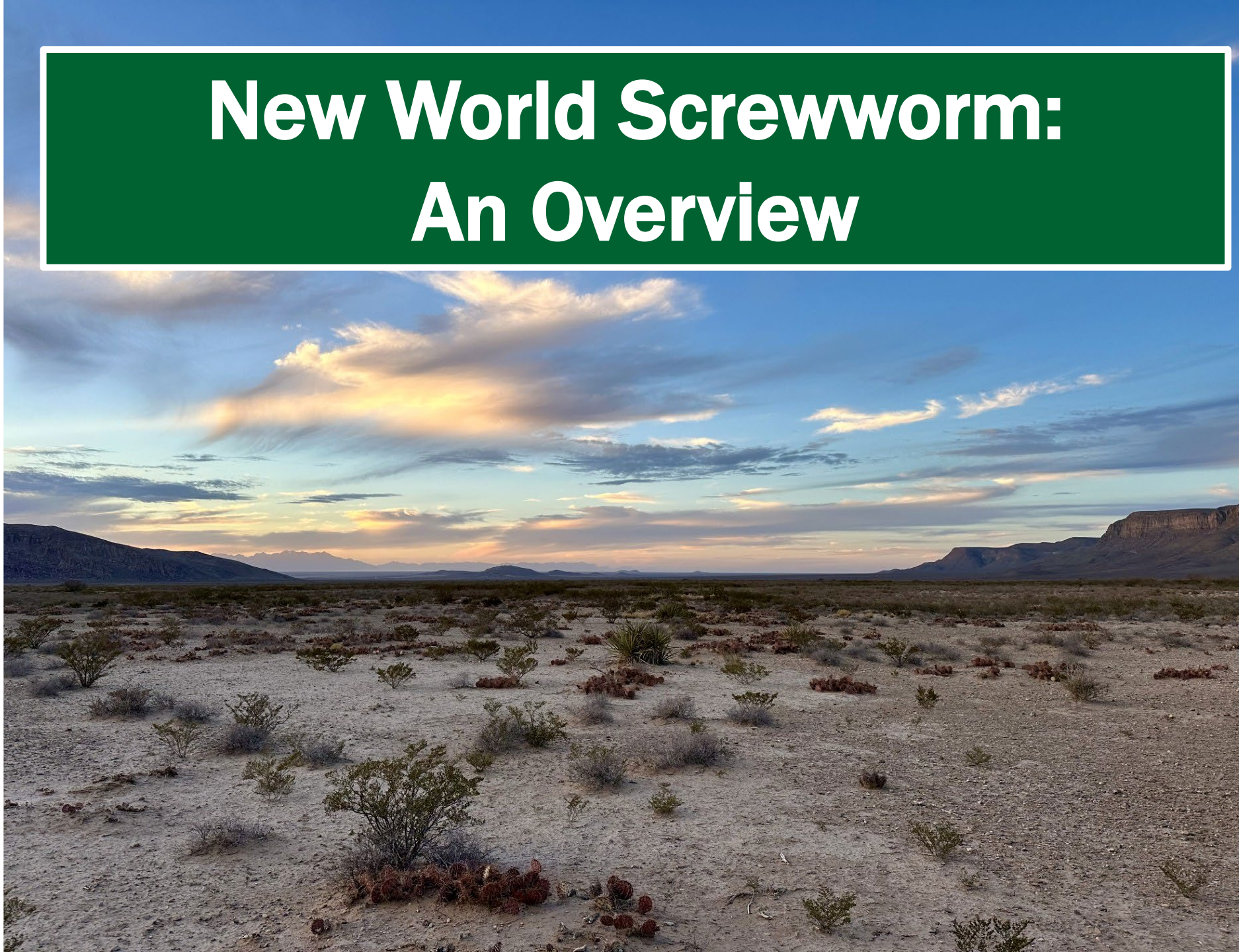
New World Screwworm: An Overview



TEXAS PARKS & WILDLIFE

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DVM

NWS Biology

- **Species** - NWS; *Cochliomyia hominivorax*
  - Maggots feed on **living tissue** from warm-blooded animals, including people!
  - Infest wounds as small as tick bites and mucous membranes.
  - Severe myiasis can cause death when left untreated.
  - Significant disease for agricultural, human and wildlife health.
  - Flies can travel up to 50 miles per day.

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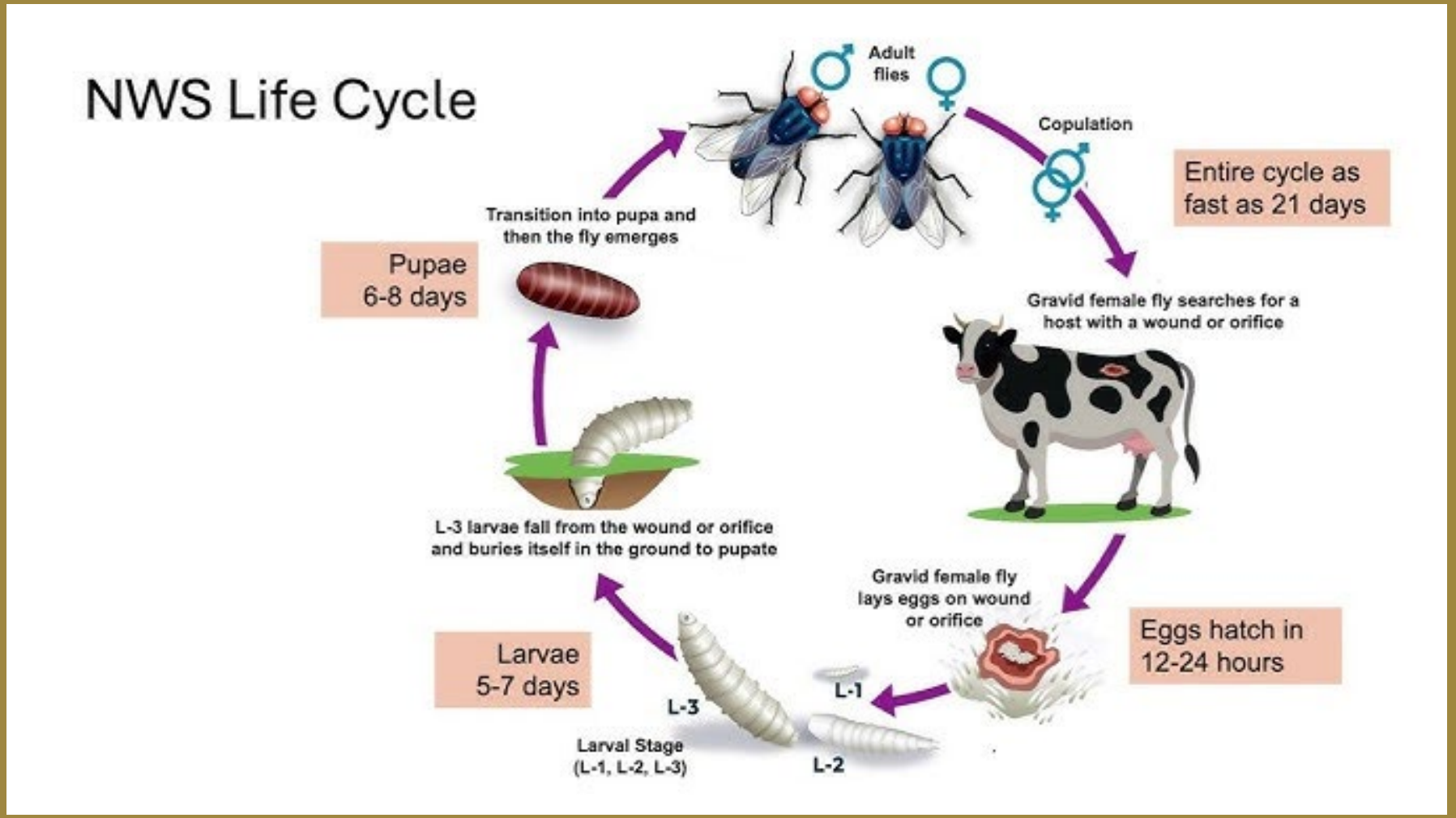
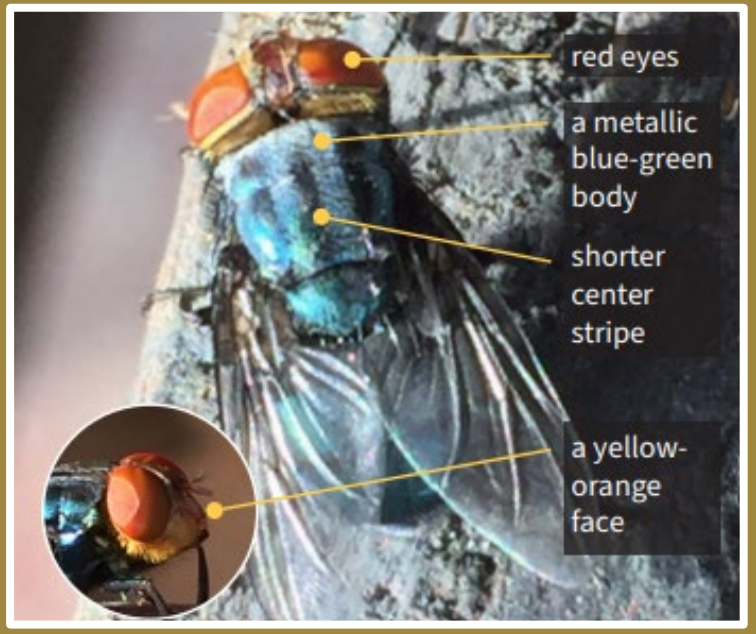
NWS Life Cycle

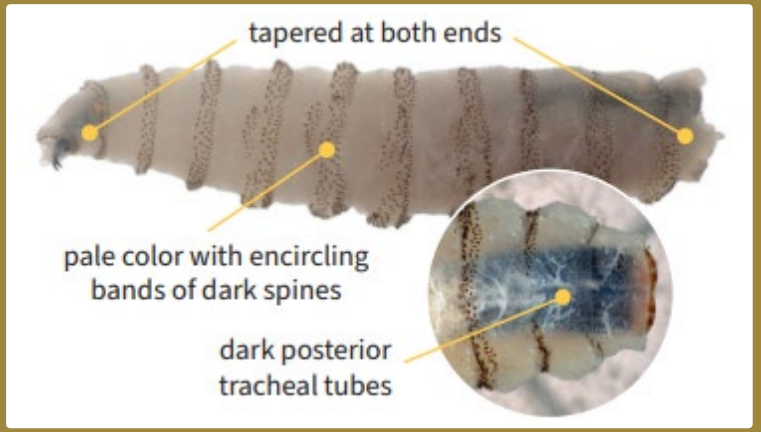


NWS Identification

Key Elements:

- Bright red to orange eyes
- 3 lines on the thorax, center line is usually shorter than others
- Metallic bluish green in color
- Relatively large fly
- Secondary screwworm similar





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Caution: Harsh images

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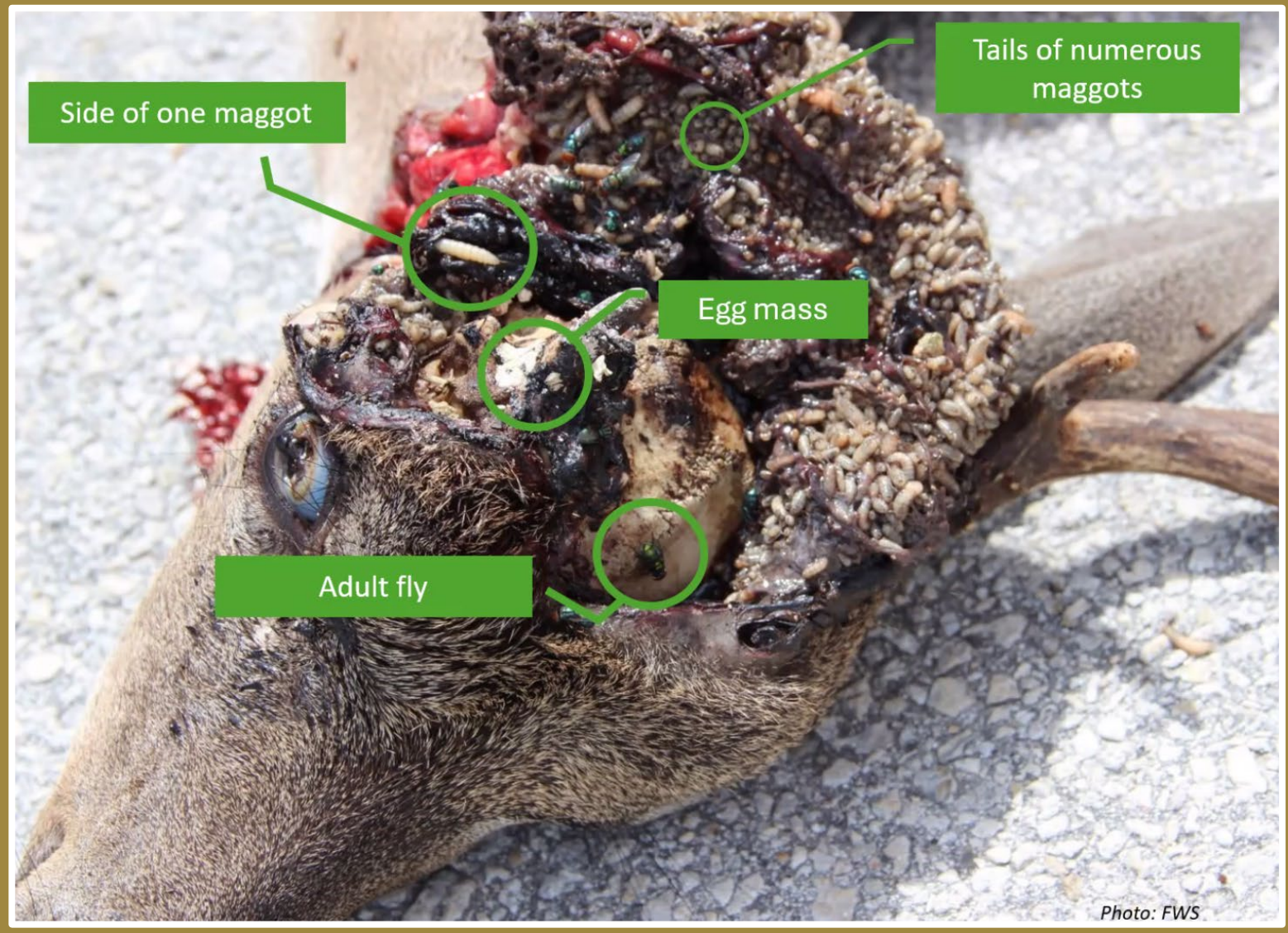
NWS Myiasis



NWS Myiasis

Clinical Signs:

- Maggots in wounds, mucous membranes or openings on living animals
- Wounds that have bloody discharge and very foul odor
- Wounds that worsen as maggots grow and feed on living tissue
- Animals that are showing signs of pain including depression, irritability, not eating, and isolation.

NWS Historical Impacts

- Historically cost the U.S. livestock industry more than $20 million annually.
- Significant impacts on wildlife and livestock populations.
- Eradicated from mainland US in 1966 using the Sterile Insect Technique (SIT).
- 2016 Florida Keys Outbreak
  - Detected October 2016
  - Declared eradicated March 2017
  - ~154 million sterile flies released

NWS Historical Impacts - TX

- Confirmed cases in WTD, jackrabbits, cottontails, raccoons and opossums
- Suspected cases in bobcats, coyotes, badgers, armadillos, mountain lion, foxes
- Smaller animals tend to hide and die
- Significant impacts on WTD fawn crop and WTD population

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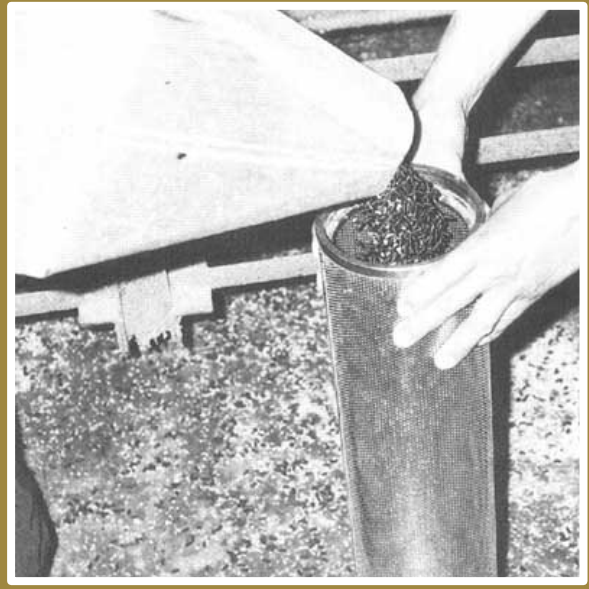
Sterile Insect Technique

MAINSTAY FOR ERADICATION!



- Developed in 1950's and coordinated by USDA
- Gamma irradiation of pupae to sterilize.
- Females only mate once, and eggs do not develop after mating with sterile males.
- Population dies off after a few life cycles.
- ~100-120 million produced per week.

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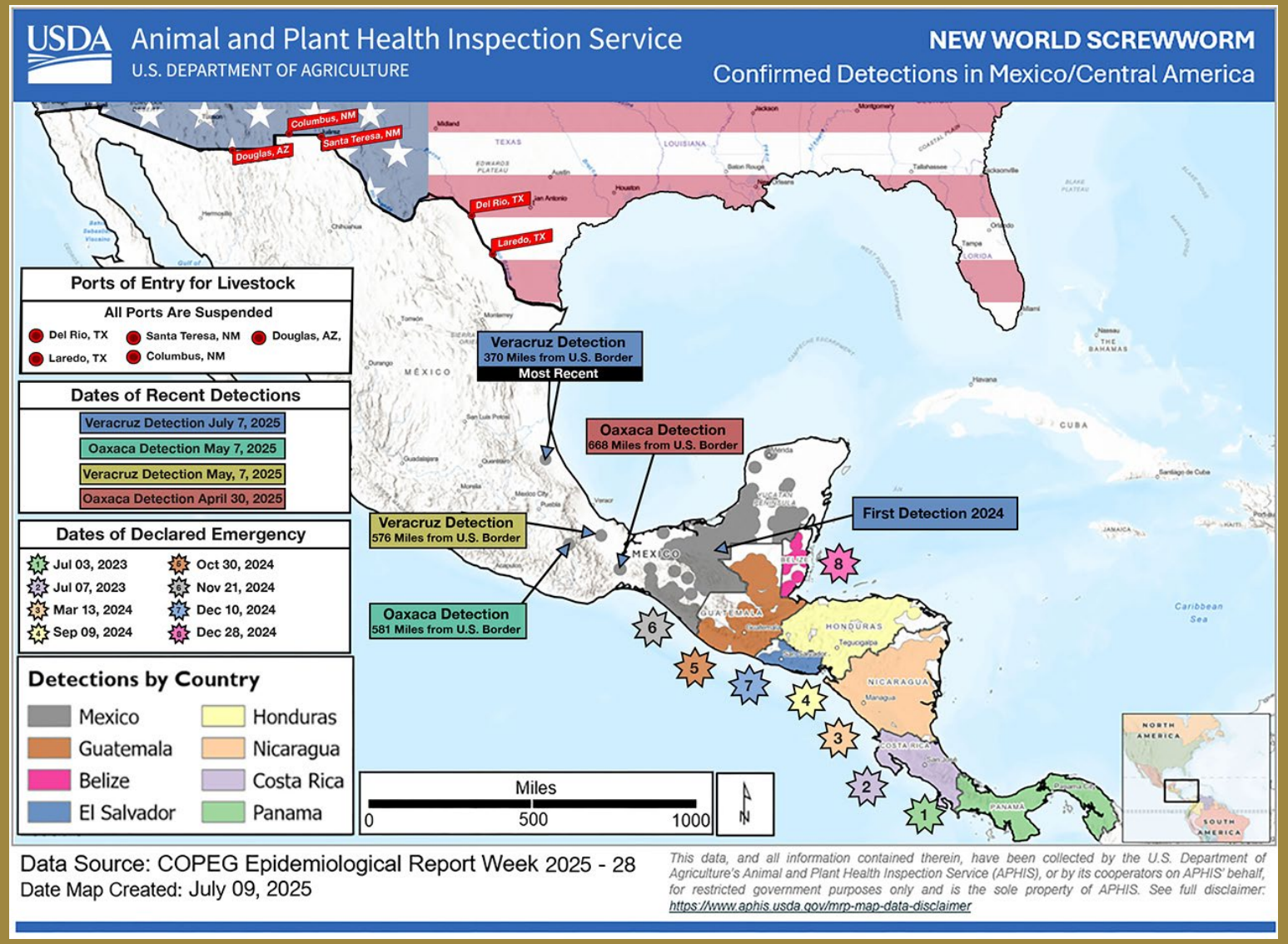
Current Situation



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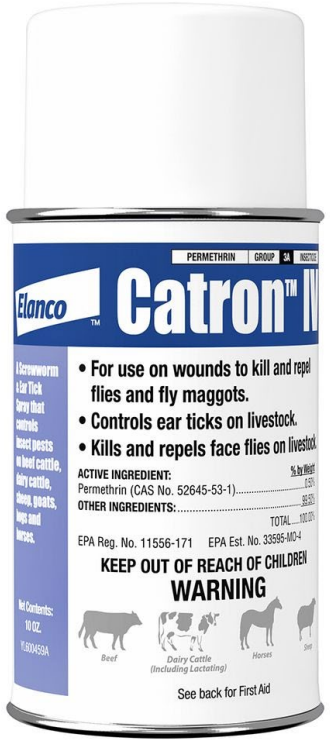
Current Situation

Captive Treatment

1. Use forceps to gently remove ALL maggots and place in 70% alcohol.
2. Approved sprays help remove maggots.
3. Clean wound with chlorohexidine, povidone-iodine, or soapy water.
4. Use approved spray and bandage.
5. Repeat every 2-3 days until healed.
6. Very ill animals, complicated infections, or clinical questions should all be referred to a veterinarian.



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Captive Treatment - EPA

Pesticides Registered for Control of Screwworm

Several pesticides are currently registered for use against screwworm (Table 1), which means these products met EPA's efficacy data requirements for screwworm under 40 CFR 158.1748.

Table 1. Federally registered pesticides labeled for control of screwworm (adult flies and/or larvae).

Product Name*	EPA Registration Number	Registrant	Active Ingredient(s)	Applicable Labeled Use Site(s)
Fyfanon® ULV AG *Alternate brand name:* Fyfanon® ULV Ag Insecticide	279-3540	FMC Corporation	Malathion	Pasture and rangeland
Claire® Bed Bug, Lice and Dust Mite Spray *Alternate brand name:* Claire® Lice Killer	706-110	PLZ Corp	Permethrin	Beef cattle, horses, sheep
PRAMEX® Multi-Use Insecticide Spray 30231	1021-2685	McLaughlin Gormley King Company, D/B/A MGK®	Permethrin	Beef cattle, horses, sheep
887 Multi-Use Insecticide Spray	10900-86	Sherwin-Williams Consumer Brands Group	Permethrin	Beef cattle, horses, sheep
Co-Ral® Coumaphos Flowable Insecticide	11556-98	Elanco US, Inc.	Coumaphos	Beef cattle, non-lactating dairy cattle, horses
Permethrin Insecticide Spray Alternate brand name: Catron® IV	11556-171	Elanco US, Inc.	Permethrin	Beef cattle, dairy cattle, sheep, goats, hogs, and horses
Eradicator II Multi-Purpose Insect Spray *Alternate brand names:* Clobber Lice, Dust Mite & Bedbug Multi-Purpose Insect Spray Raider Bed Bug, Lice and Dust Mite Multi-Purpose Insect Killer	44446-80	QuestSpecialty Corporation	Permethrin	Beef cattle, horses, sheep

Captive Treatment - FDA

New World Screwworm: Information Veterinarians May Find Useful in Making Extra-Label Use Decisions

(see footnotes below table)

FDA-Approved Product [1] [2]	FDA-Approved Route of Administration [3]	FDA-Approved Dosage Form	FDA-Approved Species [4]	Scientific literature investigating potential efficacy for prevention or treatment of NWS myiasis [5]
Doramectin 1%	Subcutaneous (cattle) and Intramuscular (cattle and swine) Injection	Solution	Cattle, swine	Cattle (Anziani et al., 2000; de Aquino et al., 2022; Moya-Borja et al., 1997; Moya-Borja et al., 1993; Muchiut et al., 2025; Muniz et al., 1995; Silva et al., 2015) No published research available in swine.
Ivermectin 1%	Subcutaneous Injection	Solution	Cattle, swine, reindeer, bison, fox	Cattle (Anziani et al., 2000; Anziani & Loreficce, 1993; Benitez Usher et al., 1997; de Aquino et al., 2022; Moya-Borja et al., 1997) No published research available in swine, reindeer, bison or fox
Nitenpyram	Oral	Tablet	Dog, cat	Dogs (Correia et al., 2010; Han, Toh, et al., 2018) Cats (de Souza et al., 2010)
Afoxolaner	Oral	Tablet	Dog	Dogs (Cutolo et al., 2021; Han, Toh, et al., 2018)
Lotilaner	Oral	Chewable tablet	Dog, cat	Dogs (do Vale et al., 2023)
Sarolaner	Oral	Chewable tablet	Dog	Dogs (Oliveira et al., 2019)
Milbemycin oxime	Oral	Tablet	Dog, cat	Dogs (Han, Chen, et al., 2018)
Milbemycin oxime and spinosad	Oral	Chewable tablet	Dog	Dogs (Han, Chen, et al., 2018)
Spinosad	Oral	Chewable tablet	Dog, cat	Dogs (Han, Chen, et al., 2018; Oliveira et al., 2018)

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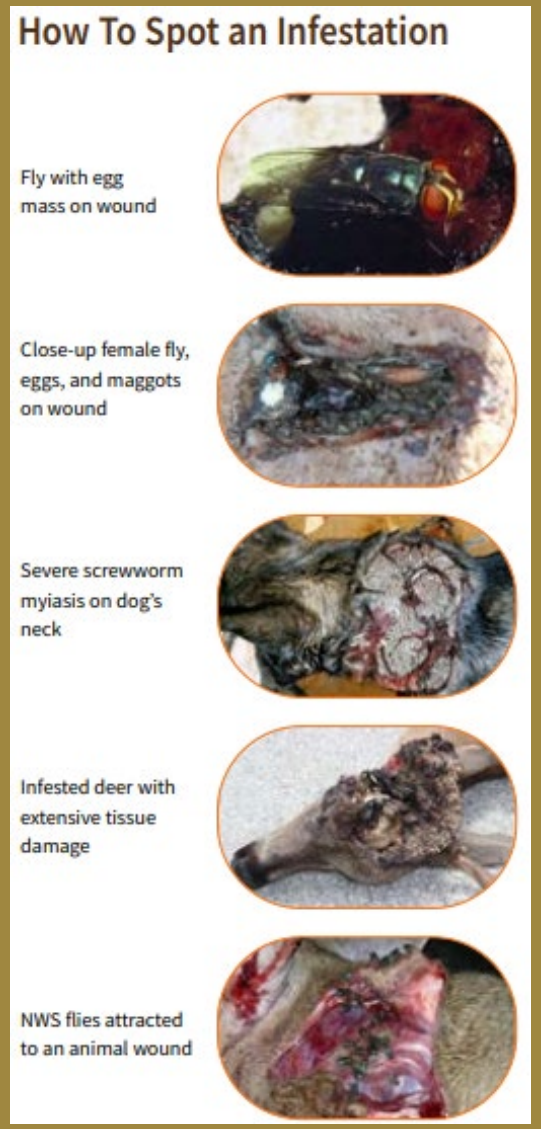
Prevention



- Routinely check captive animals (especially newborns navels)
- **Quickly** report any suspected cases
- Clean, cover, spray, and monitor all wounds until healed
- Treat clothing with permethrin sprays
- As feasible, schedule branding, dehorning, calving, castration, tail docking, antemortem CWD testing, and working **during winter or early spring to avoid high NWS activity**

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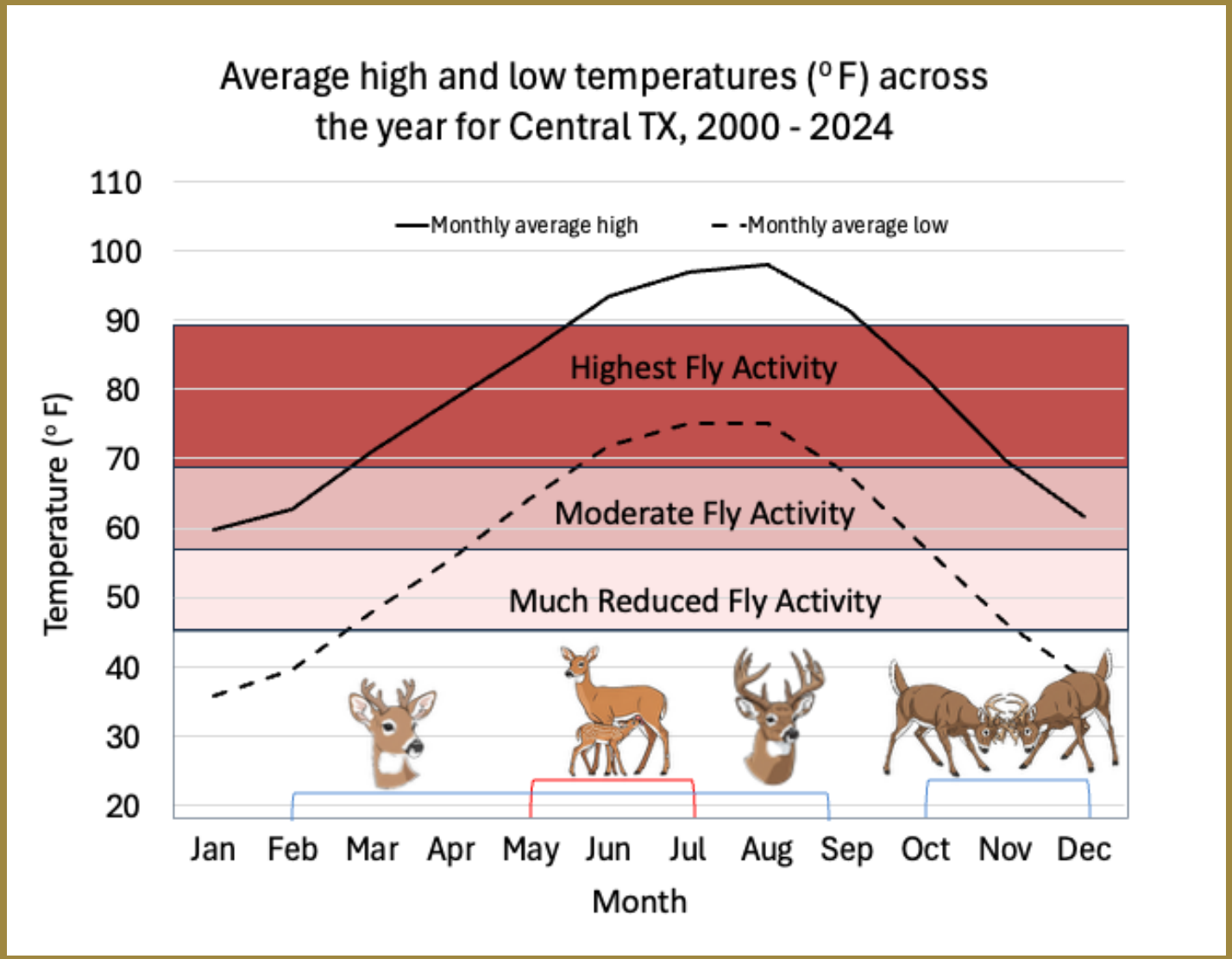
Prevention



Joint Authority in Texas

CFR

TPWD

Native wildlife
- Hunting
- Captive breeding
- Rehabilitation
- Zoological

NWS

TAHC

Domestic and exotic livestock

Any disease impacting these species

Interagency Cooperation

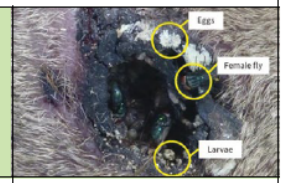
GENERAL WILDLIFE INFORMATION

New World Screwworm

WHAT ARE NEW WORLD SCREWWORMS?

New World screwworms (NWS) are parasitic flies (*Cochliomyia hominivorax*) that lay eggs in open wounds or mucous membranes such as the nostrils, eyes or mouths of live warm-blooded animals. These eggs hatch into a type of parasitic larvae (maggots) that only feeds on living tissue, while other species of fly larvae prefer dead or necrotic tissue. NWS larvae burrow or "screw" into living tissue with sharp mouth hooks, giving them a screw-like appearance. Infested wounds quickly become infected and, if left untreated, will kill the infested animals.

If you see LIVE animals with LIVE maggots, report to local biologists. Early detection is key. Do not delay if you suspect a NWS infestation. Reporting is crucial to the implementation of management actions and eradication of NWS.



COMMONLY AFFECTED WILDLIFE SPECIES
- White-tail deer
- Rabbits (jackrabbits, cottontails)
- Small mammals
- Turkey

Note: All warm-blooded mammals can be infested

COMMON INFESTED AREAS
- Newborn animals' umbilical stump/navel
- Mucous membranes — genitalia, eyes, nose, ears, mouth
- Damaged skin — cuts, scrapes, stings, tick bites, antler/velvet shedding
- Management-related — dehorning, ear tagging, castration, branding

INFESTATION MIGHT LOOK LIKE
- Open sores or wounds with maggots
- Animals shaking heads or irritated demeanor
- Foul rotted flesh odor

Screwworm infestations occur year-round in temperate regions such as South Texas but are generally seasonal (Spring through Fall) in other areas like the Panhandle and farther north.

REPORTING IS CRITICAL! IF YOU SUSPECT NWS INFESTATION

Livestock or Domestic Pets
(800) 550-8242
Find the list of regional offices at tahc.texas.gov/agency/contact.html#regions

Wildlife
(512) 389-4505
Find wildlife biologists by county at tpwd.texas.gov/wildlife

Humans
(888) 963-7111
dshs.texas.gov/regional-local-health-operations/public-health-regions

Primary Focus Areas:

- Response:
  - Surveillance and reporting
  - Movement restrictions
  - Treatment
  - Enforcement
- Communications:
  - National
  - Regional
  - State
  - Public involvement and outreach

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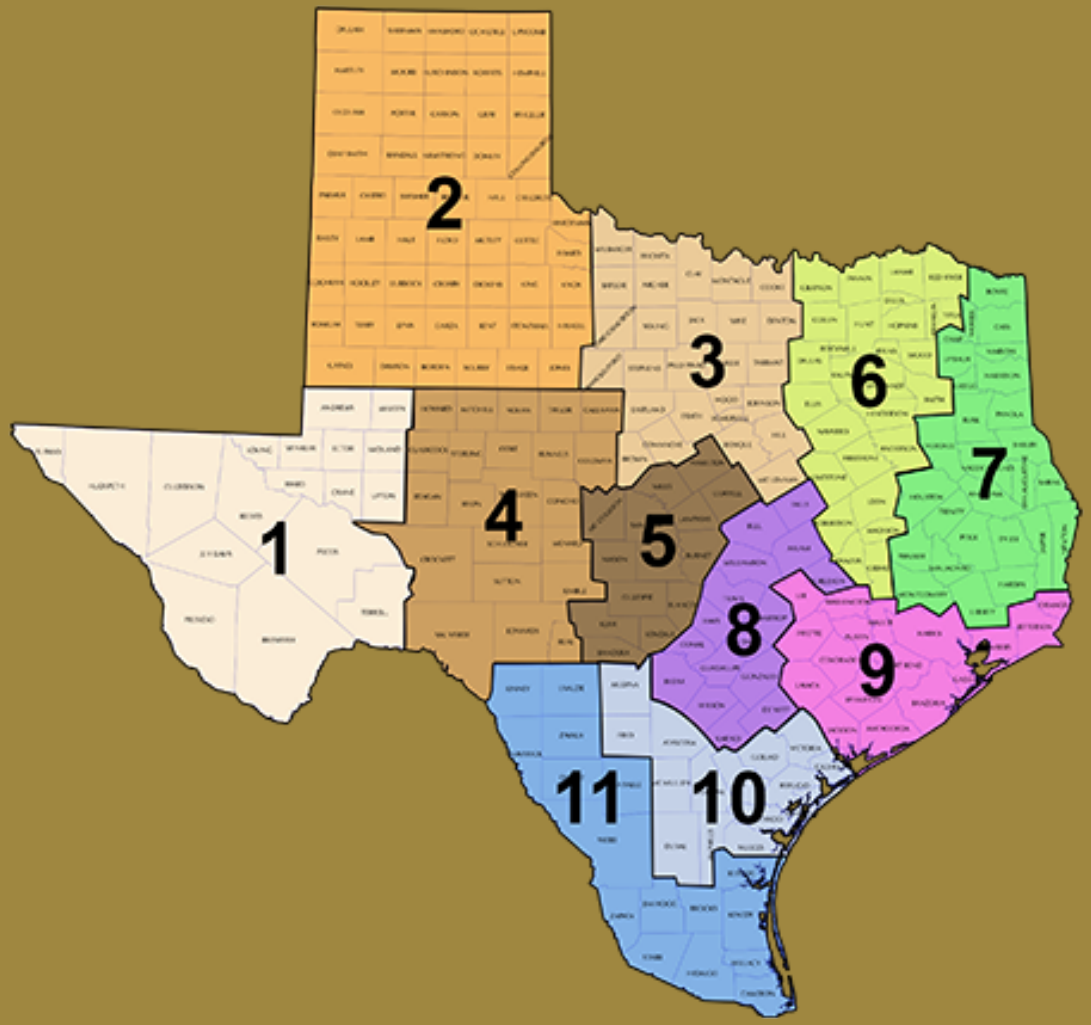
Agency Capacity

Wildlife Division:
- Wildlife Veterinarians
- Wildlife Health Specialists
- Biologists

State Parks Division:
- State Park and Natural Area Biologists

Law Enforcement Division:
- Game Wardens



Information Flow

Facility Owner or Landowner

Biologist or Game Warden

Data Management

Wildlife Health Specialist

Wildlife Veterinarians

USDA

NVSL

Response

Movement Restriction

Data Management

Treatments

Disposal

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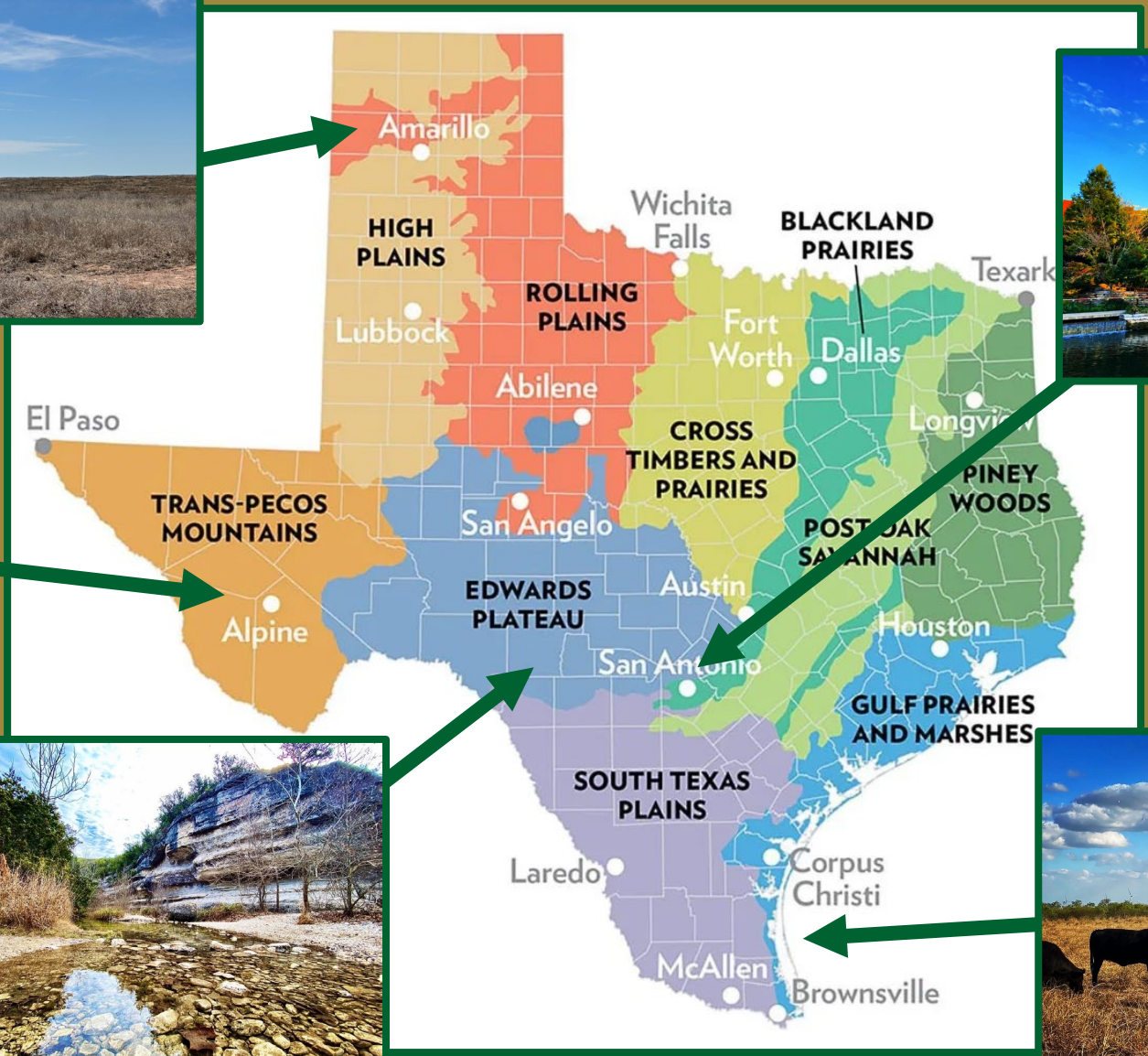
Scalability



Resources

- **Texas Parks and Wildlife Department:**
  - Website
  - Factsheet
- **Texas Animal Health Commission:**
  - Website
  - Factsheet
- **USDA-Wildlife Services:**
  - Hunter guidance
- **Texas A&M AgriLife Extension:**
  - Website
  - Wildlife Monitoring and Management

Thank You!

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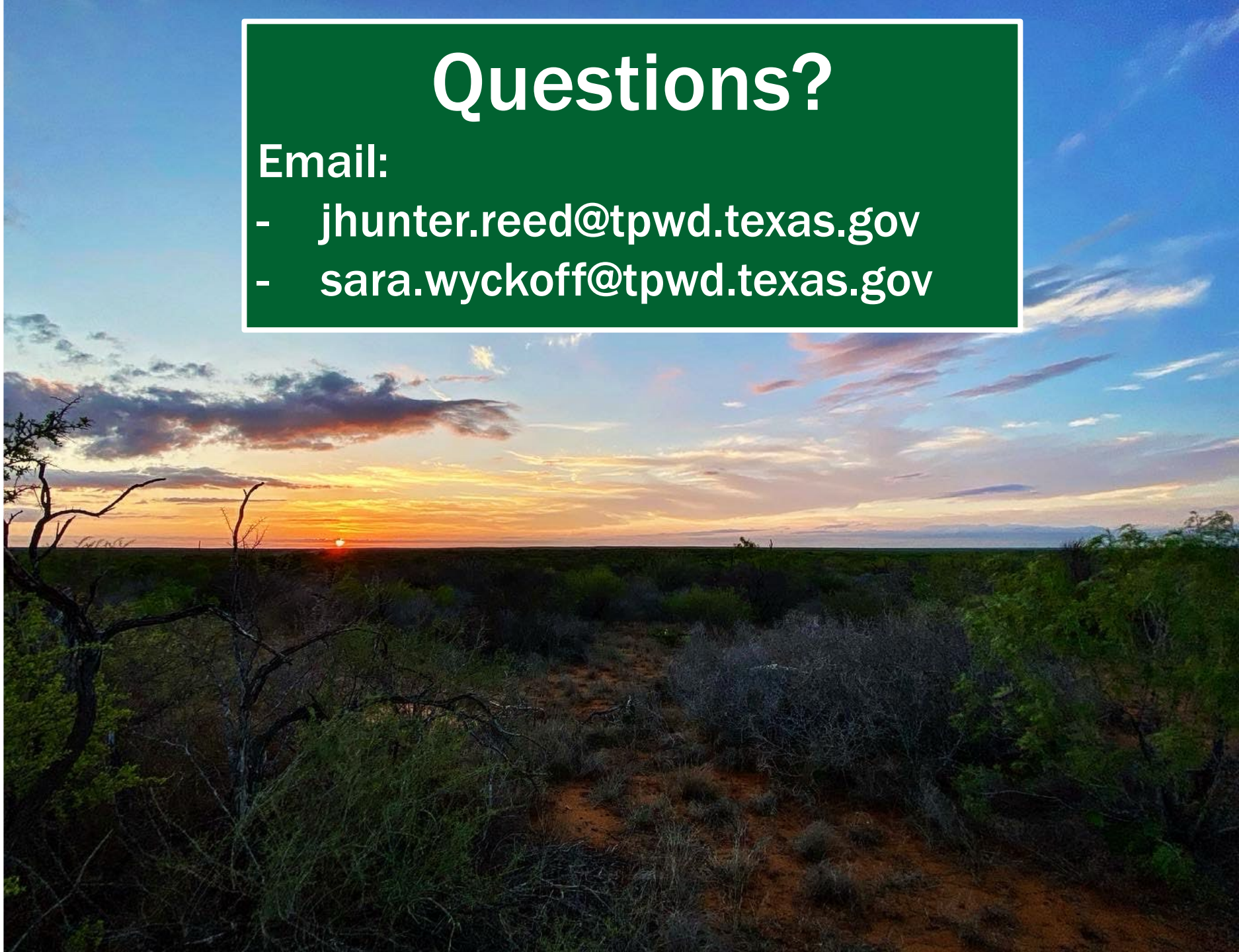

Questions?

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