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**AHM Working Group
Post-Meeting Briefing
Division of Migratory Bird Management
December 8, 2006**

- **AHM-NAWMP Joint Task Group** – comments from the AHM Working Group (AHMWG)
 - The AHMWG supports the conceptual framework for coherence the JTG has advanced. The evidence so far suggests that serious discussions may need to take place about harvest objectives, habitat objectives, *and* NAWMP goals, potentially with adjustments to any or all. That said, the AHMWG is very interested in seeing the details in the JTG report before commenting on a particular path.
 - The AHMWG is intrigued by a “shoulder strategy” as an alternative objective for harvest management. To better evaluate this alternative, the AHMWG is interested in seeing more details about a shoulder strategy, specifically:
 - Finer detail about shoulder points between a 90% and 100% for the mid-continent mallard harvest strategy;
 - More understanding about the costs of a shoulder strategy, specially loss of harvest opportunity for mallards; and
 - Documentation of the benefits to other species.We note that this assessment is conditional on a larger discussion about packages. We don’t expect this work to be done by the JTG, but it is something we would like to see the Service and the states work on, under the guidance of the AHMWG.
 - The AHMWG expressed some qualified support for the proposal to form a Human Dimensions Working Group (HDWG), which would operate as a partner to the AHMWG and the NSST, but there was significant concern that the charge to the HDWG would not be clear. The AHMWG was particularly interested in knowing how the proposed HDWG would work with existing groups, how it would determine its direction, and how its work would affect the work of others. Without having seen the text and details of the JTG report, the AHMWG reserves judgment on this proposal, but wanted to offer these comments so the JTG could be sure their report addressed them.
 - Regarding the proposed policy summit, the AHMWG is concerned that the timing may be too soon, and that the summit may circumvent existing deliberative bodies (including the SRC, the Flyway Councils, the NAWMP Plan Committee, and others). The AHMWG was not convinced of the value of holding this policy summit, at least as articulated by Fred Johnson and Mike Runge.
 - The AHMWG could not reach consensus on the proposed timing of the JTG process. While everyone was comfortable with a report being presented by March 2007, there was no agreement on how quickly action should be taken on the report. Some members felt the consultation process would take a considerable amount of time, others were anxious to see this important issue put on a fast track.

- ***Scaup Harvest Management Strategy***
 - Comments from the AHMWG:
 - The assessment framework is a reasonable and adequate basis for developing a harvest strategy. Previously expressed concerns have been addressed, and the model predictions track the observed data. We support using the assessment framework to develop a harvest strategy.
 - The AHMWG would like to see the following technical work by February 8, 2007:
 - An alternative population model embracing the hypothesis that scaup carrying capacity (K , population size in the absence of harvest) has declined to a lower value than that estimated from historical data
 - An examination of additional “shoulder” harvest strategies; specifically, expected implications of incremental shoulder values between 90% and 100% of MSY
 - A preliminary assessment of the relationship between regulations and harvest
 - PHAB staff (principally Scott Boomer and Fred Johnson) need to have these additional analyses completed prior to the winter Flyway technical committee meetings in February and March.
 - DMBM must present a complete harvest strategy as a “strawman” for discussion purposes at the February 8th SRC meeting.
- ***AHM for Western Mallards***
 - A model set describing the dynamics of mallards breeding in Alaska and California-Oregon (hereafter, simply western mallards) was proposed and generally endorsed by the AHMWG. A major challenge remaining is to determine the extent to which the status of western mallards and mid-continent mallards should influence the regulations in the Pacific Flyway and in the Central and Mississippi Flyways. This issue involves not only biology (i.e., the distribution of the two stocks during winter), but the management objectives for the two stocks, and the degree to which the three flyways should collectively be responsible for meeting those stock-specific objectives.
 - The implications of these management objectives can be explored using a joint optimization for the two stocks, in which the inputs are breeding population sizes in Alaska, California-Oregon and the mid-continent region, and the number of ponds in Prairie Canada. The output is the optimal regulatory choice for the Central and Mississippi Flyways (combined) and the Pacific Flyway. However, a joint optimization may not be feasible at this time due to questions about how stock-specific management objectives should be combined, limitations in computing power (joint optimizations often exceed the capacity of even the fastest PCs), and uncertainty about how regulatory changes in the Pacific Flyway might affect the harvest rates of western and mid-continent mallards (see next bullet).
 - The most recent analysis by PHAB suggested that there is little or no relationship between the number of framework days and harvest rates of western mallards. Harvest rates of western mallards have remained relatively constant since the

- early 1990's at about 13% on adult males. This appears to be similar to that necessary for maximizing sustainable yield on the combined AK-CA-OR stock (14%). Todd Sanders (PHAB) has begun a more detailed investigation into the potential relationship between western-mallard harvest rates and hunting regulations.
- PHAB is recommending implementation of AHM for western mallards in the 2007 cycle with the following features:
 - Independent optimizations for the Pacific Flyway and the Central/Mississippi Flyways (until such time that a joint optimization is more feasible)
 - Prescription for an optimal harvest rate in the Pacific Flyway based on the status of western mallards (assuming that no historic relationship between regulations and harvest rate can be found)
 - Criteria to determine whether the recently observed harvest rates of western mallards are sufficiently different from the optimal rate to warrant regulatory action
 - An annual updating of model parameters and weights based on a comparison of expected and observed changes in population size
 - DMBM will provide a status report at the February 8th SRC meeting. Prior to this meeting and those of the Flyway technical committees, PHAB will be responsible for exploring the implications of implementing an initial AHM strategy with the constraints described above.
 - ***Wood Duck Harvest Potential***
 - The AHM WG expressed conceptual support for an assessment framework based on the Potential Biological Removal method (PBR).
 - PHAB staff (principally Pam Garrettson) will be responsible for conducting additional analyses to fully parameterize the PBR assessment.
 - DMBM should provide a description of how PBR will be used to construct a harvest strategy for purposes of discussion at the February 8th SRC meeting; emphasis will be on harvest-management objectives for wood ducks, possible regulatory mechanisms for manipulating harvest, the linkage between monitoring programs and criteria for regulatory changes, and methods for coping with uncertainty in wood duck population dynamics.
 - ***Mottled Duck Harvest Potential***
 - PHAB has been also been exploring the PBR method to assess the harvest potential of mottled ducks, but the amount of data available to parameterize this assessment are even more limited than that for wood ducks. Given multiple lines of evidence suggesting a dramatic decline in the West Gulf Coast Population, it is necessary to investigate possible causes of the decline (e.g., drought, long-term habitat changes, harvest) before harvest potential can be reliably assessed. In the end, however, a risk-averse approach to mottled duck harvest may be warranted because of the large uncertainties concerning population dynamics and the impact of harvest and other environmental factors.

- In the short term, DMBM has two possible alternatives for recommending hunting regulations depending on the speed at which PHAB can conduct additional analyses. These two alternatives should be discussed at the upcoming SRC meeting.
 - Parameterize the PBR assessment framework (or other suitable assessment framework based on modu biology and population status), identify an explicit level of conservatism (i.e., % of MSY), and prescribe allowable harvest and/or harvest rates. A monitoring protocol would be necessary to determine whether harvest pressure exceeded the allowable take and thus whether regulatory action is necessary.
 - If a PBR assessment framework and accompanying strategy cannot be completed in time for use during the 2007 regulations cycle, PHAB will recommend regulatory changes necessary to achieve a 30% reduction in harvest (i.e., that needed to reduce harvest pressure to pre-1997 levels).
- ***Northern Pintail Harvest Management***
 - Mike Runge posited a compensatory harvest model for pintails that was based on a negative relationship between post-harvest population size and winter survival; however, available data are not adequate to estimate the parameters of this model.
 - Therefore, several biologically reasonable alternatives will be examined with respect to how well they predict observed population changes over the period of record; appropriate weights for the existing additive model and a compensatory alternative would be derived from this comparison
 - The intent of PHAB staff is to work with Mike to complete this assessment so that a compensatory model can be considered when making decisions about harvest regulations for the 2007 cycle; however, the effect on regulatory prescriptions is expected to be minimal, primarily because the existing pintail harvest strategy was negotiated rather than derived directly from biological models and explicit articulation of harvest-management objectives.
 - The AHMWG is therefore interested in the development of an optimal, adaptive harvest strategy for pintails as soon as is feasible; continued technical support from Mike Runge and USGS will be essential for this development.
- ***Black Duck Harvest Management***
 - In November 2006 the international Black Duck AHM Working Group (BDAHMWG) agreed to investigate the possibility of a constant harvest-rate strategy for black ducks until such time that a strategy conditioned on breeding-population size can be developed; a constant harvest-rate strategy would seek a fixed, target harvest rate, accompanied by a condition of approximately equal shares of the harvest for Canada and the U.S.
 - In support of the recommendation, PHAB investigated the implications of various constant harvest-rate strategies and compared those to a strategy in which harvest rates would be manipulated based on population size as measured by the mid-winter survey. Per agreement of the BDAHMWG, this assessment was based on

- the black duck monograph by Mike Conroy et al. (2002). However, the observed decline in black duck productivity documented by Mike during 1961-96 was extended to 2007 based on recent evidence that the decline has continued unabated.
- Based on simulated population dynamics, the black duck population averaged 546k (SD = 154k) in the absence of harvest. For a constant harvest rate, the maximum sustainable harvest was achieved at a harvest rate of 0.09 on adults, resulting in an average of 240k (SD = 94k) black ducks in the MWI and a harvest of 47k (SD = 15k). The expected harvest under a constant harvest-rate strategy was only 7% less than that which could be achieved under an optimal state-dependent harvest strategy. However, population size was nearly twice as variable under the constant harvest rate of 0.09 as under the optimal state-dependent strategy.
 - On December 8, 2006 members of the BDAHMMWG had a conference call to discuss next steps. The elements of a joint U.S.-Canada harvest strategy requiring specification include:
 - A target harvest rate (which will imply an acceptable average population size)
 - Criteria for joint regulatory action based on a comparison of the observed and target harvest rates
 - Criteria for country-specific regulatory action based on an observed deviation from parity in harvest
 - At the February 8th SRC meeting DMBM will discuss the process by which agreement on these elements might be achieved for application in the 2007 regulations cycle.
- ***AHM for Atlantic Population Canada Geese***
 - Considerable progress has been made in the development of models to describe APCG population dynamics and in understanding the harvest-management implications of those models. In particular, new models have been proposed to account for the recent, unexpected stabilization in breeding-population size.
 - Mike Runge, in cooperation with PHAB, continues to investigate the implications of these models and to develop procedures for model averaging. Another important area of investigation involves the specification of harvest-management objectives, and the Atlantic Flyway Canada Goose committee is consulted regularly in the development and refinement of these objectives.
 - It may be feasible to implement an AHM strategy in the 2007 cycle depending on the pace of remaining technical analyses, as well as review and acceptance by FWS and the Atlantic Flyway Council.
 - DMBM will provide a progress report on the status of this effort at the February 8th SRC meeting. Expectations for the 2007 regulations cycle will be discussed.