U.S. Fish & Wildlife Service

2017 Mourning Dove Banding at the Rocky Mountain Arsenal National Wildlife Refuge

October 2017

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations.

CITATION:

U.S. Fish and Wildlife Service. 2017. 2017 Mourning Dove Banding at the Rocky Mountain Arsenal National Wildlife Refuge. U.S. Department of the Interior, Fish and Wildlife Service. Commerce City, CO. 8p.

COVER PHOTO: USFWS (Susan Horton)

Introduction:

Mourning doves (doves), *Zenaida macroura*, are the most abundant and widely distributed bird species in North America (Seamans, 2016). Their estimated population in the US is 400 million (Otis, Schultz, and Scott, 2008). They are habitat generalists and can thrive in both urban and rural landscapes (Otis, Schultz, and Scott, 2008). They are recognized in multinational treaties as a renewable migratory bird resource for the purposes of sport hunting therefore a healthy population is an important goal for agencies charged with their management (Seamans, 2016). On the US federal level, management is the responsibility of the Department of the Interior. In the State of Colorado the responsibility lies with Colorado Parks and Wildlife (CPW).

In 2003 a National Strategic Harvest Management Plan was adopted by the national flyway councils for the purpose of making informed harvest management decisions pertaining to the hunting of mourning doves (USFWS, 2017). In 2007 CPW, in alignment with the national strategy, initiated a new dove banding program to better understand the dove population within the State of Colorado (CPW, 2017). The Western, Central, and Eastern Flyway Councils endorsed a national dove banding program in 2008 to gather information on the national population of doves to build an informed harvest scenario model for the purposes of maintaining healthy dove populations and to minimize changes to hunting regulations (USFWS, 2017). The first year of the national banding program, 38 states participated and banded 43,537 doves. The State of Colorado did not participant. The following year Rocky Mountain Arsenal National Wildlife Refuge (RMANWR, Refuge) was added as a banding site for the State of Colorado to aid in CPW efforts to gain population data as a participant in the national dove banding program.

Approximately 1 million hunters harvest about 20 million birds each year in the United States (Otis, Schultz, and Scott, 2008). Of the nine hunting seasons since the Refuge has participated in the dove banding program there are four seasons of harvest data for the State of Colorado (CPW, 2017 and Kulowiec, Reitz, Fleming, and Thompson , 2016). The median number of doves harvested in those 4 seasons is 219,688 and the median number of hunters is 14,179 (CPW, 2017 and Kulowiec, Reitz, Fleming, and Thompson , 2016).

Methods:

Nine potential trap sites on the Refuge were pre-baited to determine the potential of trap success at each site. Sites chosen were sites where trapping efforts were successful in the past or where doves are known to perch and/or feed. Most sites are in the central portion of the Refuge in Section 35. Trap sites were typically devoid of vegetation and what debris was present was cleared to enable traps to lay flush with the surface to help keep trapped birds in and off-target species out. Pre-baiting consisted of removing debris of any sort on the soil surface then placing an arbitrary amount of millet (~2 cups) in a pile daily at each site for 14 days.

There are 20 Kniffin funnel traps for use at the Refuge (Fig. 1). There are various ways to configure the traps but we have chosen to tightly arrange 4 traps over a pile of millet with corners and edges where funnels are not present touching as the funnels are facing outward to

allow for bird entrance. This limits the number of trap sites for any given trap period to five sites. We initiate trapping at the sites thought to have the most potential for success as determined by the amount of seed needed to replenish the trap site daily over the course of the 2-week pre-baiting period. Traps are moved to other pre-bait sites as warranted. This is a subjective decision when trap success appeared to be slowing down or current year recapture rates increase over trap days. No time of day was targeted. Trapping effort continued throughout the work day as long as the heat of the day did not appear to stress the birds.

Figure 1. Four Kniffin trap set-up.

Once birds are trapped, towels are placed over the traps to calm the birds. Each bird is then gently removed from the trap by picking it up with the first 2 knuckles of a hand around its neck while the rest of the hand prevented the bird's wings from flapping. Then the bird is banded using avian banding pliers. The band number is recorded along with the trap location, the bird's age, and sex if assigned or it is designed unknown for one or more category.

The age of a bird is assigned using coloration along the tips of the primary coverts. Juveniles are assigned the **Hatch Year (HY)** label and have white or cream-colored tips on the primary coverts. The light colored tips are also referred to as buff-colored (FWS, 2017 and Otis, Schulz, and Scott, 2008). Adults are assigned the **After Hatch Year (AHY)** label and have solid gray feathers (FWS, 2017 and Otis, Schulz, and Scott, 2008). See protocol at end of report.

The gender of an adult dove is also assigned using coloration where "females are tan or rosy on the head and neck and males are bluish on the crown of the head and nape of the neck" (FWS, 2017 and Otis, Schulz, and Scott, 2008). Coloration of juvenile dove is ambiguous therefore gender cannot be assigned (FWS, 2017 and Otis, Schulz, and Scott, 2008). Unassigned age or gender is labeled Unknown (UNK), (FWS, 2017 and Otis, Schulz, and Scott, 2008).

Results:

Eight of the nine pre-bait sites were used over the course of the 12 trap days. One hundred and fifty-eight doves were trapped and banded on the Refuge from July 11th through July 31st, 2017 (Table 1). One hundred and nine AHY birds were banded. Of those adults, 33 were male and 76 were female. No birds assigned AHY had unassigned gender. Forty-five doves were assigned HY for age. Those 45 birds were assigned unknown gender. Four birds were assigned unknown gender and age.

Table 1. Age & Sex of 2017 Banded Doves	Males	Females	Unknown Age	Total
AHY – After Hatch Year	33	76		109
HY – Hatch Year			45	45
Unknown Sex			4	4
Total	33	76	49	158

A total of 1,556 doves have been banded on the Refuge from 2009-2017. Eight hundred and three were adult birds, 682 were juvenile, and 71 were not assigned an age group. Two hundred and ninety-seven doves were male and 436 were female. Seventy AHY birds were assigned UNK for their gender.

Thirty-one birds banded on the Refuge in previous years were recaptured in 2017. Three of these recaptured birds were banded in 2013, 3 were banded in 2014, 8 were banded in 2015, and 17 were banded in 2016.

Colorado participates in the national Harvest Information Program (HIP) where hunters provide harvest information pertaining to migratory birds (CPW, 2017). Eleven birds banded on the Refuge have been harvested and reported. Four were harvested in Texas, 3 in Mexico, 2 in Colorado, 1 in Arizona, and 1 in New Mexico (Grommenly, Personal Communication, Summer 2017).

- Of the 4 birds harvested in Texas, all 4 were hatch year birds. One was harvested in 2011, 2 were harvested in 2013, and 1 was harvested in 2015.
- Of the 3 birds harvested in Mexico, 1 was a hatch year bird and 2 were adults. The hatch year bird was harvested in 2010. One adult was banded in 2009 and harvested the following year the other was both banded and harvested in 2015.
- Of the birds harvested in Colorado, both were banded as hatch year birds. One was banded in 2010 and harvested the following year, and the other was both banded and harvested in 2011.
- The bird harvested in Arizona was a HY bird both banded and harvested in 2014.
- The bird harvested in New Mexico was banded as an AHY bird in 2016 and harvested the same year.

In 2017, 31 previously banded doves were trapped at the Refuge (Fig. 3). All were originally banded on the Refuge. The previously banded doves accounted for 16.4 % of the

doves trapped in 2017 and 77.4% of these 31 doves were assigned the AHY age class at time of banding (Fig. 3). The next highest return rate of trapping previously banded doves was in 2016 when 11 previously banded doves were trapped (Fig. 3). This accounted for 5.2% of the total doves trapped in that year and 90.9% of these 11 doves were assigned the AHY label at time of banding (Fig. 3). Between 2009 and 2917, 68% of returning birds were assigned the AHY label at banding. Twenty-three percent were trapped at the very sight where they were banded. The oldest returning birds were banded in 2013 and each of them was labeled as HY birds.

Discussion:

Mourning Doves have a high mortality rate (Otis, Schulz, and Scott, 2008). Migrating doves from northern latitudes have a higher survival rate than southern resident populations and adult survival is higher than juvenile (Otis, Schulz, and Scott, 2008). Fifty to 75% of the overall dove population dies each year with life expectancy being one breeding season (Otis, Schulz, and Scott, 2008). Mortality is likely controlled by available food (Otis, Schulz, and Scott, 2008).

Juvenile doves tend to disperse across a broad range and show less affinity for their hatch site than for their first nesting site (Otis, Schulz, and Scott, 2008). In a six year study in Missouri only 3.1% of juvenile doves returned to their hatch site. In Massachusetts a 20 year study showed that over 90% of both adult male and female doves return to their first nest site (Otis, Schulz, and Scott, 2008).

The predominate age class of doves banded at the Refuge shifts from juvenile to adult over time (Fig. 2) though no definitive conclusions can be drawn from the data collected at the Refuge. In 2009, 2011 and 2012 the majority of the birds banded were AHY birds (Fig. 2). In 2010, 2013 and 2014 the banded birds were dominated by HY birds (Fig. 2). In 2015, 2016, and 2017 the dominate age class of doves banded was AHY (Fig.2).

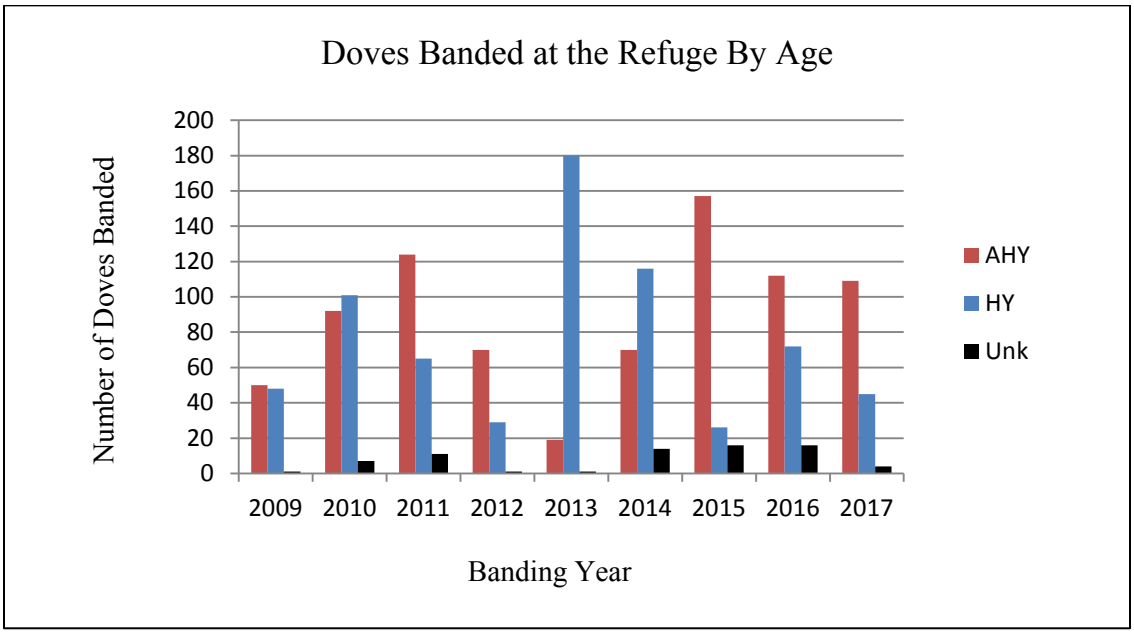

Figure 2. Age class of doves banded at the Refuge between 2009 and 2017.

There is a trend in age class that can be seen in the recaptured dove data as well (Fig. 3). In 2016 and 2017 there are very high percentages of AHY doves that had been banded in previous years (Fig. 3). This information supports the idea that the dove population is either resident or AHY birds are returning to their first nesting site. Colorado is found at middle latitudes so the dove population may have characteristics of both migrating birds similar to those found at northern latitudes and resident birds such as those found in southern latitudes (Otis, Schulz, and Scott, 2008). The Refuge may also be shifting from a predominate hatch site, to that homed in on by AHY birds as a preferred nesting site (Otis, Schulz, and Scott, 2008).

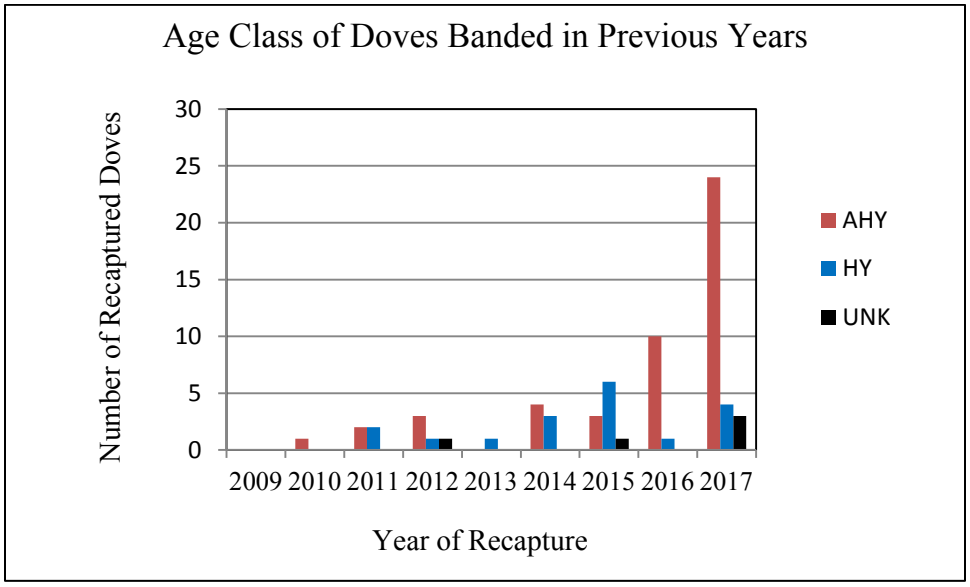

Figure 3. Age class of doves, at the time of banding, that were recaptured at the Refuge in subsequent years.

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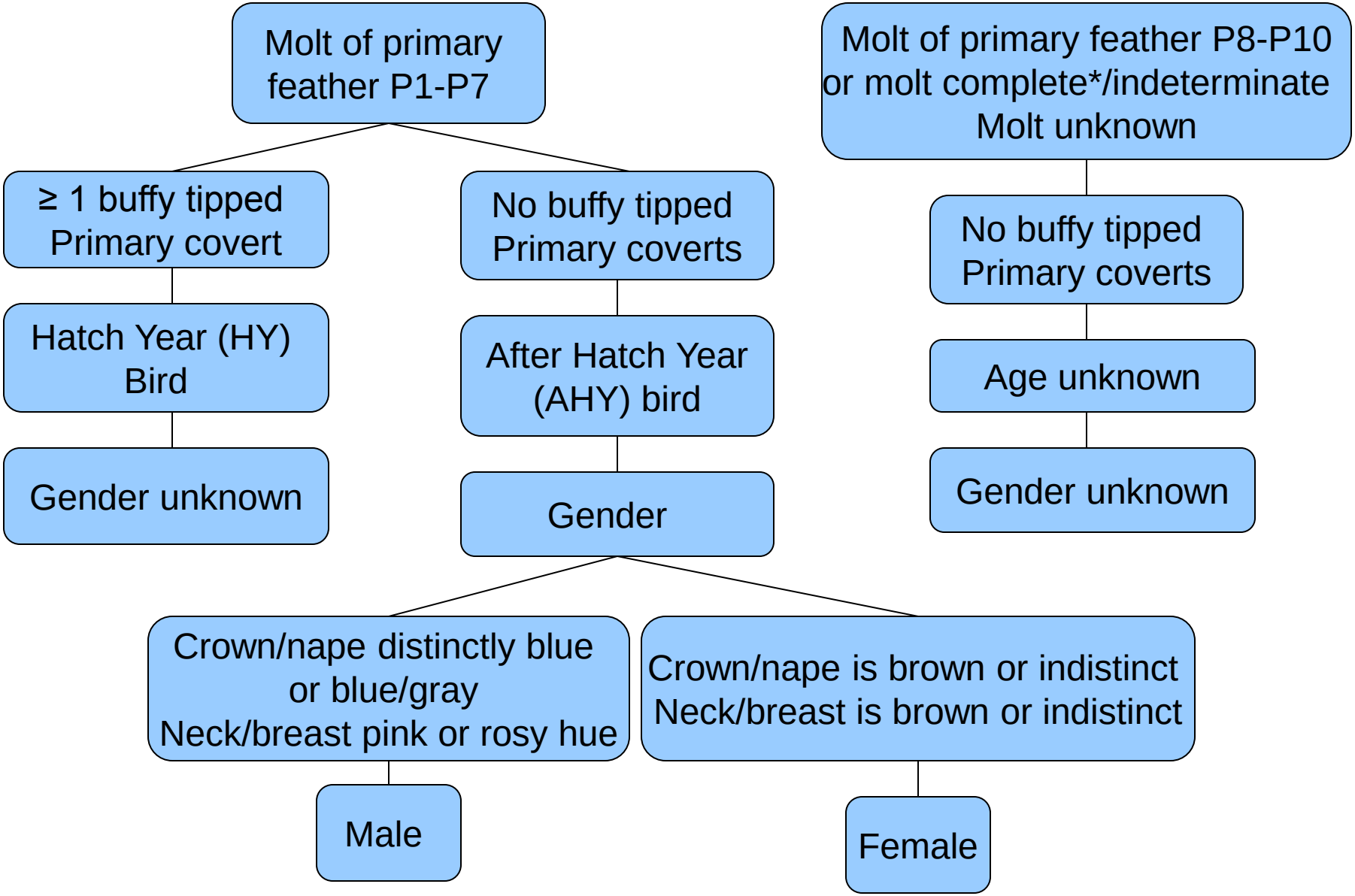
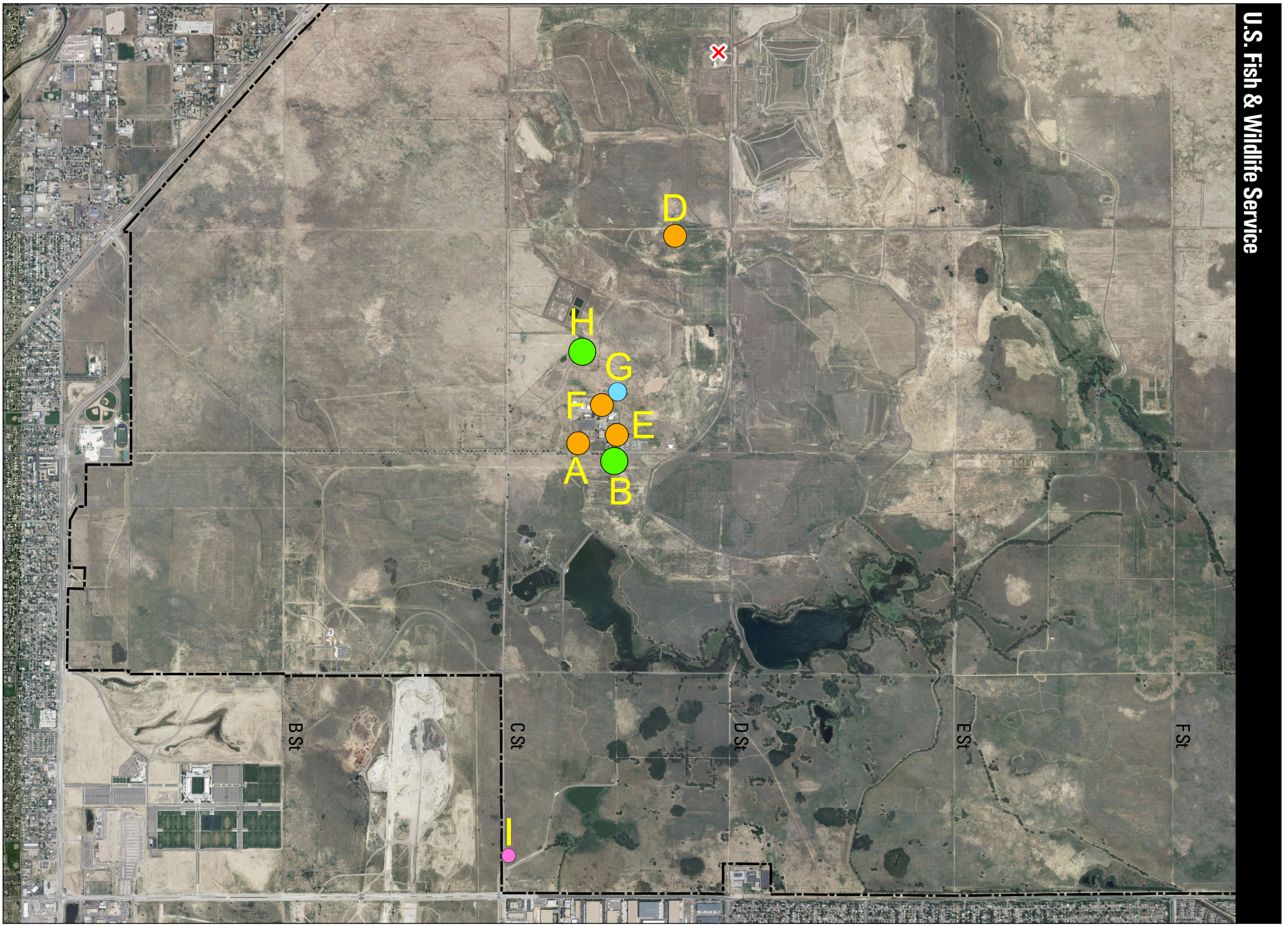
Assessing Molt, Age, and Gender



*Complete = all 10 primaries have been replaced

Adrianna Araya, USFWS 6/7/10



Rocky Mountain Arsenal
National Wildlife Refuge
2017 Mourning Dove Banding

No doves trapped

1 | 6 - 10 | 26 - 50

2 - 5 | 11 - 25 | > 50

0 Miles 0.5

0 Kilometers 1

Transverse Mercator Projection
UTM Zone 13 North - Units Meters
North American Datum 1983
WGS 1984 Grid