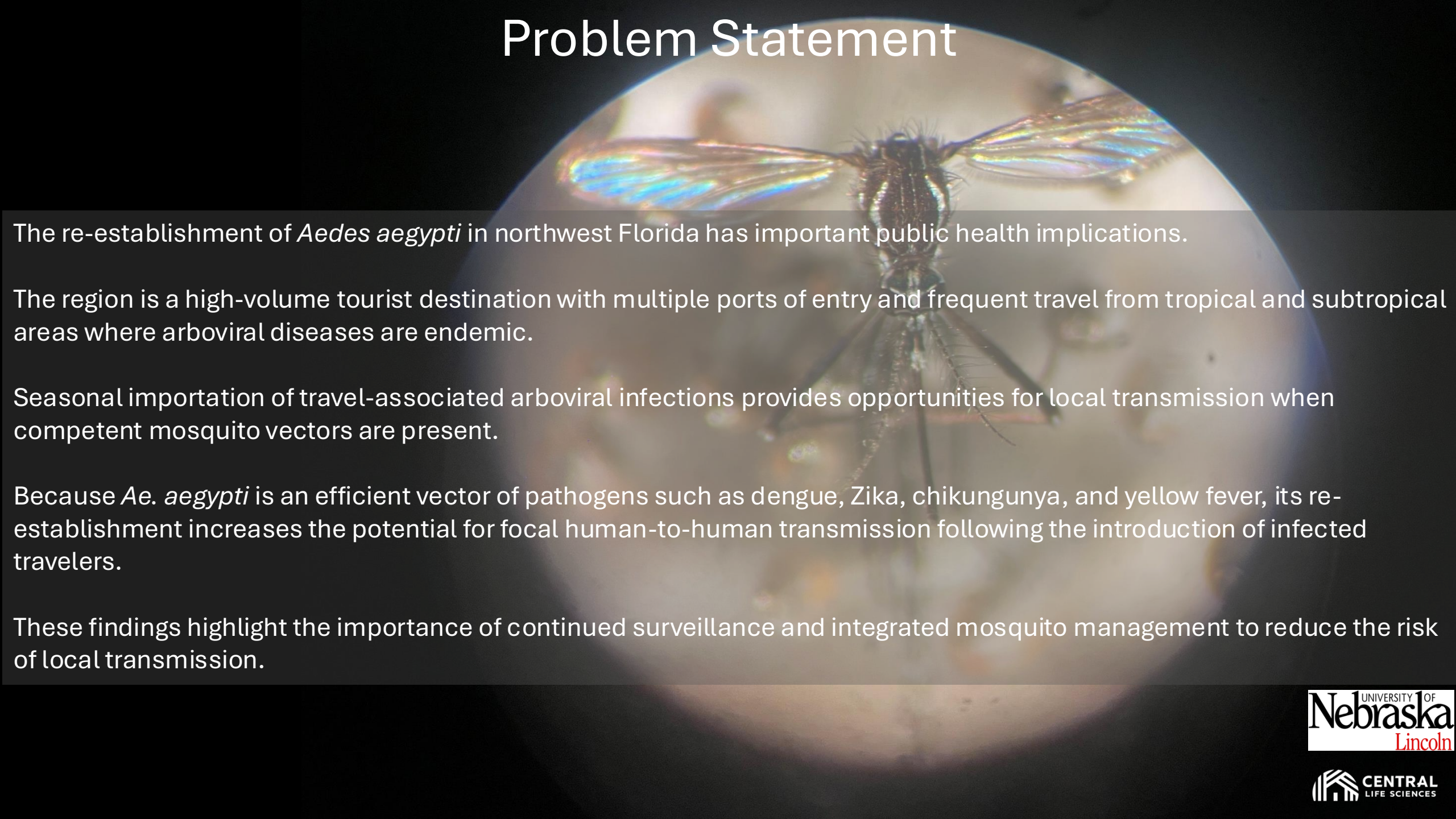
Re-establishment and interventions of *Aedes aegypti* in the Panhandle of Florida



Michael T. Riles
Department of Entomology
University of Nebraska
Central Life Sciences

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Problem Statement



The re-establishment of *Aedes aegypti* in northwest Florida has important public health implications.

The region is a high-volume tourist destination with multiple ports of entry and frequent travel from tropical and subtropical areas where arboviral diseases are endemic.

Seasonal importation of travel-associated arboviral infections provides opportunities for local transmission when competent mosquito vectors are present.

Because *Ae. aegypti* is an efficient vector of pathogens such as dengue, Zika, chikungunya, and yellow fever, its re-establishment increases the potential for focal human-to-human transmission following the introduction of infected travelers.

These findings highlight the importance of continued surveillance and integrated mosquito management to reduce the risk of local transmission.

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Objectives and Goals

The purpose of this study is to characterize the re-establishment of *Aedes aegypti* in northwest Florida by integrating mosquito surveillance, operational mosquito control, and public health data

Objective 1: Characterize the distribution and temporal re-establishment of *Aedes aegypti* in Bay County and surrounding counties by evaluating surveillance records, habitat characteristics, and the co-occurrence of *Aedes albopictus*.

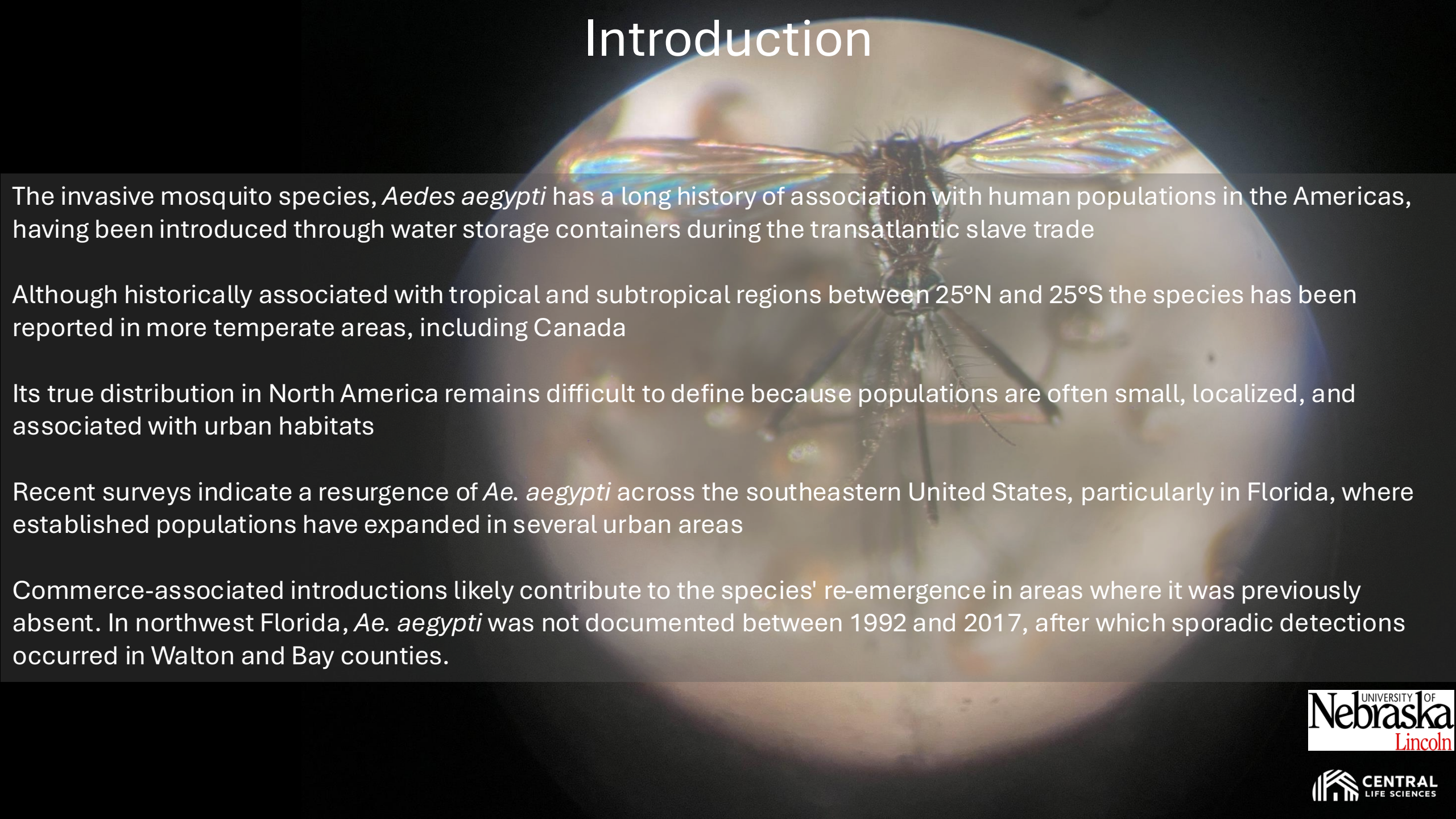
Objective 2: Compare surveillance and integrated mosquito management strategies implemented by mosquito control programs across the Florida Panhandle to identify practices associated with suppression or prevention of *Aedes aegypti* establishment.

Objective 3: Evaluate the spatial and temporal relationship between re-established *Aedes aegypti* populations and travel-associated arboviral disease introductions to assess regional vulnerability and inform mosquito surveillance, vector control, and public health preparedness.

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Introduction



The invasive mosquito species, *Aedes aegypti* has a long history of association with human populations in the Americas, having been introduced through water storage containers during the transatlantic slave trade

Although historically associated with tropical and subtropical regions between 25°N and 25°S the species has been reported in more temperate areas, including Canada

Its true distribution in North America remains difficult to define because populations are often small, localized, and associated with urban habitats

Recent surveys indicate a resurgence of *Ae. aegypti* across the southeastern United States, particularly in Florida, where established populations have expanded in several urban areas

Commerce-associated introductions likely contribute to the species' re-emergence in areas where it was previously absent. In northwest Florida, *Ae. aegypti* was not documented between 1992 and 2017, after which sporadic detections occurred in Walton and Bay counties.

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Introduction[2]

Established populations in northeast and north-central Florida, along with nearby populations in Alabama and Georgia, increase the likelihood of introductions into the Florida Panhandle

Between 2017 and 2020, *Ae. aegypti* was detected on multiple occasions in Walton and Bay counties. An established population in a recreational vehicle park in southern Walton County during 2019–2020 was eliminated through intensive integrated pest management, with no mosquitoes detected during follow-up surveys in 2021

More recently, *Ae. aegypti* has established in Bay County, where surveillance, source reduction, and targeted pesticide applications are ongoing

This study documents the re-establishment of *Ae. aegypti* in Bay County, its current distribution in the surrounding region, and the implications for mosquito control and public health.

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Background

Last reported surveillance collection was in 1992-93 in Bay County, Florida (Ansell 1994, JFMCA)

Bay County, Florida detections in 2017, 2019, 2022, and 2023

- 2017 concrete construction culverts
- Collected 1 female adult in a CDC Light Trap, Deerfield PC
- 2022 larvae found in plant dish in Panama City, FL
- 2022-26 adults found in Panama City, FL

Walton County detections in 2020 and 2021

- Initial collection CDC light trap near a coastal RV park
- Incidence throughout winter of 2020 into 2021
- Eradicated in Walton County by June 2022

Expanded in Panama City Beach county to encompass southern urban sprawl throughout

- 1st collection in 3 sites in 2022
- Expanded to 7 collection sites by 2023
- Expanded to multiple sites within district boundaries by 2026

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SCOPE



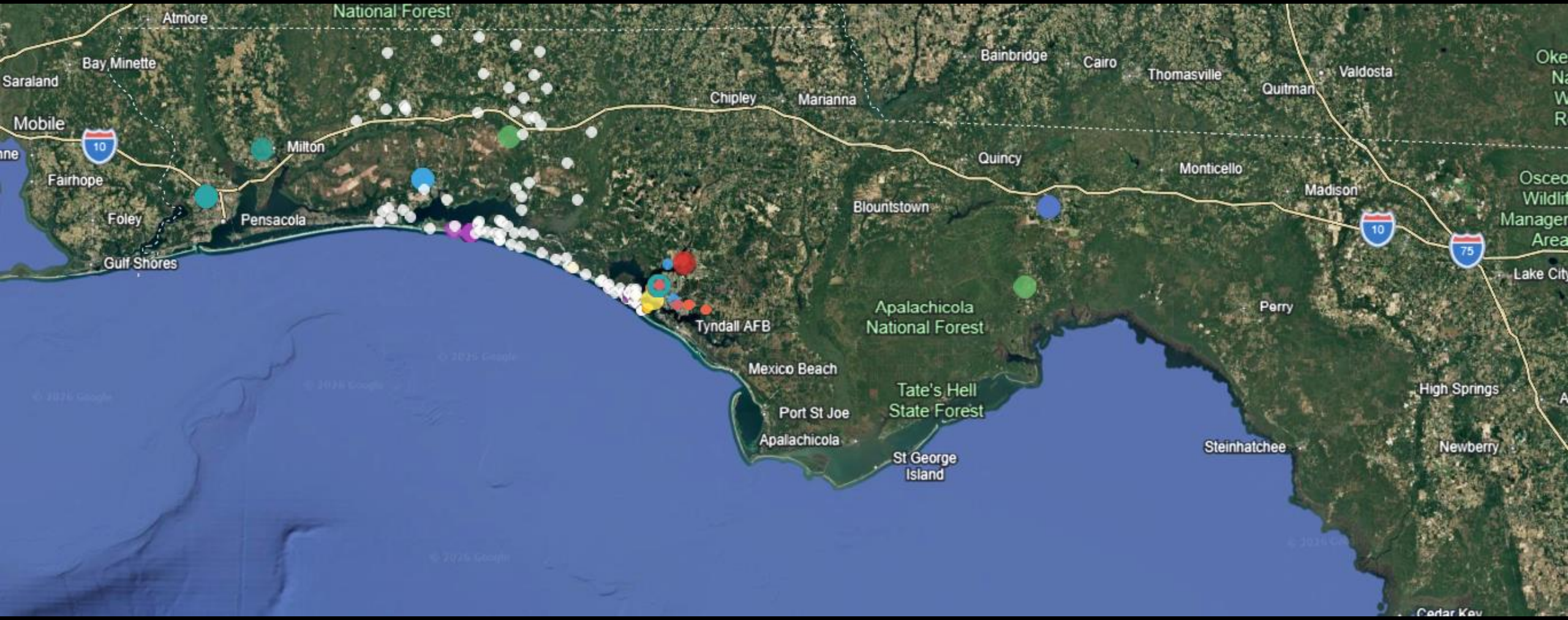
The scope of this study extends beyond documenting the presence of *Aedes aegypti* in Bay County.

By integrating surveillance records from multiple mosquito control programs with operational control data and epidemiological information, this study provides a regional assessment of the factors influencing *Aedes aegypti* re-establishment, evaluates current management approaches, and identifies implications for arboviral disease preparedness throughout the Florida Panhandle.

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Panhandle *Aedes aegypti & Aedes albopictus* over space and time (2017-2026) + travel related DENv & CHIKv incidence (2022-2026)



https://earth.google.com/web/@30.21759019,-85.77654303,-8.06958586a,55168.17493178d,35y,-0h,0t,0r/data=CgRCAggBMikKJwolCiExYnlKRmkzWWxQazZKOVZnd01GWklTWFB3SFJTOGVudFogAToDCgEwQgIIAEolCPXczJ0HEAE?authuser=0

Control Strategies



South Walton MCD
Kontrol 30-30 ULV
Vectobac WDG + Buffalo Turbine

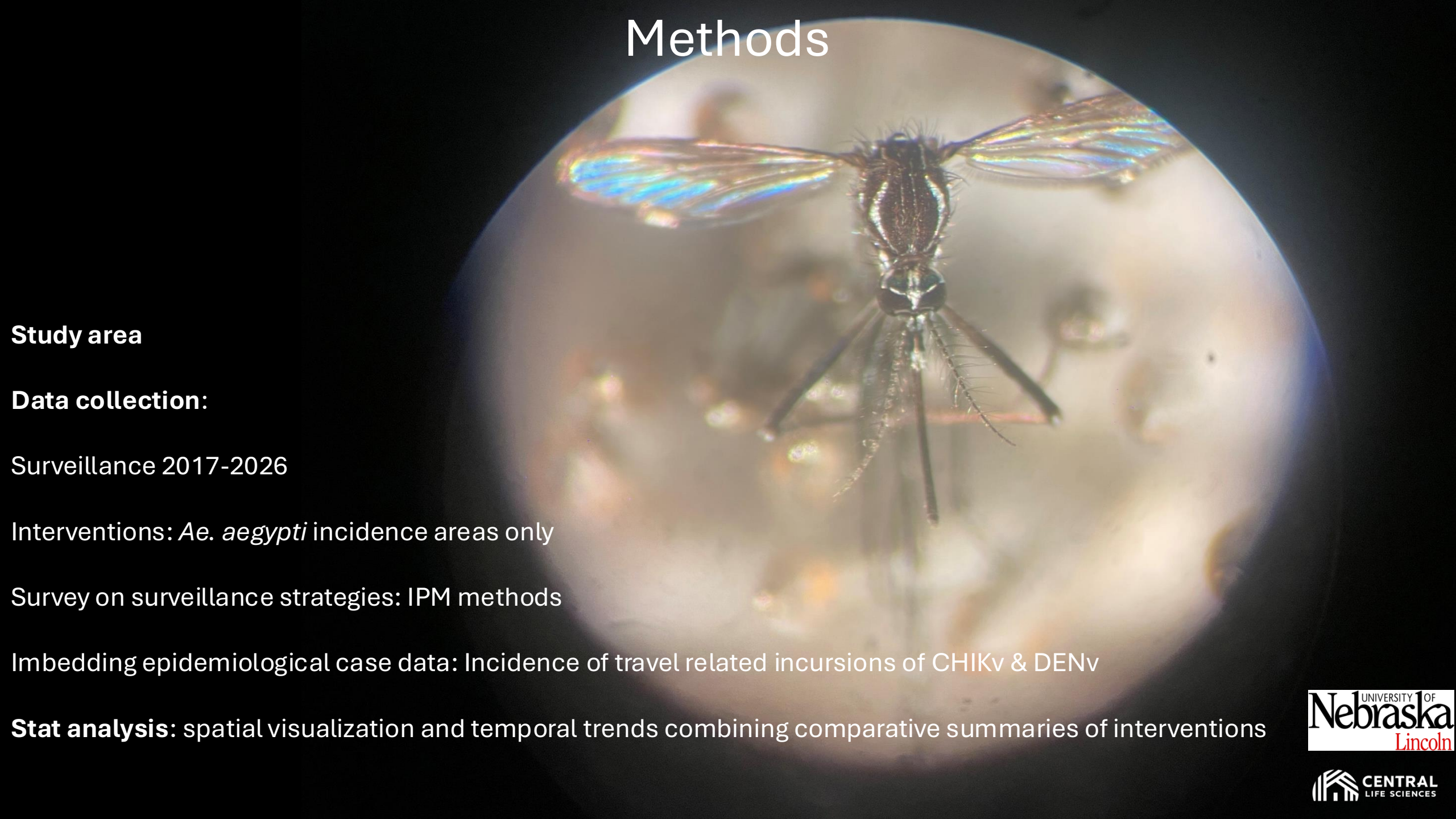
Beach MCD
Kontrol 30-30 ULV
Duet + handheld ULV
Altosid SR20 + A1 Mister

Bay County MCD
Fyfanon ULV
Kontrol 30-30 ULV
Duet
Altosid SR20 + A1 Mister

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Methods



Study area

Data collection:

Surveillance 2017-2026

Interventions: *Ae. aegypti* incidence areas only

Survey on surveillance strategies: IPM methods

Imbedding epidemiological case data: Incidence of travel related incursions of CHIKv & DENv

Stat analysis: spatial visualization and temporal trends combining comparative summaries of interventions

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Expected Outcomes

Document the current distribution of *Aedes aegypti* in northwest Florida, including confirmation of re-established populations in Bay County and the presence or absence of the species in surrounding counties

Characterize surveillance and intervention strategies currently employed by municipal mosquito control programs, providing a regional comparison of monitoring methods and integrated mosquito management approaches for *Ae. aegypti*

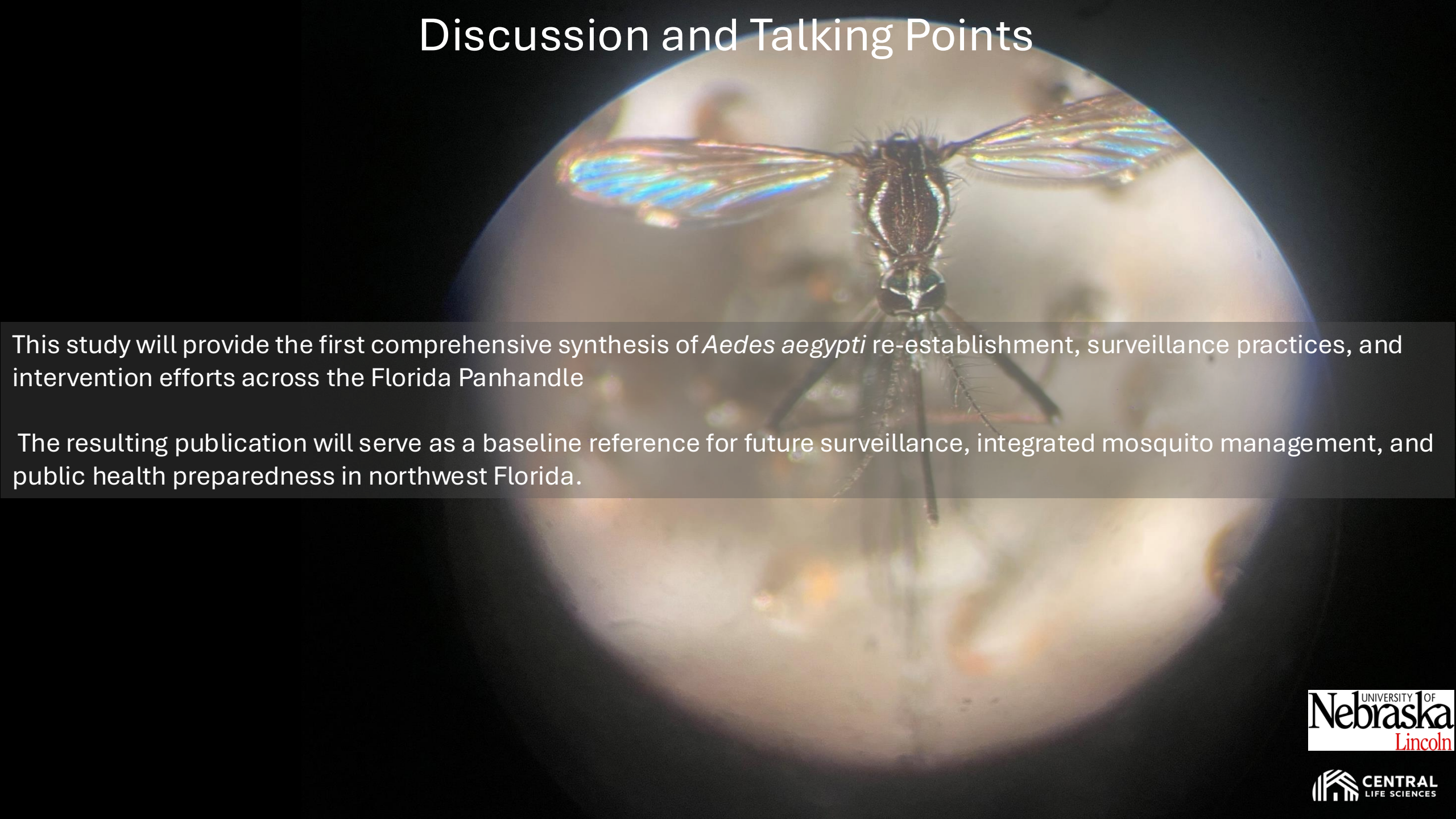
Develop a comprehensive dataset integrating mosquito surveillance, intervention activities, and travel-associated arboviral disease reports to evaluate the public health significance of *Ae. aegypti* re-establishment in the Florida Panhandle

Produce maps, tables, and descriptive analyses illustrating spatial and temporal patterns of *Ae. aegypti* occurrence and associated control efforts throughout the study region

Prepare and submit a peer-reviewed manuscript to the *Florida Mosquito Control Association Journal*, providing a current reference on the re-establishment of *Ae. aegypti* in northwest Florida for mosquito control professionals, public health officials, and future researchers.

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Discussion and Talking Points



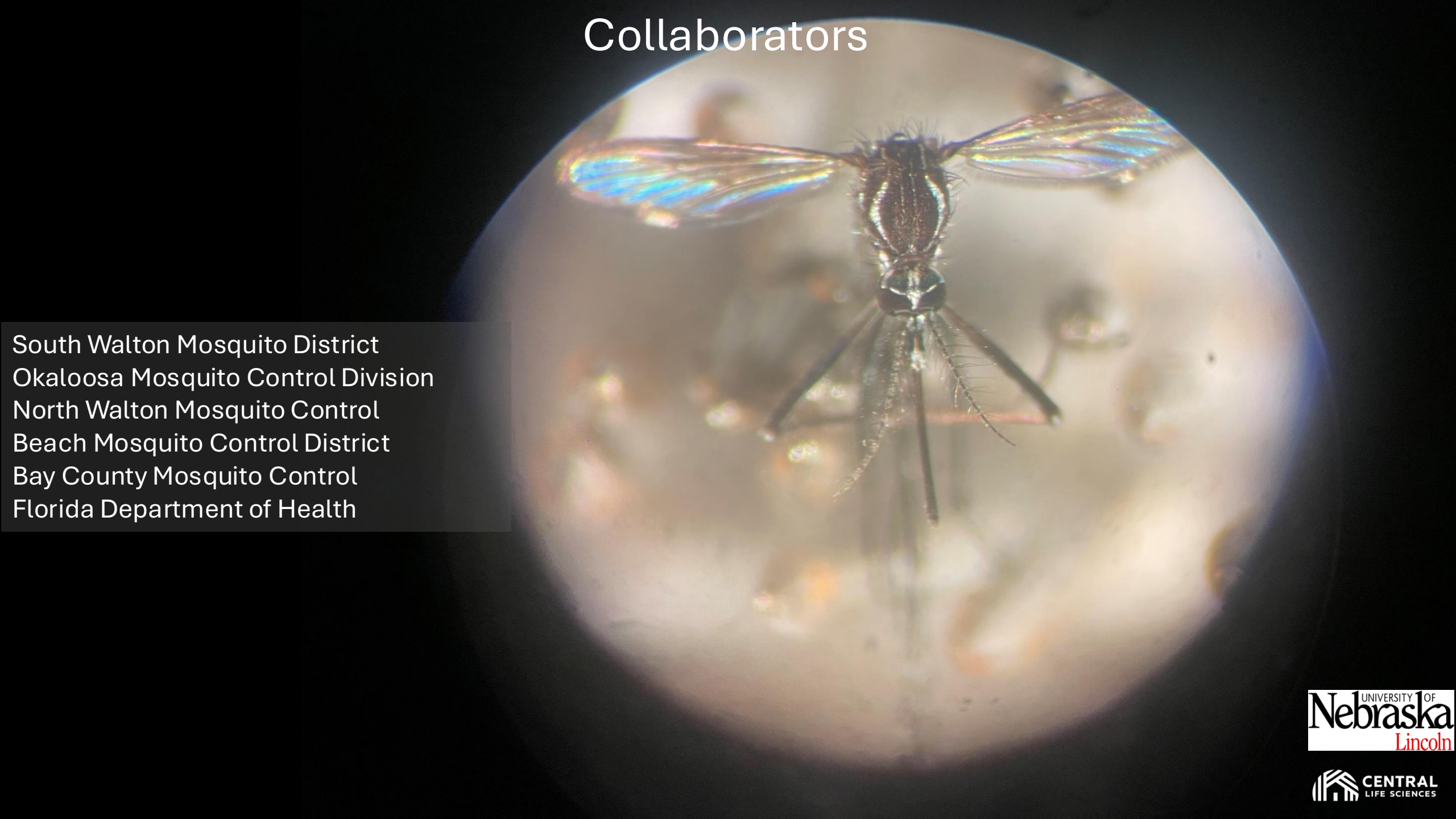
This study will provide the first comprehensive synthesis of *Aedes aegypti* re-establishment, surveillance practices, and intervention efforts across the Florida Panhandle

The resulting publication will serve as a baseline reference for future surveillance, integrated mosquito management, and public health preparedness in northwest Florida.

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Collaborators



South Walton Mosquito District
Okaloosa Mosquito Control Division
North Walton Mosquito Control
Beach Mosquito Control District
Bay County Mosquito Control
Florida Department of Health

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Michael T Riles
mriles@central.com
850.628.0091

Questions????





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