United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Migratory Bird Management
Population and Habitat Assessment Branch
11510 American Holly Drive
Laurel, Maryland, 20708-4016

MEMORANDUM

TO: Ken Richkus

FROM: Mark Seamans

DATE: January 24, 2014

SUBJECT: Mourning dove harvest strategy assessment

This memo reports on the annual assessment of the status of mourning doves in support of the regulation setting process. It does not, however, represent a regulatory recommendation by the Fish and Wildlife Service or Flyway Councils. Based on the harvest strategies, current data, and this assessment, the prescribed regulatory alternative for each management unit during the 2014–15 hunting season is the moderate regulatory alternative. More specific details of the harvest strategies and assessment follow.

Mourning dove harvest strategies were endorsed by the Flyway Councils and Service Regulations Committee in 2013 for each of the three Management Units (Eastern, Central, and Western), with implementation beginning in 2014. The harvest strategies replace the interim strategies that have been used to prescribe regulatory alternatives since 2009. These new strategies represent a more informative approach to managing harvest of mourning doves as envisioned in the Mourning Dove National Strategic Harvest Management Plan approved by the Flyway Councils in 2003.

The objectives of the strategy are to: conserve mourning dove populations in the three Management Units; and to minimize annual regulatory change. A discrete logistic model in Bayesian framework is used to estimate population parameters (intrinsic rate of growth, carrying capacity) and predict mourning dove abundance in the year subsequent to the data time series. The procedure involves repeated sampling and results in a distribution of predicted abundance estimates (posterior probability distribution). The distribution is broad when there is more uncertainty and narrow when there is less uncertainty. The posterior probability distribution is used in a decision analysis framework for setting harvest regulation relative to threshold abundance values. The harvest strategy requires that 85% of the distribution (confidence in the parameter estimate) must be above the critical abundance threshold to prescribe that regulatory alternative. This corresponds to a credible interval (CI) of 70% for the parameter estimate (i.e., central 70% of the posterior probability distribution plus one half of the

remaining distribution [the upper half]). Thus, if the lower 70% CI for the predicted abundance is below the critical abundance threshold value then the more restrictive regulatory alternative is prescribed. Using the lower credible interval provides incentive to reduce uncertainty in parameter estimation (spread in the posterior probability distribution) by maintaining and improving monitoring programs. The greater the uncertainty in the parameter estimate the sooner a restrictive regulatory alternative may be prescribed because one is less confident that the predicted abundance is above the threshold value.

The harvest strategies for each Management Unit share a common assessment framework:

1) Discrete logistic model to estimate population parameters (intrinsic rate of growth, carrying capacity) and predict population abundance in the year subsequent to the data time series,
2) Critical abundance thresholds based on 30% and 50% of approximated maximum sustained yield (Table 1),
3) 85% confidence that the predicted abundance exceeds the critical threshold that would trigger that regulatory change,
4) Standard, restrictive, and closed regulatory alternatives consistent in daily bag limit (Table 2).

The harvest strategies differ among Management Units in the critical threshold values for regulatory change; each based on the Units approximated maximum sustained yield. They also differ somewhat in season length associated with each regulatory package.

This assessment uses the most current data available. The most current data is 1 year behind (i.e., the strategies predict abundance for September 2013, and this is used to inform annual regulatory decisions for the 2014-15 seasons). This is because total harvest data needed to estimate abundance for September 2013 is not available until June 2014. State and Federal regulation setting meetings for mourning doves start in February. Summary results of the assessment for each management unit are provided in Table 3 and Figures 1–3.

Table 1. Critical mourning dove abundance thresholds (in millions) in the Eastern, Central, and Western Management Units based on the percentage of the population size expected when at maximum productivity (MSY; one half of carrying capacity). The harvest strategy states that 85% of the posterior probability distribution (confidence in the parameter estimate) must be above the critical abundance threshold to prescribe that regulatory alternative. Thus, if the lower 70% CI for the predicted abundance is below the critical abundance threshold value then the more restrictive regulatory alternative is prescribed.

Percentage MSY	Regulatory Threshold	EMU	CMU	WMU
50	Restrictive	36.5	72.6	19.3
30	Closed	21.9	43.5	11.6

Table 2. Mourning dove daily bag limit and days associated with each regulatory alternative in the Eastern (EMU), Central (CMU), and Western (WMU) Management Units.

Management Unit	Regulatory alternative	Daily bag limit	Days
EMU	Standard	15	90
	Restrictive	10	70
	Closed	0	0
CMU	Standard	15	70
	Restrictive	10	70
	Closed	0	0
WMU	Standard	15	60
	Restrictive	10	60
	Closed	0	0

Table 3. Predicted abundance of mourning doves and respective credible intervals (in millions) for September 2013 for each Management Unit.

Management Unit	Population Prediction	L95%CI	U95%CI	L70%CI	U70%CI
EMU	94.39	61.32	141.20	76.83	115.00
CMU	160.80	133.20	213.60	146.10	182.10
WMU	60.47	41.14	88.87	51.13	71.74

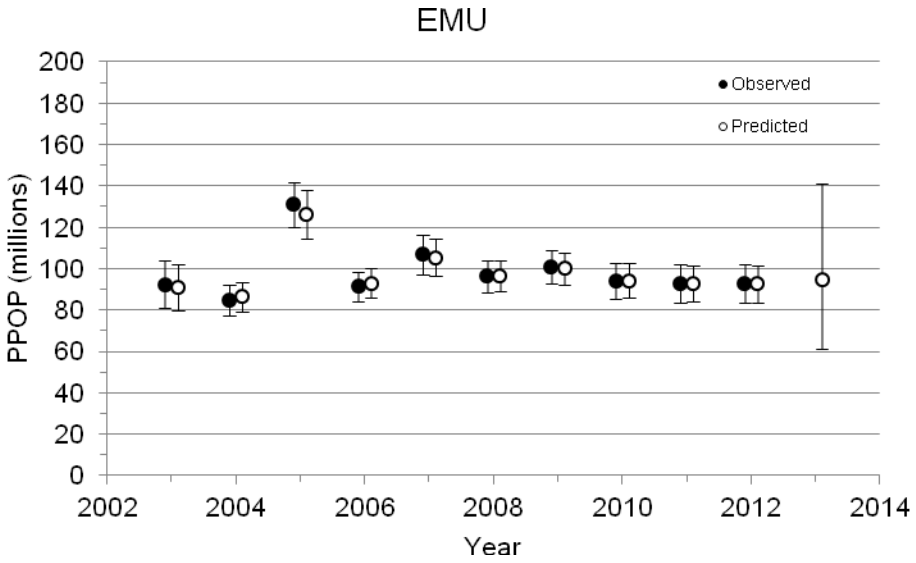

Figure 1. Observed and predicted mourning dove abundance (PPOP) in the Eastern Management Unit. Error bars are 95% credible intervals.

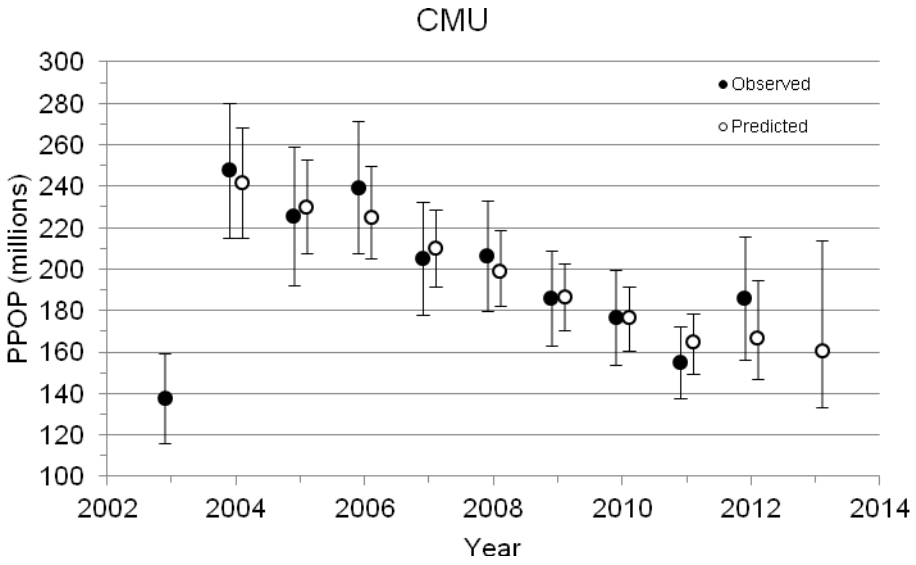

Figure 2. Observed and predicted mourning dove abundance (PPOP) in the Central Management Unit. Error bars are 95% credible intervals. First year not used in predictions.

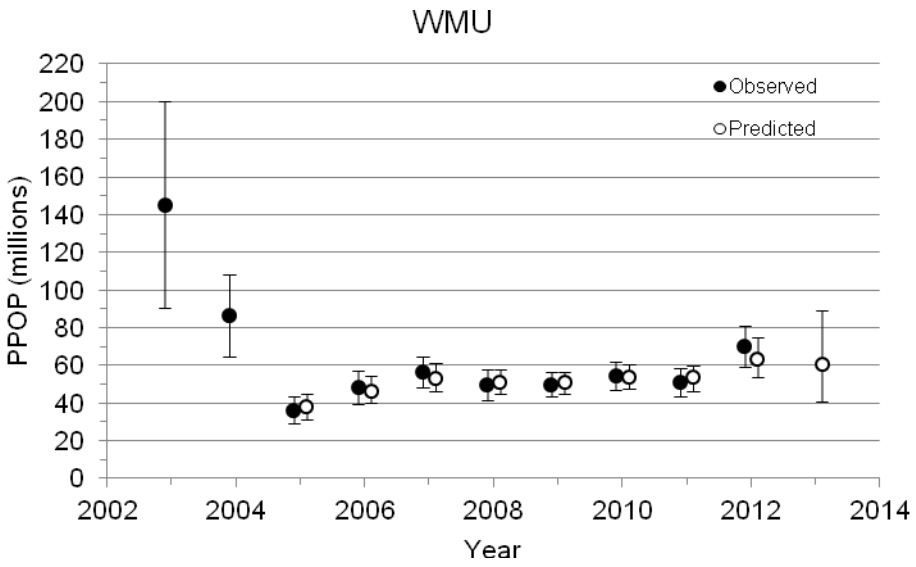

Figure 3. Observed and predicted mourning dove abundance (PPOP) in the Western Management Unit. Error bars are 95% credible intervals. First two years were not used in predictions.