

Meeting the Needs of Waterfowl and Other Wetland Dependent Wildlife in Wetlands

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+ ECOLOGICAL CONSIDERATIONS FOR
WETLAND MANAGEMENT
IN NEBRASKA

Crane Trust
Wood River, Nebraska
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ABIOTIC FACTORS

■ HYDROLOGIC

- WATER PRESENCE/ABSENCE
- WATER DEPTH

■ CLIMATIC

- TEMPERATURE
 - HABITATS AVAILABLE
 - THERMOREGULATION
- PRECIPITATION
- WIND

BIOTIC FACTORS

■ HABITAT

– FOOD

- QUALITY/TYPE

- ABUNDANCE

- AVAILABILITY

– COVER

BIOTIC FACTORS

■ WATERBIRD

- SEX
- AGE
- LIFE CYCLE EVENT

- PAIRING

- MOLT

- BREEDING

- MIGRATION

TIMING OF USE

■ SUBARCTIC

- SEASONAL – TEMPERATURE DRIVEN

■ N TEMPERATE

- SEASONAL – TEMPERATURE DRIVEN

■ TEMPERATE

- SEASONAL – TEMPERATURE AND PRECIPITATION

■ SUBTROPICAL

- CONTINUOUS – PRECIPITATION DRIVEN

■ TROPICAL

- CONTINUOUS – PRECIPITATION DRIVEN

Annual Cycle Events

Migration

Reproduction (Pre-Laying, Egg Laying,
Incubation, Brood Rearing)

Molt

Postbreeding Dispersal

Staging

Migration

Pairing

Molt

Reserve Deposition



Nutritional Requirements of Female Mallards (Heitmeyer and Fredrickson 1989)

	PreA Molt	Fall Alt	Winter Paired	PreBas Molt	Pre - Depart
Protein	+	+	+	+	+
Lipid	+	+	+	+	+
Mineral	+	+	+	+	+
Vitamin	+	+	+	+	+

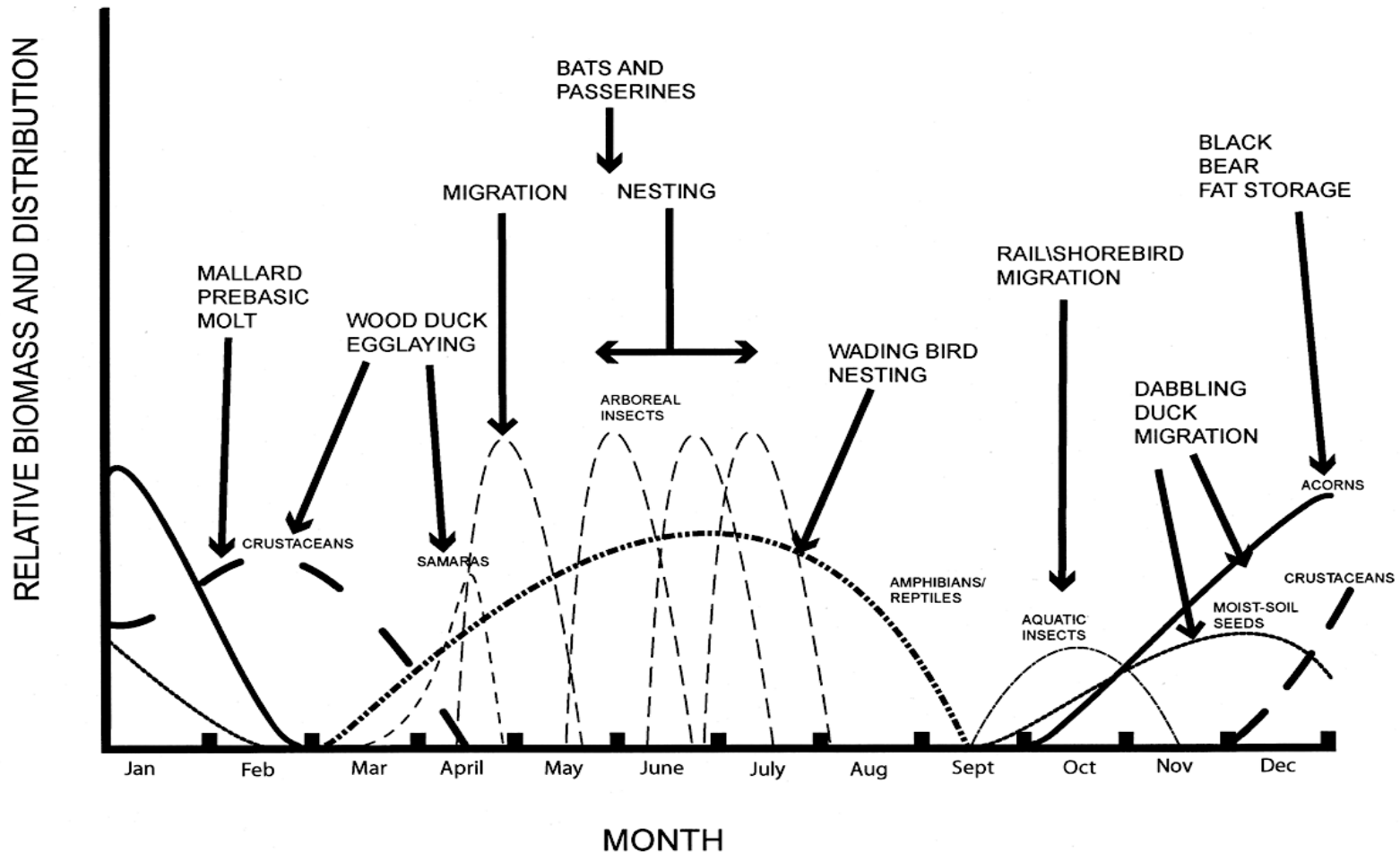
Nutritional Contributions of Foods (Heitmeyer 1985)

	Moist Soil Seeds	Inverts	Acorns	Row Crops
Protein	+	+	+	+
Lipid	+	+	+	+
Minerals	+	+	+	+
Vitamins	+	+	+	+

Relative Abundance of Key Waterfowl Foods to Demonstrate “Crunch” Periods

	Inverts	Seeds/ Mast	Tubers	SAV
Spring	+	+	+	+
Summer	+	+	+	+
Fall	+	+	+	+
Winter	+	+	+	+

Seasonal Food Pulses in BLH



INVERTEBRATE CONSUMPTION

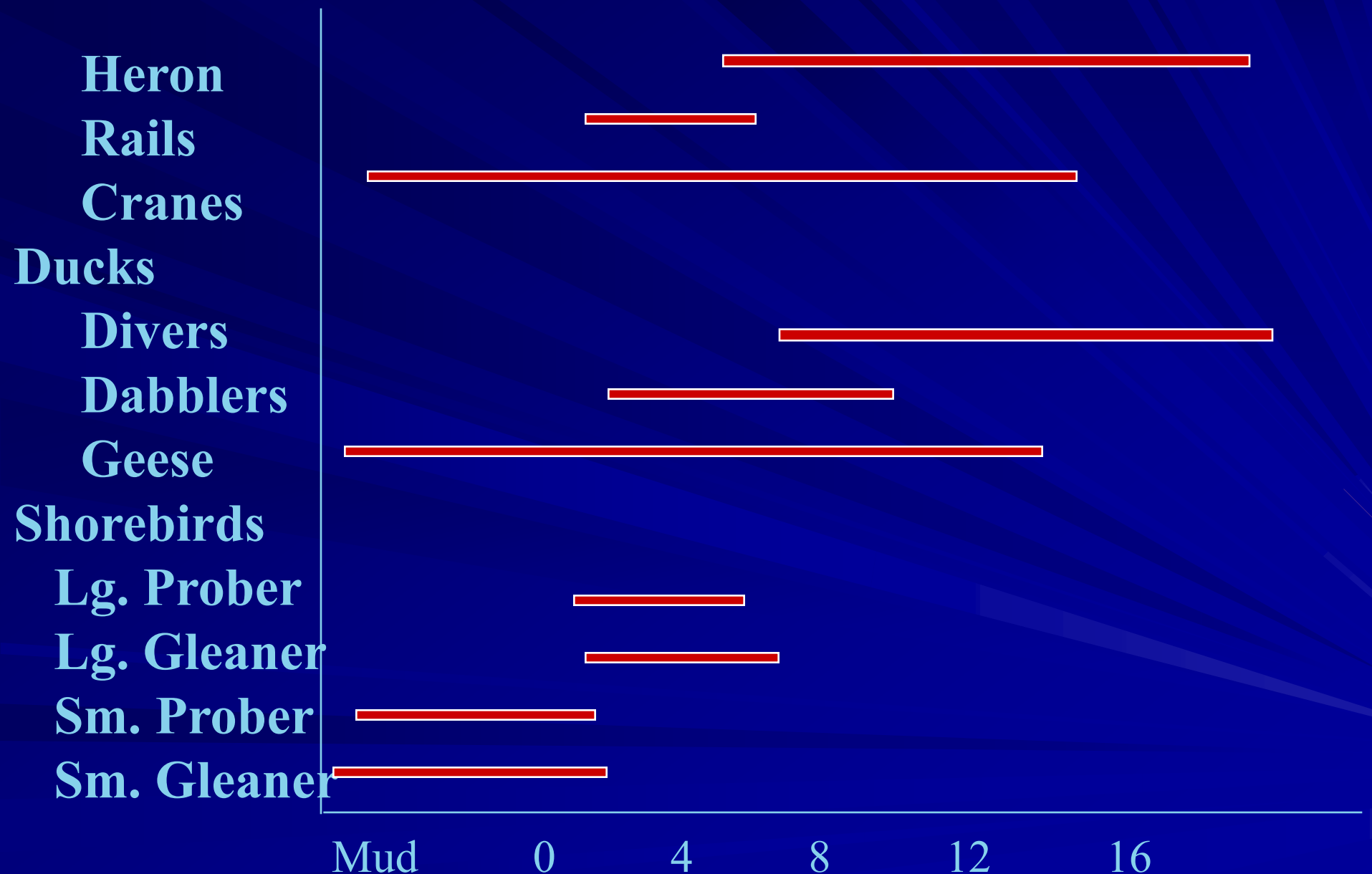
	# SPECIES	AQUATIC	TERRESTRIAL
GREBES	1	1	0
BITTERNS	2	2	1
HERONS	5	5	0
EGRETS	3	3	1
IBIS	2	2	0
SWANS	2	1	0
DUCKS	23	23	3
SHOREBIRDS	24	24	6
RAILS	7	7	6
CRANES	1	1	1

PREFERRED WATER DEPTHS OF WATERBIRDS

■ 81 SPECIES REQUIRING FLOOD
WATER FOR USE OF HERBACEOUS
WETLANDS

- | | |
|----------------------------------|------------|
| ■ >25 CM (10 IN) | 19 SPECIES |
| – 10 REGULARLY USE WATER < 10 IN | |
| ■ 5-25 CM (2-10 IN) | 24 SPECIES |
| ■ <10 CM (< 4 IN) | 34 SPECIES |

FORAGING DEPTHS FOR WATERBIRD GROUPS



SHOREBIRDS

Considerations for Shorebirds

- Body morphology
 - Foraging mode
 - Foraging depth
 - Fat storage
- Timing of migration
 - Early/late
- Pattern of migration
 - Age and sex
 - Seasonal
- Duration of use
 - Rapid or casual rates of movement





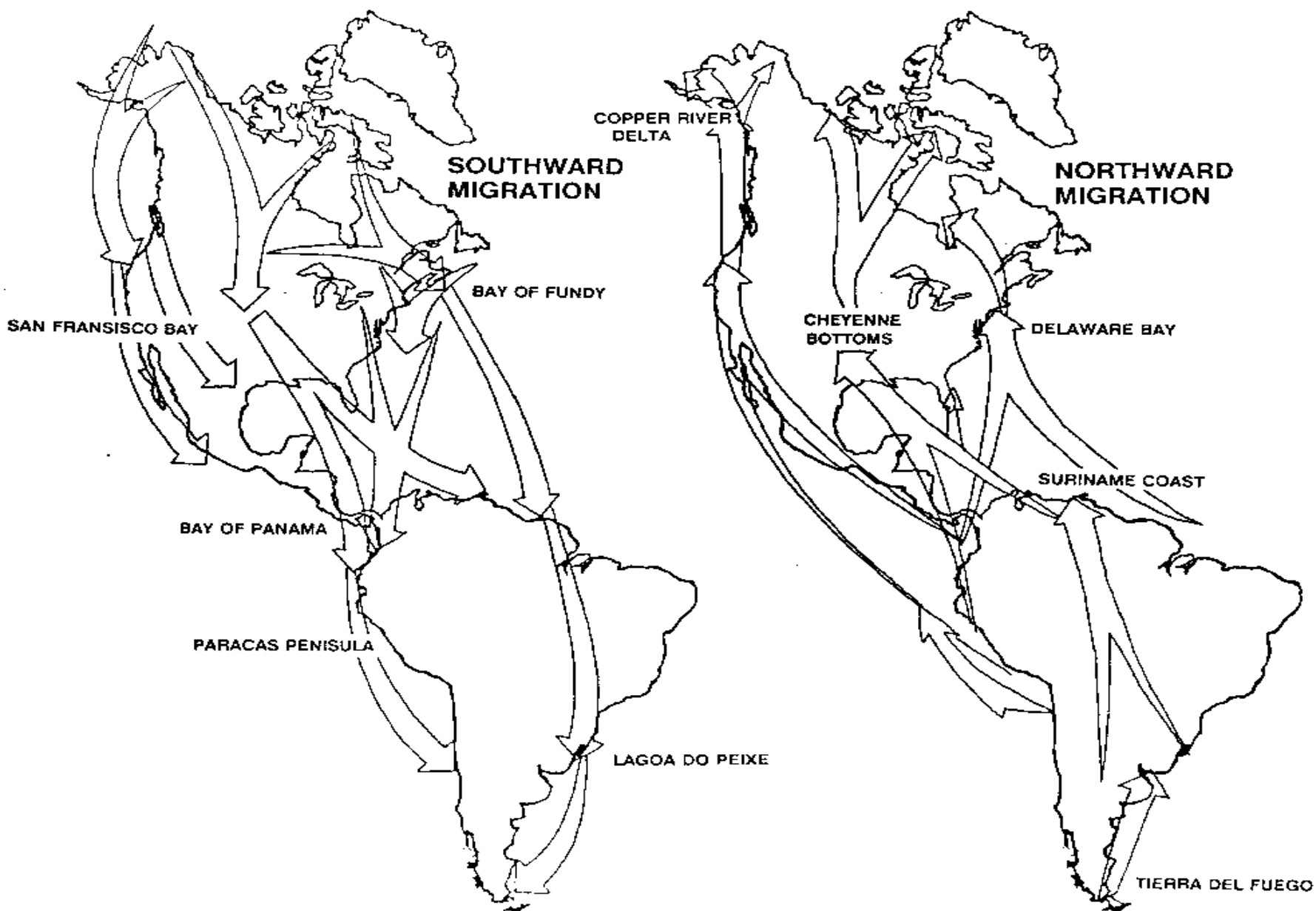












Historical Setting

Wide river-floodplain system

Braided channels

Many temporary and seasonal basins

Extensive area of sheet flow

Modern Setting

Restriction of river and active floodplain

Single narrow, sinuous, incised channel

Upstream dams with regulated flow

Limited temporary and seasonal basins

Widely restricted sheet flow

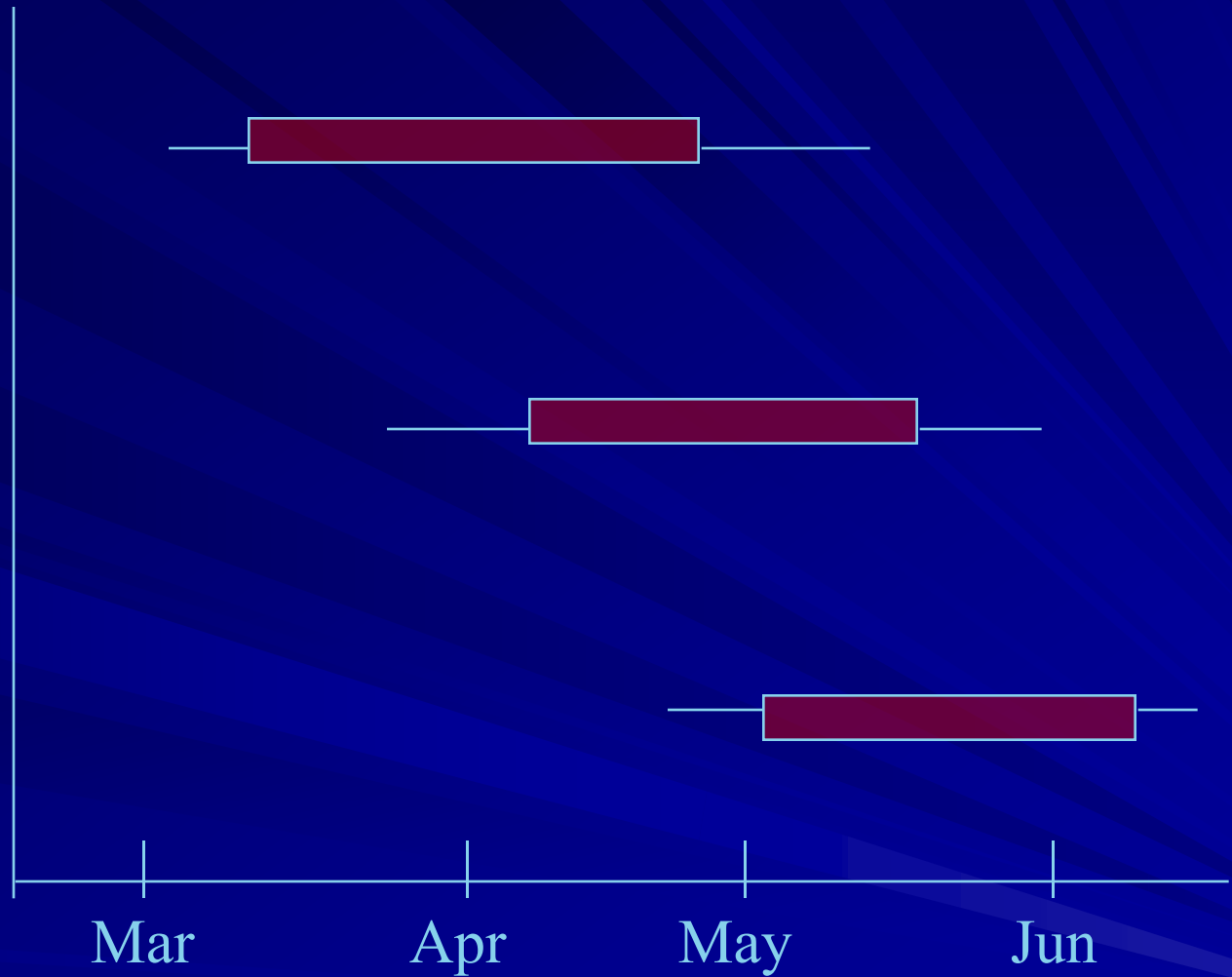
SHOREBIRD HABITAT

- OPEN CONDITIONS FOR MOST SPECIES
 - SHORT VEGETATION
 - SPARSE VEGETATION
- SHALLOW WATER
 - LARGE OPEN EXPANSES
 - VARIABLE WATER DEPTHS
- ABUNDANCE OF INVERTEBRATES

**Baird's
Sandpiper**

**Semipalmated
Sandpiper**

**White-rumped
Sandpiper**



BREEDING MARSH BIRDS

- COVER ATTRACTIVE TO MIGRANT BIRDS FOR SETTLING
- SUITABLE NEST MATERIAL AND STRUCTURE FOR NEST SITES
- SUITABLE FORAGING DEPTHS FOR ALL AGES
- FLUCTUATIONS DURING NESTING LIMITED TO A SPECIES ABILITY TO BUILD WITH RATE OF INCREASED WATER DEPTH
- DECREASING WATER DOES NOT CAUSE NEST COLLAPSE
- ADEQUATE FOODS FOR PRE-LAYING, LAYING, AND BROOD REARING
 - SIZE
 - ABUNDANCE
 - DISTRIBUTION





























1950s

GREEN-HEADED DUCKS

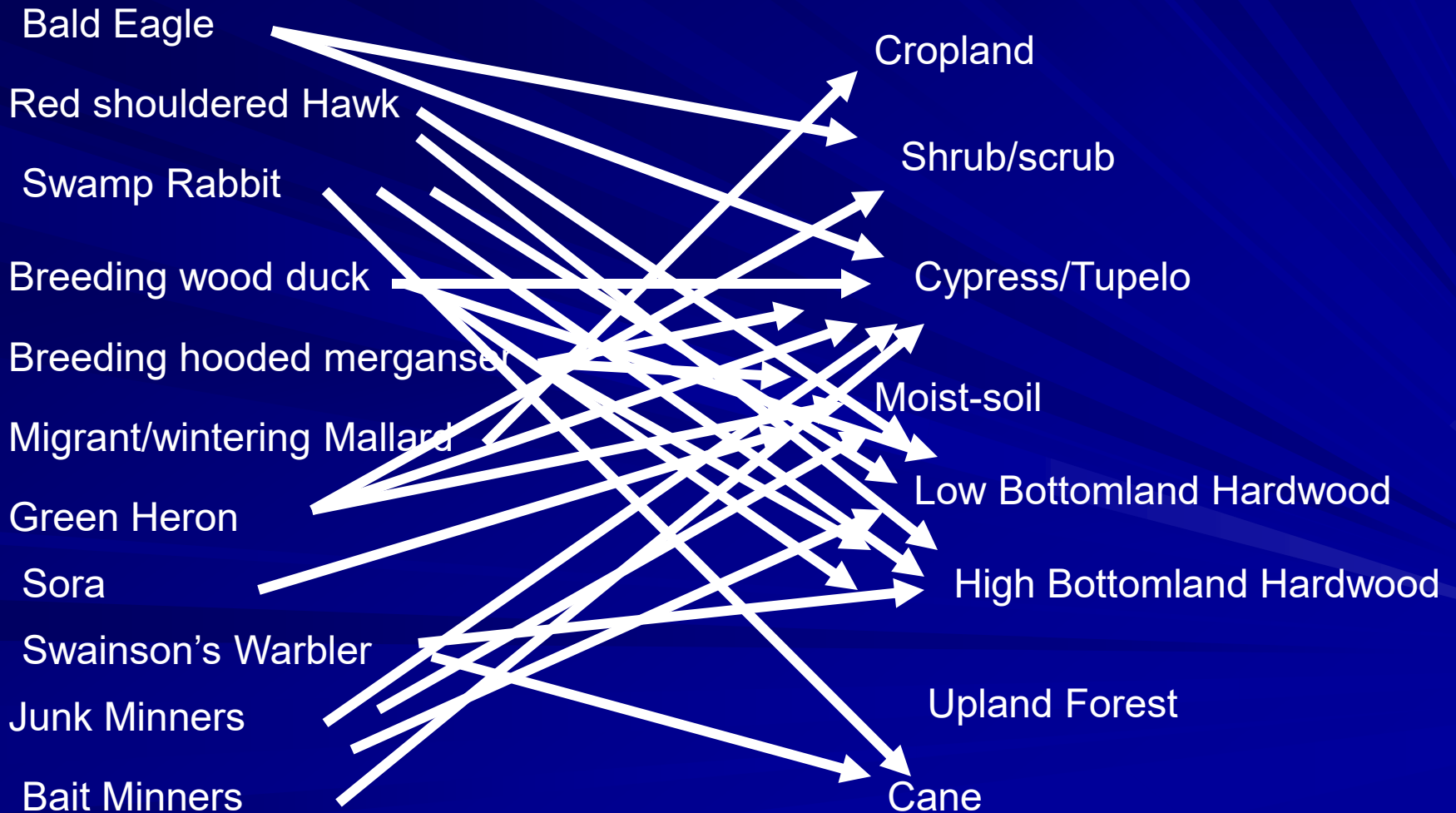


CORN

BUT WHAT ABOUT OTHER SPECIES??

- BEST KNOWN FOR WETLAND DEPENDENT BIRDS AND ESPECIALLY DUCKS
- POORLY KNOWN FOR HERPTILES
- POORLY KNOWN FOR INVERTEBRATES

TODAY and BEYOND





PROBLEM SOLVING FLOW CHART

