THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Birds of Ohio Shores: Diversity, Ecology and Management of Shorebirds in Ohio

Woodlands Stewards Friday Morning Webinar,

October 2, 2020

From Plovers to Pipers (who dey):

A diversity tour of Ohio Shorebirds

Large Plovers:

Common Plovers:

Uncommon Plovers:

Avocet and Black-Necked Stilt

Greater and Lesser Yellowlegs

Solitary and Spotted Sandpipers

Willet and Upland Sandpiper

Whimbrel

Hudsonian and Marbled Godwits

Ruddy Turnstone and Sanderling

"Peeps" (= *Calidris* spp.)

Hard to identify; they all look alike and often occur in large flocks.

Dublin and Pectoral Sandpiper

White-rumped and Baird's Sandpipers

Semi-palmated and Least Sandpipers

Stilt and Buff-breasted Sandpipers

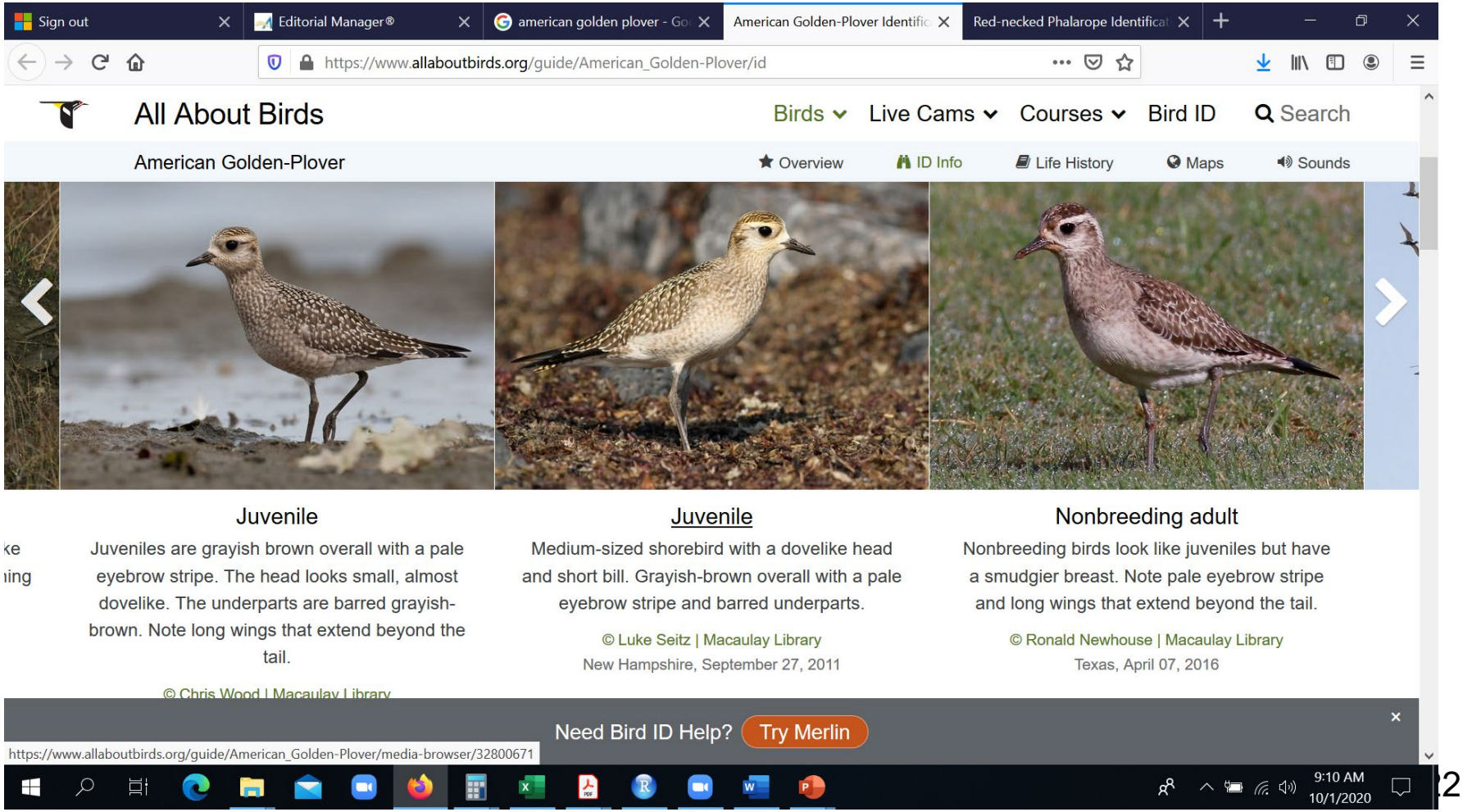
End of the “peeps”

Long and Short-billed Dowitcher

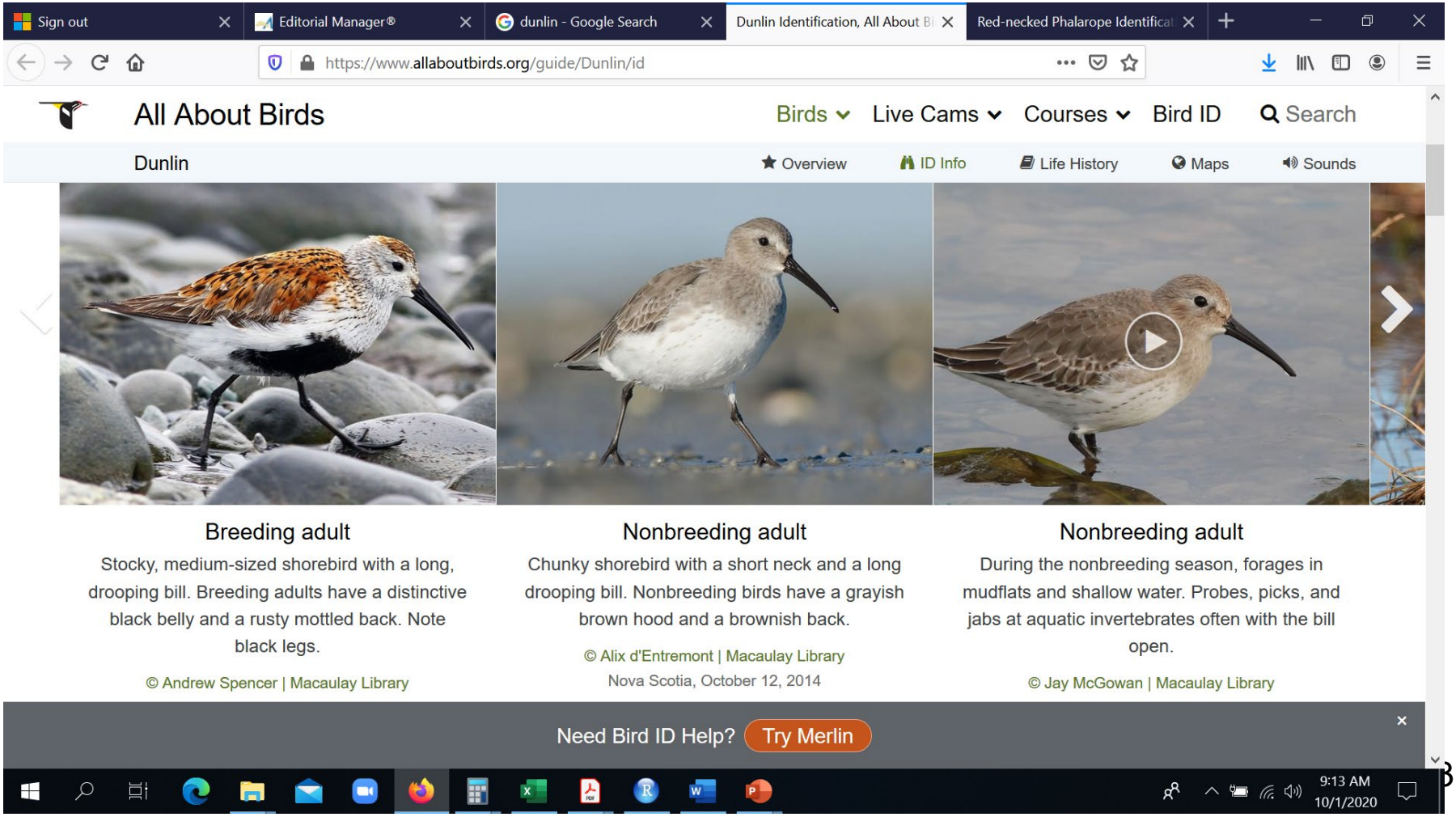
American Woodcock and Wilson's Snipe

Wilson's and Red-necked Phalaropes

And if that were not enough!



Breeding, juvenile, fall and spring plumages!



Prebalternate and prebasic molts (all spp. of shorebirds, not limited to peeps)

Feathers wear so plumage changes spring to fall.

Shorebird Guilds

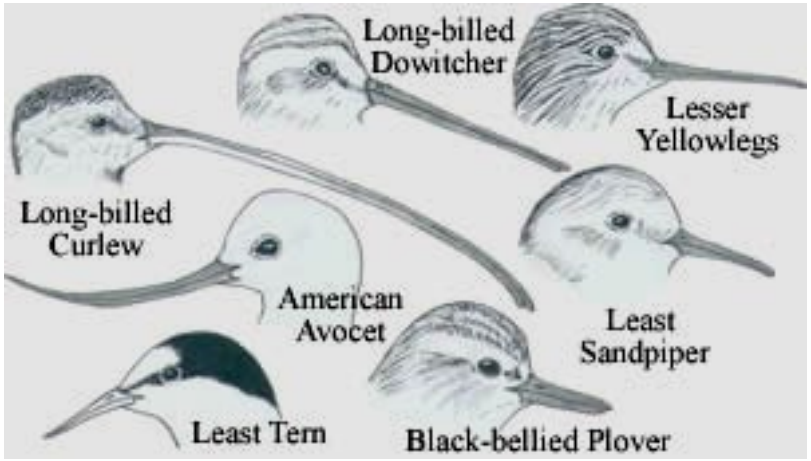
Body Size

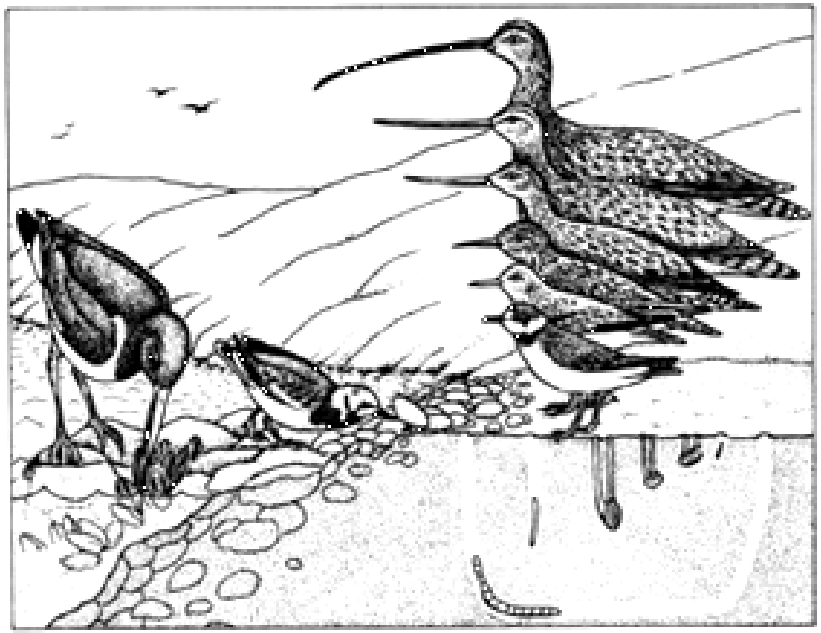
Leg Length

Bill size and shape

Foraging behavior

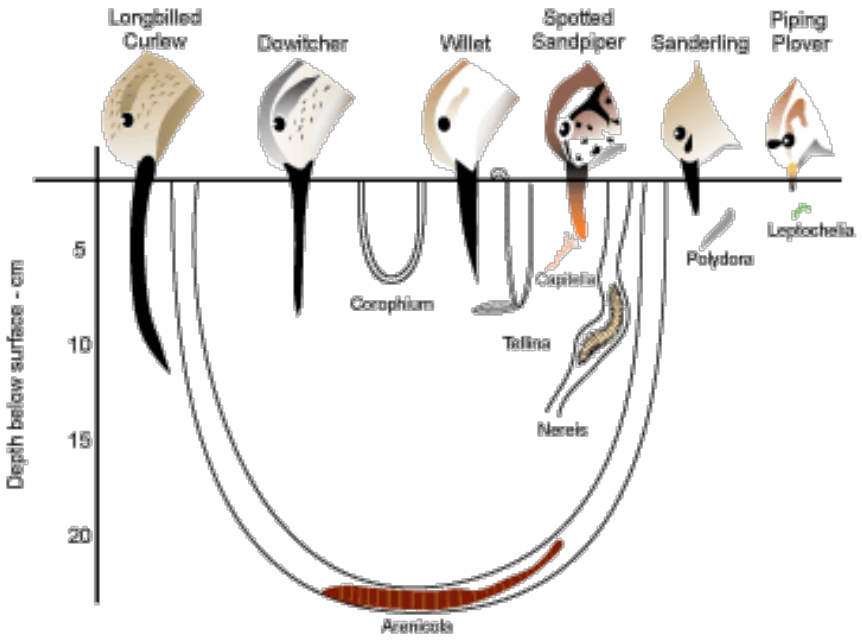
Habitat type (wetland zone)

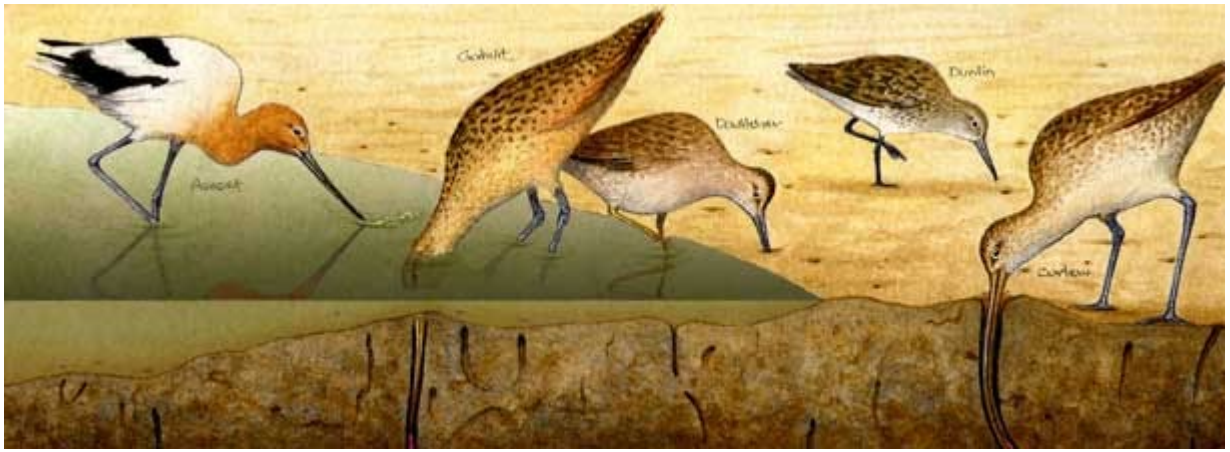




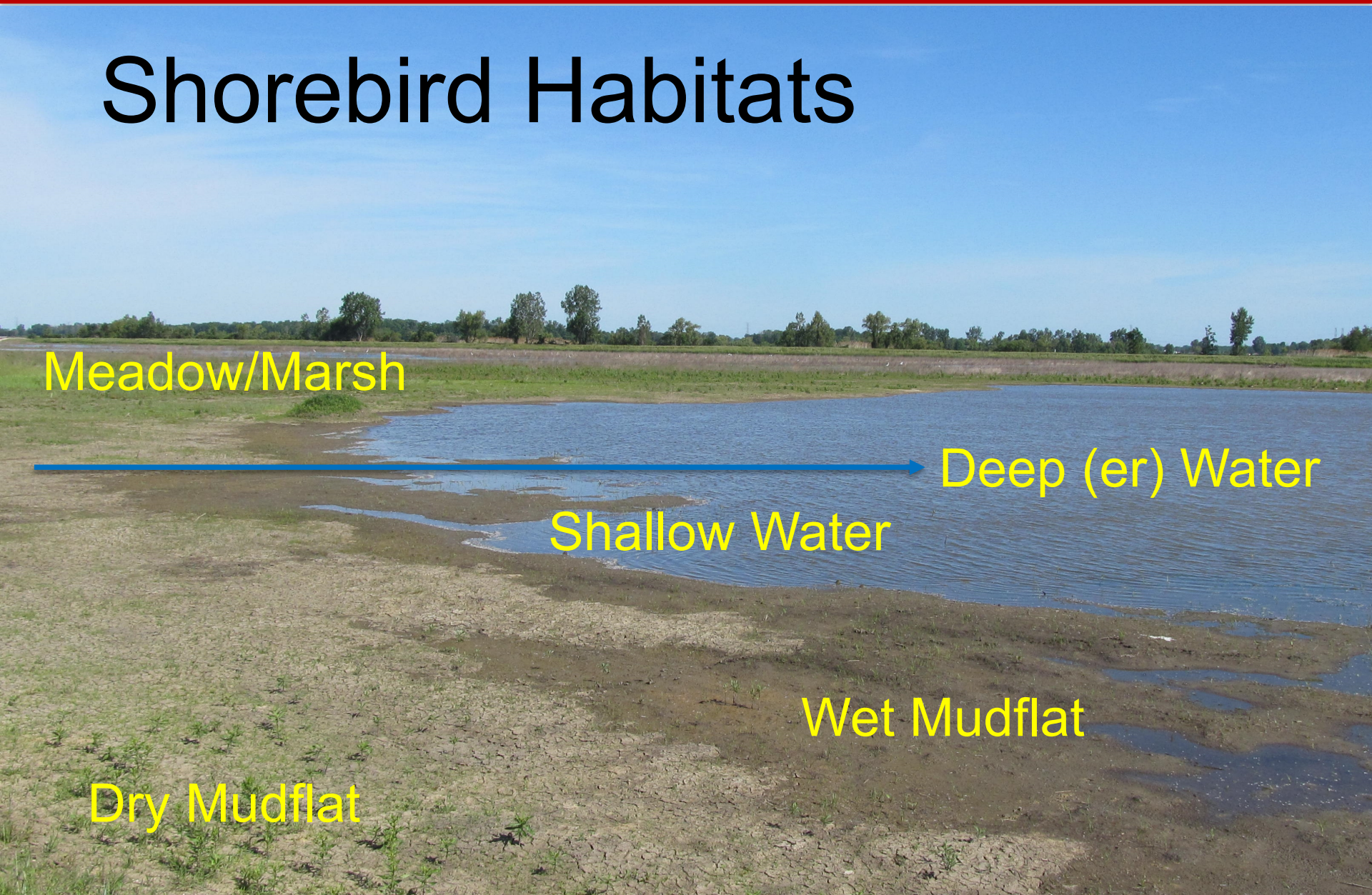
Shorebird Guilds

- Small gleaners (beach, dry mudflat)
- Small probers (moist mudflat)
- Large probers (moist mudflat, shallow water)
- Large gleaners (shallow water)

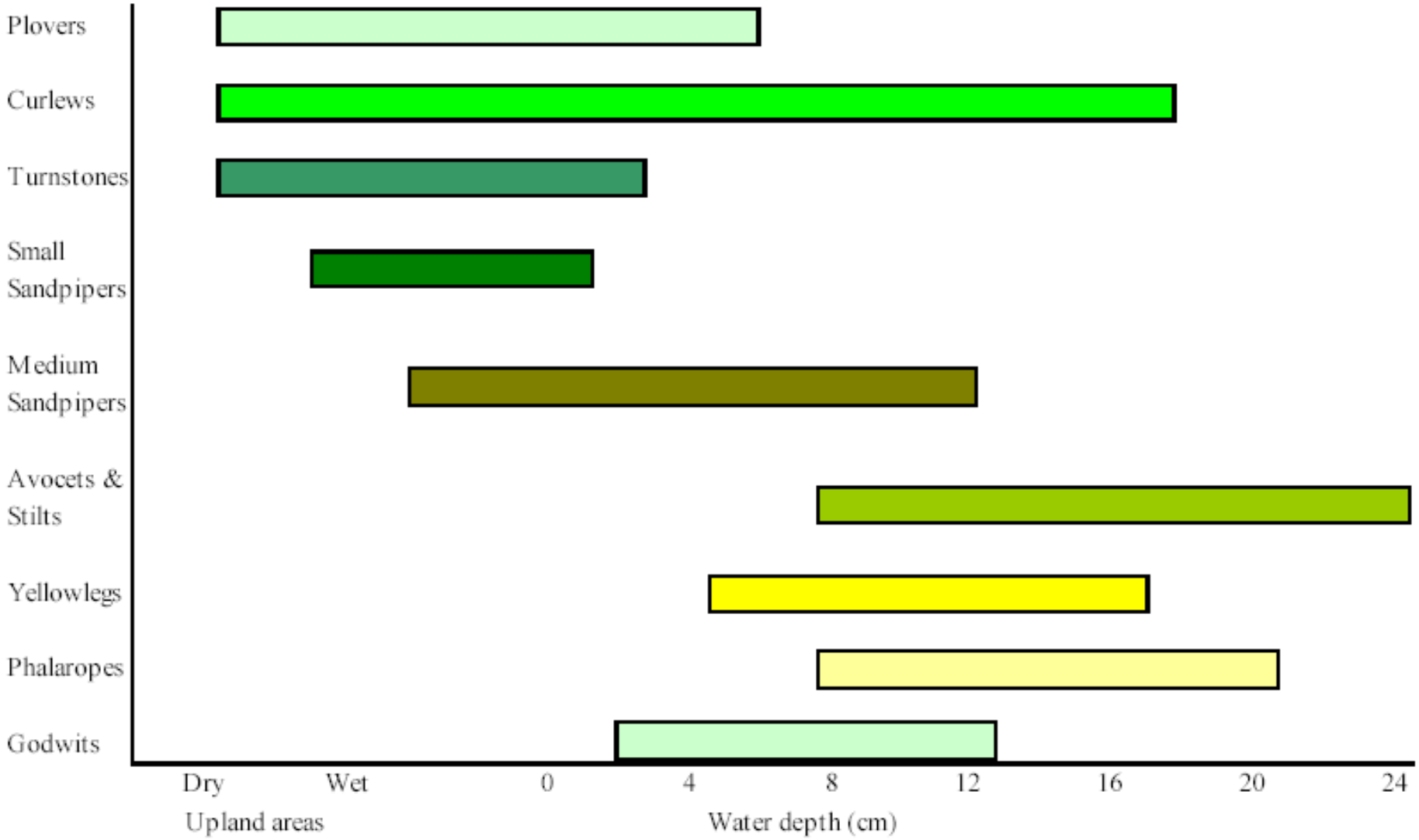




Shorebird Habitats



Typical foraging depths of various shorebirds (from Helmers 1992).



Shorebird Habitats

Dry mudflat species:

- Killdeer
- Baird's Sandpiper
- Buff-breasted Sandpiper
- Black-bellied Plover
- Golden Plover

Shorebird Habitats

Moist mudflats:

Red Knot
Ruff
Least Sandpiper
Semi-palmated Sandpiper
Snowy Plover
Solitary Sandpiper
Semi-palmated Plover
Spotted Sandpiper
Western Sandpiper
White-rumped Sandpiper
Common Snipe
Dunlin
Pectoral Sandpiper

Shorebird Habitats

Moist mudflats:

Red Knot
Least Sandpiper
Semi-palmated Sandpiper
Snowy Plover
Solitary Sandpiper
Semi-palmated Plover
Spotted Sandpiper
Western Sandpiper
White-rumped Sandpiper
Common Snipe
Dunlin
Pectoral Sandpiper

Shorebird Habitats

Shallow Water:

Greater Yellowlegs
Lesser Yellowlegs
Long-billed Dowitcher
Short-billed Dowitcher
Stilt Sandpiper
Willet

Shorebird Habitats

Deep(er) Water:

American Avocet
Hudsonian Godwit
Marbled Godwit
Wilson's Phalarope
Northern Phalarope
Black-necked Stilt
Whimbrel

Shorebird Habitats

Uplands:

Upland sandpiper

American Woodcock

Shorebird Habitats

Beech, er I mean Beach:

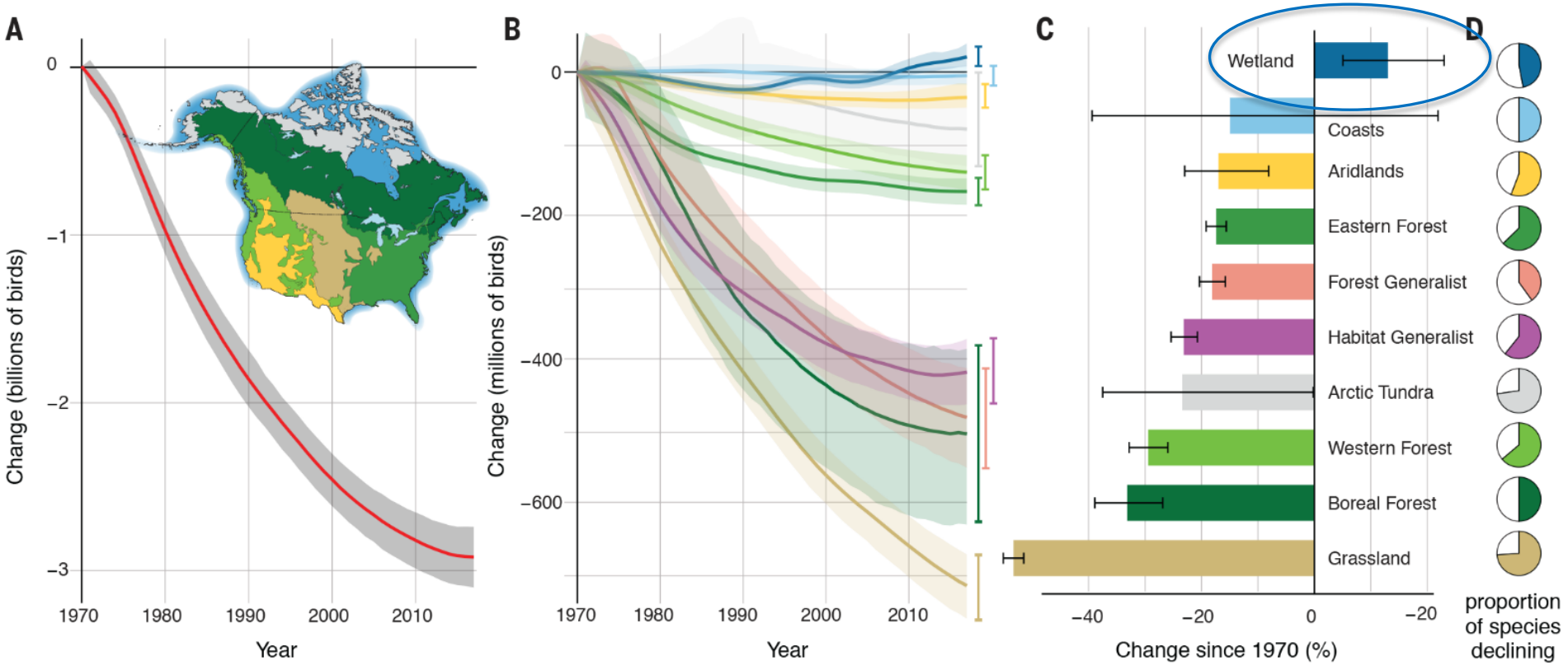
Sanderling

Ruddy Turnstone

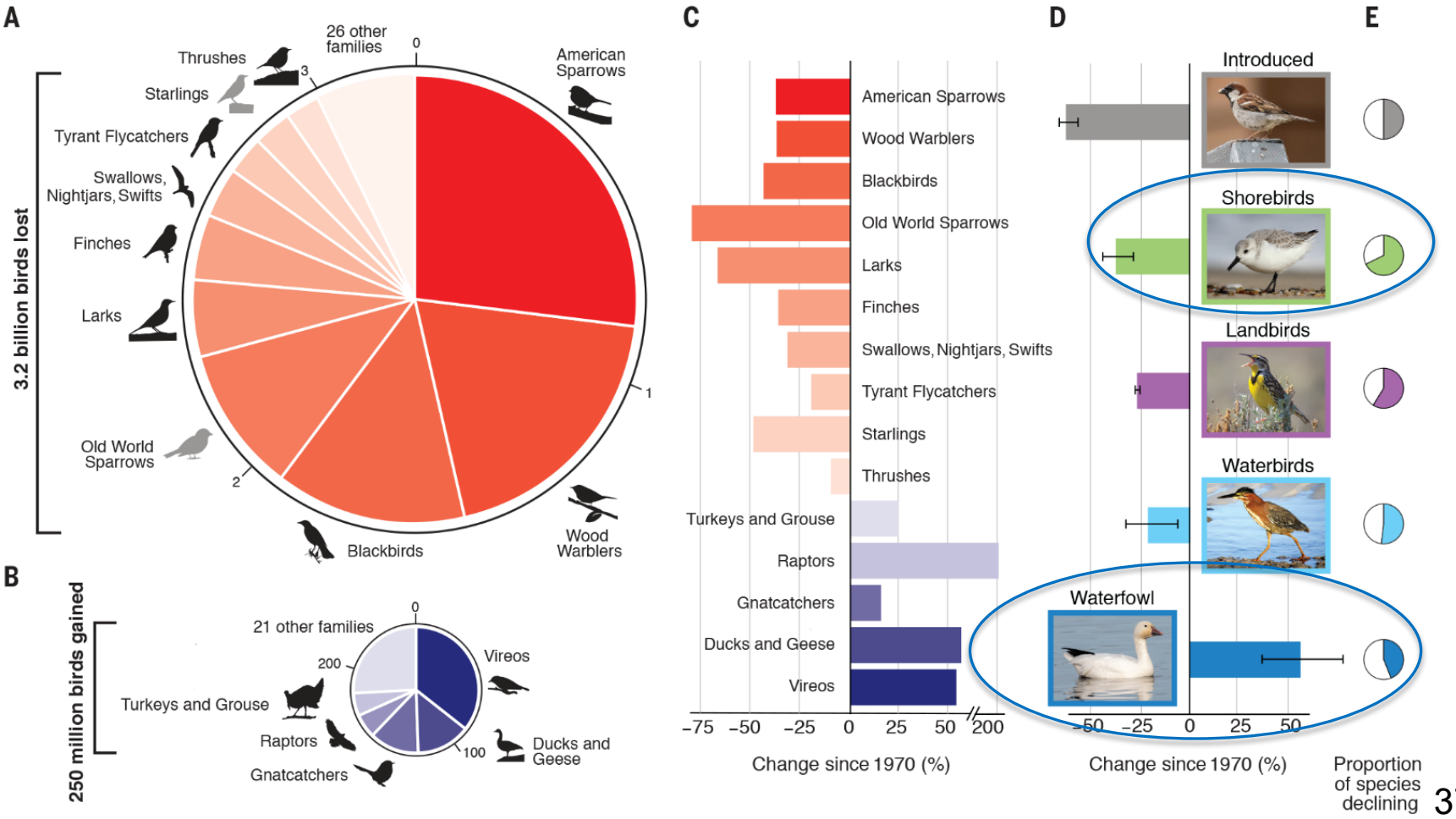
Piping Plover

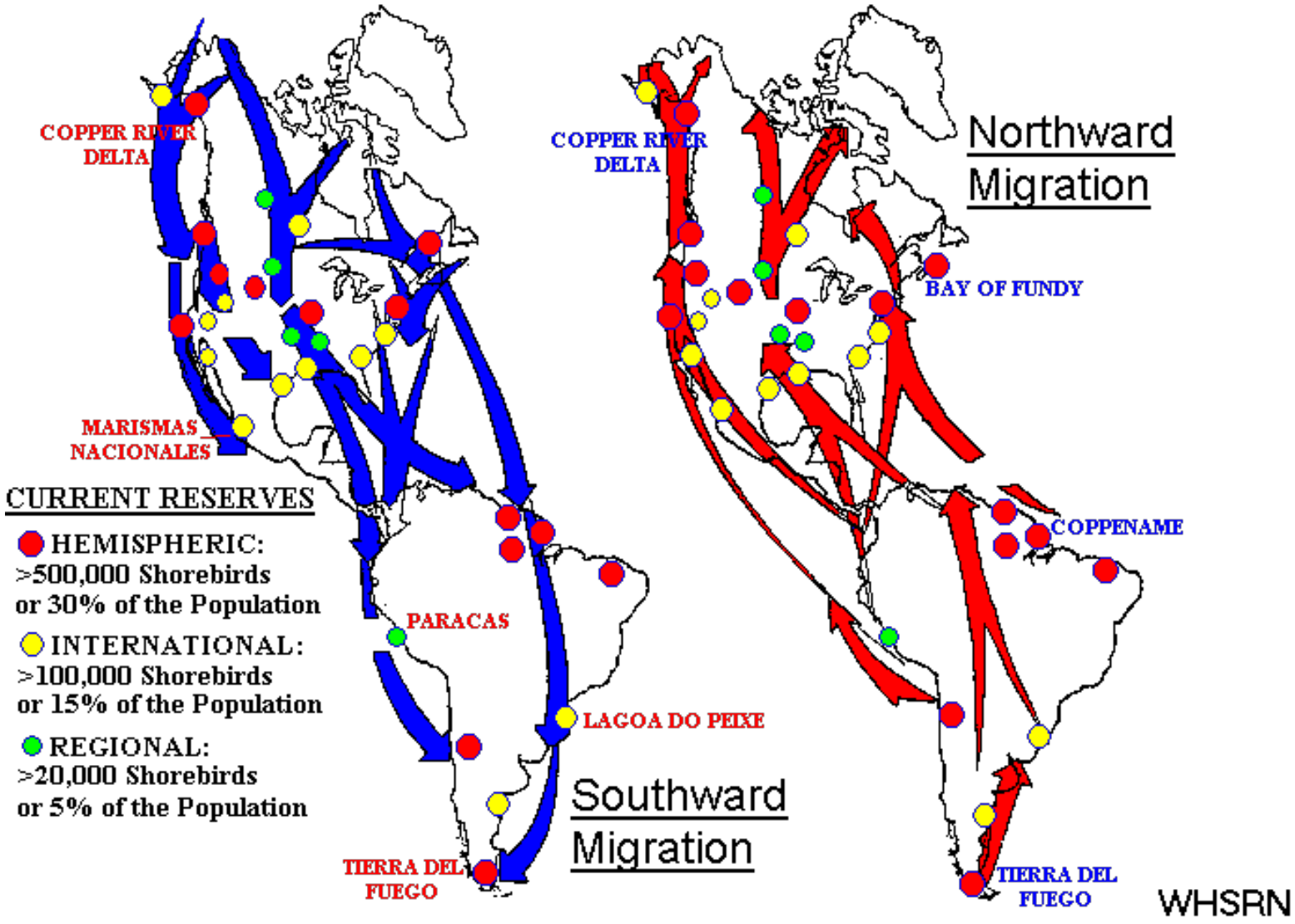
Decline of the North American avifauna

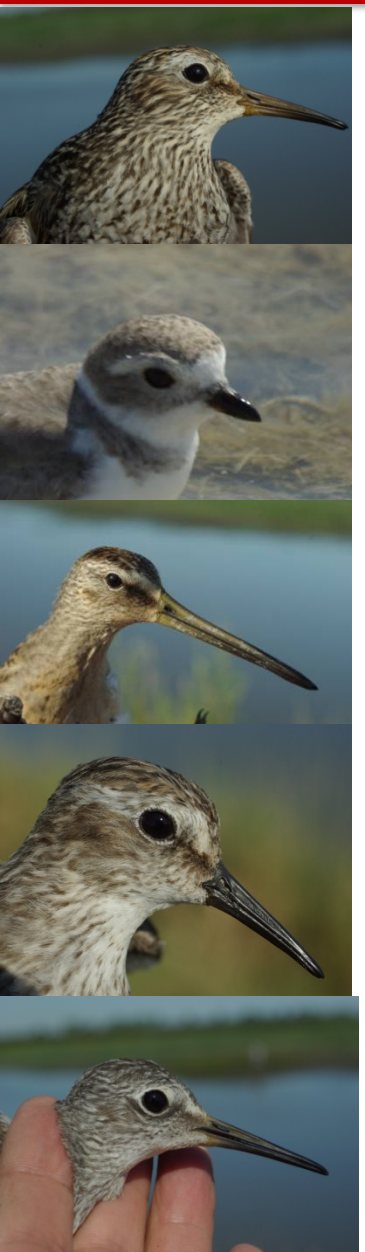
Kenneth V. Rosenberg[1,2*], Adriaan M. Dokter[1], Peter J. Blancher[3], John R. Sauer[4], Adam C. Smith[5], Paul A. Smith[3], Jessica C. Stanton[6], Arvind Panjabi[7], Laura Helft[1], Michael Parr[2], Peter P. Marra[8†]



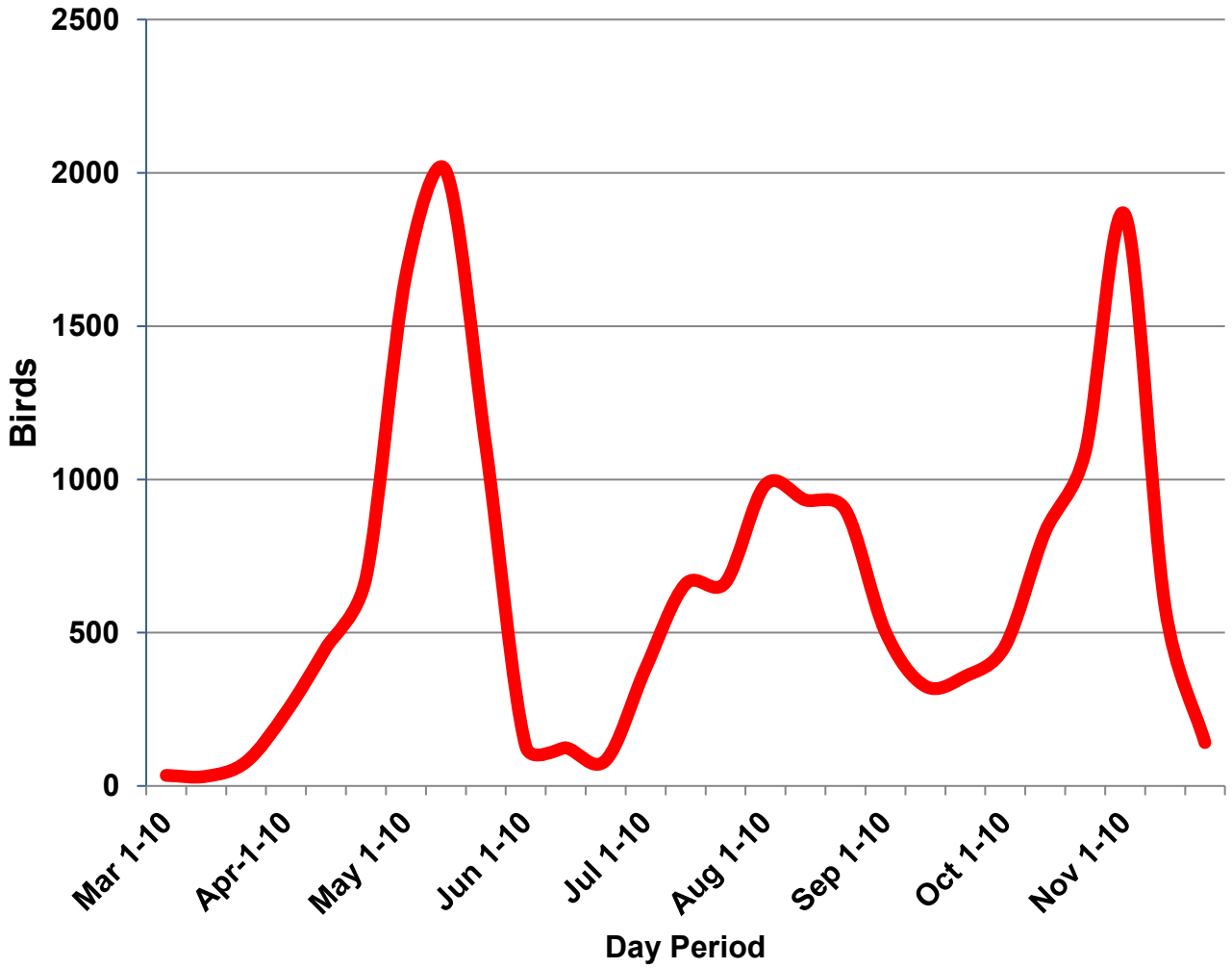
In contrast to waterfowl, shorebirds are declining



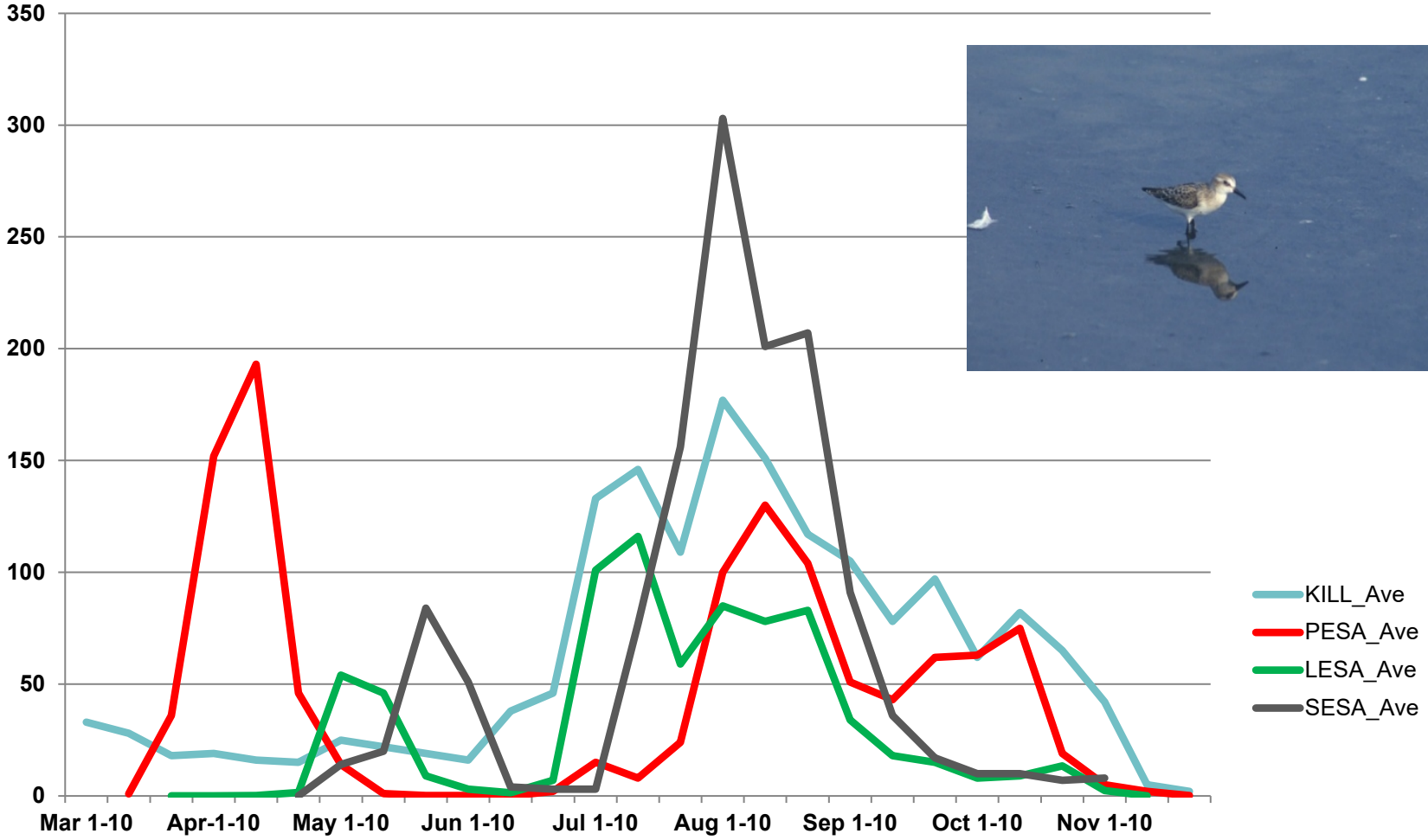

COPPER RIVER DELTA
MARISMAS NACIONALES
PARACAS
LAGOA DO PEIXE
TIERRA DEL FUEGO
CURRENT RESERVES
HEMISPHERIC:
>500,000 Shorebirds
or 30% of the Population
INTERNATIONAL:
>100,000 Shorebirds
or 15% of the Population
REGIONAL:
>20,000 Shorebirds
or 5% of the Population
Southward Migration
COPPER RIVER DELTA
Northward Migration
BAY OF FUNDY
COPPENAME
TIERRA DEL FUEGO
WHSRN

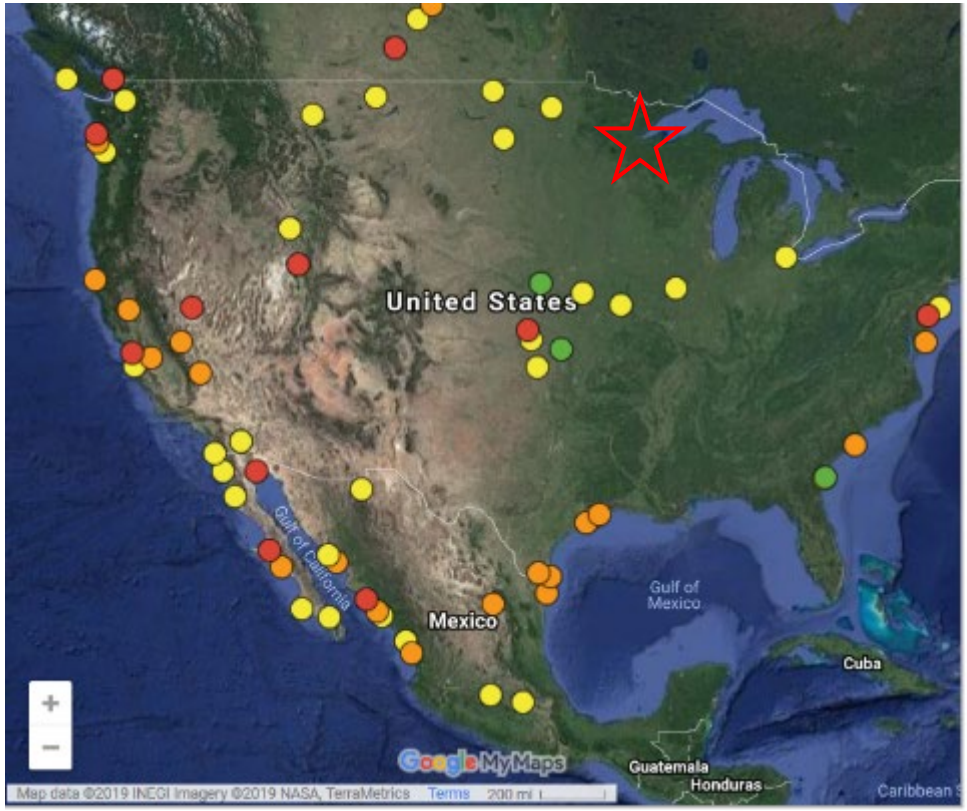


Total Shorebird Migration in the Lake Erie Marsh Region



Migration Counts of Killdeer, Pectoral Sandpiper, Least Sandpiper, and Semipalmated Sandpiper





United States

Benton Lake NWR

Bowdoin NWR

Chautauqua NWR

Cheyenne Bottoms

Flint Hills

Great Salt Lake

J. Clark Salyer NWR

Kelly's Slough NWR

Lahontan Valley Wetlands

Lake Erie Marsh Region

Long Lake NWR

Mono Lake

Quivira NWR

Rainwater Basin

Salt Plains NWR

Springfield Bottoms / American Falls Reservoir

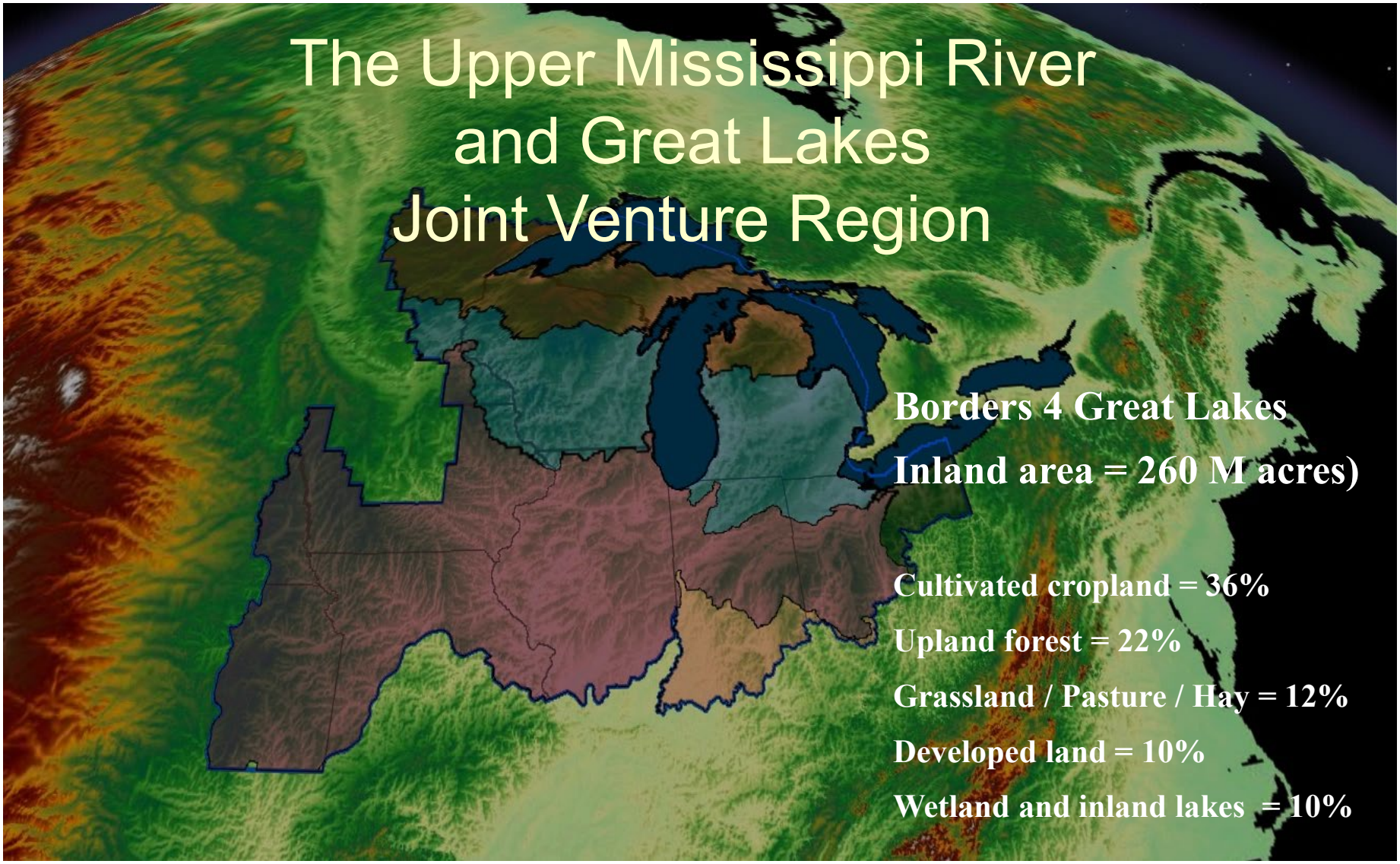
WHSRN
WESTERN HEMISPHERE SHOREBIRD RESERVE NETWORK

Regional Status:

>20,000 shorebirds annually

16,187 ha(40,000 ac)

The Upper Mississippi River and Great Lakes Joint Venture Region



Borders 4 Great Lakes

Inland area = 260 M acres)

Cultivated cropland = 36%

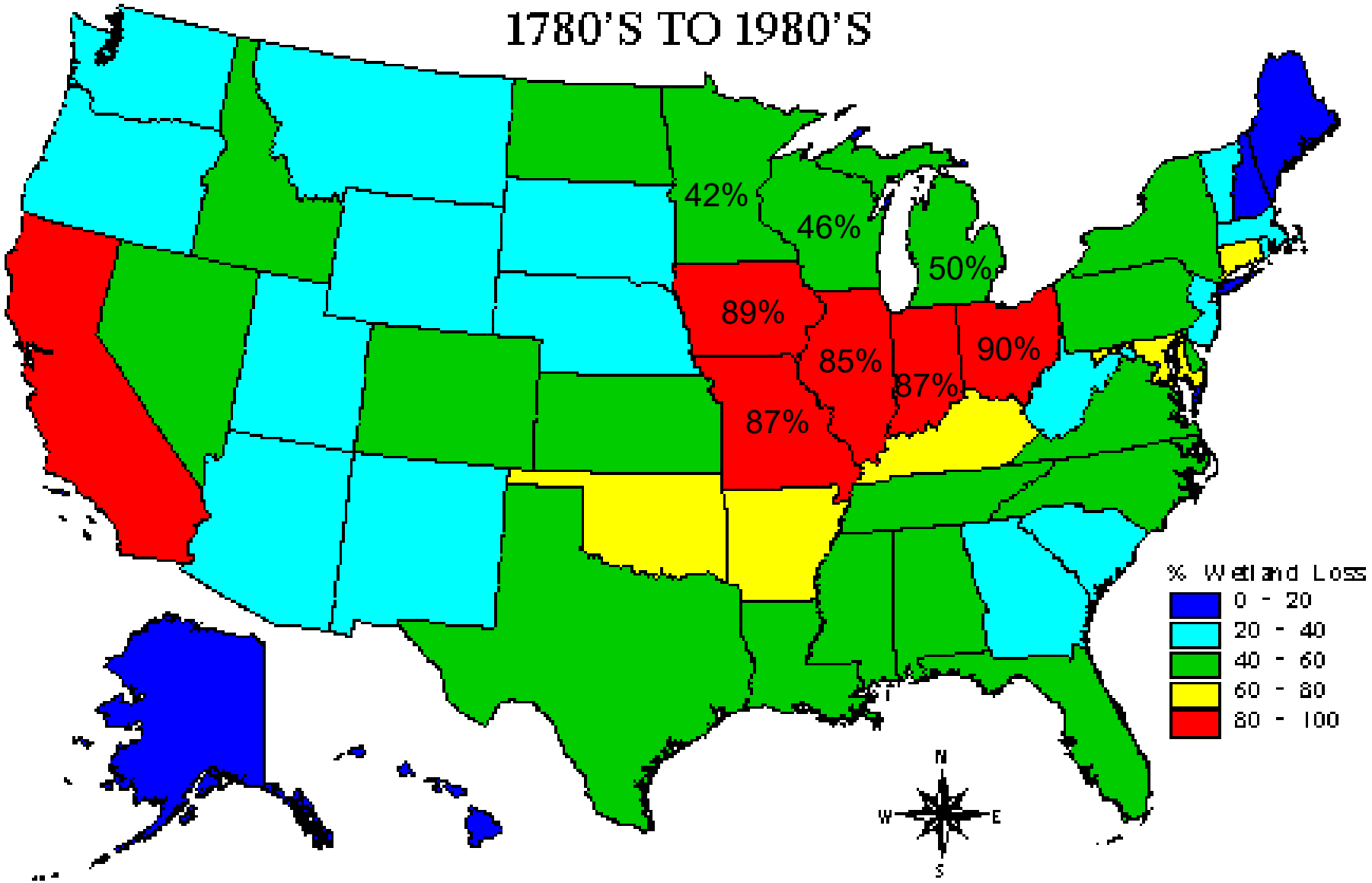
Upland forest = 22%

Grassland / Pasture / Hay = 12%

Developed land = 10%

Wetland and inland lakes = 10%

WETLAND LOSSES IN THE UNITED STATES
1780'S TO 1980'S



The Lake Erie Marsh Region

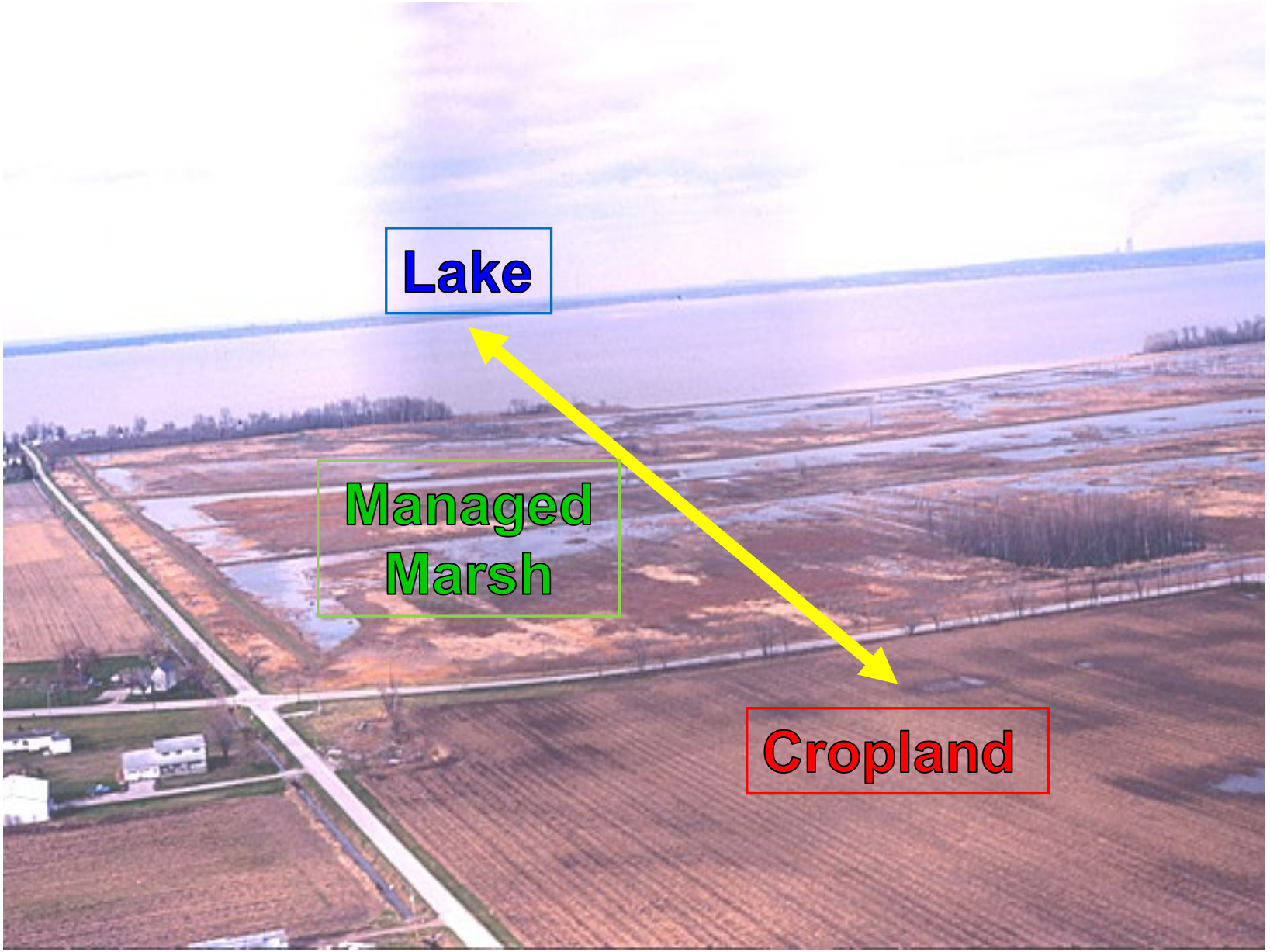
Formerly >300,000 ac from Huron OH to the Mouth of the Detroit River, A remnant of the Great Black Swamp

Dikes currently protect vegetation from high lake levels

Spring drawdowns expose soils to germinate seeds of native plants, provides spring migration habitat for shorebirds

Late summer or fall drawdowns create mudflats during fall migration

Nearby croplands, and seiche events in estuaries supply additional habitat in fall and spring


Lake
Managed Marsh
Cropland

Hydrology

Wind-induced seiche events

Mechanically regulated

Local runoff & precipitation

Beach/Estuary

Managed Marsh

Cropland

Open water
Sand/mudflats

Moist Soil
Hemi-marsh

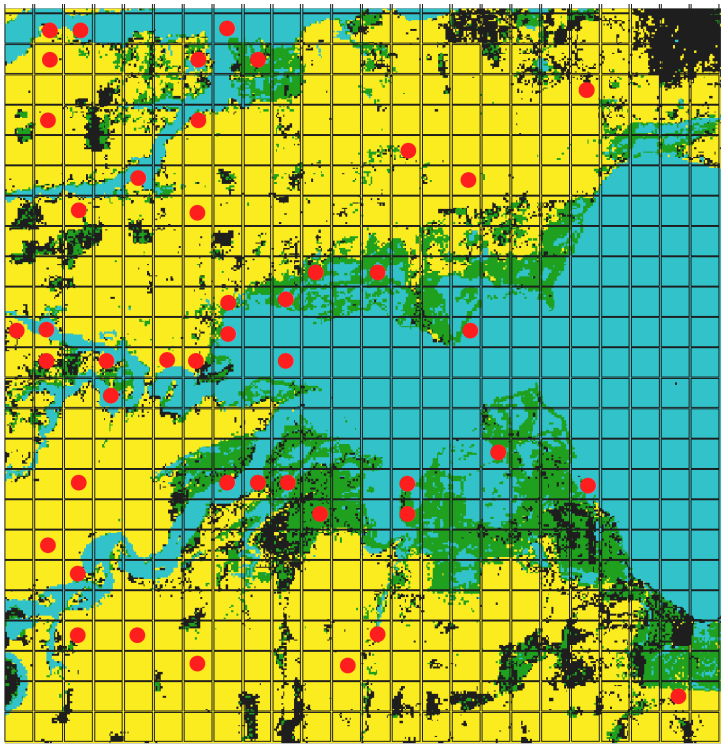
Corn, soy, wheat
Cropping/tillage

Vegetation Cover

Tara Baranowski, M.S. Thesis

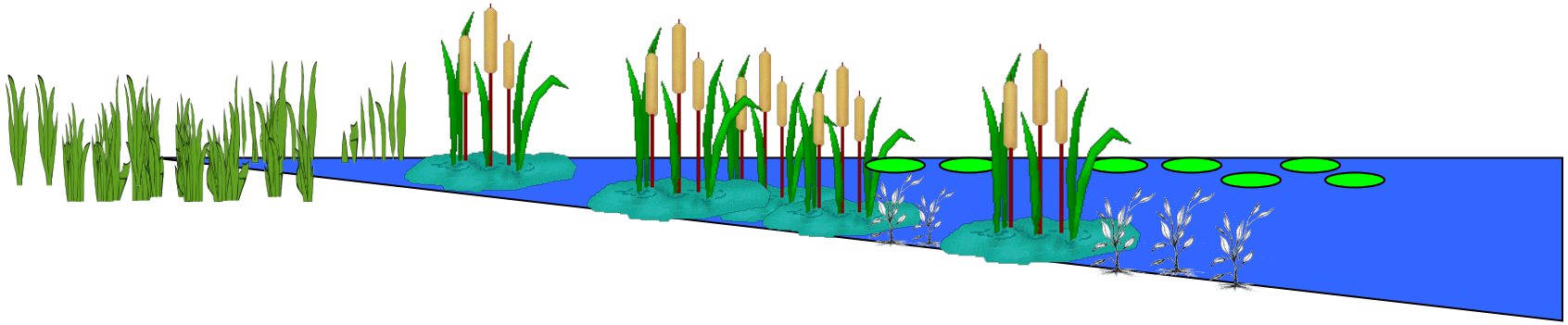
Stratified sample of 60-90 25-ha plots

- Cropland, Beach/ Estuary, Managed Marsh
- Visual scan followed by "beat out"
- Weekly surveys
- Apr – Jun,
  Jul - Nov



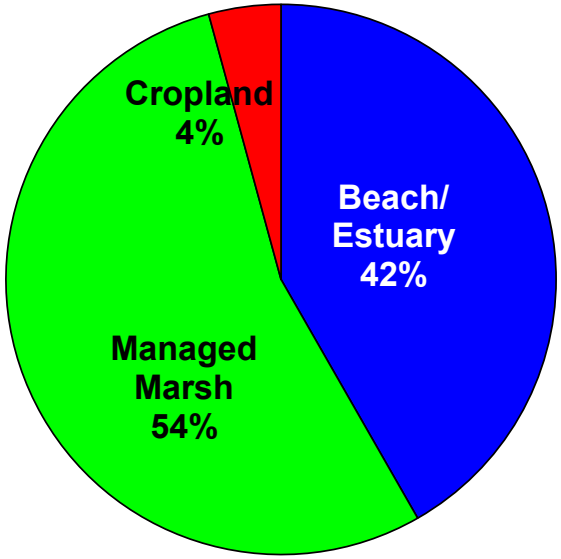
Management of Impounded Marshes

Moist Soil ⟷ **Hemi-marsh** ⟷ **Deep Marsh** ⟷ **Open Water**

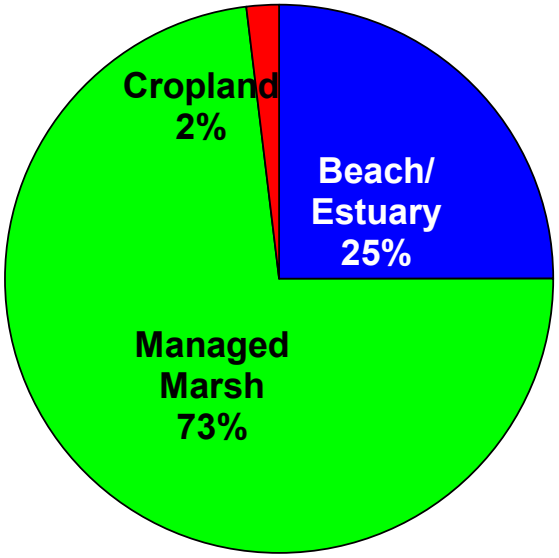


Marsh Stage	Summer Water Level (cm)	Seed Production	Invertebrate Production	Carrying Capacity-Migrating Waterfowl	Invasive Plant Species Potential	Optimum Lake Level
Deep Marsh	>30	Little or None	Moderate	Low	Low	Above Long-term Ave.
Hemi-marsh	~15	Moderate	High	Moderate to High	Low	Near Long-term Ave.
Moist Soil	Mudflat by mid-June	High	Moderate to High	High	High	Below Long-term Ave.

Bird Use-Days by Stratum Shorebirds and Waterfowl

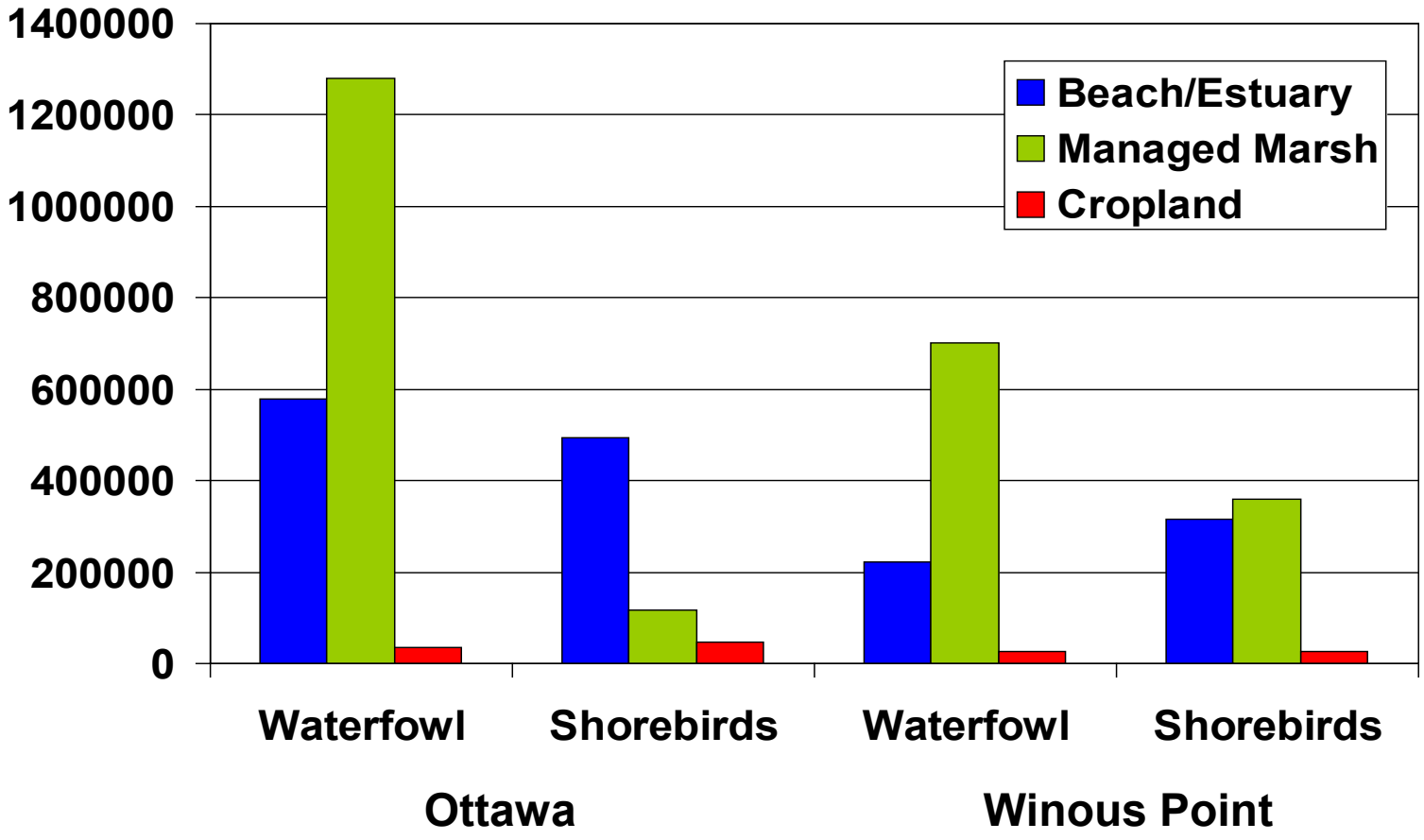


Shorebirds =
2,747,995 UD

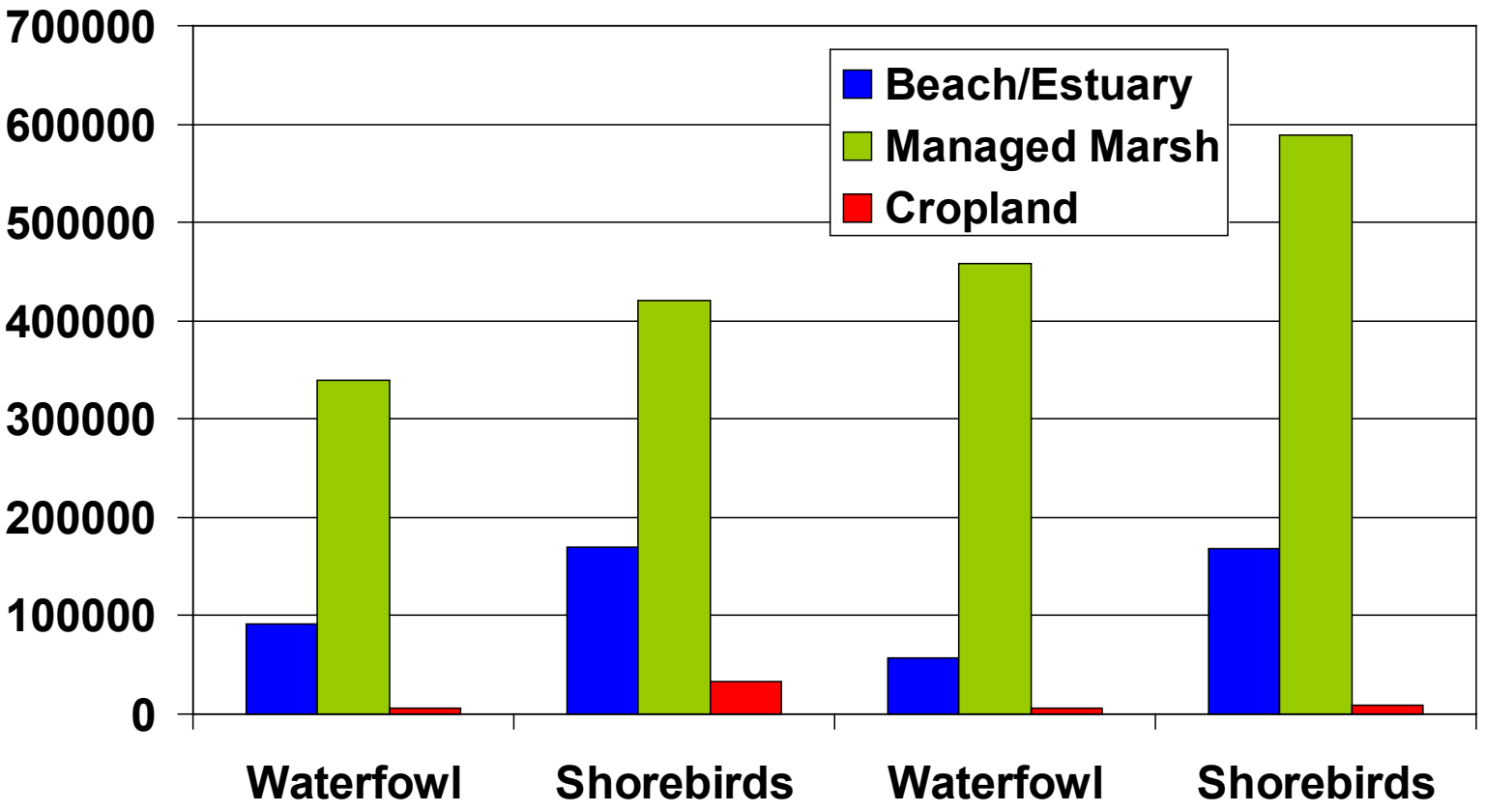


Waterfowl =
3,799,892
UD

Bird Use-Days by Stratum
Ottawa vs. Winous Point, Autumn



Bird Use-Days by Stratum Ottawa vs. Winous Point, Spring



Keith Norris, MS. Thesis

Within-Season Recaptures:
n = 706 measures of body change

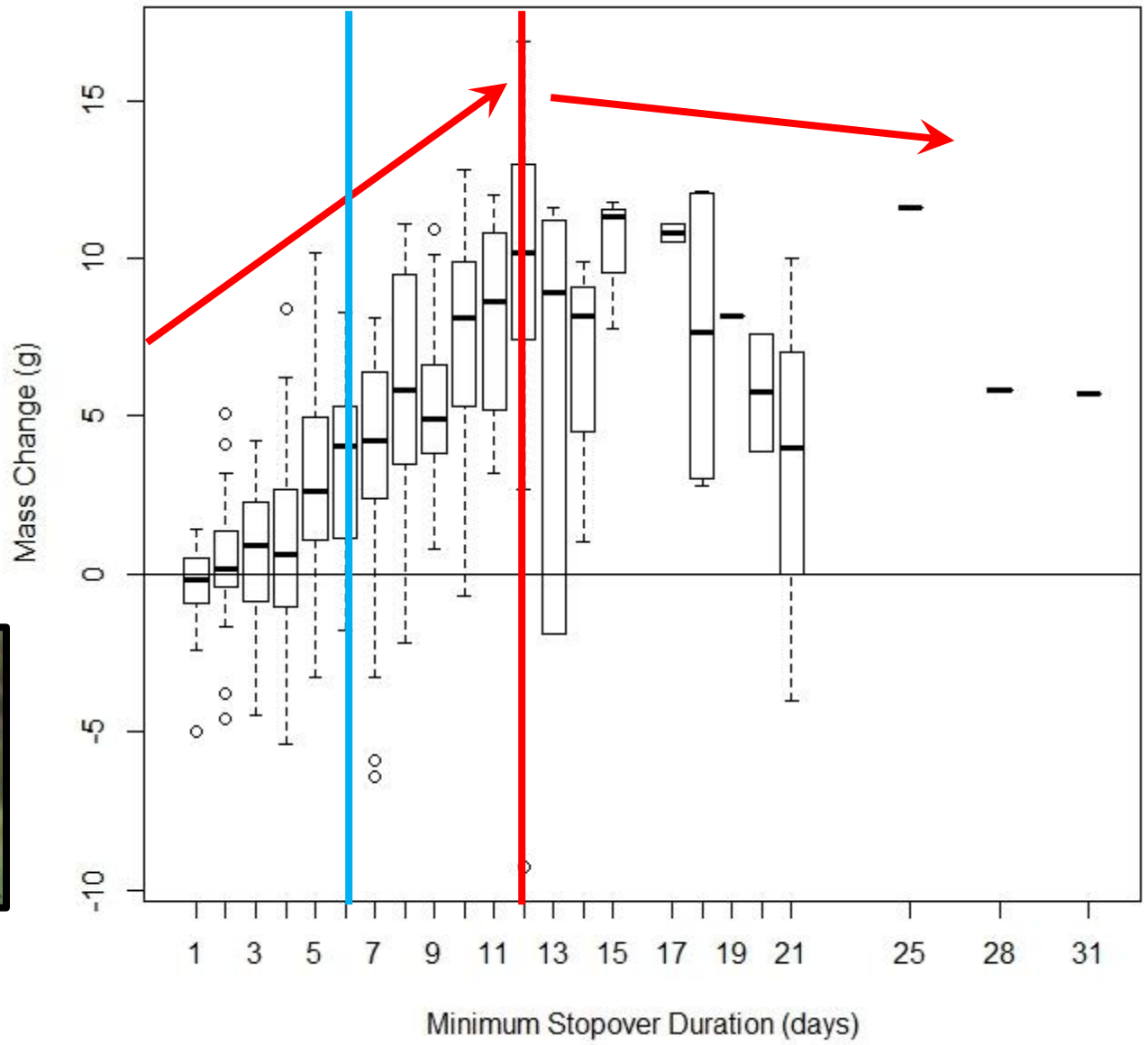
Autumn 2006-2013:

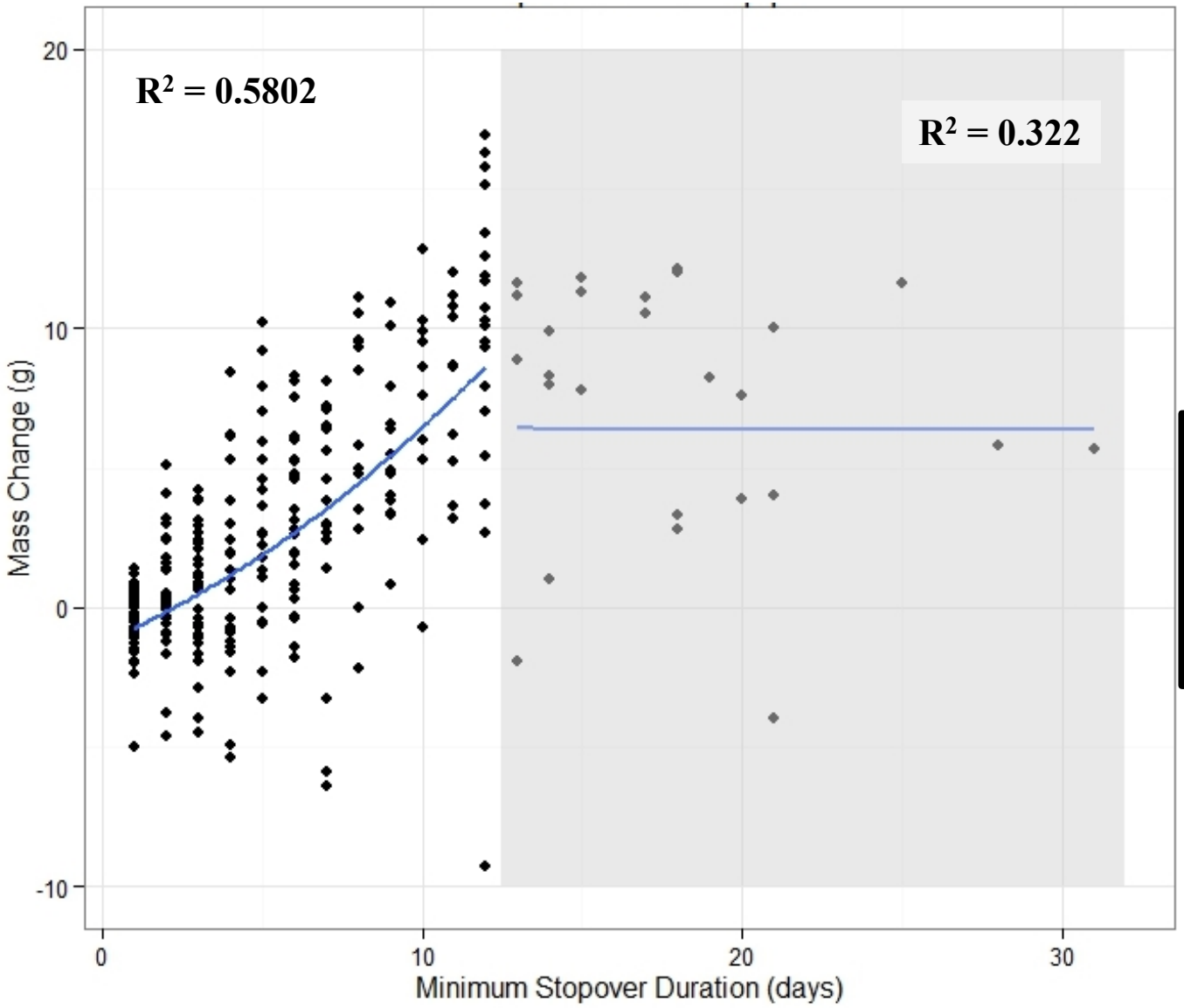
n = 686 (8.5%),
PESA, LESA, PESA, SBDO

Spring 2012-2013:

n = 20 (2.1%)
12 DUNL, 3 SEPL,
3 SESA, 2 SPSA

Mass Gain, Stopover Duration Fall Migration

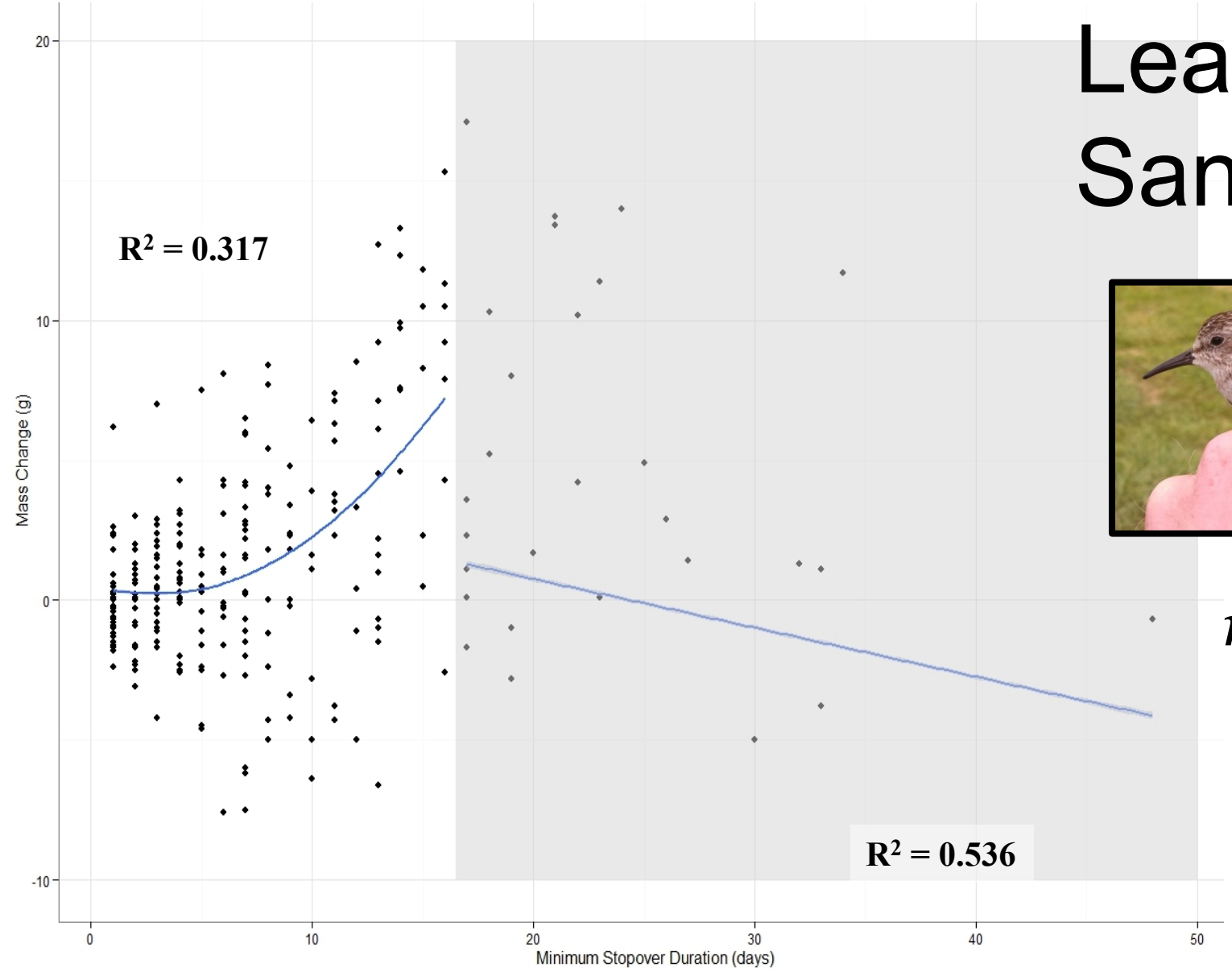




Semi-palmated Sandpiper

$n = 301$

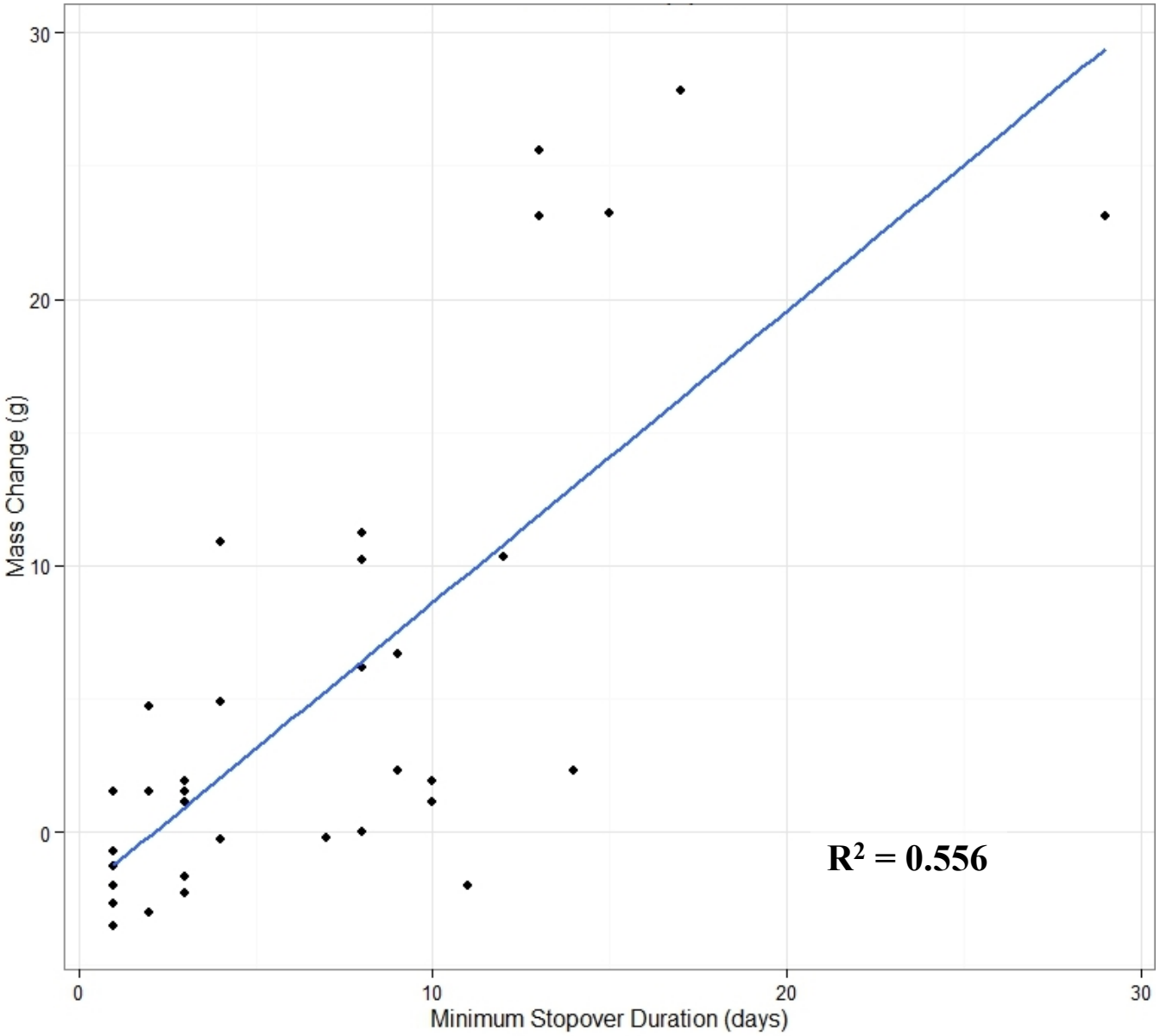
Least Sandpiper

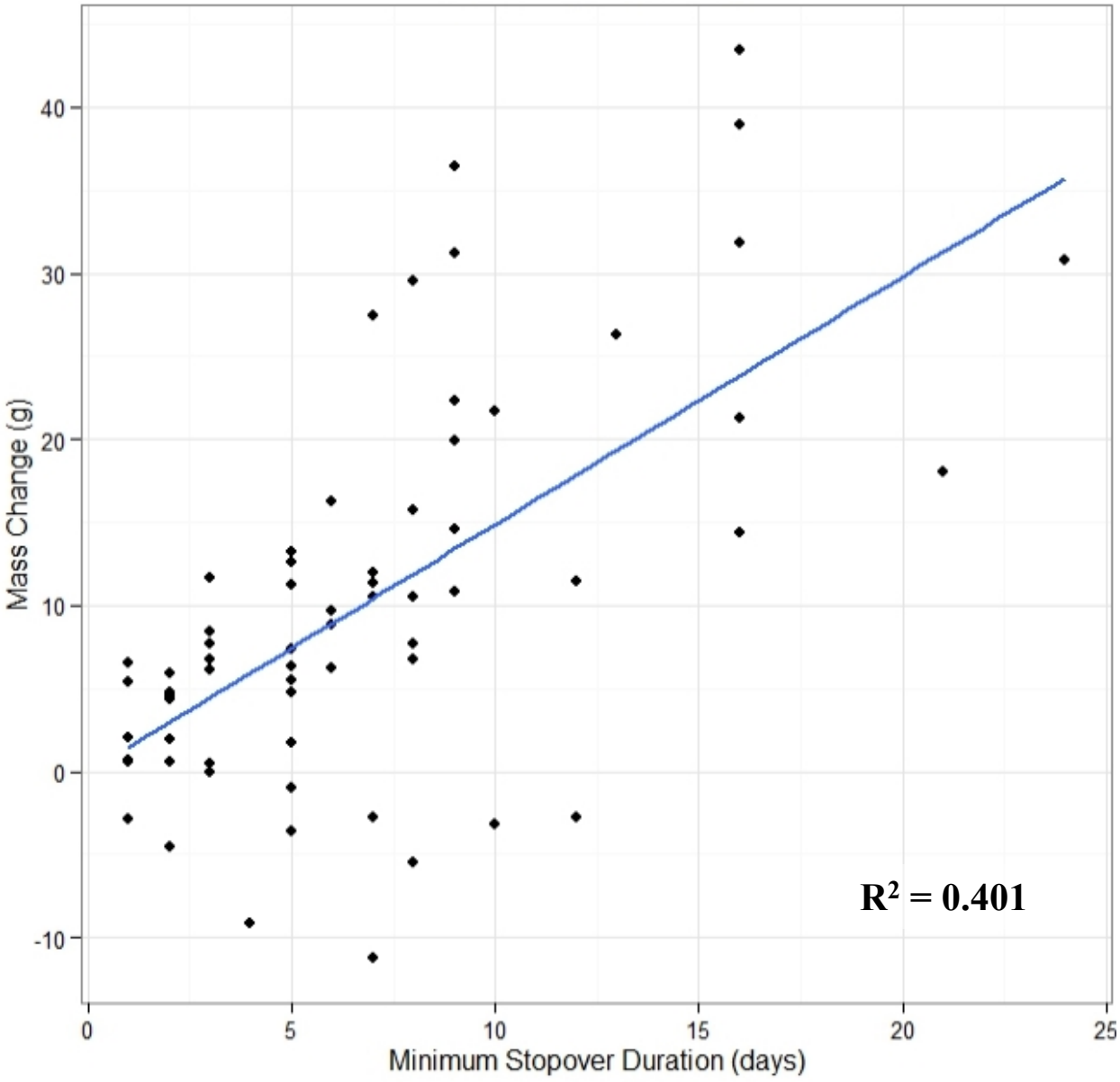


$n = 281$

Pectoral Sandpiper

$n = 35$





Short-billed Dowitcher

$n = 69$

Fall Migration, Stopover Duration

Species	Minimum (days)	Full (days)
Semipalmated Sandpiper	6.2	**12**
Least Sandpiper	7.7	**16**
Pectoral Sandpiper	6.9	**14**
Short-billed Dowitcher	6.5	**13**


SESA


LESA


PESA


SBDO

Fall vs. Spring Migration—Which is more important?

Component	Spring	Autumn	JV Assumption
Body Mass	Maintain	Gain, 0.3 – 1.5 g/day	1 g/day
Stopover Duration	<10 days	14 days	1-5, 5-10 days
Food Biomass	Lower	Higher	20 kg/ha
Primary Foraging Zones	Saturated mud and water <5 cm never predominant		.
Water Levels	Decline	Stable	.
Vegetation Cover	Increase	Stable	.


SESA


LESA


PESA


SBDO

Use-days (2002-2003) and stopover duration (2012-2013) suggest support designation of the Lake Erie as a WHSRN site of International Importance.

An important re-fueling and staging area during autumn and spring migrations.

Mass gains of 0.6-1.5 g/day are supported with a standing crop invertebrate biomass ≈ 10 kg/ha during autumn ~ 50% less than assumed by UMR&GLR JV.

Managed marshes are the mainstay source of habitat for shorebirds but shorelines, estuaries, and cropland are utilized when water and vegetation conditions are suitable

Acknowledgements

Upper Mississippi River and Great Lakes Region Joint Venture

National Fish and Wildlife Foundation

Winous Point Marsh Conservancy

Ottawa NWR

Magee Marsh WA

Black Swamp Bird Observatory

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Questions?

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https://umgljv.org/planning/joint-venture-plans/

https://senr.osu.edu/programs/terrestrial-wildlife-ecology-lab