



Arkansas Game and Fish Commission Aerial Waterfowl Survey Report November 12-16, 2018

Arkansas Game and Fish Commission staff conducted Nov. 2018 aerial waterfowl surveys Nov. 12-16 in the Mississippi Alluvial Valley (Delta), Nov. 15 in the Arkansas River Valley and southwest Arkansas Nov. 14. Observers estimated over 837,000 ducks in the Delta, including over 360,000 mallards (Table 1), and a total of 32,670 ducks in the Arkansas River Valley, many of which were mallards (32,670; Table 2). The southwest Arkansas total duck count was 26,969, including just under 10,000 mallards. Observers in the Delta estimated strong number of arctic-nesting geese, including over 828,000 light (lesser snow and Ross's) geese and over 420,000 greater white-fronted geese. Observers were J.J. Abernathy, Jason Carbaugh, Jason Jackson, Cameron Tatom and Alex Zachary.

The Delta mallard population estimate was about 100,000 higher than the 2009-2018 long-term November average. Total duck population estimates were similar to the long-term average (Figure 1). Nearly one-third of mallards in the Delta were in the Cache survey zone, followed closely by the Black-Upper White survey zone. Notable duck concentrations that did not fall along randomly selected transect lines included Lake Ashbaugh, Big Lake NWR, south of Big Lake NWR and WMA, Cache River north of Amagon, and Bald Knob NWR. Estimates for all ducks and mallards in the Arkansas River valley were slightly higher than normal, with the highest counts in the Point Remove-Plumerville survey zone and fair numbers in the Petit Jean, Frog Bayou and Fourche LaFave survey zones (Figure 2). Only about one-third of ducks observed in southwest Arkansas were mallards, with gadwalls making up the majority of ducks in the area during the survey.

Observers found nearly 40 percent of mallards in the Delta in rice fields, followed by other agricultural fields and moist-soil habitat. In the Arkansas River valley, biologists saw about 36 percent of mallards in moist-soil habitat, with about 20 percent each in bottomland hardwood wetlands and flooded corn fields.

Habitat conditions during the survey period were much better than during typical for November. What is historically one of the driest periods of the year turned out to be abnormally wet, leading to much more water on the landscape during the survey period. Persistent rainfall during October and November also has slowed harvest in agricultural fields, likely to the detriment of farmers but a bonus for waterfowl. Wet conditions also appears to have slowed fall tillage of harvested fields. Observers did note many fields that may have stayed flooded with later rains were drained to allow farmers to complete harvest. Abnormally cool temperatures provided good migration conditions for ducks and geese preceding surveys. Dry conditions are not typical during early fall, and early rain (even snow) and cold during typically dry periods provided a migration pulse earlier than normal, but duck migrations and higher duck counts typically coincide with historic periods of natural flooding (i.e. mid-December and early January) so, as in most years, additional mallard migrations should be coming in the next month.

Staff will conduct the next aerial waterfowl survey the week of Dec. 10.

Table 1. Waterfowl abundance estimates in Arkansas during the late November (Nov), mid-December (Dec), early-January Midwinter Survey (MWS) and late-January (Jan) aerial waterfowl survey periods, 2009-2018, in the Mississippi Alluvial Valley (MAV) using stratified random sampling of transects.

| | | Survey Zone | | | | | | | | | | | MAV Total | | |
|---------------|-------------|---------------------------------|-------------|-----------------------------|-----------|---------------------|---------|-------------|-----------------------------|----------------------|-------------------|-------------|-----------|-----------|-----------|
| | | Bayou Bartholomew - Bayou Boeuf | Bayou Macon | Bayou Meto - Lower Arkansas | Big Creek | Black - Upper White | Cache | L' Anguille | Lower White - Bayou Des Arc | Little River Ditches | Lower St. Francis | Lower White | | | |
| Survey Period | Nov-09 | Mallards | | | | | | | | | | | | | 124,065 |
| | | Total Ducks | | | | | | | | | | | | | 794,405 |
| | Dec-09 | Mallards | | | | | | | | | | | | | 648,955 |
| | | Total Ducks | | | | | | | | | | | | | 2,046,969 |
| | MWS-10 | Mallards | | | | | | | | | | | | | 2,309,453 |
| | | Total Ducks | | | | | | | | | | | | | 2,887,810 |
| | Jan-10 | Mallards | | | | | | | | | | | | | 2,063,243 |
| | | Total Ducks | | | | | | | | | | | | | 3,153,410 |
| | Nov-10 | Mallards | | | | | | | | | | | | | 180,198 |
| | | Total Ducks | | | | | | | | | | | | | 1,133,126 |
| | Dec-10 | Mallards | | | | | | | | | | | | | 1,247,697 |
| | | Total Ducks | | | | | | | | | | | | | 1,860,894 |
| | MWS-11 | Mallards | | | | | | | | | | | | | 671,982 |
| | | Total Ducks | | | | | | | | | | | | | 1,192,518 |
| | Jan-11 | Mallards | | | | | | | | | | | | | 1,311,245 |
| | | Total Ducks | | | | | | | | | | | | | 1,786,677 |
| | Nov-11 | Mallards | 4,750 | - | 15,717 | 66 | 9,968 | 47,902 | 7,577 | 10,896 | 2,432 | 36 | 32,736 | | 132,080 |
| | | Total Ducks | 52,662 | 19,346 | 174,725 | 1,367 | 32,914 | 77,686 | 36,010 | 78,700 | 40,038 | 61 | 114,332 | | 627,841 |
| | Dec-11 | Mallards | 39,569 | 2,136 | 90,328 | 10,161 | 73,576 | 226,861 | 48,173 | 206,485 | 367,290 | 122,032 | 283,418 | | 1,470,029 |
| | | Total Ducks | 135,903 | 14,267 | 298,196 | 32,799 | 171,366 | 306,191 | 94,423 | 360,232 | 417,990 | 247,685 | 339,894 | | 2,418,946 |
| | MWS-12 | Mallards | 7,956 | 989 | 110,141 | 87,360 | 35,244 | 318,991 | 51,493 | 43,618 | 51,721 | 8,604 | 37,862 | | 753,979 |
| | | Total Ducks | 29,124 | 2,318 | 161,830 | 161,081 | 51,447 | 368,370 | 89,139 | 60,802 | 75,241 | 51,660 | 65,861 | | 1,116,873 |
| | Jan-12 | Mallards | 22,365 | 5,917 | 48,569 | 82,272 | 47,069 | 102,400 | 38,682 | 232,214 | 80,546 | 11,193 | 82,291 | | 753,518 |
| | | Total Ducks | 47,985 | 17,165 | 87,045 | 114,331 | 128,018 | 162,763 | 105,318 | 321,724 | 86,482 | 70,673 | 122,334 | | 1,263,838 |
| | Nov-12 | Mallards | 2,543 | 7,176 | 44,732 | 5,298 | 50,797 | 112,327 | 97,712 | 14,306 | 19,136 | 36,967 | 51,127 | | 442,121 |
| | | Total Ducks | 11,037 | 38,220 | 95,784 | 34,352 | 79,726 | 171,744 | 164,874 | 68,621 | 25,852 | 66,825 | 75,764 | | 832,799 |
| | Dec-12 | Mallards | 37,887 | 11,126 | 40,660 | 4,525 | 157,624 | 54,417 | 45,467 | 8,517 | 29,542 | 8,993 | 17,448 | | 416,206 |
| | | Total Ducks | 121,538 | 22,648 | 70,813 | 18,267 | 233,838 | 81,262 | 95,628 | 30,981 | 35,021 | 45,649 | 31,270 | | 786,915 |
| | MWS-13 | Mallards | 30,438 | 12,508 | 75,690 | 16,112 | 48,272 | 57,409 | 32,133 | 20,437 | 48,267 | 4,633 | 105,865 | | 451,764 |
| | | Total Ducks | 54,951 | 19,145 | 120,222 | 22,876 | 60,929 | 84,871 | 68,389 | 27,503 | 56,231 | 7,511 | 142,842 | | 665,470 |
| | Jan-13 | Mallards | 28,836 | 8,921 | 90,090 | 36,204 | 93,035 | 62,369 | 26,058 | 7,344 | 3,511 | 93,337 | 27,036 | | 476,741 |
| | | Total Ducks | 128,058 | 48,672 | 127,548 | 48,364 | 138,314 | 103,878 | 52,116 | 9,588 | 3,665 | 145,229 | 32,483 | | 837,915 |
| | Nov-13 | Mallards | 13,582 | 2,841 | 24,371 | 2,900 | 25,948 | 66,501 | 54,163 | - | 13,242 | 1,445 | 39,840 | | 244,833 |
| | | Total Ducks | 200,157 | 38,409 | 107,960 | 18,100 | 148,225 | 111,257 | 99,517 | 49,598 | 46,545 | 4,206 | 114,572 | | 938,546 |
| | Dec-13 | Mallards | 73,158 | 20,062 | 71,142 | 7,904 | 72,485 | 25,429 | 63,845 | 54,023 | 37,107 | 27,422 | 22,806 | | 475,383 |
| | | Total Ducks | 154,707 | 31,980 | 145,453 | 26,009 | 98,951 | 36,088 | 122,202 | 77,353 | 47,533 | 33,835 | 60,612 | | 834,723 |
| | MWS-14 | Mallards | 104,455 | 33,520 | 164,150 | 3,070 | 66,080 | 216,061 | 934 | 56,508 | 25,124 | 13,835 | 123,399 | | 807,136 |
| | | Total Ducks | 114,764 | 44,313 | 182,263 | 3,070 | 75,082 | 247,069 | 1,196 | 80,835 | 25,124 | 17,143 | 136,817 | | 927,676 |
| | Nov-14 | Mallards | 9,409 | 17,100 | 136,741 | 22,901 | 34,196 | 19,077 | 3,454 | 22,216 | 128,948 | 69,511 | 84,007 | | 547,560 |
| | | Total Ducks | 83,914 | 51,660 | 234,759 | 80,425 | 70,814 | 29,520 | 12,382 | 45,023 | 171,835 | 80,469 | 132,448 | | 993,249 |
| | Dec-14 | Mallards | 81,653 | 48,048 | 53,377 | 7,836 | 159,637 | 12,105 | 36,370 | 8,308 | 23,966 | 16,198 | 172,746 | | 620,244 |
| | | Total Ducks | 107,261 | 50,700 | 168,894 | 12,430 | 212,520 | 18,005 | 72,920 | 15,300 | 24,196 | 46,082 | 251,119 | | 979,427 |
| | MWS-15 | Mallards | 113,960 | 29,818 | 162,687 | 99,270 | 110,723 | 25,064 | 31,083 | 10,033 | 8,855 | 162,042 | 172,026 | | 925,561 |
| | | Total Ducks | 130,296 | 30,988 | 188,203 | 106,124 | 148,309 | 39,287 | 55,675 | 18,601 | 8,855 | 321,514 | 180,142 | | 1,227,994 |
| | Nov-15 | Mallards | 3,599 | 43,200 | 17,915 | 19,253 | 15,382 | 46,418 | 7,625 | 15,597 | 9,093 | 40,889 | 42,941 | | 261,912 |
| | | Total Ducks | 203,640 | 120,492 | 126,942 | 25,333 | 49,581 | 149,017 | 18,051 | 22,088 | 14,459 | 43,547 | 116,041 | | 889,191 |
| | Dec-15 | Mallards | 6,103 | 1,287 | 59,153 | 17,784 | 107,474 | 109,493 | 13,682 | 5,814 | 11,408 | 9,242 | 5,837 | | 347,277 |
| | | Total Ducks | 98,739 | 25,214 | 106,887 | 100,928 | 223,106 | 221,060 | 65,282 | 40,127 | 21,975 | 28,436 | 16,697 | | 948,451 |
| MWS-16 | Mallards | 31,506 | 13,806 | 84,035 | 14,558 | 53,900 | 97,829 | 106,172 | 20,482 | 60,454 | - | 170,364 | | 653,106 | |
| | Total Ducks | 55,172 | 32,204 | 125,780 | 37,662 | 91,665 | 164,831 | 155,016 | 28,744 | 74,250 | 3,943 | 226,832 | | 996,099 | |
| Jan-16 | Mallards | 22,606 | 9,068 | 59,169 | 22,800 | 80,590 | 135,110 | - | 116,169 | - | 74,942 | 96,330 | | 616,784 | |
| | Total Ducks | 94,269 | 21,294 | 75,702 | 33,212 | 105,643 | 184,233 | - | 291,312 | - | 74,942 | 111,648 | | 992,255 | |
| Nov-16 | Mallards | 0 | 0 | 26,781 | 21,094 | 0 | 1,792 | 3,007 | 285 | 16,572 | 0 | 12,381 | | 81,912 | |
| | Total Ducks | 5,983 | 17,179 | 71,612 | 57,213 | 1,167 | 24,772 | 29,140 | 1,064 | 33,788 | 9,724 | 17,919 | | 269,561 | |
| Dec-16 | Mallards | 15,104 | 475 | 150,591 | 31,456 | 23,246 | 91,324 | 19,088 | 8,160 | 20,241 | 20,767 | 64,914 | | 445,364 | |
| | Total Ducks | 72,010 | 8,361 | 207,710 | 43,213 | 26,332 | 115,977 | 30,448 | 43,642 | 30,147 | 86,977 | 85,357 | | 750,174 | |
| MWS-17 | Mallards | 72,405 | 40,448 | 219,106 | 22,908 | 14,102 | 128,174 | 20,651 | 12,660 | 8,873 | 41,202 | 70,677 | | 651,004 | |
| | Total Ducks | 95,012 | 57,394 | 250,439 | 26,358 | 38,389 | 236,142 | 36,784 | 13,479 | 9,892 | 75,996 | 75,677 | | 915,562 | |
| Jan-17 | Mallards | 7,154 | 15,135 | 146,710 | 20,187 | 41,860 | 159,212 | 47,507 | 19,013 | 8,116 | 31,646 | 63,039 | | 559,579 | |
| | Total Ducks | 73,706 | 66,649 | 225,301 | 28,396 | 87,546 | 277,917 | 85,046 | 57,463 | 10,021 | 51,226 | 91,663 | | 1,054,934 | |
| Dec-17 | Mallards | 4,921 | 3,151 | 116,026 | 19,729 | 84,718 | 38,466 | 26,874 | 2,400 | 26,662 | 100,522 | 9,508 | | 432,977 | |
| | Total Ducks | 28,720 | 12,448 | 192,672 | 24,770 | 158,347 | 70,974 | 64,906 | 39,102 | 37,663 | 139,882 | 21,915 | | 791,399 | |
| MWS-18 | Mallards | 2,458 | 34,577 | 390,205 | 92,504 | 40,402 | 132,049 | 35,330 | 1,402 | 12,274 | 54,505 | 153,625 | | 949,331 | |
| | Total Ducks | 3,027 | 62,533 | 415,037 | 110,084 | 44,660 | 140,405 | 58,871 | 3,845 | 13,969 | 122,781 | 180,326 | | 1,155,538 | |
| Jan-18 | Mallards | 3,276 | 10,690 | 104,937 | 116,012 | 8,117 | 21,688 | 11,050 | 555 | 36 | 70,030 | 63,378 | | 409,769 | |
| | Total Ducks | 42,652 | 35,963 | 118,023 | 116,275 | 10,768 | 22,626 | 17,671 | 2,313 | 39 | 143,833 | 69,635 | | 579,794 | |
| Nov-18 | Mallards | 251 | 476 | 66,867 | 7,222 | 91,284 | 110,677 | 43,214 | 1,572 | 40,305 | - | 2,226 | | 364,094 | |
| | Total Ducks | 57,431 | 17,075 | 131,319 | 11,649 | 214,432 | 265,268 | 73,438 | 3,900 | 57,849 | 2,040 | 2,997 | | 837,398 | |

Table 2. Waterfowl abundance estimates in western Arkansas during the late November (Nov), mid-December (Dec), early-January Midwinter Survey (MWS) and late-January (Jan) aerial waterfowl survey periods, 2009-2018. Beginning in Jan. 2013, surveys in the Arkansas River Valley (ARV) were conducted using stratified random sampling of transects, while past ARV surveys and surveys in southwest Arkansas were conducted using "cruise" surveys.

| | | Survey Zone | | | | | | | | | | | |
|---------------|-------------|--------------------------|--------|------------------------------|--------------------|------------|------------|------------|-----------------------------|------------------------------|--------------------------------|-----------------------------|--------|
| | | Bigelow - Lake Conway | Cadron | East Dardanelle Reservoir | Fourche La Fave | Frog Bayou | Holla Bend | Petit Jean | Pt. Remove - Plumerville | West Dardanelle Reservoir | Arkansas River Valley Total | Southwest Arkansas Total | |
| Survey Period | Nov-09 | Mallards | | | | | | | | | 13,731 | 5,480 | |
| | | Total Ducks | | | | | | | | | 31,416 | 19,140 | |
| | Dec-09 | Mallards | | | | | | | | | 18,580 | 19,230 | |
| | | Total Ducks | | | | | | | | | 31,304 | 31,820 | |
| | MWS-10 | Mallards | | | | | | | | | 58,815 | 34,590 | |
| | | Total Ducks | | | | | | | | | 81,685 | 36,060 | |
| | Jan-10 | Mallards | | | | | | | | | 14,359 | 19,840 | |
| | | Total Ducks | | | | | | | | | 20,336 | 27,705 | |
| | Nov-10 | Mallards | | | | | | | | | 96 | 14,010 | |
| | | Total Ducks | | | | | | | | | 5,966 | 30,300 | |
| | Dec-10 | Mallards | | | | | | | | | 25,064 | 2,390 | |
| | | Total Ducks | | | | | | | | | 28,054 | 21,106 | |
| | MWS-11 | Mallards | | | | | | | | | 26,318 | 15,027 | |
| | | Total Ducks | | | | | | | | | 40,470 | 21,267 | |
| | Jan-11 | Mallards | | | | | | | | | 41,850 | - | |
| | | Total Ducks | | | | | | | | | 60,635 | - | |
| | Nov-11 | Mallards | | | | | | | | | 12,225 | - | |
| | | Total Ducks | | | | | | | | | 19,870 | - | |
| | Dec-11 | Mallards | | | | | | | | | 21,389 | - | |
| | | Total Ducks | | | | | | | | | 40,919 | - | |
| | MWS-12 | Mallards | | | | | | | | | 7,264 | - | |
| | | Total Ducks | | | | | | | | | 13,339 | - | |
| | Jan-12 | Mallards | | | | | | | | | 13,900 | - | |
| | | Total Ducks | | | | | | | | | 21,000 | - | |
| | Nov-12 | Mallards | | | | | | | | | 1,182 | 13,090 | |
| | | Total Ducks | | | | | | | | | 7,732 | 21,935 | |
| | Dec-12 | Mallards | | | | | | | | | 13,975 | 10,245 | |
| | | Total Ducks | | | | | | | | | 22,417 | 17,105 | |
| | MWS-13 | Mallards | | | | | | | | | 16,893 | 8,165 | |
| | | Total Ducks | | | | | | | | | 26,058 | 14,630 | |
| | Jan-13 | Mallards | - | 408 | 10,000 | 372 | 1,837 | 630 | 627 | 1,843 | 917 | 16,634 | - |
| | | Total Ducks | - | 1,428 | 10,180 | 372 | 1,971 | 990 | 902 | 3,687 | 7,857 | 28,011 | - |
| | Nov-13 | Mallards | 240 | 187 | 4,660 | 800 | 0 | 144 | 0 | 754 | 253 | 7,038 | 4,455 |
| | | Total Ducks | 320 | 187 | 14,320 | 1,920 | 0 | 1,080 | 528 | 965 | 3,307 | 22,627 | 19,145 |
| | Dec-13 | Mallards | 576 | 245 | 5,472 | 1,728 | 358 | 162 | 1,320 | 3,429 | 2,176 | 15,466 | 10,130 |
| | | Total Ducks | 1,604 | 2,713 | 8,672 | 1,728 | 1,836 | 3,132 | 1,501 | 4,329 | 3,941 | 29,456 | 29,070 |
| | MWS-14 | Mallards | 11,767 | 816 | 2,898 | 4,800 | - | 2,160 | 715 | 13,703 | 3,449 | 40,306 | 18,385 |
| | | Total Ducks | 14,441 | 816 | 8,711 | 5,124 | - | 2,934 | 957 | 22,177 | 6,087 | 61,247 | 35,875 |
| | Nov-14 | Mallards | 926 | 7,140 | 12,114 | 704 | 924 | 4,518 | 10,428 | 7,125 | 392 | 44,271 | 15,890 |
| | | Total Ducks | 5,040 | 10,540 | 45,485 | 4,256 | 3,248 | 4,518 | 19,932 | 12,039 | 624 | 105,682 | 29,790 |
| | Dec-14 | Mallards | 720 | 224 | 1,028 | 640 | 373 | 3,006 | 2,541 | 1,343 | 299 | 10,174 | 21,200 |
| | | Total Ducks | 1,242 | 530 | 33,805 | 1,296 | 373 | 4,194 | 4,059 | 6,991 | 299 | 52,789 | 29,400 |
| | MWS-15 | Mallards | 3,929 | 143 | 5,813 | 221 | - | 11,138 | 0 | 2,107 | 3,531 | 26,882 | 19,245 |
| | | Total Ducks | 10,594 | 755 | 18,649 | 221 | - | 13,455 | 224 | 2,107 | 9,871 | 55,876 | 28,695 |
| | Nov-15 | Mallards | 270 | - | 1,867 | - | 149 | 2,430 | 561 | 4,785 | 64 | 10,126 | 21,580 |
| | | Total Ducks | 270 | 449 | 2,898 | - | 1,170 | 14,760 | 726 | 7,042 | 64 | 27,379 | 37,060 |
| | Dec-15 | Mallards | 1,440 | 340 | 320 | 160 | 140 | 563 | 165 | 2,864 | 1,027 | 7,019 | 11,425 |
| | | Total Ducks | 4,140 | 374 | 3,140 | 992 | 140 | 7,088 | 165 | 6,913 | 3,274 | 26,226 | 17,950 |
| | MWS-16 | Mallards | 411 | 775 | 352 | 496 | 14,000 | 3,042 | 726 | 2,544 | 6,070 | 28,416 | 10,310 |
| | | Total Ducks | 617 | 775 | 6,752 | 896 | 17,562 | 6,102 | 990 | 3,808 | 15,019 | 52,521 | 16,715 |
| | Jan-16 | Mallards | 634 | 918 | 2,743 | 576 | 373 | 1,548 | 14,388 | 8,479 | 4,622 | 34,281 | 14,735 |
| | | Total Ducks | 634 | 918 | 3,817 | 1,536 | 1,966 | 2,088 | 18,777 | 11,815 | 5,478 | 47,029 | 19,565 |
| | Nov-16 | Mallards | - | - | 818 | - | 0 | - | - | - | 99 | 917 | 5,165 |
| | | Total Ducks | - | - | 6,530 | - | 814 | - | - | - | 100 | 7,444 | 14,690 |
| Dec-16 | Mallards | 112 | - | - | 739 | 187 | 2,612 | 296 | 234 | 8,186 | 12,364 | 34,946 | |
| | Total Ducks | 333 | - | 3,165 | 1,016 | 988 | 3,248 | 550 | 1,788 | 10,192 | 21,278 | 39,360 | |
| MWS-17 | Mallards | 24 | 1,538 | 180 | 831 | 242 | 448 | 5,050 | 1,808 | 2,333 | 12,454 | 19,386 | |
| | Total Ducks | 325 | 2,137 | 453 | 12,788 | 2,167 | 547 | 5,499 | 4,461 | 14,900 | 43,277 | 31,679 | |
| Jan-17 | Mallards | 17 | 627 | 16,432 | 3,812 | 1,019 | 5,394 | 1,561 | 14,818 | 4,768 | 48,448 | 13,682 | |
| | Total Ducks | 17 | 1,647 | 17,810 | 11,308 | 2,595 | 5,638 | 1,825 | 14,836 | 4,917 | 60,593 | 26,594 | |
| Dec-17 | Mallards | - | - | 821 | - | 0 | 1,184 | - | - | 2,129 | 4,134 | 15,487 | |
| | Total Ducks | - | - | 2,558 | - | 2,972 | 3,654 | - | - | 4,264 | 13,448 | 34,822 | |
| MWS-18 | Mallards | 0 | 0 | 10,862 | 1,013 | 4,784 | 22,254 | 0 | 5,269 | 6,711 | 50,893 | 18,412 | |
| | Total Ducks | 510 | 0 | 13,785 | 2,114 | 5,880 | 36,695 | 0 | 13,843 | 7,553 | 80,380 | 38,114 | |
| Jan-18 | Mallards | 2,080 | 3,144 | 11,881 | 135 | 1,115 | 141,074 | 845 | 3,361 | 5,214 | 168,849 | 10,849 | |
| | Total Ducks | 3,420 | 4,489 | 20,281 | 227 | 3,826 | 174,542 | 3,150 | 3,313 | 5,381 | 218,629 | 32,928 | |
| Nov-18 | Mallards | - | - | 273 | 2,956 | 3,617 | 198 | 4,733 | 7,074 | 429 | 19,280 | 9,721 | |
| | Total Ducks | - | - | 5,878 | 3,319 | 3,895 | 253 | 8,867 | 9,956 | 502 | 32,670 | 26,969 | |

Figure 1. Duck abundance estimates in the Mississippi Alluvial Valley (Delta) of Arkansas during the late November (Nov), mid-December (Dec), early-January Midwinter Waterfowl Survey (MWS) and late-January (Jan) aerial waterfowl survey periods, 2009-2018.

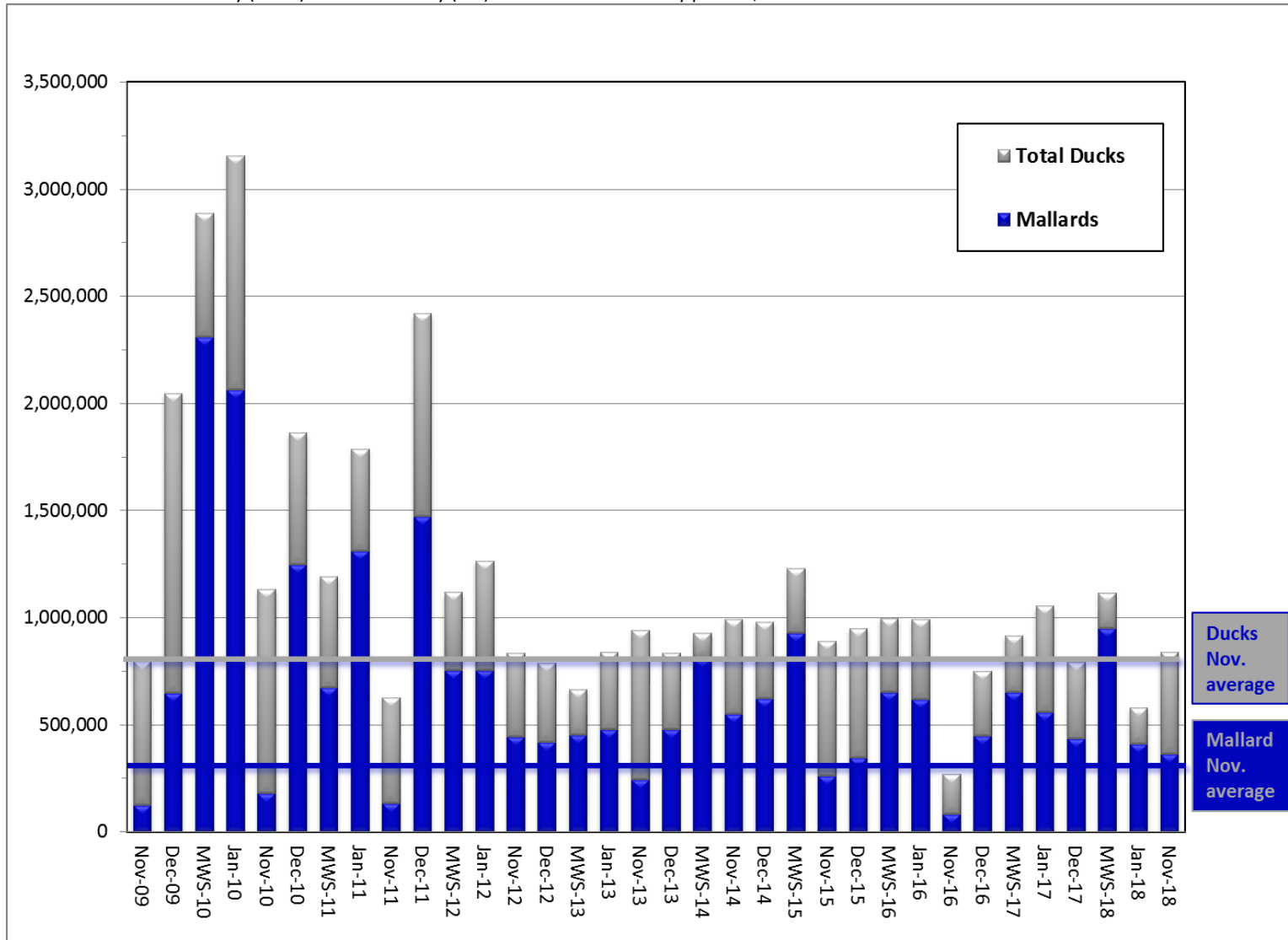


Figure 2. Duck abundance estimates in the Arkansas River valley of Arkansas during the late November (Nov), mid-December (Dec), early-January Midwinter Waterfowl Survey (MWS) and late-January (Jan) aerial waterfowl survey periods, 2009-2018.

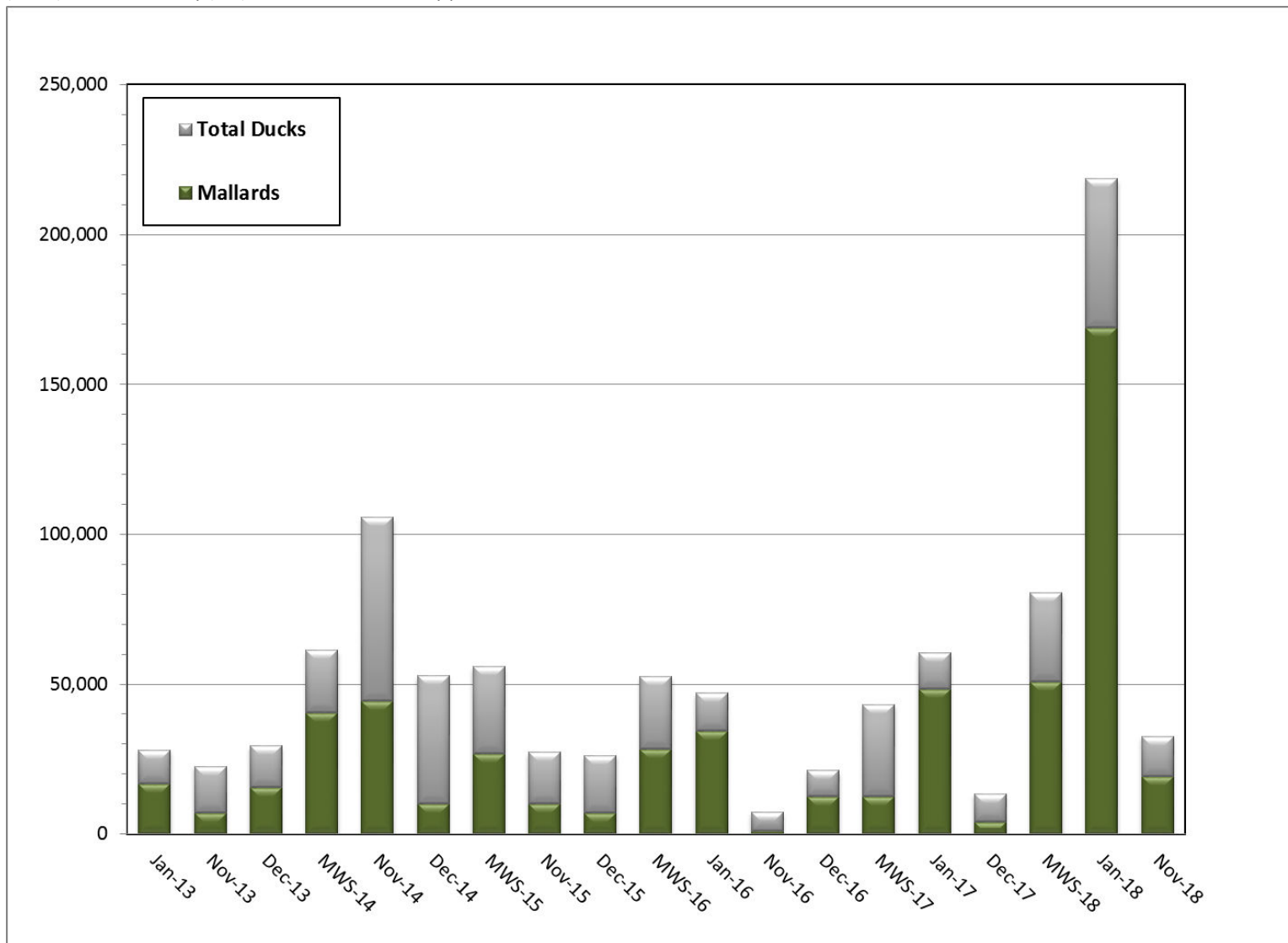


Figure 3. Duck distribution in the Mississippi Alluvial Valley of Arkansas during the November 2018 aerial waterfowl survey period.

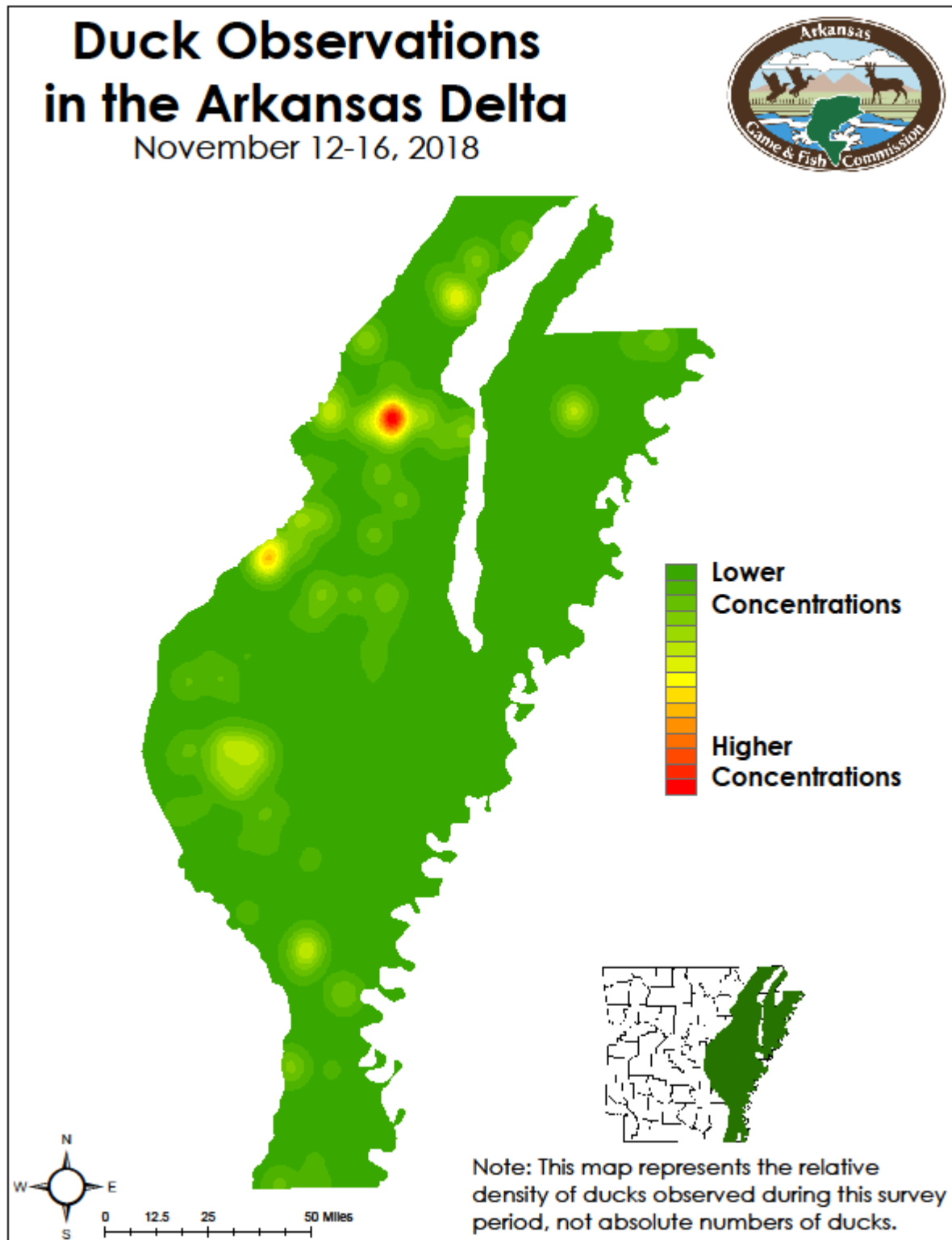


Figure 4. Mallard distribution in the Mississippi Alluvial Valley of Arkansas during the November 2018 aerial waterfowl survey period.

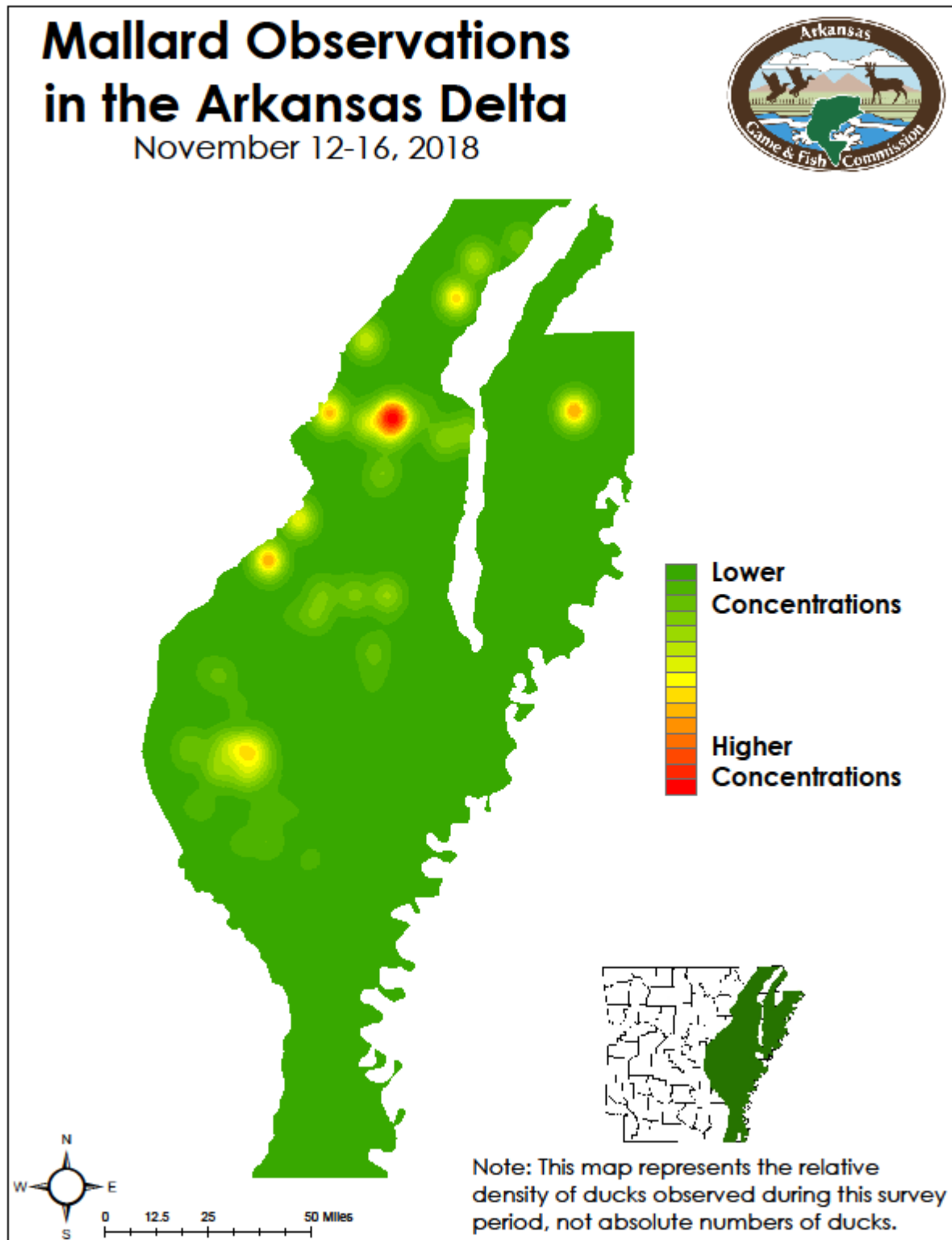


Figure 5. Duck distribution in the Arkansas River Valley (ARV) of Arkansas during the November 2018 waterfowl survey period.

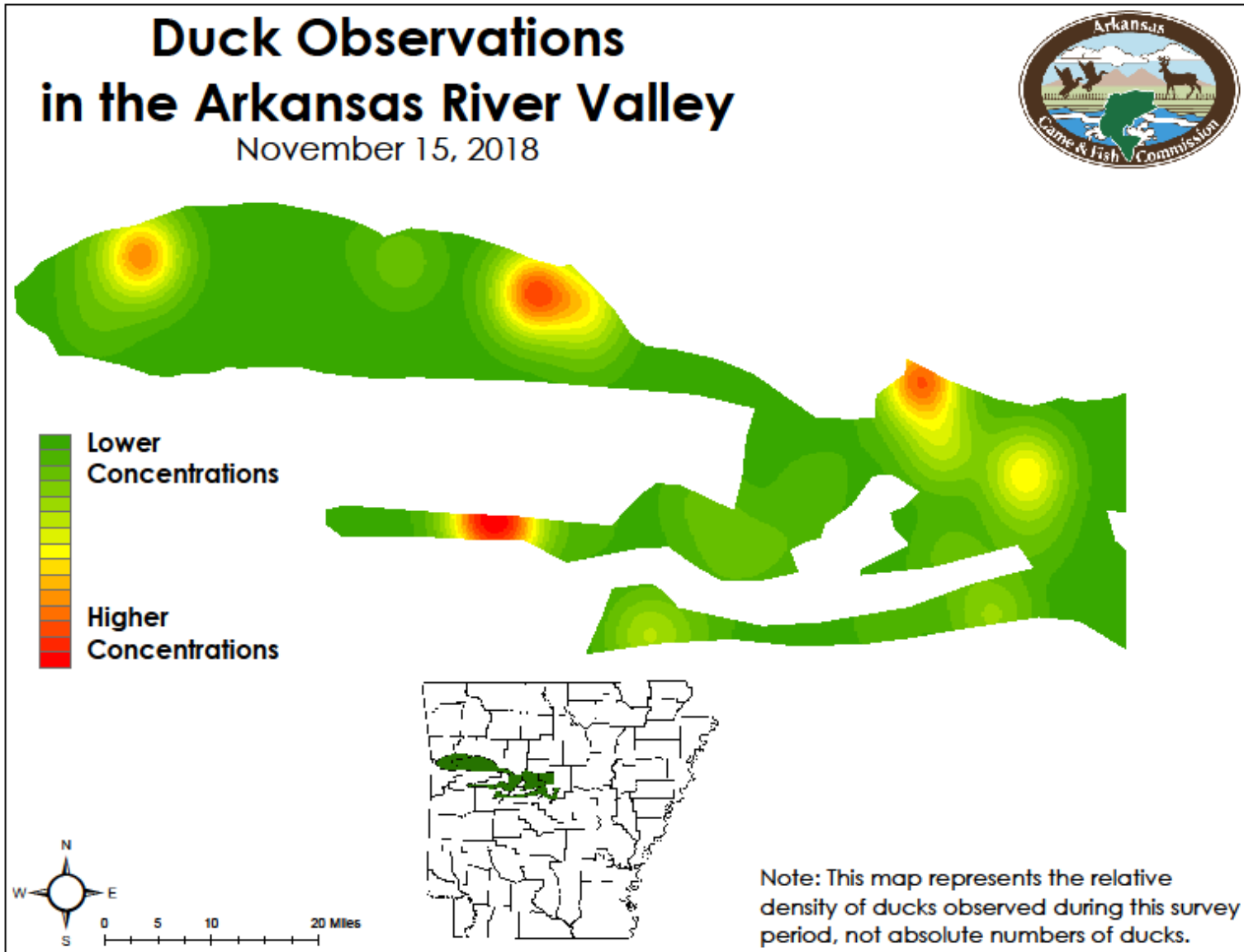
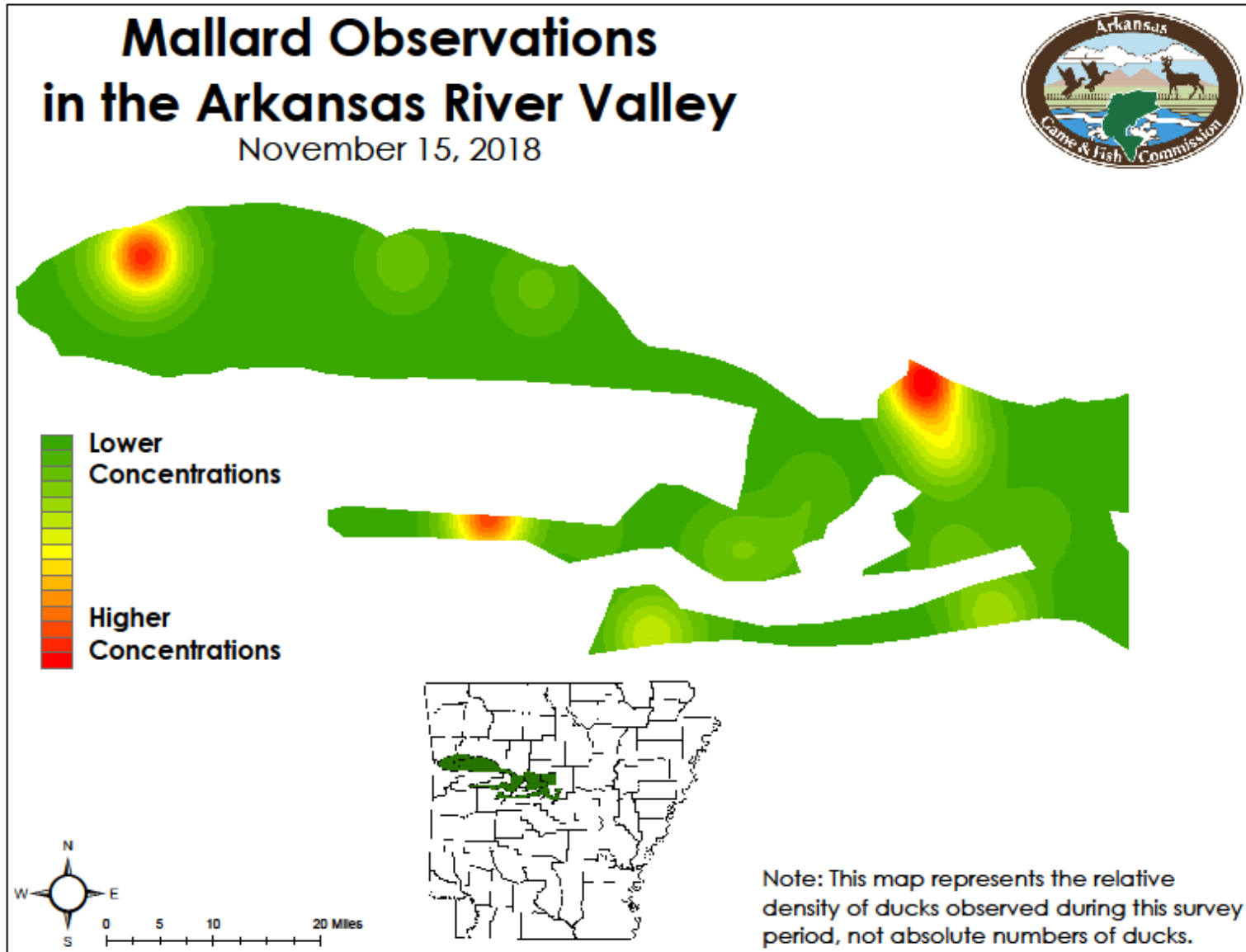


Figure 6. Mallard distribution in the Arkansas River Valley (ARV) of Arkansas during the November 2018 waterfowl survey period.



Survey Design Background

The Mississippi Alluvial Valley is an area of continental significance for migrating and wintering waterfowl, as outlined in the North American Waterfowl Management Plan, and the single most important region for wintering mallards. Habitats found in western Arkansas, including the Arkansas River Valley and southwest Arkansas, such as the Red and Sulphur River floodplains, provide additional critical habitat for migrating and wintering waterfowl. Biologists conduct regular waterfowl surveys in these regions by aircraft up to four times each wintering period.

Winter waterfowl surveys, including the Midwinter Waterfowl Survey, have been conducted across much of the United States since 1935. Many different counting techniques have been used, and recently AGFC and partners have conducted surveys in the MAV using stratified random sampling of aerial fixed width (250m) strips, or transects, that have the advantages of extensive coverage (i.e., no area is excluded from the sample), increased accuracy by counting on fixed strips rather than traditional “cruise” surveys only counting waterfowl on large concentration areas, and availability of measures of sampling error.

Beginning in 2011 in the MAV, survey strata – or sampling zones – follow watershed boundaries (Figure 4). Watersheds in this case are simply land areas that are occupied by a drainage system consisting of a portion of a surface stream and all the tributary surface streams feeding it. For example, the Cache River strata includes lands surrounding and tributaries flowing into the Cache River from the Missouri border on the north to the Cache River’s junction with the White River on the south. At the root of this sampling design is the idea that habitat within these zones will share common weather and flooding patterns and, knowing that ducks are keyed in on such patterns, duck distribution will vary among watersheds. This is not a concept foreign to those who follow ducks, particularly duck hunters, as they frequently discuss habitat and duck numbers in terms of conditions in the “Cache River bottoms,” for instance. Systematically conducting aerial waterfowl surveys using this design will allow for more efficient allocation of sampling effort and provide precise estimates of waterfowl abundance in the MAV. Such a design offers an opportunity to track changes in abundance in response to changes in land use, flooding patterns or weather conditions, for example.

Before each survey period, transects to be flown are randomly selected within each strata. Biologists spend many hours in the air flying each of these transects – totaling over 3,500 miles each survey – recording all waterfowl observations using specialized computer software that collects location information in flight. Biologists also collect habitat information for each duck observation to track trends in habitat use. These data can then be used to generate population estimates for each strata and the entire MAV and develop visual representations of duck distribution (i.e., duck density maps).

Figure 6. Aerial waterfowl survey strata in the Mississippi Alluvial Valley (Delta) of Arkansas.

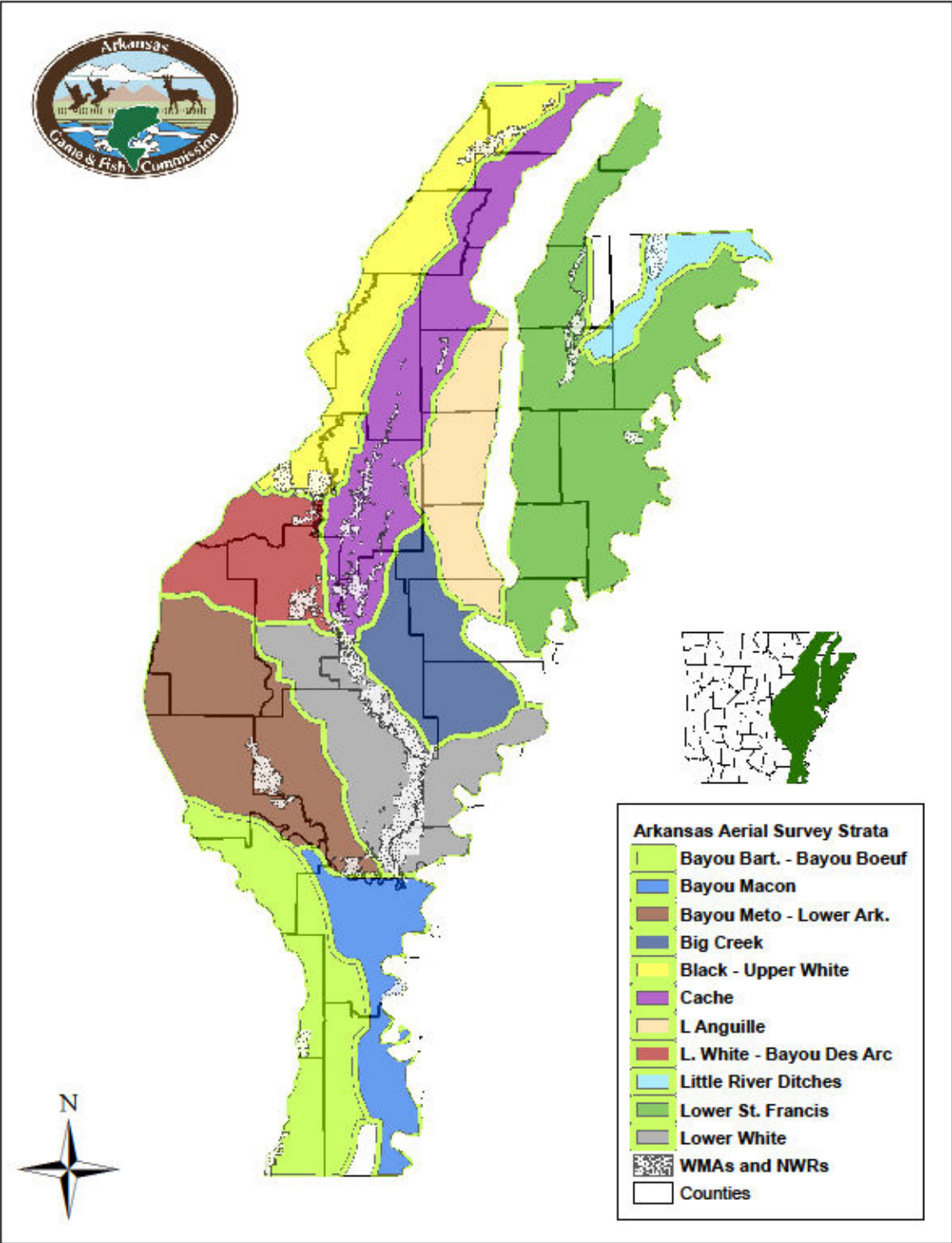


Figure 7. Aerial waterfowl survey strata in the Arkansas River valley (ARV) of western Arkansas.

