvest management objectives) and revisit the JTG framework in the context of the 2012 Revision goals and emerging information from stakeholder surveys.
- With completion of the SEIS13, conduct an open review and possible modification of existing AHM packages (included in the Midcontinent and AF revisions listed above, and using results from the hunter stakeholder survey). Consider a broader continental discussion of harvest management in the context of the multiple goals outlined in the 2012 Revision.

Desired outcome: A consensus on how harvest management and NAWMP duck population levels are related. A framework (scalable?) for incorporating considerations of hunter participation objectives into harvest management on an on-going basis.

Recommendation: *Establish a Human Dimensions Working Group to support development of objectives for people and ensure that those actions are informed by science.*

The HDWG, formed in 2012-13, coordinated development of surveys of hunters, viewers, and the general public that was conducted during 2016-17; initial results will be emerging in the summer of 2017. Resulting information will be used to inform harvest management and public engagement efforts.

Unfinished business: A formal Human Dimensions Working Group (HDWG) was established very early in Revision implementation, and a series of annual workshops (at times in conjunction with the Public Engagement Team (PET)), have led to purposeful integration of HD themes during implementation.

- Complete delivery and analyses of surveys of hunters, viewers, and the general public (conducted during 2016 with initial results by summer, 2017). Resulting information will be used to inform harvest management and public engagement efforts.
- A process for engaging the professional community in recruitment, retention, and reactivation (R3) of waterfowl hunters was initiated during 2016 through a series of flyway workshops. Next steps involve identifying states that will implement R3 efforts in a coordinated and evaluated manner (also see public engagement recommendation below).
- Utilize electronic license data to generate useful metrics of user vital rates (e.g., retention, churn, lapse, etc.). Despite proposals for funding (unsuccessful to date), a broad evaluation of POS data has not been forthcoming; some regional efforts have been initiated in the Central Flyway.
- Following analyses of the current social studies, and direction firming up for the 2018 Update, develop a multi-year strategy for updating NAWMP social objectives and testing key assumptions associated with those objectives.

Desired outcome: Routinely and effectively integrate social science into management decisions about population and habitat management and stakeholder engagement at relevant and actionable scales. Fully utilize emerging HD information during the process of re-evaluating NAWMP goals and objectives (initially by the FoW2; however, central to the 2018 Update).

Recommendation: *Build support for waterfowl conservation by reconnecting people with nature through waterfowl, and by highlighting the environmental benefits associated with waterfowl habitat conservation.*

Initial efforts established task groups for engaging waterfowl hunters, viewers, and landowners. General strategic direction has been developed, and work plans are works in progress. Local, small-scale engagement experiments have been implemented by various joint ventures and should be rigorously evaluated and expanded as insights are gained. Emerging experience needs to be well communicated among JVs.

Unfinished business:

- Task groups have been established under the PET for engaging waterfowl hunters, viewers, and landowners; and co-chairs for each task group have been identified. Overall strategic direction developed during an initial meeting (fall 2015) began to outline direction for each task group and this early approach was reassessed during a follow-up workshop mid-summer 2016. Initial progress by each group, reported in February 2017, outlined primary assumptions, areas of opportunity, as well as uncertainty. The most tangible progress by each group includes:
    - R3 workshops in each flyway assured a common understanding of the background and possible strategies for engagement. Primary issues that will need to be resolved include lack of dedicated staff and funding, specific strategies to employ, candidate states to test approaches, and expertise to compile and analyse R3-related data.
    - The primary management questions about engaging the birding community have been outlined and information gaps identified. Specific strategies for engagement need to be developed and a plan for evaluation laid out.
    - Engaging private landowners will occur in the context of the unique landscapes involved, associated land use, conservation programs designed for particular landscapes, and funding available. Joint Venture partners also are unique to each landscape and present the most likely forum for collaboration. At least 11 different regional scale efforts have been initiated as pilot "experiments" to address priority drivers of hunter and viewer recruitment and retention, demonstrate ecological values and services, and incorporate social science into waterfowl habitat planning and delivery. These pilot efforts will be useful only to the degree they are coordinated, successfully communicated, replicated when successful, and rigorously evaluated.
    - It will be critical to align social science (HDWG) with engagement initiatives (PET) to ensure both active implementation as well as coordination and evaluation.

Desired outcome: Social science (HDWG) is aligned with engagement initiatives (PET) to ensure active implementation, coordination, and evaluation of public engagement efforts (initial insights gained by FoW2; however, implementation as a "way of doing business" will be a gradual process extending through 2018 and beyond).

Recommendation: *Integrate waterfowl management to ensure programs are complementary, inform resource investments, and allow managers to understand and weigh trade-offs among potential actions.*

Recommendation: *Increase adaptive capacity so structured learning expands as part of the culture of waterfowl management and program effectiveness increases.*

The 2012 Plan recommendation for integrated management will most effectively be implemented within a rigorous, adaptive management framework. Thus, the two recommendations (i.e., integrated management and increased adaptive capacity) are themselves linked. This is particularly true of decisions that are "co-dependent" and must be considered in concert when multiple objectives are involved. Among these are decisions about harvest management, allocation of limited budget resources among landscapes important to waterfowl and users, and decisions about how to deliver conservation within landscapes with widely variable social and ecological challenges. These will need to be explored in greater depth if the goals of the 2012 Plan are to be effectively and efficiently advanced. Making progress on integrated decisions will be conditional, however, on the institutional environment and culture.

Many waterfowl management decisions are straight-forward, involve specific management actions, and result in relatively predictable outcomes. Although an adaptive framework is essential for tackling key integrated management challenges (see above), the basic rudiments of adaptive management are not limited to these. Uncertainty is prevalent throughout waterfowl management, key management actions outlined throughout the 2012 NAWMP Revision will require a consistent application of structured decision making to ensure efficient and effective conservation progress. The bullets that follow itemize progress that needs to continue if the vision of the 2012 Plan Revision is to evolve. While the IIC has provided near-term guidance, continuation will require attention by the Update Steering Committee (USC), the 2018 update writing team, and ultimately, institutional arrangements that perpetuate integrated decisions and adaptive management.

Unfinished business:

<u>Integration</u>

- Increase recognition that useful integration of waterfowl management can initially be accomplished through focus on a few linked decisions at various spatial and temporal scales. More fully develop a minimal set of multi-criteria decision problems that usefully and pragmatically describe the primary linkages among populations, habitat, and people.
- Clarify decision authorities and processes to oversee such linked decisions, and responsibilities for advancing adaptive management capacity.
- Coordinate a comprehensive, inclusive, international review of the institutional structures and processes in place to support integrated waterfowl management and conservation.
- Consider how the integrative functions of the IIC might be vested in a more permanent body, preferably as part of an existing committee structure.
- Develop a clearly stated purpose / vision for the 2018 Update (role for the USC and PC).

- Limited capacity and to a degree, lack of demonstrated relevance of integration have accounted for progress that has been slower than envisioned in the 2012 Action Plan. However, changes in the culture of waterfowl management institutions have been progressive. Among these developments are recognition that:
    - Small, rather than large, scales are the typical sources of innovation in management and provide opportunities for rapid learning.
    - Tight feedback loops are essential for learning and for motivating change.
    - Adaptive governance (i.e., institutional change) is fostered by the application of adaptive management.
    - Change depends on the presence of intellectual diversity
    - The capacity for change depends on whether the resilience / inertia within the institution of waterfowl management is sufficiently "weak" to allow for transformation.

Adaptive Management

- The NAWMP community has been committed to using adaptive management (AM) since the late 1990s as evident in the 1999 and 2004 Plan updates and by establishment of the NSST in 1999 and the 2005-2007 NAWMP Continental Assessment. The broader vision of the 2012 Plan has moved waterfowl management and the Plan into a new realm. Objectives for populations, habitat, and human users/supporters fundamentally changed our perspectives on decision support requirements. We now need:
    - Monitoring and assessment resources to help inform decisions for multi-objective AM at multiple spatial scales.
    - Social science related to increasing the emotional and pragmatic support of people for waterfowl conservation.
    - Further research on adaptive harvest management, and studies of factors affecting hunter engagement and support.
    - Resources to encourage Joint Venture innovation and improve their decision-support models for habitat delivery in light of all three NAWMP goals.
- Increasing adaptive capacity for the NAWMP will require developing the technical framework and plans to achieve adaptive actions; and mustering political and financial support, and steadfast leadership to ensure the work gets done. Existing technical working groups, with sufficient staff support, may be able to address the first part. The IIC has made initial progress in trying to identify and model the decision nodes where people, habitat and harvest management decisions co-occur.
    - The IIC should collaborate with the USC and FoW2 steering committee to identify a small set of multi-criteria decision frameworks that would pragmatically describe initial (minimal) frameworks for integrated waterfowl management.
    - Use these clear and compelling AM frameworks to advocate for modeling, monitoring, and AM capacity.
    - Emphasize these multi-criteria decision frameworks and related AM capacity in the 2018 Update.

- Stress the challenges of funding and leadership necessary to achieve the three inter-connected goals of the 2012 Revision. From a decision-support point of view, the 2012 Revision was a "game-changer", and the USC and the PC, need to think ahead in transformative terms.

Desired outcome: Institutional arrangements that perpetuate the gains made towards integration of waterfowl management that include a revitalized, strong linkage between technical functions and the NAWMP Committee and other policy levels (potentially amended or alternative structures drafted by an Institutions Sub-committee in collaboration with USC, explored during the FoW2, and proposed through the 2018 Update). Ultimately and gradually, development of a responsive culture within the waterfowl management enterprise.

Desired outcome: Decision makers actively consider and promote an adaptive framework for implementing waterfowl management in the 2018 Update. Elements of adaptive management are prominent in the agenda, presentation, and breakouts at the FoW2 Workshop.