

Whitetail Wanderings: Geospatial Tech and Aerial Deer Surveys in Farmington Hills

Matt Malone, GIS Coordinator
City of Farmington Hills, Michigan

IMAGIN Conference
2022

OUTLINE

- Overview of city and deer concerns
- Aerial deer surveys
- Geospatial apps and data collection
- Mapping the deer population
- Future directions for deer management



DEER CONCERNS IN FARMINGTON HILLS

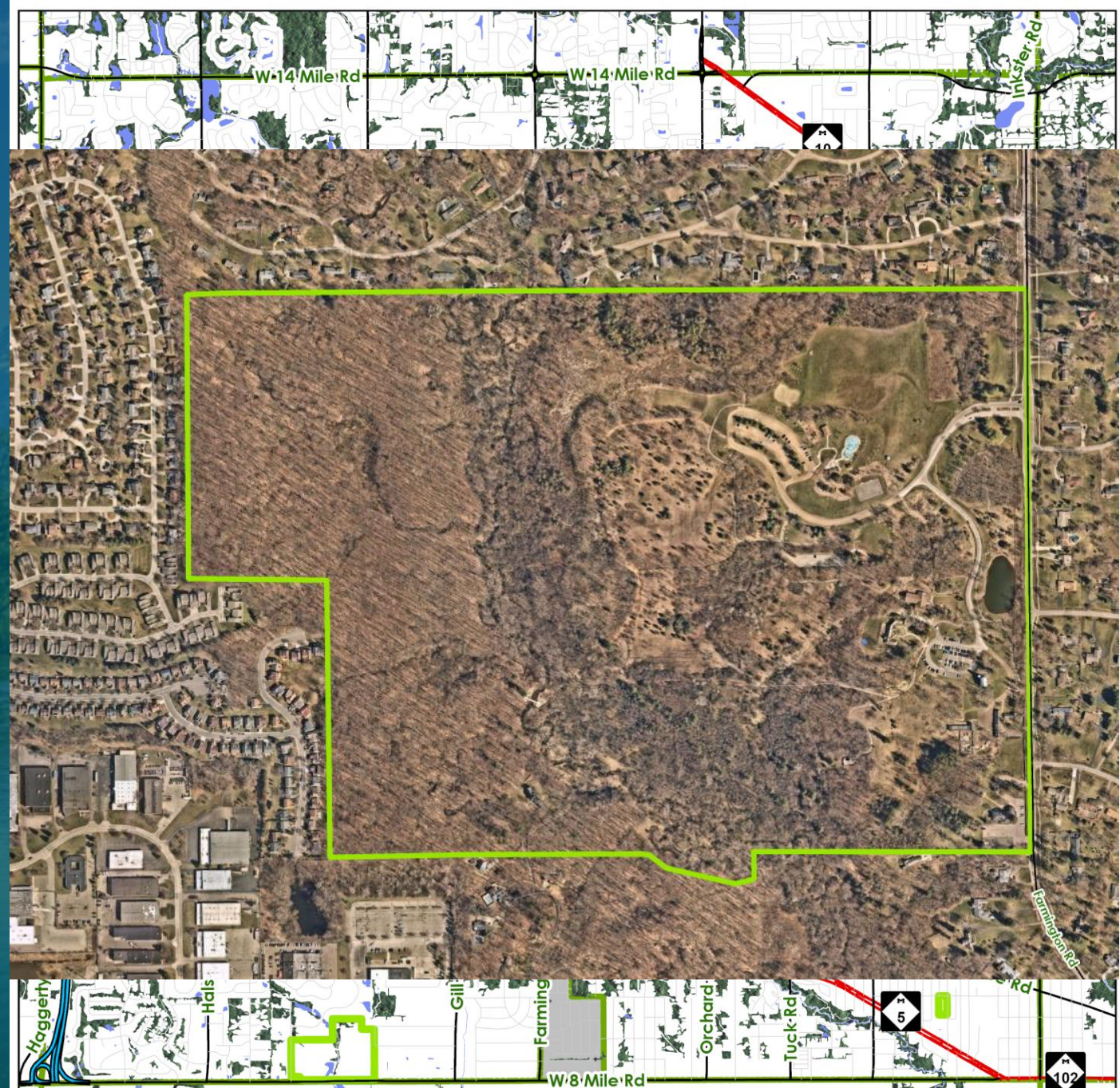
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FARMINGTON HILLS OVERVIEW

- Second largest city in Oakland County and 11th in Michigan
- Population: 83,986 (2020)
- Several major roads crisscross the city
- Rouge River
- Three major parks and two golf courses

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MICHIGAN STATE POLICE

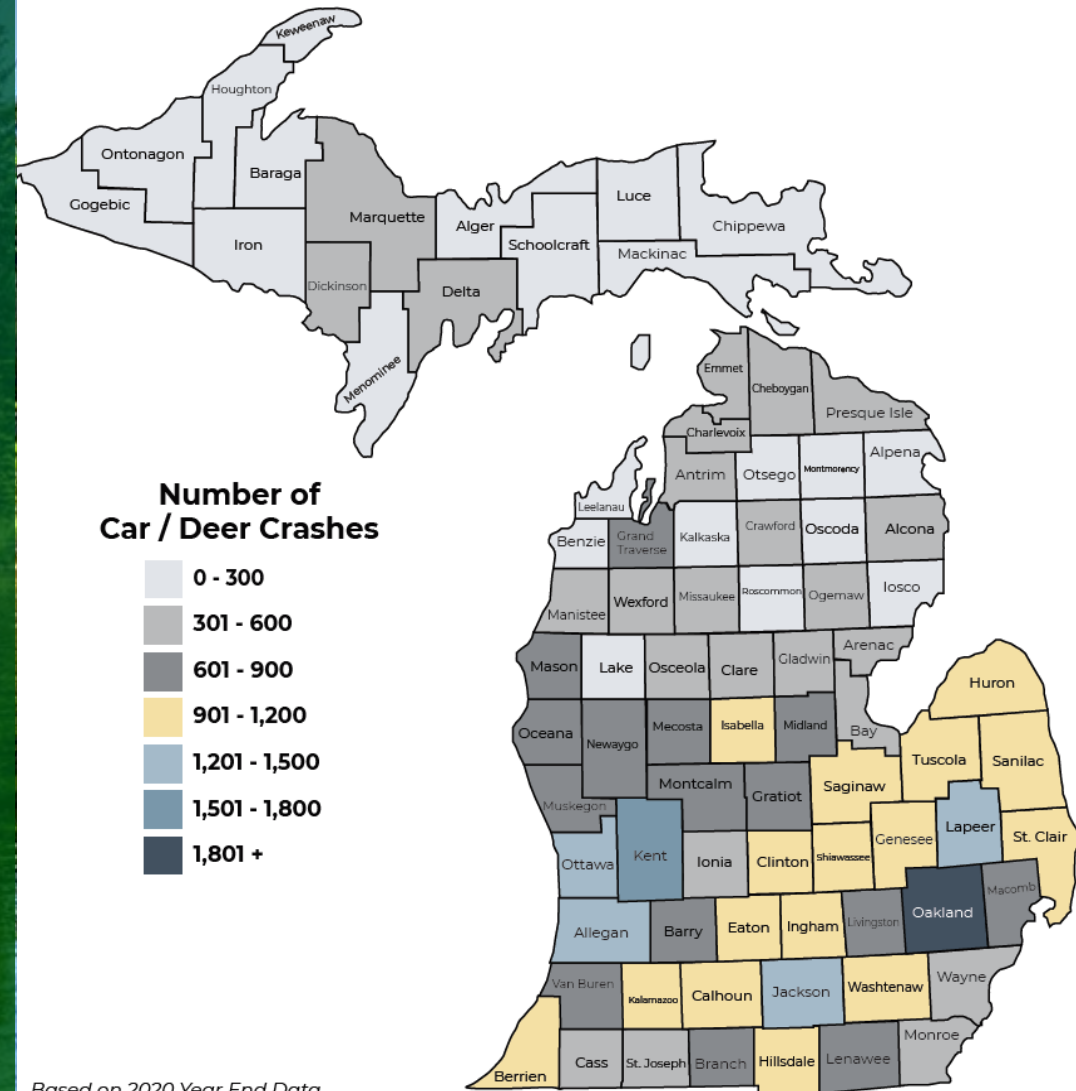


A PROUD tradition of SERVICE through EXCELLENCE, INTEGRITY, and COURTESY.

DEER CONCERNS ARISE

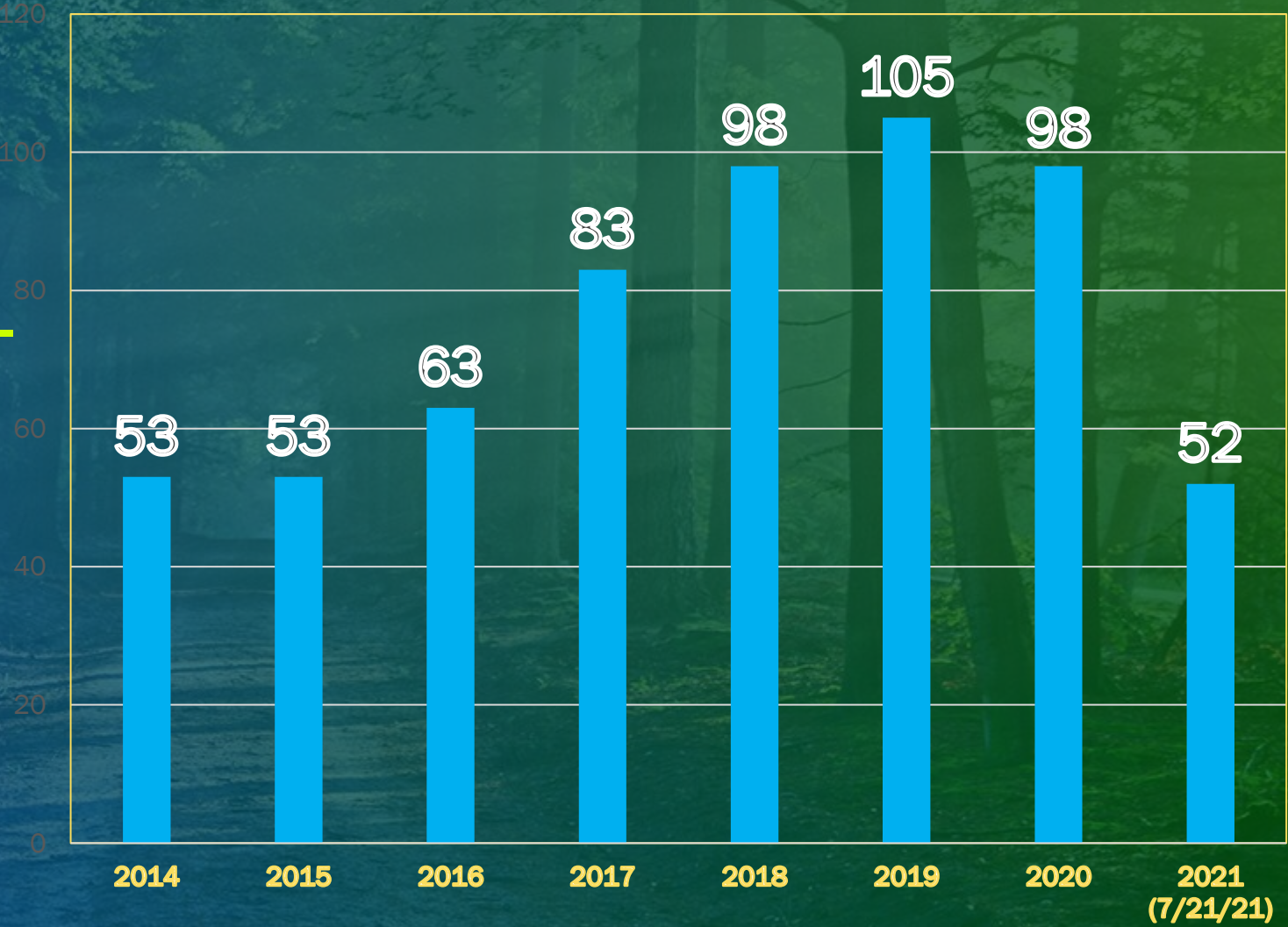
- City meets with DNR in April 2015 regarding deer issues
- Deer Information Log for residents created -over 200 calls and emails
- Primary concerns: Deer population; landscape destruction; ticks/lyme disease; personal and pet safety
- Feeding ban ordinance adopted in 2017

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Deer/Vehicle Crash Data in Farmington Hills

DEER REMOVED BY DPW



AERIAL DEER SURVEYS

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The image is a composite. The top half features a dark, semi-transparent overlay with the text 'AERIAL DEER SURVEYS' in white, bold, sans-serif font. A thin yellow horizontal line is positioned below the text. The background of this top section is a grayscale aerial photograph of a mountain range. The bottom half of the image is a vibrant, full-color photograph of a mountain valley. In the foreground, a calm lake reflects the surrounding landscape, including the sky, trees, and distant mountains. The valley floor is covered in lush green grass, with scattered evergreen trees and a few small buildings visible in the distance. The overall scene is a picturesque mountain landscape.

THE FIRST SURVEYS- SPRING 2016

- McMahan Helicopters out of Canton Township-4 occupants including pilot
- Flight heights at ~200 feet at 25 MPH
- DNR wildlife specialist on-board
- Leaf off, snow covered ground a necessity for spotting

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SUBSEQUENT AERIAL SURVEYS

- Winter flights in 2016-2019 and 2021-2022
- Flight and study area expanded to include partnership with City of Southfield in 2018

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DATA COLLECTION: FROM OPEN SOURCE TO QUICK CAPTURE

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DECIDING ON APPS AND METHODS

- Phone-based location services or stand-alone GPS?
- Smartphone OS changes and advancements = good thing
- Battery life during GPS use
- What if phone dies during collection?



THE PAPER LOG YEARS

- 2016-2017 flights-data captured by Geo Tracker application
- Pre-printed sheets of site numbers 1-200 to tally deer
- App operator collected point when deer called out, joined to tally sheet

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216/16

SITE 7 NAME: 49 START: 10:12 STOP: _____	DEER TALLY 4
SITE 8 NAME: 50 START: 10:29 STOP: _____	DEER TALLY 89
SITE 9 NAME: 51 START: 10:29 STOP: _____	DEER TALLY 3
SITE 10 NAME: 52 START: 10:24 STOP: _____	DEER TALLY 8
SITE 11 NAME: 53 START: 10:26 STOP: _____	DEER TALLY 4
SITE 12 NAME: 54 START: 10:27 STOP: _____	DEER TALLY 1

26

MOVING TO ESRI COLLECTOR AND QUICK CAPTURE

- 2018-2019 flights used Collector
- Rudimentary dashboard trials in 2019
- No flight in 2020 due to you know what
- 2021-2022 flights-Quick Capture and the Big Button™

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Deer Monit

Total Deer



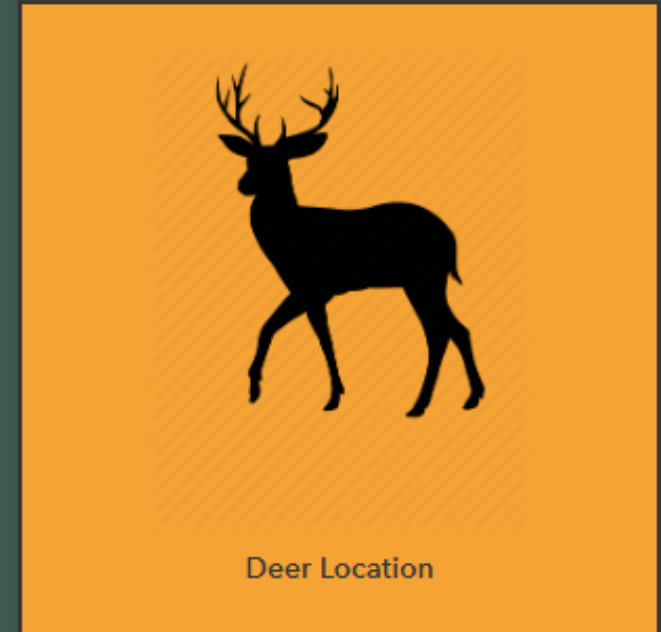
Last update: a few seconds ago

Deer Si



Deer Locations 2022

Deer Location Capture



● GPS accuracy 30m



FINAL DEER TOTALS

Survey Date	Farmington Hills and Farmington Area	Southfield	Total Deer
2016	304	N/A	304
2017	425	N/A	425
2018	602	277	879
2019	370	279	649
2021	729	869	1,598
2022	528	447	975

MAPS AND DATA PRODUCTS

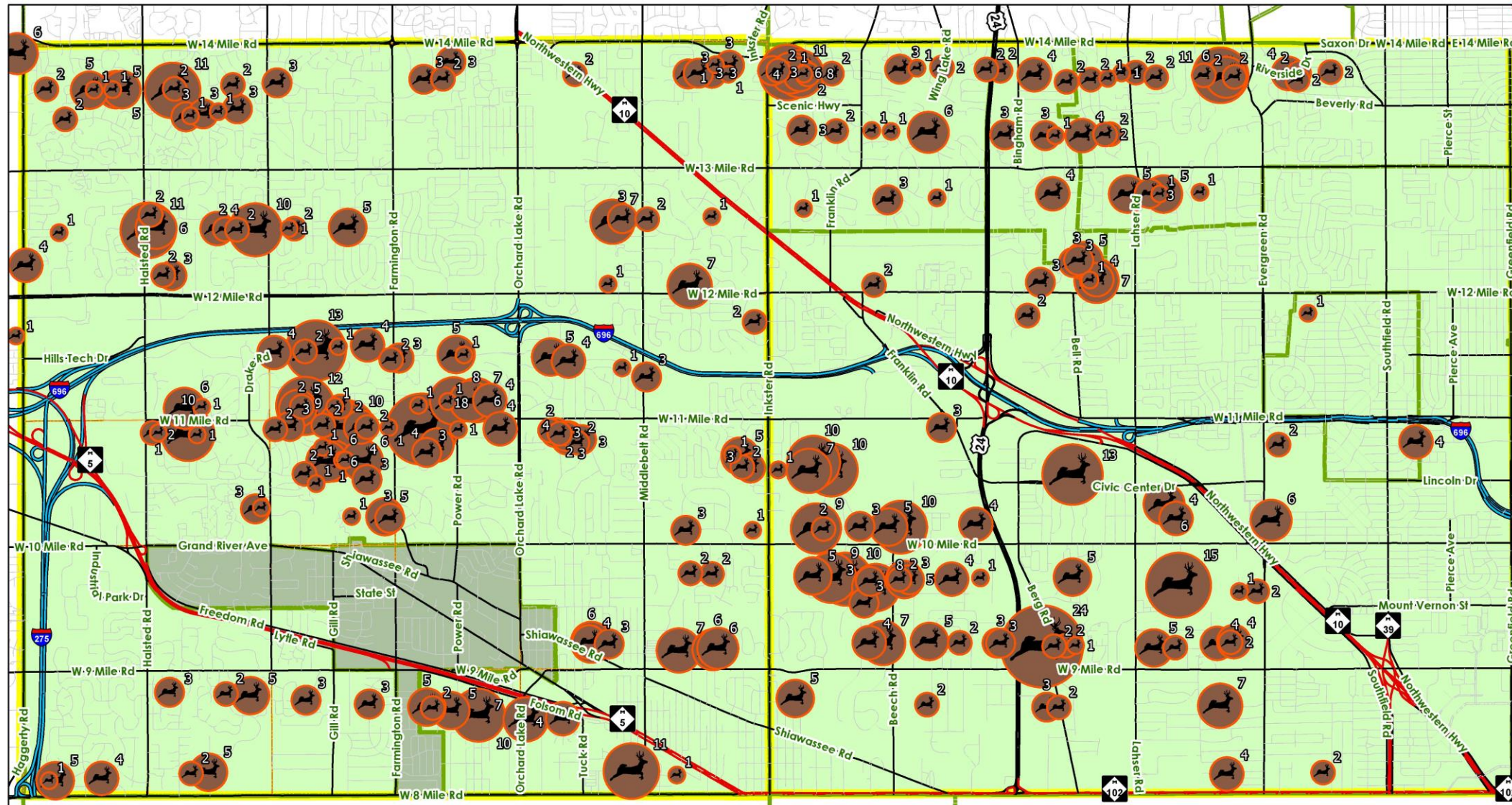
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DISPLAYING THE DEER DATA DELUGE

- Best mapping types to communicate and visualize counts
- Graduated symbols, choropleth mapping
- Density per square mile-DNR threshold
- Rivers and wooded corridors to show routes



GRADUATED SYMBOLS

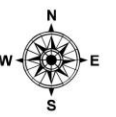
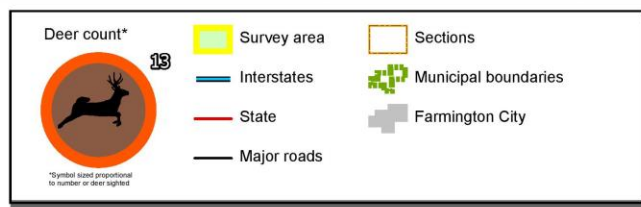


Urban Deer Survey

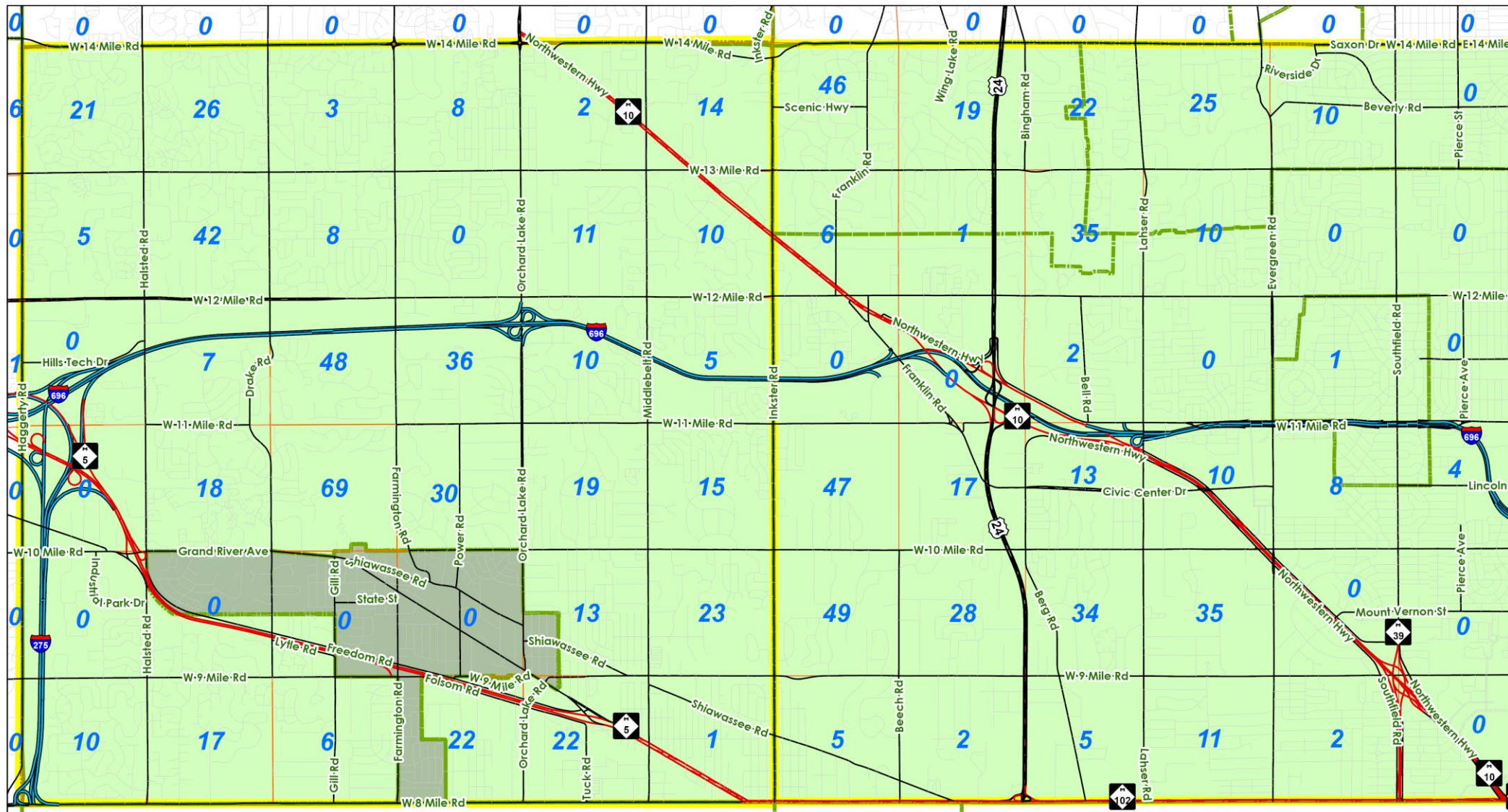
Cities of Farmington Hills & Southfield
Aerial Survey-February 2022



SOURCES: City of Farmington Hills, 2022
Department of Special Services, 2022
Deer Survey Conducted: 2/14/2022



CHOROPLETH AND DENSITY MAPPING

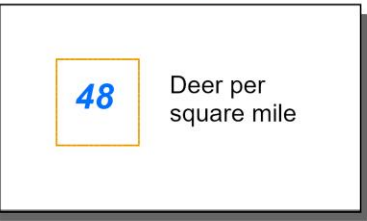


Urban Deer Survey

Cities of Farmington Hills & Southfield
Aerial Survey-February 2022

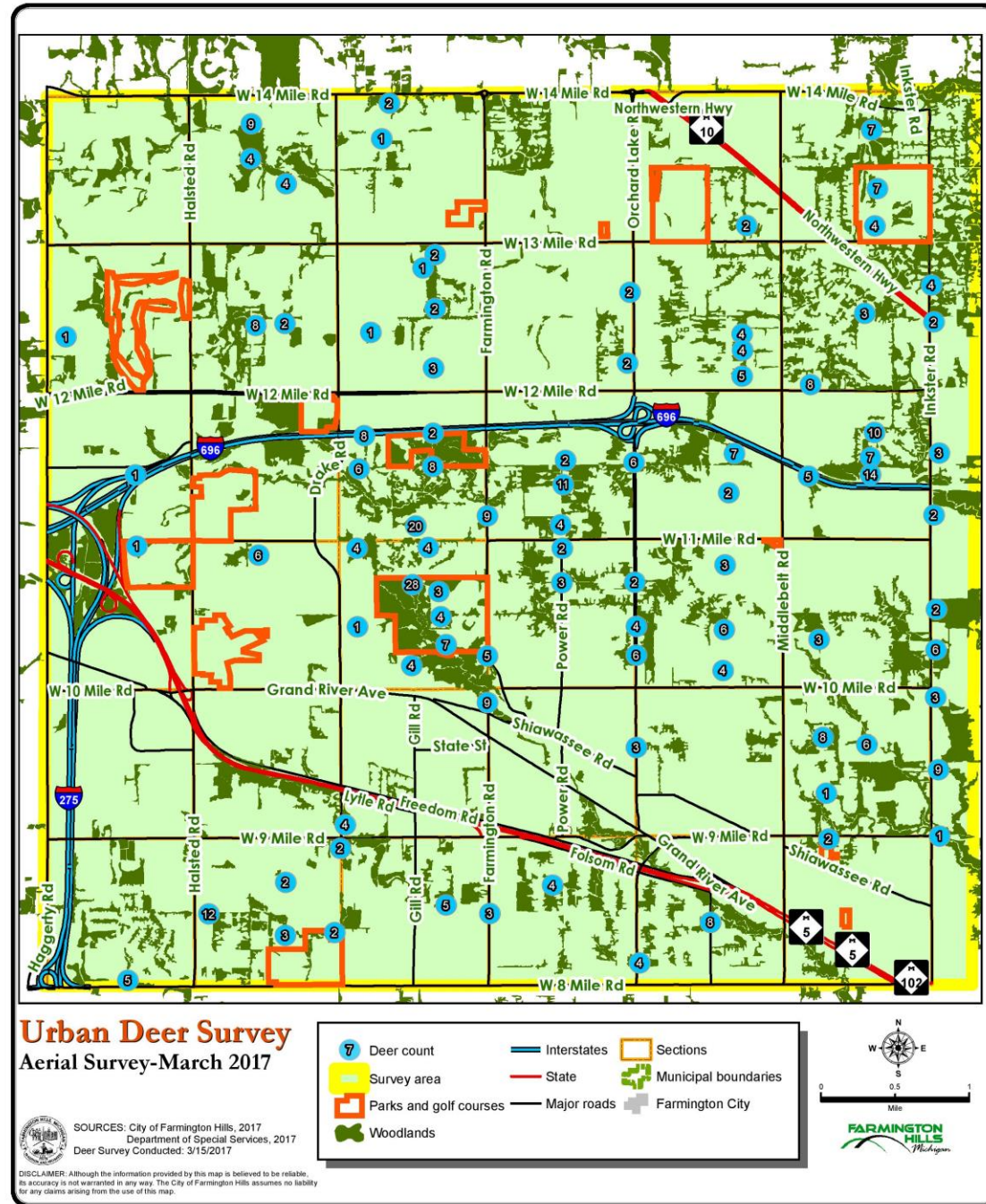


SOURCES: City of Farmington Hills, 2022
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WOODLAND AND WATER CORRIDORS

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FUTURE DIRECTIONS FOR DEER SURVEYS AND MANAGEMENT

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DIVULGING THE DEER DATA

- Presentation on annual deer surveys- Farmington Hills Council, July 2021
- Joint DNR/Farmington Hills public presentation-September 2021:
(<https://bit.ly/FHDeerPresentation>)
- Deer Management page for residents:
<https://www.fhgov.com/departments-services/resident-information/deer-management>)
- Presenting the info at conferences and on website for first time

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MANAGEMENT DECISIONS

- Regional approach to deer management
- Council approved resolution on August 9, 2021 for a “collaborative regional solution for the health and safety of its citizens, their property and the deer herd in Oakland County.”
- City of Southfield passed similar resolution on September 27, 2021
- Aerial deer surveys set to continue





QUESTIONS?

THANK YOU!

Contact Info

Email

mmalone@fhgov.com