

May 10, 2017

Maryland Wood Duck Initiative (MWDI)
2016 Public Lands Wood Duck Production Report
Reconciliation of 2013-2015 Data

2016 Results

7,832 ducklings are estimated to have been hatched from MWDI's 112 public sites last year, a 2% gain over 2015 levels. An increase in 2017 is expected due to new sites initiated in 2016 and 2017 (25) and improved project supervision, partially offset by a continued rationalization and elimination of certain project sites where pragmatic supervision is no longer feasible.

After rebounding from the decrease in 2012, production has been basically stable for the past 4 years despite a modest annual decline in functional boxes. MWDI inferentially attributes the prior decline to the impact of the increased daily bag limit on woodies based on a noticeable drop in utilization at several key sites within an otherwise generally stable habitat environment that year.

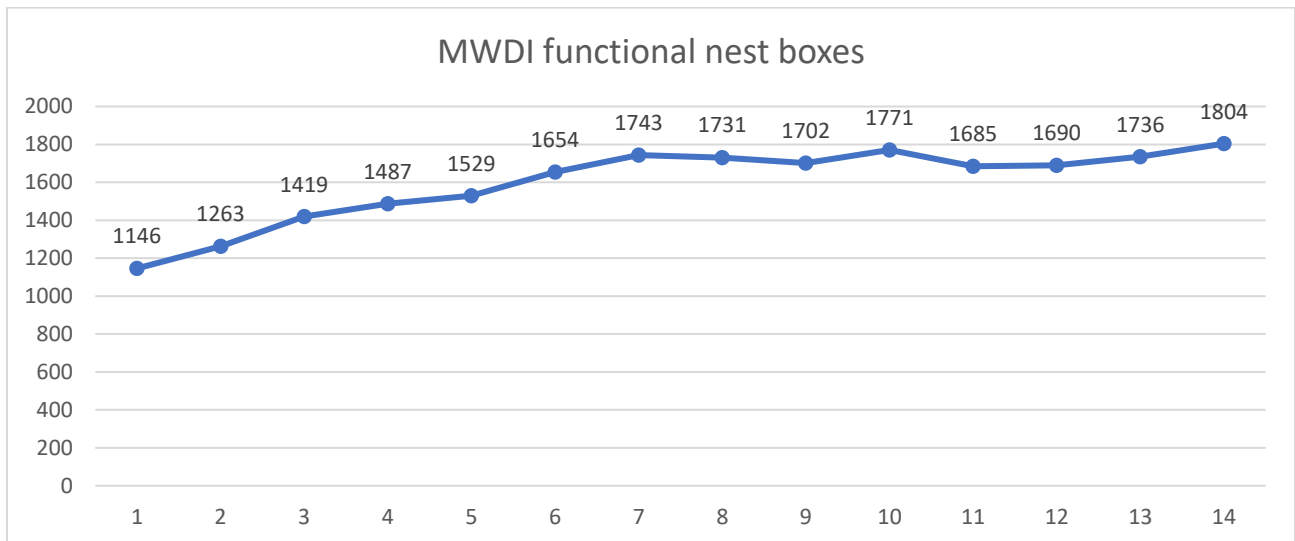
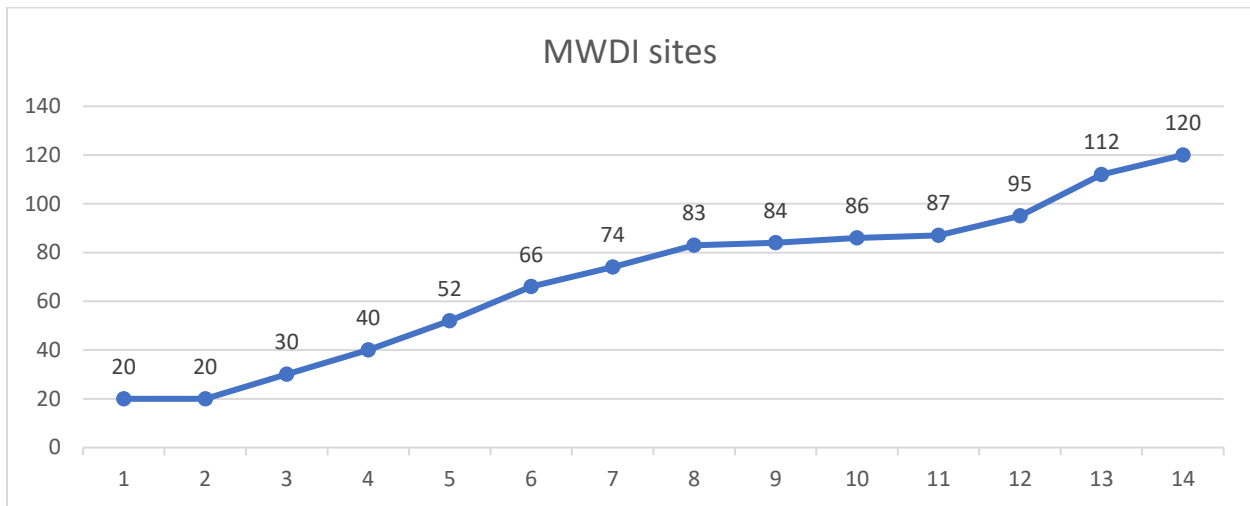
This year's report includes a reconciliation of the 2013-2015 results. Some moderate revisions have been made to insure that a consistent estimation methodology was used involving poorly supervised sites, partial data, snake predation estimates, final hatch estimates / results for active nests and under-reporting associated with poor to non-existent hatch remnants typically associated with winter / early spring inspections.

Partially due to personal time constraints the past three years, volunteer recruitment has lagged while turnover of certain previously trained site managers occurred. Until 2012, approximately 90% of MWDI's boxes had excellent supervision and data reporting. This dropped to 75% in 2013. It has been nominally increased back to 91% in 2016 and for 2017 but only 84% of the box data was available for this reporting deadline. Examination of 11 sites where periodic supervision lapses have occurred during the 2005-2016 period indicates that at their respective peak these 330 boxes produced 1,205 ducklings. MWDI data now supports an estimate of only 365 ducklings from 177 estimated boxes – a drop in efficiency from 3.4 ducklings per box to 2.1. Six of these sites were rejuvenated supervision-wise for the 2017 nest season.

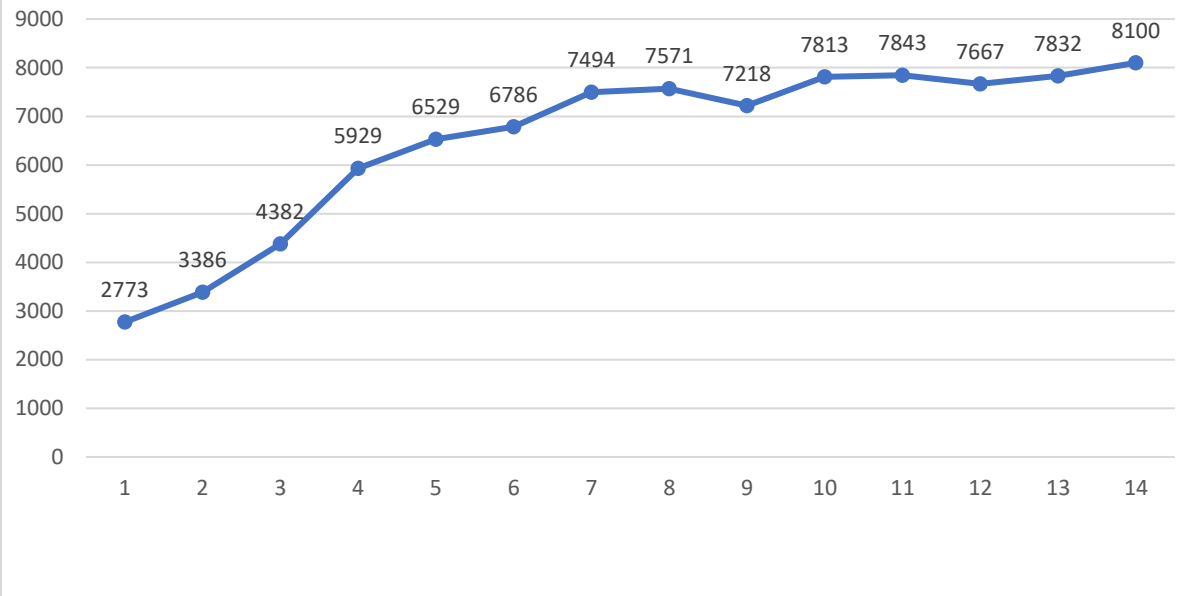
In 2016, MWDI produced on average an estimated 4.5 ducklings for each functional box. The peak was 4.7:1 in 2014. This measure of efficiency has risen steadily and almost doubled from 2.4:1 in 2004. If the boxes where only partial and estimated data are excluded, this ratio is 5.2:1. For the larger and best managed projects in good habitat, a ratio of 6-10:1 is typical.

Cumulative incremental production since 2004 is expected to reach 52,000 ducklings in 2017. Over 1,500 new boxes have been installed by MWDI volunteers during this period. ~900 of these have been to expand inherited projects and replace old boxes. 665 boxes were installed on the 100 new sites. Over 900 boxes have been eliminated as old sites were de-clustered and as certain projects were dropped or reduced by loss of managed wetlands (eg. Patuxent Wildlife Refuge went from 144 to 52 and Loch Raven dropped from 49 to 6 due to silting).

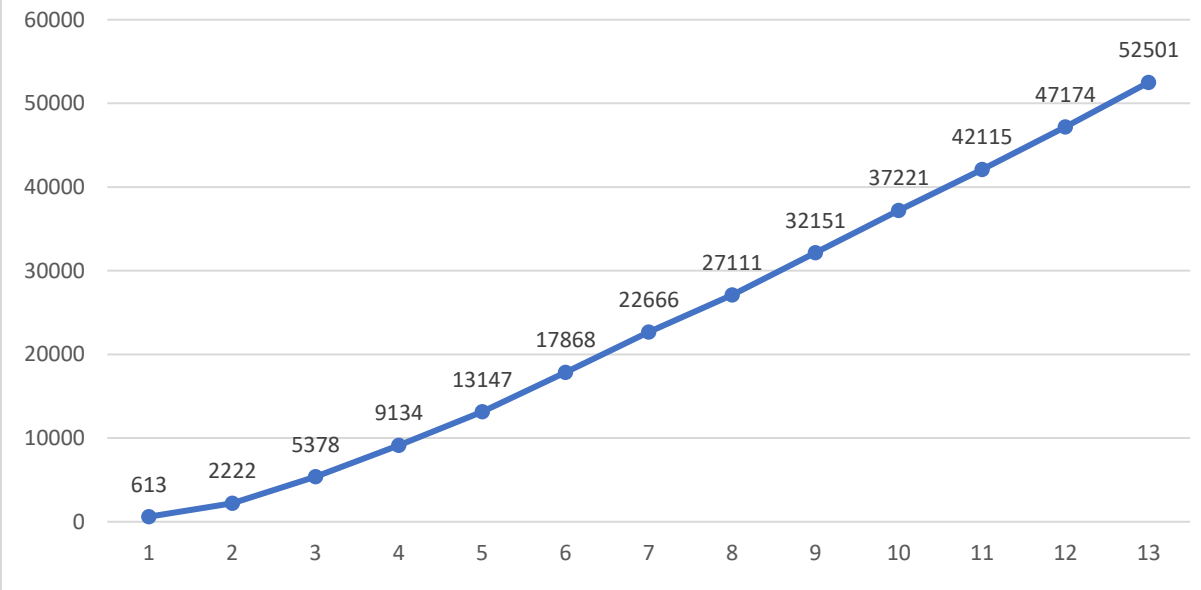
While there has been a 57% net increase in the total number of boxes, there has been a 292% increase in production based on 2017 estimates. MWDI's volunteers and our various state, local and federal agency collaborators should be very pleased with these results!



MWDI Annual Ducklings



MWDI Cumulative Ducklings Increment over 2004 Reference year 2005-2017 est



2016 Analysis

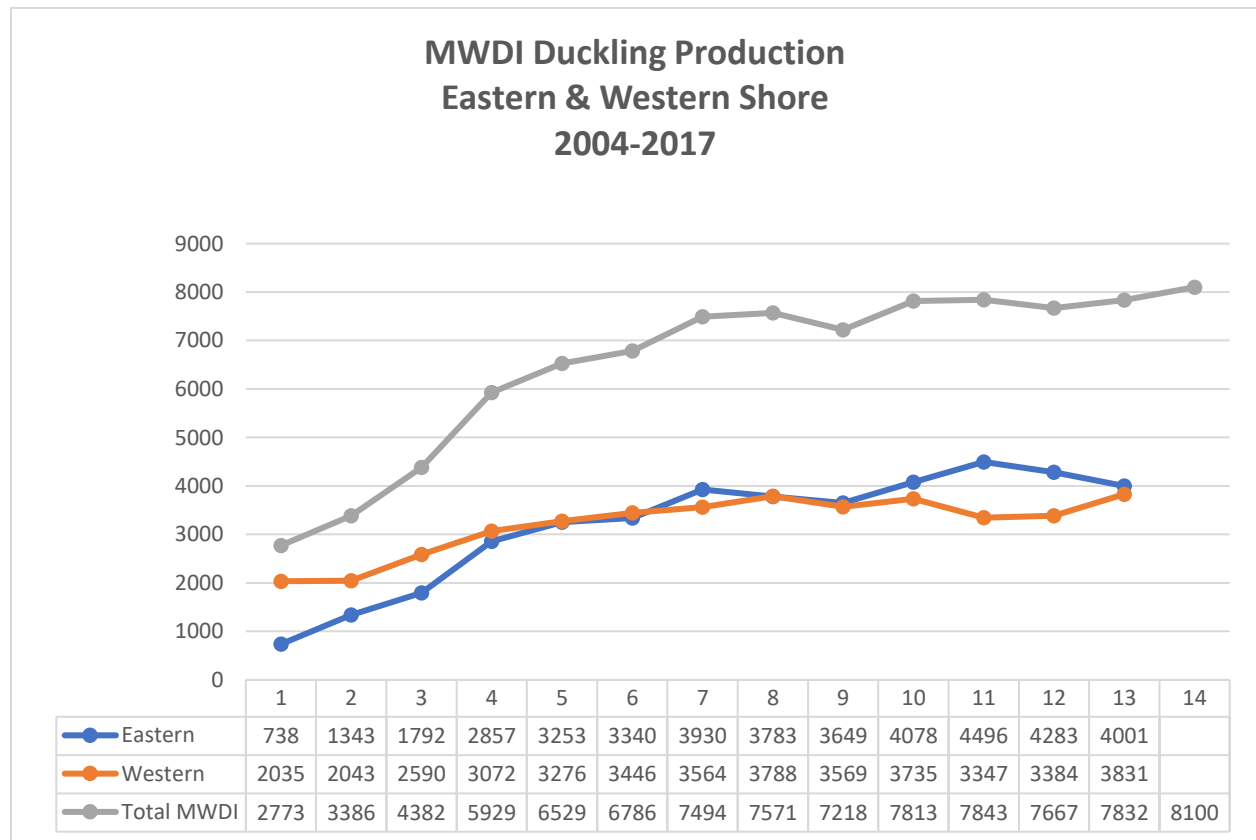
Box use was estimated at 67%. (73% in boxes where full data was available). This has been increasing steadily since a recent low in 2012 at 62%. Program maturity within a limited number of new projects during 2013-2015 and ongoing program rationalization has helped improve this efficiency measure. 17 sites had zero % use in 2016 involving 70 boxes.

Success nests were estimated to occur 72% when a box was used. (79% in boxes with 100% actual data). This rate had remained very consistent at the 74-75% level previously.

The hatch rate in Success nests was 78% - in total and in nests with full data. The average clutch size in a successful nest was 12.1 eggs, yielding 9.4 ducklings. The hatch % has also been very consistent at 78-79% in prior years. The average clutch size has been trending downward since 2012-2013 from 12.6 -13.2 eggs causing the ducks per hatch to also decline from 10.3-10.4 per success nest. In 2016, 10,088 eggs were estimated to have been laid resulting in 7,832 ducklings. Another 3,043 eggs were estimated to have been laid in Failed nests.

The **Gross hatch rate** (the percentage of ducklings / total eggs laid in Success and failed nests) **was 60%** - modestly down from the 61-63% level of prior years.

Nesting habitat conditions were considered to be generally favorable.



Eastern Shore vs Western Shore profile

Sites 46 vs 66

Boxes 776 vs 960

Use 74% vs 61%

Success 73% vs 71%

Hatch Rate 78% each

Gross hatch rate 60% each

Ducklings / Box 5.2:1 vs 4.0:1

Private Lands Nest Box Programs

The contribution to Maryland's wood duck population from private lands is believed to be significantly higher than MWDI's production. MWDI has directly assisted in either the procurement, installation or site inspection involving more than 1,500 boxes since 2004. MWDI has identified more than 3,000 of private program boxes as functional. Efforts to establish an enhanced perception of this inventory and productive capacity have been limited to date. MWDI believes that Maryland may have more than 5,000 functional nest boxes in operation.

MWDI's interest in being able to estimate Maryland's total artificial nest production relates to our desire to relate this data to USF&W breeding pair and other wood duck population estimates.

MWDI is in the process of obtaining more information about USF&W / DNR estimation methodologies. Maryland is estimated by USF&W to have about 7,700 breeding pairs of woodies – the confidence of and variability of these figures is relatively low and high, respectively, due to inherent data limitations, algorithm nuances and pragmatic collection issues. However, a simple yet conservative analysis of MWDI's known nesting pairs and those extrapolated from identified private nesting boxes suggests that Maryland's artificial nesting programs may total 30-38% of USF&W estimates – much higher than the ~5% which is typically attributed to nest boxes in the Atlantic and Mississippi Flyways for nest box contributions.

MWDI intends to evaluate whether the use of readily available, more empirical data to estimate Maryland's breeding and population trends might provide a useful resource management tool as a supplement to the current methodologies. At a minimum, if it can be established that Maryland's artificial nesting programs are quite meaningful, it will encourage the continuation and perhaps expansion of current public and private conservation efforts.

Special Recognition

The ongoing efforts of more than 100 project managers must be acknowledged. Total volunteerism significantly exceeds these levels as inspection assistance is provided by many others along with youth event mentoring, pole salvage and wood cutting.

Maryland DNR's Wildlife & Heritage Service support has been unfailing and exemplary over the past 13 years. More than 100 other organizations have also participated via their time, staff, land access, school programs, equipment and money.

Thank you all.

[Click here for complete documentation.](#)