



FAIRFAX COUNTY HEALTH DEPARTMENT

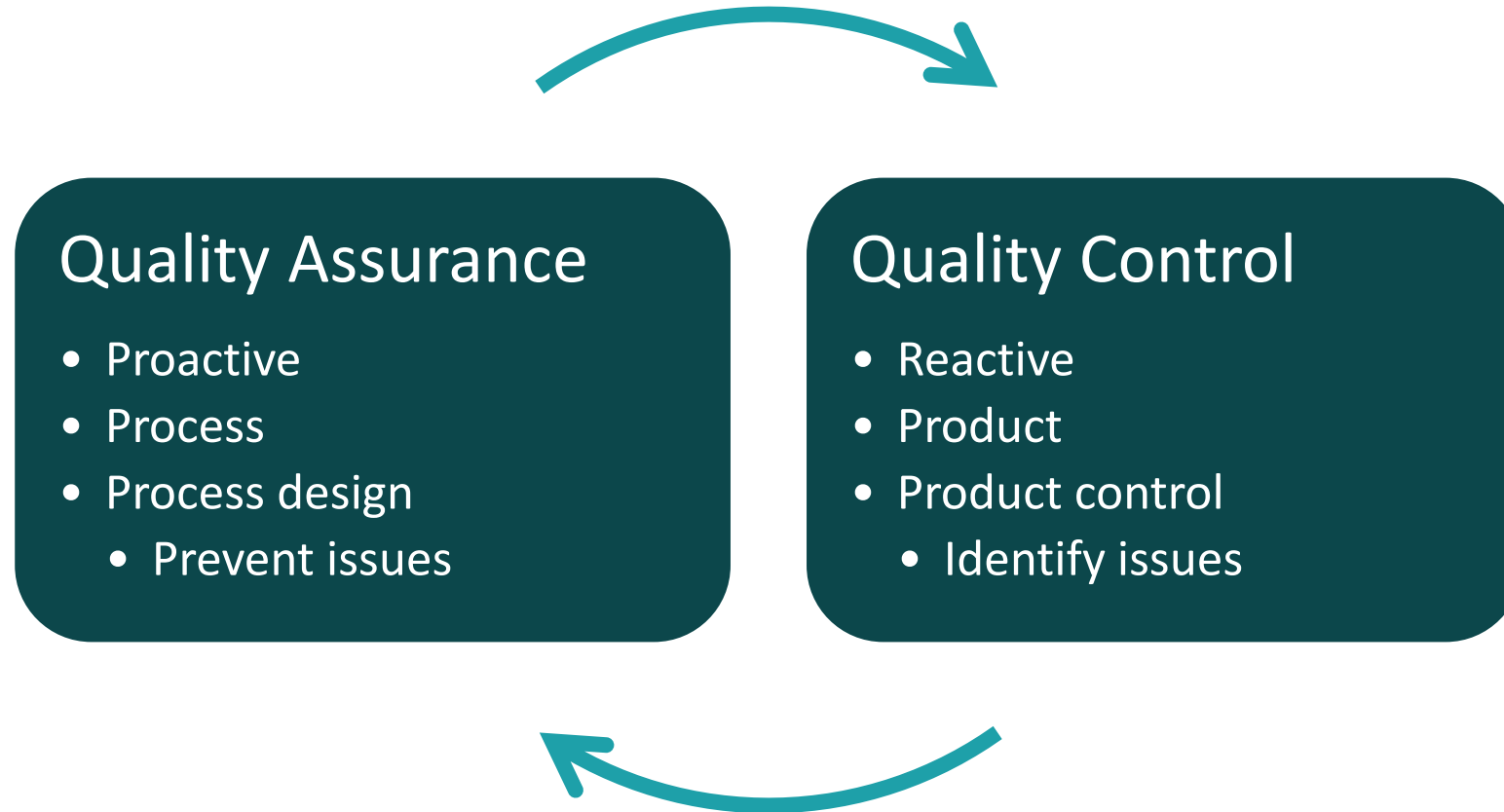
# 2023 QA Findings for Surveillance Activities

in Fairfax County

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Division of Environmental Health  
Fairfax, Virginia



# What is QA/QC?



# QA program introduction

## Mosquito Trapping

- Restarted QA program after a few years hiatus
- Paper forms
  - Route QA
  - Prep QA

Fairfax County Health Department  
Disease Carrying Insects Program  
Quality Assurance Program

Mosquito Route Set Follow-Up

Inspector Name: \_\_\_\_\_ Date: \_\_\_\_\_

Site: \_\_\_\_\_

General Expectations

Site	1	2	3	4	5	6	7	8
1. Mosquitoes flying at trap site								
2. Mosquitoes collected at trap site in need of emptying								
3. Mosquitoes collected at trap site in need of emptying								

CDC / BGPro Trapping

Site	1	2	3	4	5	6	7	8
1. Labels collection cups properly (CDC / BGPro Trapping)								
2. Sets trap at designated location (on tree limb with marker)								
3. Sets trap body at designated height (CDC / BGPro Trapping)								
4. Mosquitoes and other insects trapped in cup								
5. Mosquitoes and other insects trapped in cup								
6. Mosquitoes and other insects trapped in cup								
7. Mosquitoes and other insects trapped in cup								
8. Mosquitoes and other insects trapped in cup								

BG Trapping

Site	1	2	3	4	5	6	7	8
1. Sets trap at designated location								
2. Mosquitoes collected at trap site in need of emptying								
3. Mosquitoes collected at trap site in need of emptying								
4. Mosquitoes collected at trap site in need of emptying								
5. Mosquitoes collected at trap site in need of emptying								
6. Mosquitoes collected at trap site in need of emptying								
7. Mosquitoes collected at trap site in need of emptying								
8. Mosquitoes collected at trap site in need of emptying								

Comments: \_\_\_\_\_

Inspector's Signature: \_\_\_\_\_

Quality Assurance Checklist

Site	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Date: MM/DD/YY



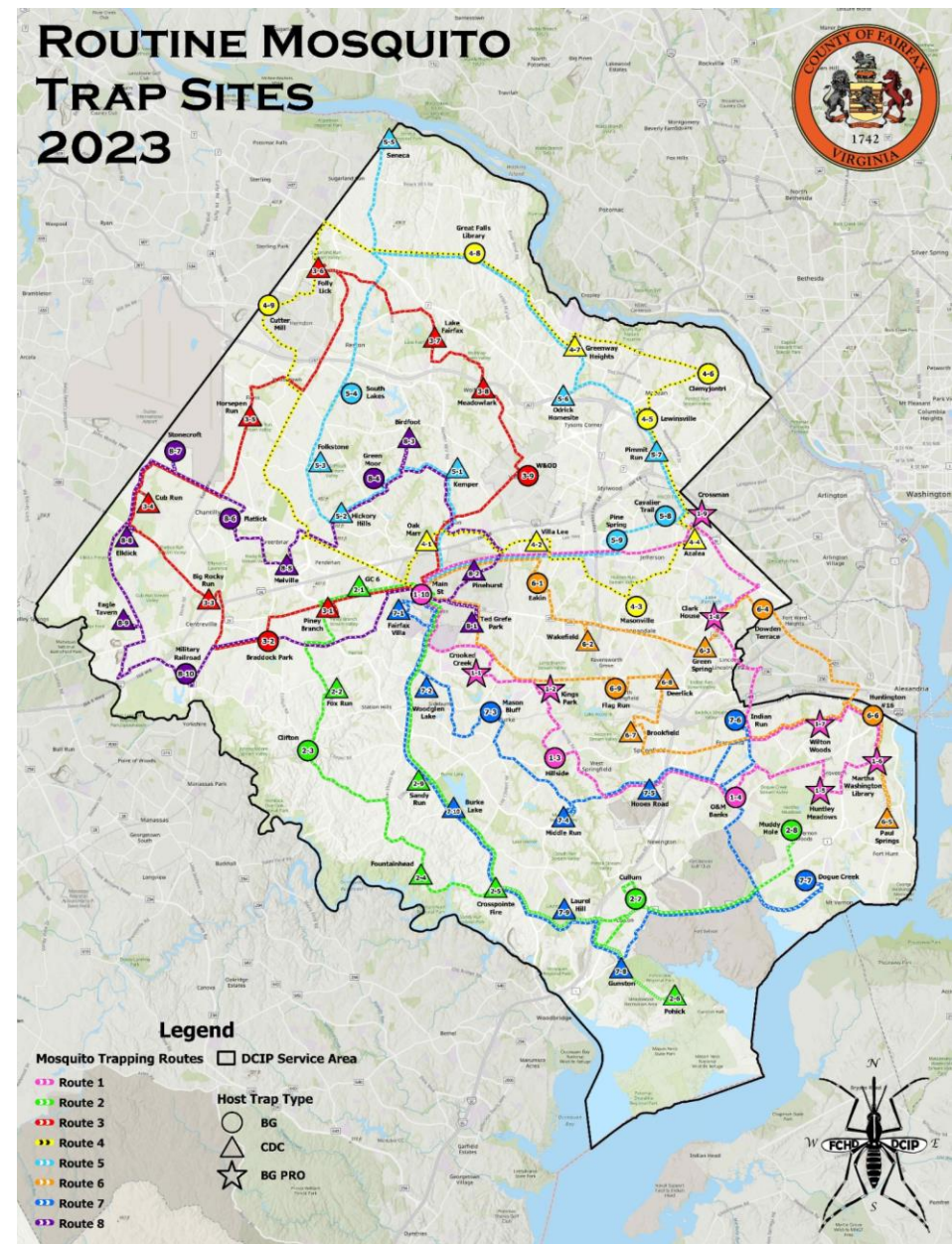
## Larval Surveillance

- First year of formal QA
- Data on GIS Portal and phone app
  - Larval QA



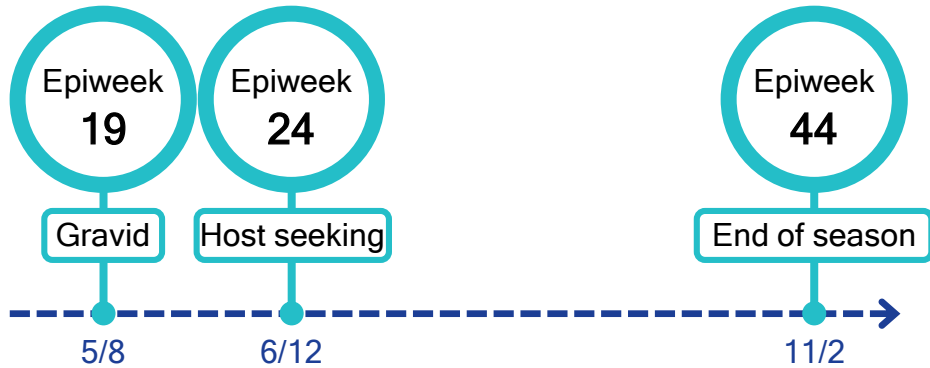
# Mosquito Trapping

- 8 routes
- 75 sites
  - Traps set for 24 hours
- Gravid trap at each site
- Host seeking trap at each site
  - BG, CDC or BG Pro
    - *BG Pro trial year - one route only*



# Mosquito Trapping

## Trapping Season



1950 gravid trap sets

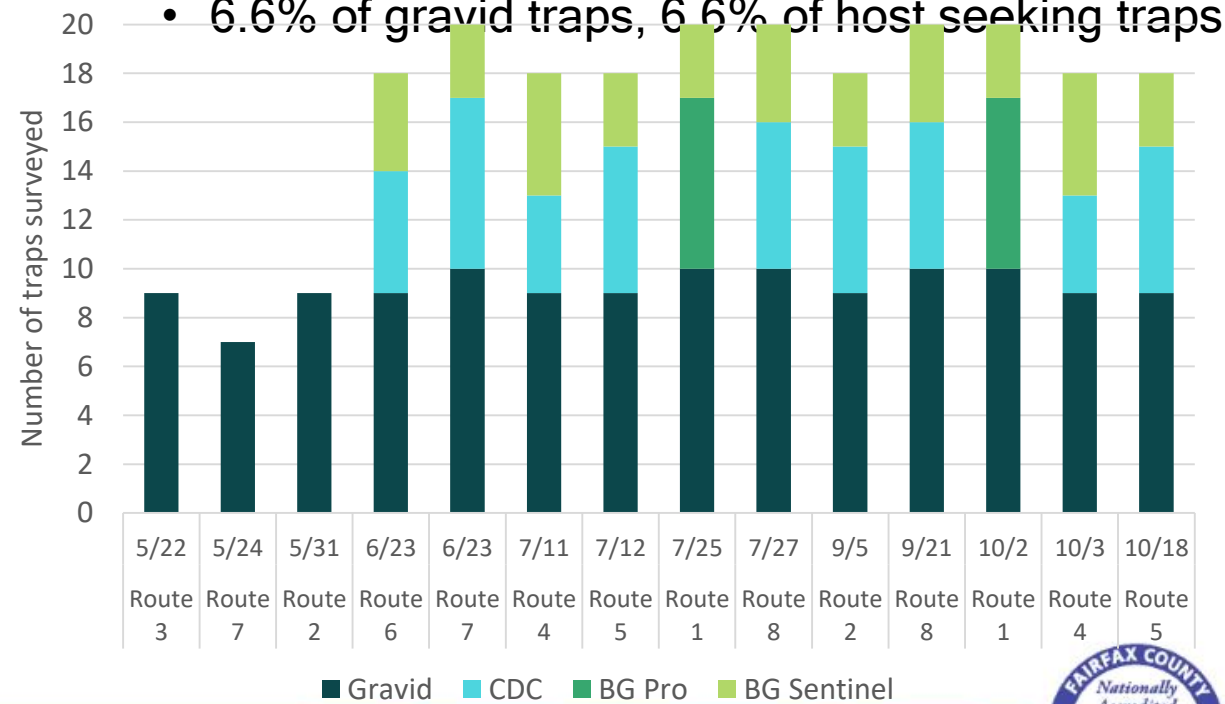
1575 Host seeking sets

• 567 BG / 861 CDC / 147 BG Pro

## Trapping QA

• 14 route QAs, total of 129 sites surveyed

• 6.6% of gravid traps, 6.6% of host seeking traps



# Mosquito Trapping

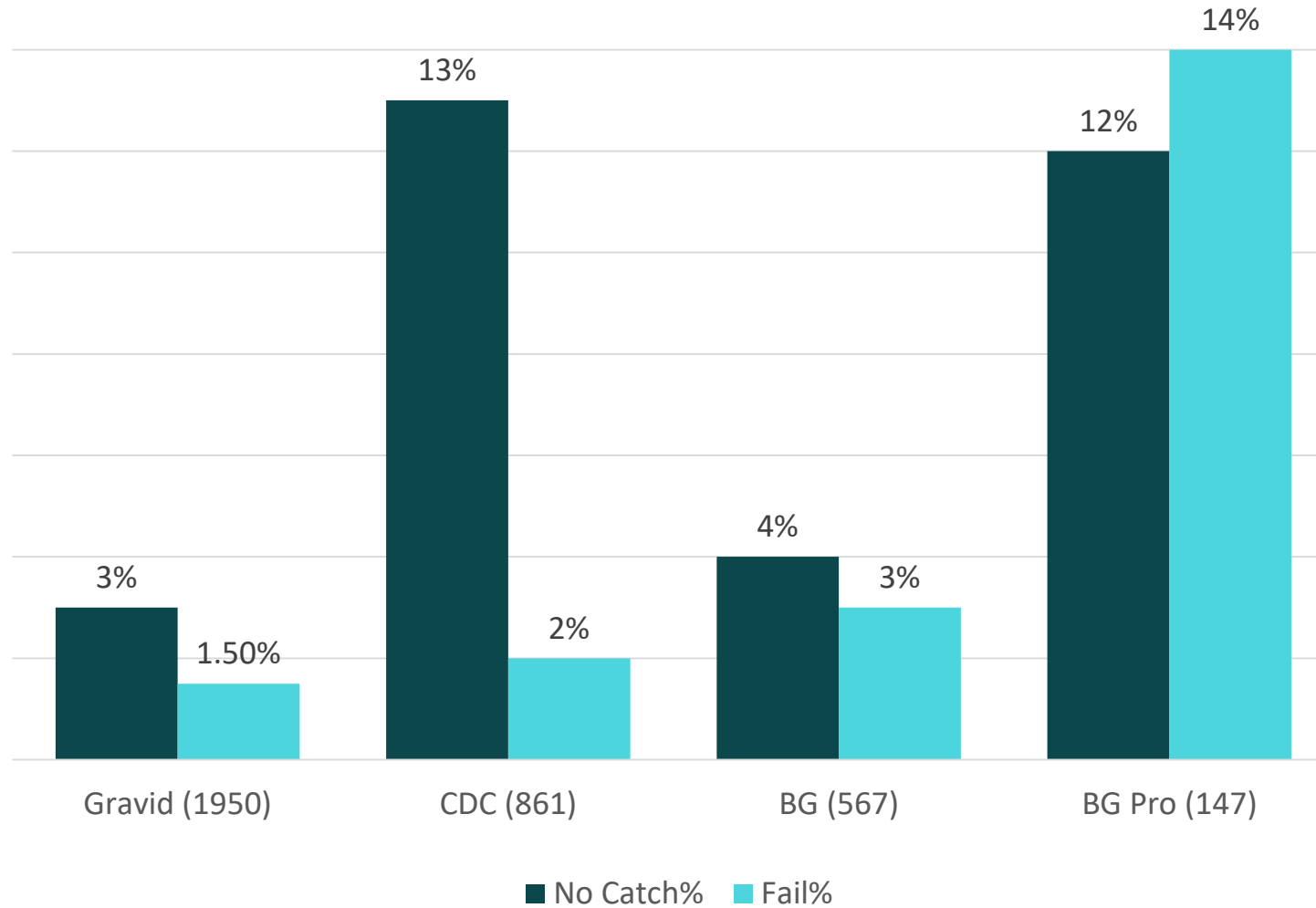
Issues observed in 10%+ of sets	%
Hangs trap cooler next to trap body as specified [CDC]	41%
Sets trap cooler next to trap body as specified [BG]	28%
Attaches funnel and netting properly [BGPro]	21%
Assembles all trap parts properly, ensures funnel net is fully open [BG]	20%
Sets trap body at designated height [CDC 5 ft / BGPro 4ft]	19%
Ensures intake valve flap is seated properly inside intake funnel [BG]	18%
Ensures motor is running and drawing air into trap [CDC]	13%
Attaches and places battery properly	11%
Faces mosquito trap sticker to public view	10%



# Mosquito Trapping

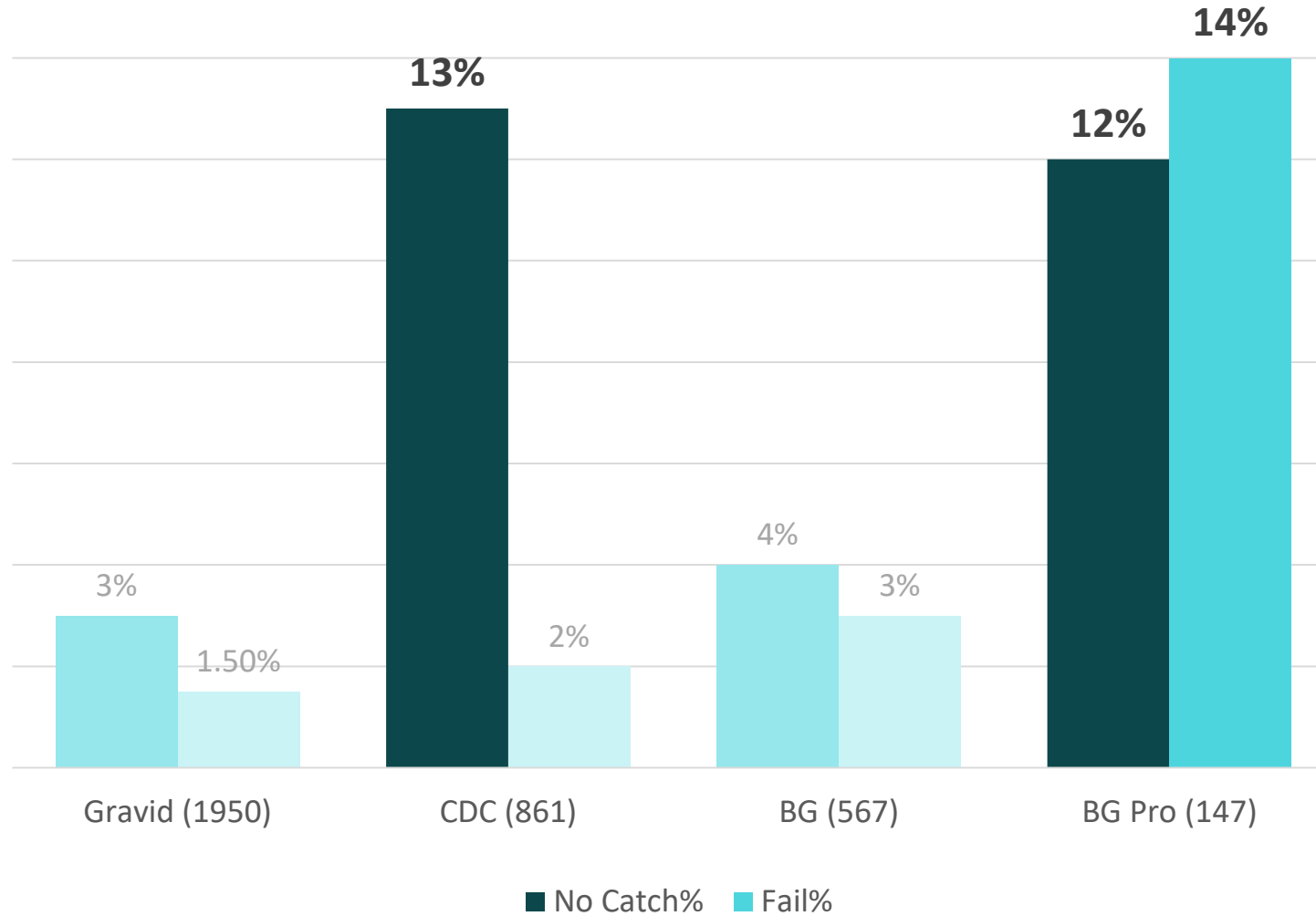


# Mosquito Trapping










# Mosquito Trapping







# Mosquito Trapping

## Common Reported Gravid Trap Fails












Issue	#	
Fan Not Running	8	
Not recorded	5	
Battery popped out of housing	4	
Weak Fan	4	
Not turned on	3	
Cracked bin	2	

Total

- Potential battery / motor issue 
- Trap set / checked incorrectly 
- Net or pod handling 
- Nature / vandalism 

6 fail reasons were not recorded






## Common Reported Host Seeking Trap Fails





Issue	#	
Collection error, mixed/unlabeled samples	7	
Fan Not Running	7	
Terminals not connected	7	
Set without black collection net	6	
Collection cup fell off	5	
Weak fan	4	
Open collection net	3	
No collection net	3	
Dry ice cooler fell	2	
Storm damage	2	
Terminals reversed polarity	2	














# Mosquito Trapping

## Common Reported Gravid Trap Fails

Issue	#	
Fan Not Running	8	
Not recorded	5	
Battery popped out of housing	4	
Weak Fan	4	
Not turned on	3	
Cracked bin	2	

32	• Potential battery / motor issue	
41	• Human error	 
8	• Nature / vandalism	

## Common Reported Host Seeking Trap Fails

Issue	#	
Collection error, mixed/unlabeled samples	7	
Fan Not Running	7	
Terminals not connected	7	
Set without black collection net	6	
Collection cup fell off	5	
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# Mosquito Trapping

## Route Prep QA

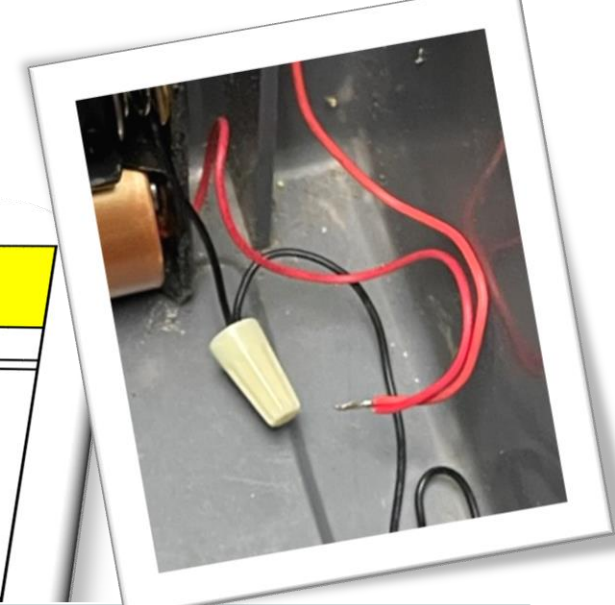
- 2 routes are prepped concurrently
  - All equipment is counted, checked and/or tested before deployment
  - Checklist for each route
- Two route prep QAs (4 routes)
  - 6 vs 3 staff members on prep
  - *Better prep with fewer people involved\**

\*supported by non-QA observations through the season

Route 4			
Type*	Site #	Site Name	Site Address
CDC	1	Oak Marr	3200 Jermantown Rd
CDC	2	Villa Lee	2954 Espana Ct
BG	3	Masonville	3704 Crest Dr
CDC	4	Azalea	2906 Cleave Dr
BG	5	Lewinsville	1659 Chain Bridge Rd
BG	6	Clemyjontri	6317 Georgetown Pike
CDC	7	Greenway Heights	8304 Hunting Hill Ln
BG	8	Great Falls Library	9830 Georgetown Pike
BG	9	Cutter Mill	1501 Herndon Pkwy

\*Gravid traps are set at all locations.

Materials Required				
Fully Prepared and Checked Traps				
Gravid	CDC	BG	PRO	
10	5	6	0	
Batteries		Coolers		
12 Volt	6 Volt	CDC/BG	PRO	
6	4	9	0	
Other Supplies				
Gravid Water Jugs	Black Tubs	BG Tarps	Hanging Rope	CDC Cups
10	10	6	5	5



### Route Prep issues observed

- Short on traps
- Short on batteries (6V + 12V)
- Missing / open gravid pods
- Wrong type of collection nets
- Missing collection nets
- Missing ziplock bags
- Traps not in good / working condition
- Missing wire terminal / missing wire nut
- Missing carabiners on tarps



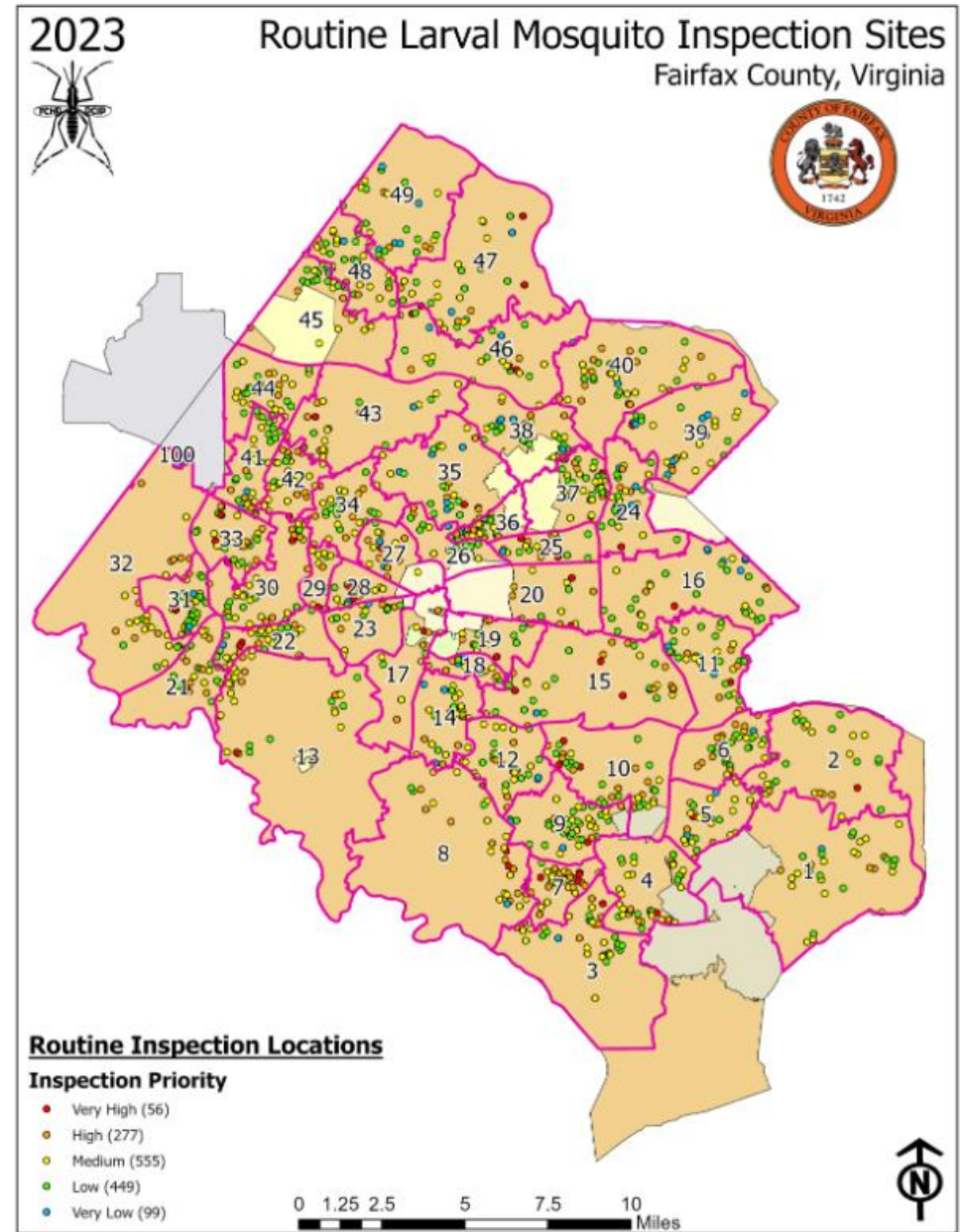
# Larval Surveillance

- Inspection & Larvicide (I&L) staff
- 1400+ stormwater dry ponds
- Inspection frequency is based on priority categories

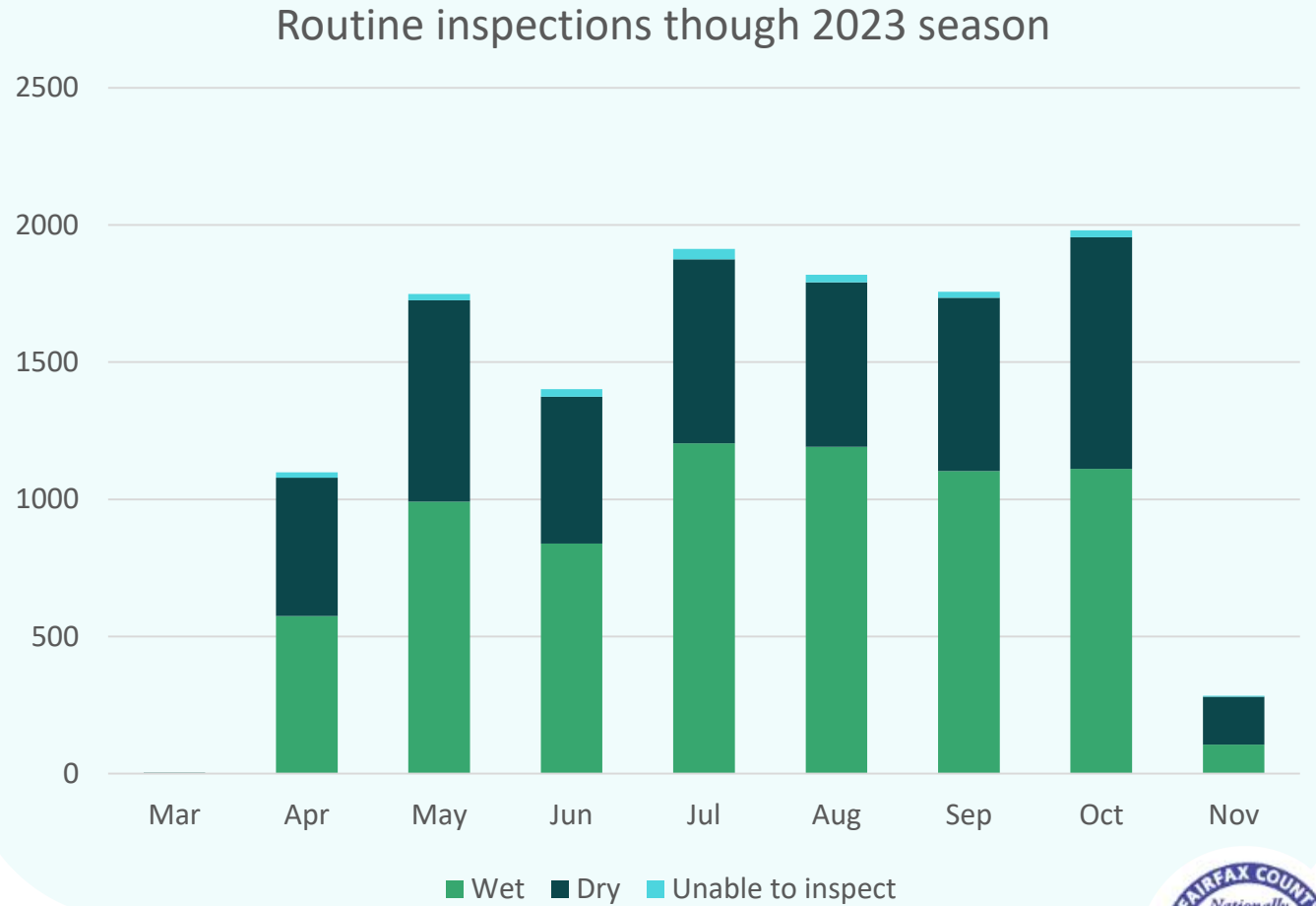
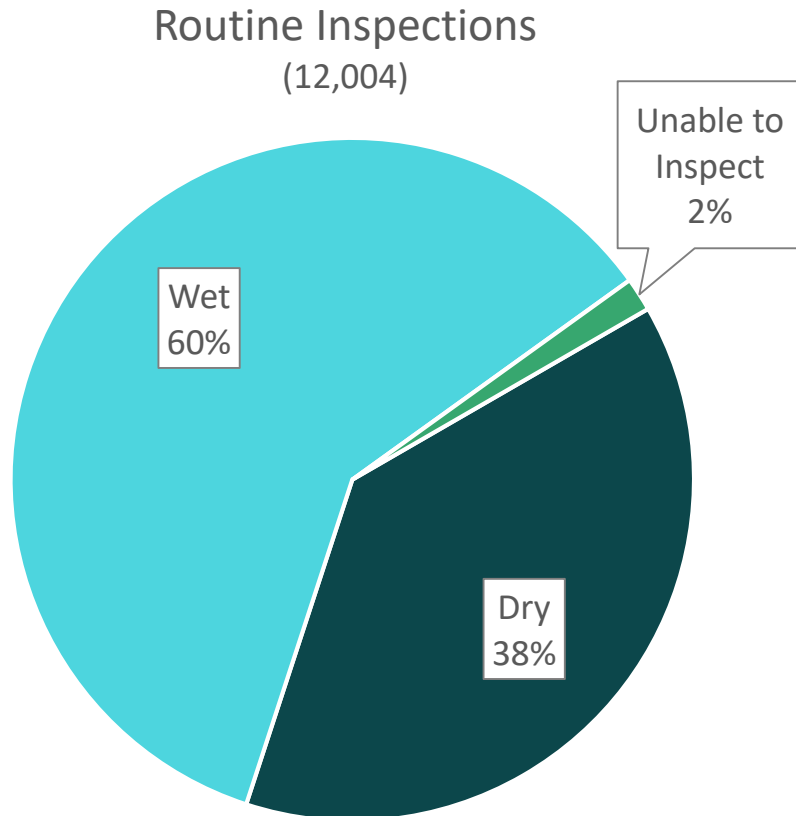


Site category is based on historical data collected since 2016

- 87 QA inspections
- Site inspection 2-5 days post treatment

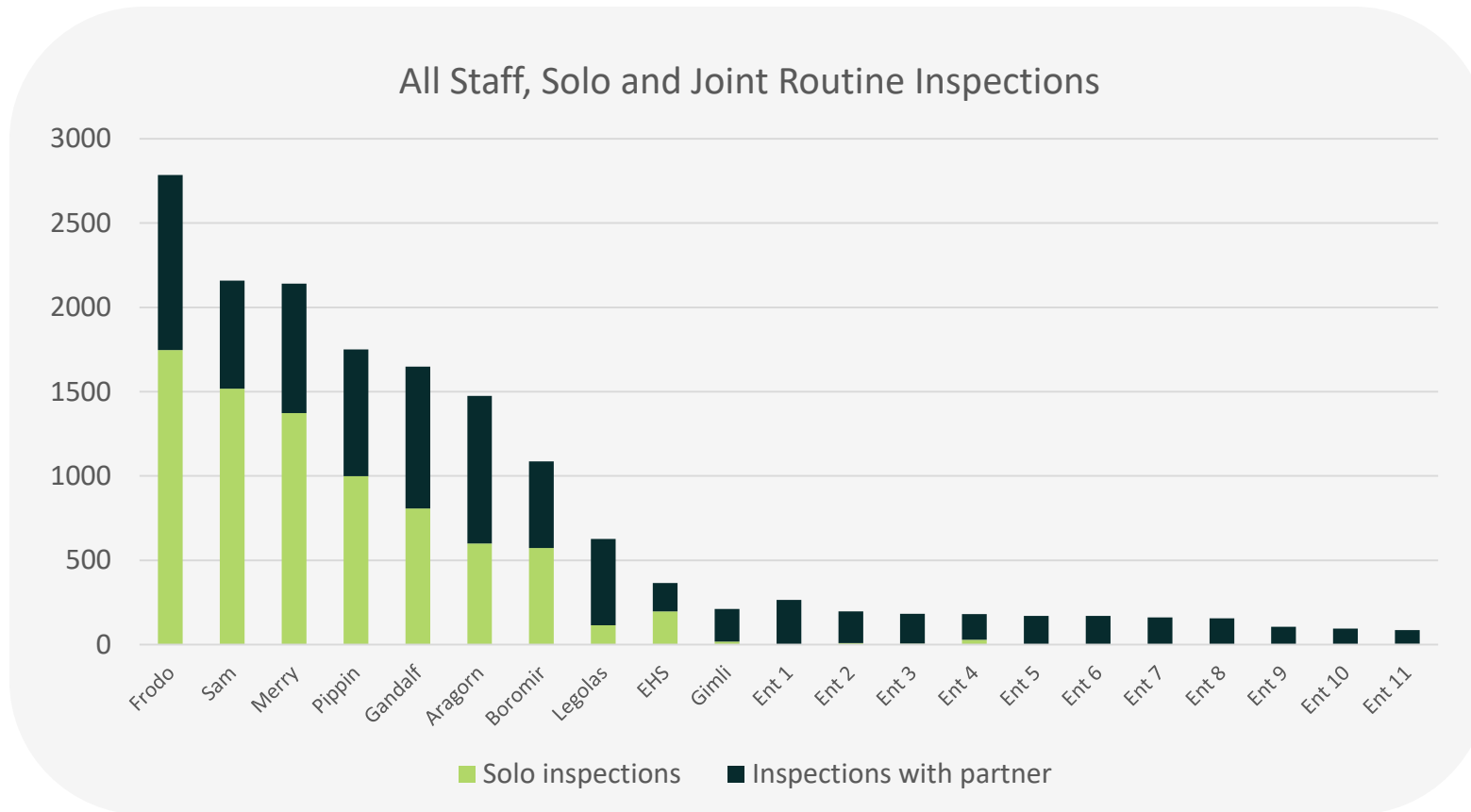


# Larval Surveillance

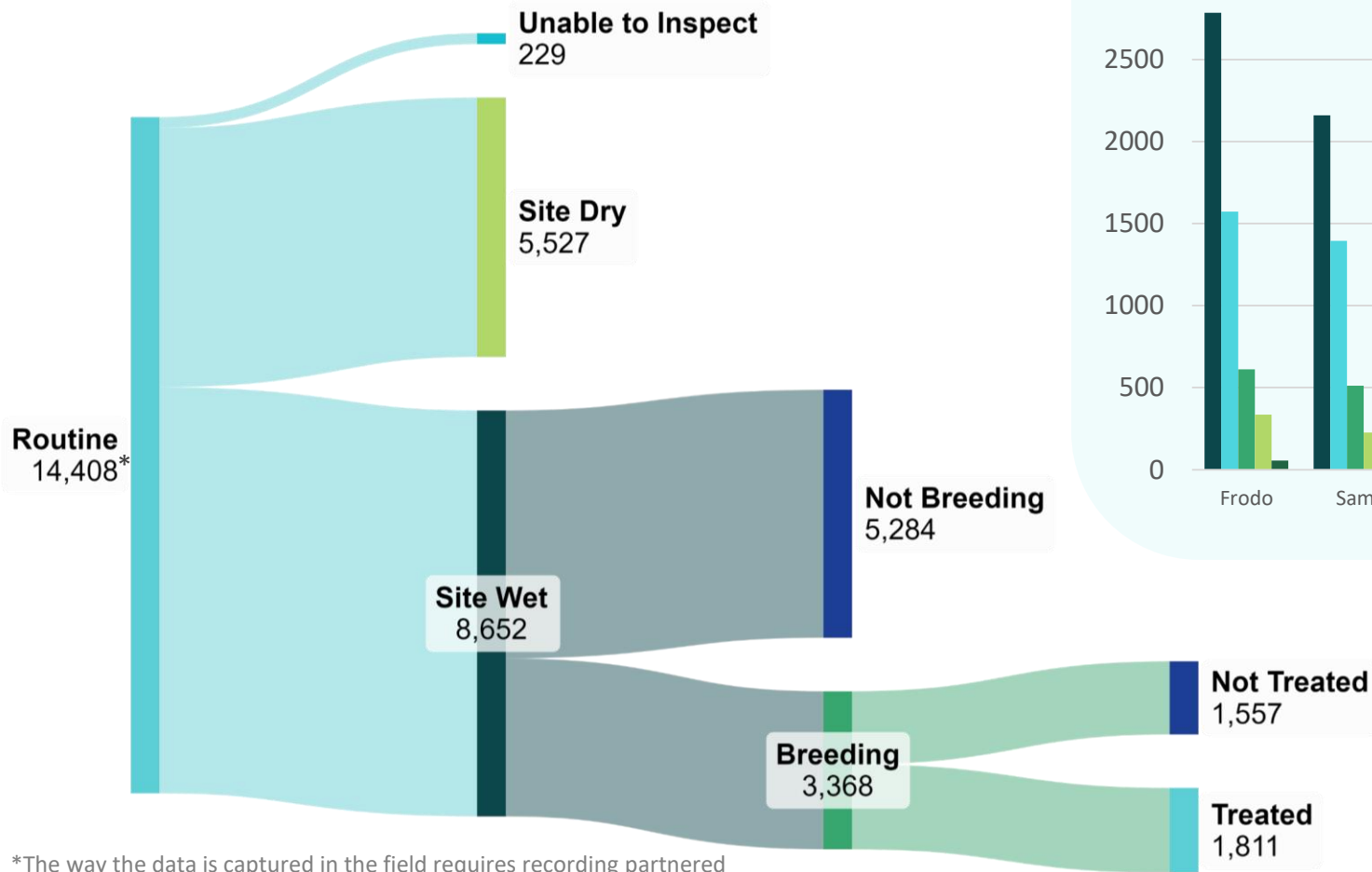


# Larval Surveillance

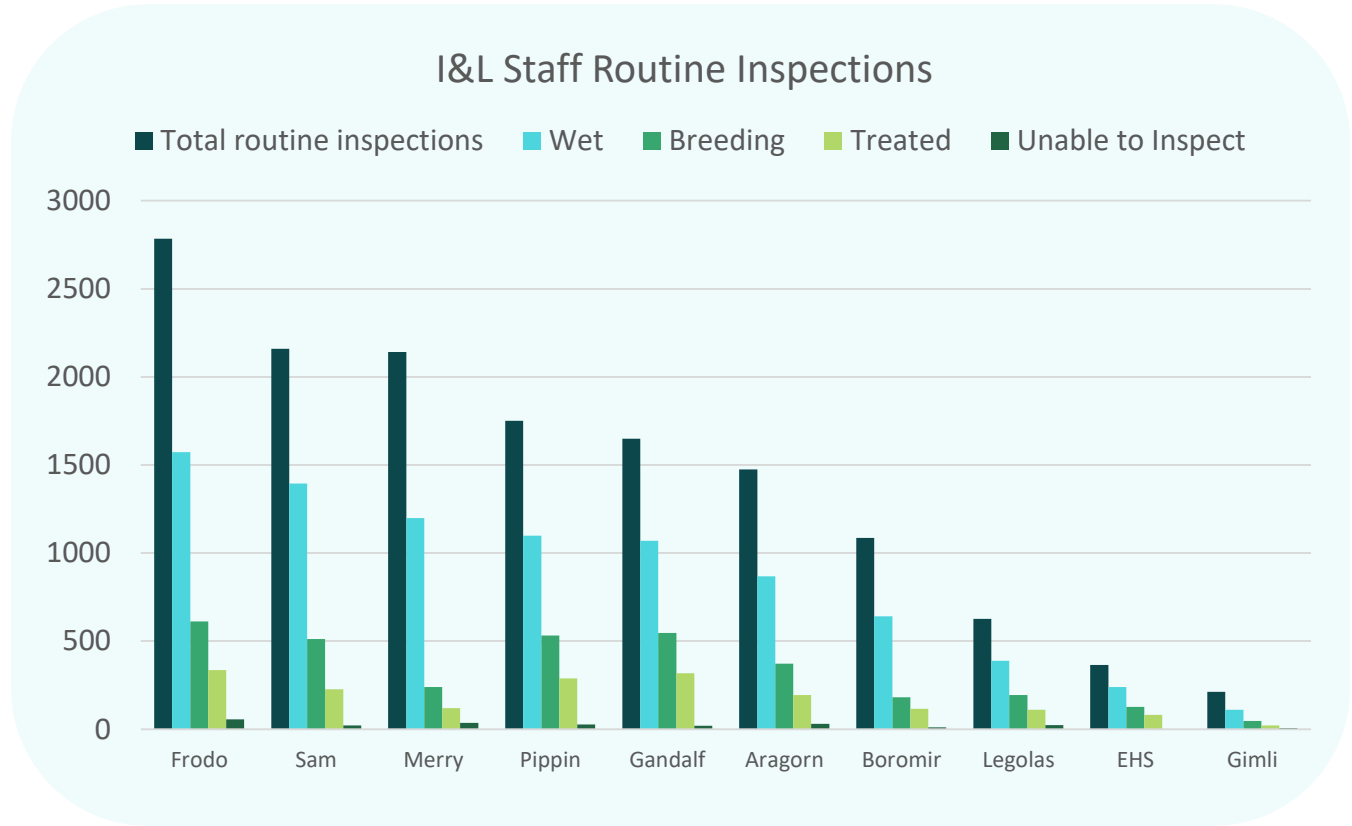
- 12,004 Routine inspections - some in pairs



# Larval Surveillance



\*The way the data is captured in the field requires recording partnered inspections twice to reflect individual inspectors in the analysis.



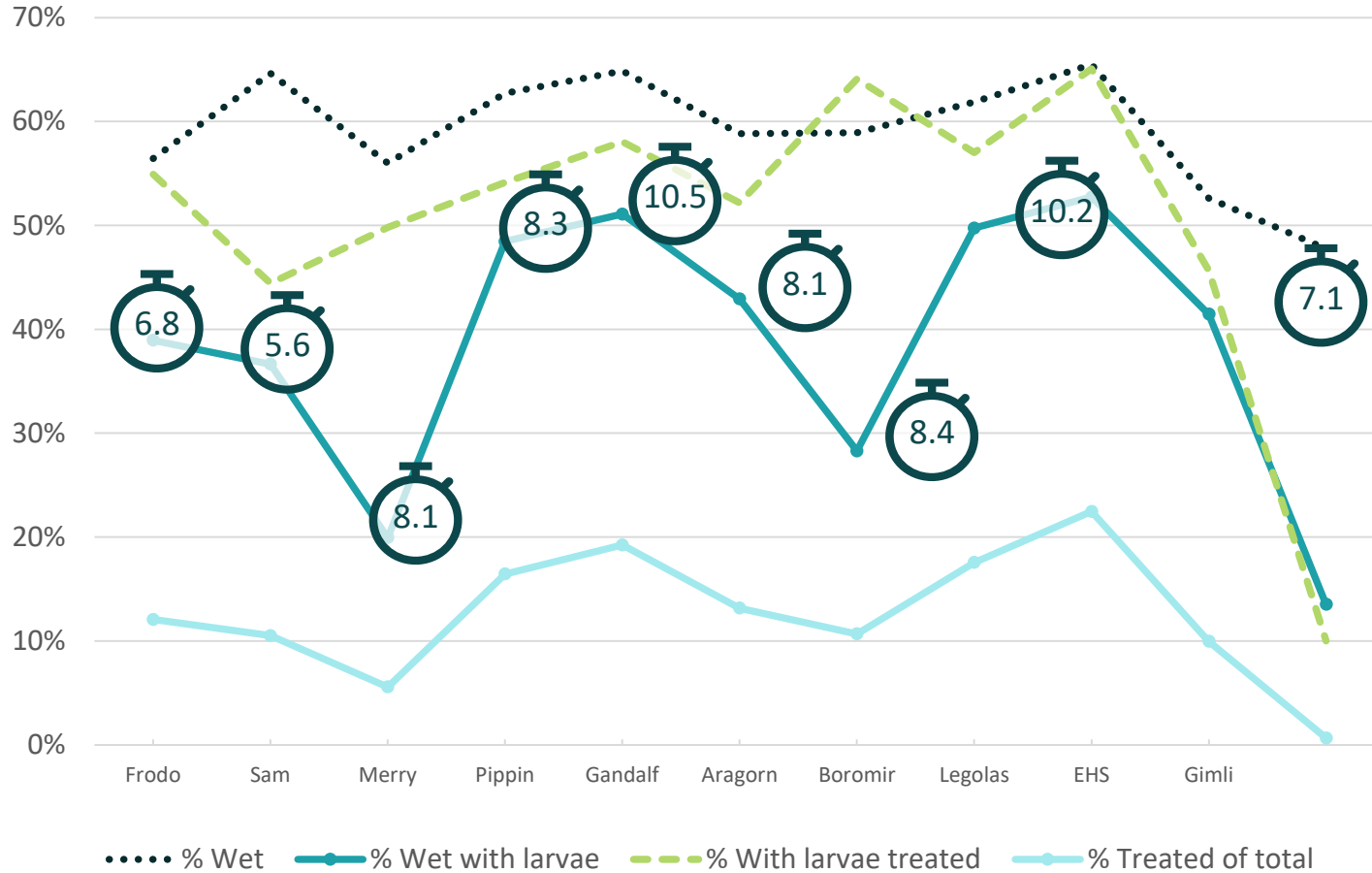
- Staff brought on at different times through 2023 season
- Number of days in field not a constant



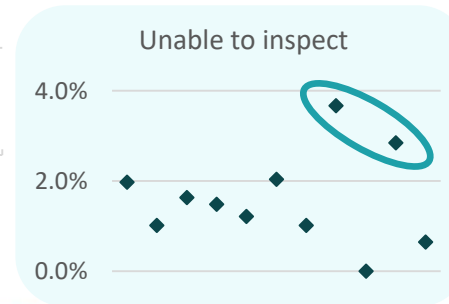


# Larval Surveillance

I&L staff Routine inspections, percentage



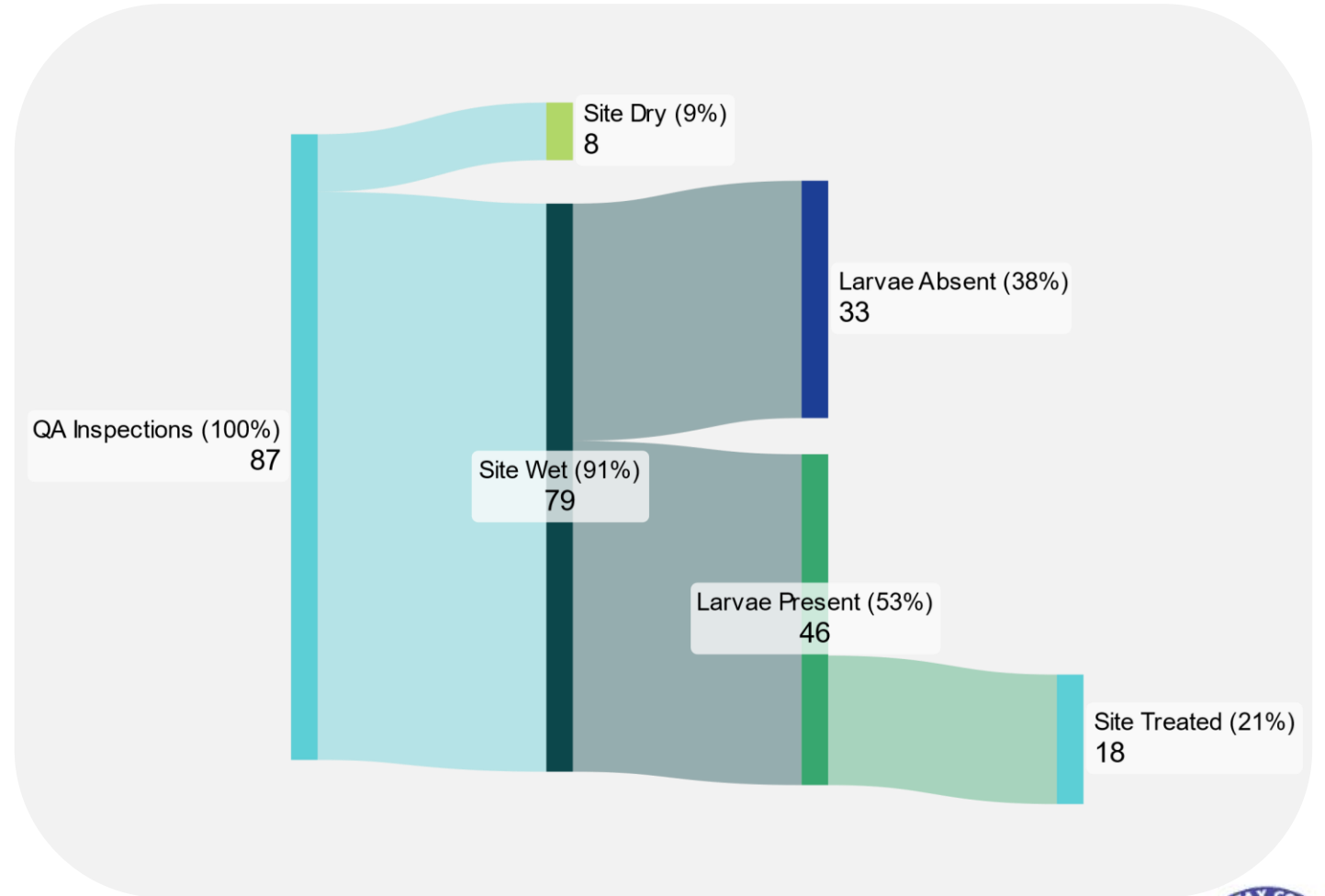
- Some consistency between staff
  - proportion of wet to dry ponds ( $\approx 60\%$ )
  - Larval sites meeting treatment threshold (50-60%)
- Differences in proportion of sites with larvae
  - less movement around in site?
    - supported by field observations
- ‘Unable to Inspect’ inspections



# Larval Surveillance

## QA Inspections

- 100% kill not expected
- QA treatments higher than expected
- ≈13% sites treated at routine inspections
- Observation: not all areas above treatment threshold treated in some sites



# Larval Surveillance

## Product differences observed

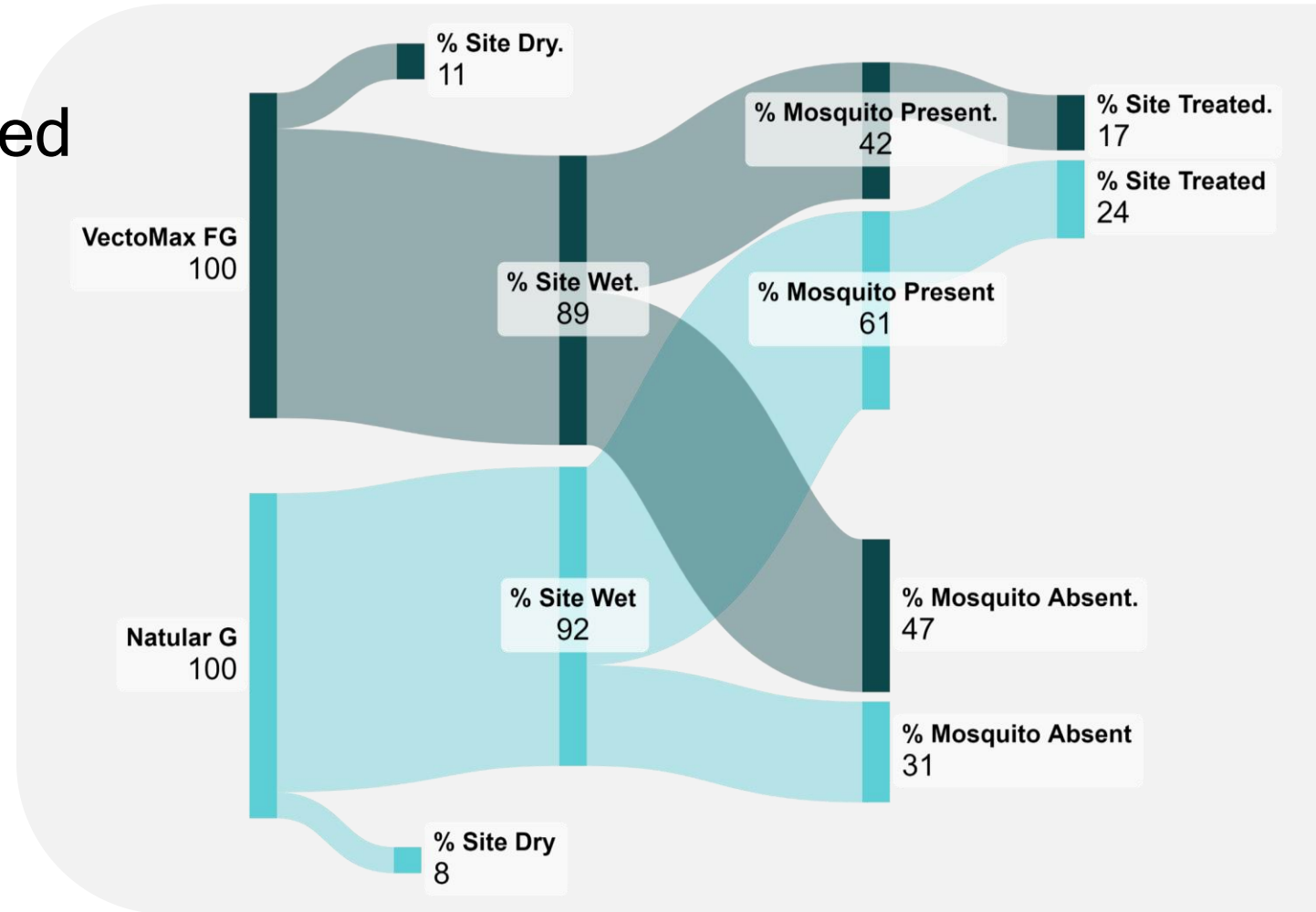
- Product switch in late July

VectoMax FG



Natular G

- 87 total QA inspections
  - 36 VectoMax
  - 51 Natular G



# In Conclusion

## Trapping

- Identified recurring issues
  - Targeted training throughout the season
  - Trap sets did get better later in the season

For the 2024 season

### Focus training around observed issues

- Slow down when setting a trap
- Cross check partner
- Identifying and reporting trap fails

All host seeking traps will be BG Sentinel

Move from paper forms to digital survey

## Larval Surveillance

- Identified recurring issues
  - Data entry not always consistent
  - Consistency in finding larvae
  - High re-treatment rate observed

For the 2024 season

### Focus training around observed issues

- Finding Larvae, moving around site
- Determining areas to treat, treatment rate
- Recording data consistently

### New fields on inspection form

- Notes
- Expanded area calculation tool

If possible, get more VectoMax/Natular G data

