Species and Habitat Studies: Waterfowl and Waterbird Studies

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September 21, 2016

Study Objectives

1. Quantify waterfowl and waterbird use of aquatic off-channel habitats within the Chehalis floodplain
2. Derive estimates of waterfowl abundance, across temporal and spatial gradients, throughout the Chehalis floodplain
3. Document waterfowl production, within aquatic off-channel habitats, throughout the Chehalis floodplain

Overview

Ground Surveys

- 36 Off-Channel Sites
- Wintering and Migration Survey
  - November 2015 – May 2016
- Production Survey
  - May – June 2016

Aerial Transect Surveys

- 36 400-m Wide Transects
- April 2015

  (Breeding Period)
- October 2015

  (Fall Migration)
- February 2016

  (Early-Spring Migration)
- April 2016

  (Breeding Period)

Classifying Ducks

Puddle Ducks

1. Mallard
2. Green-winged Teal
3. American Wigeon
4. Northern Pintail
5. Wood Duck
6. Northern Shoveler
7. Cinnamon Teal
8. Gadwall
9. Eurasian Wigeon
10. Blue-winged Teal

http://lib.store.yahoo.net/lib/yhst-16688783476651/dabbling-duck-1.jpg

Diving Ducks

1. Ring-necked Duck
2. Scaup (Lesser & Greater)
3. Canvasback

https://s-media-cache-ak0.pinimg.com/236x/f8/82/82/f8828273b93798e46f4776c6dd2a2a37.jpg

Sea Ducks

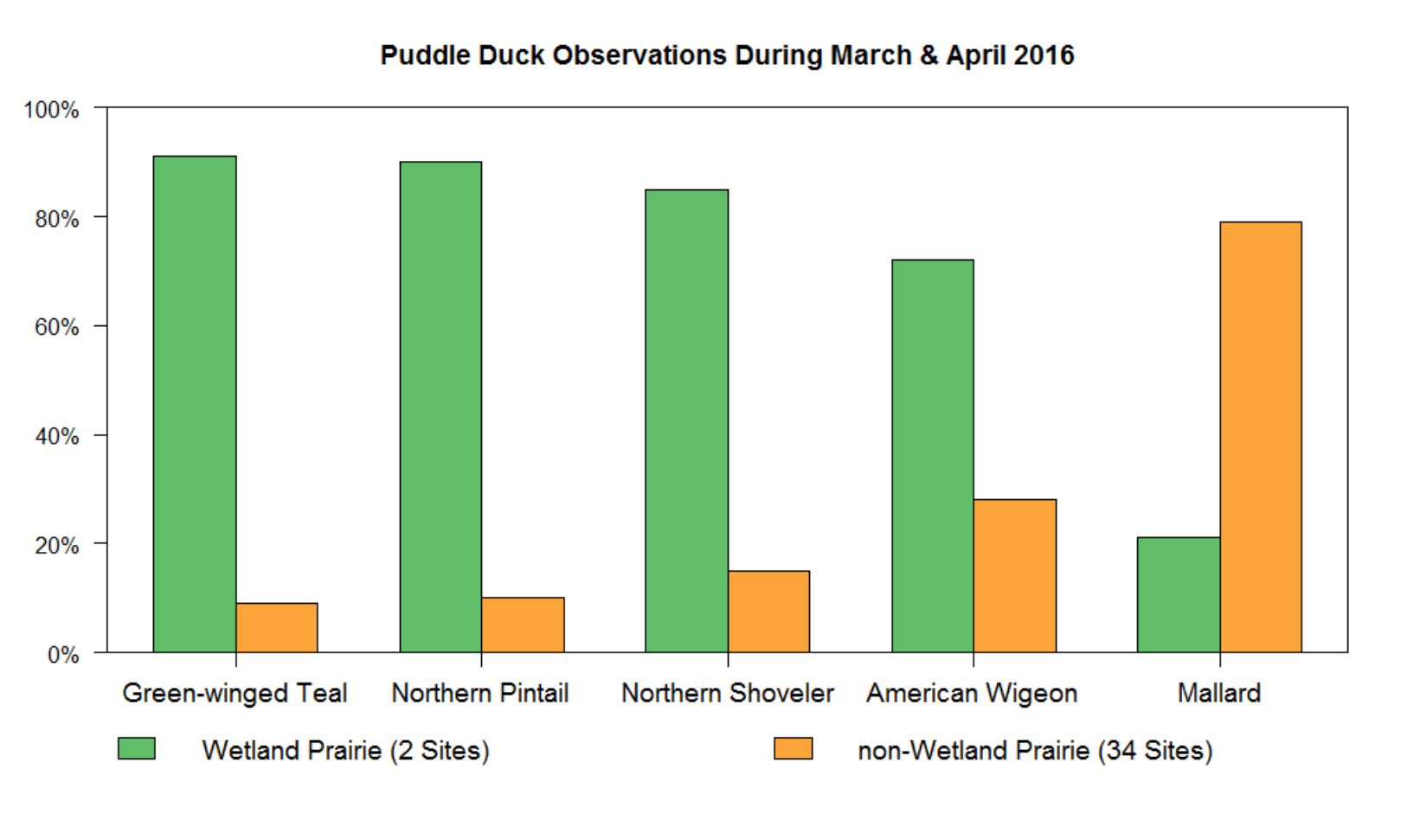
1. Bufflehead
2. Hooded Merganser
3. Common Goldeneye
4. Common Merganser
5. Red-breasted Merganser
6. Surf Scoter

http://flyways.us/sites/default/files/images/stories/divingducks/1DivingDuck.jpg

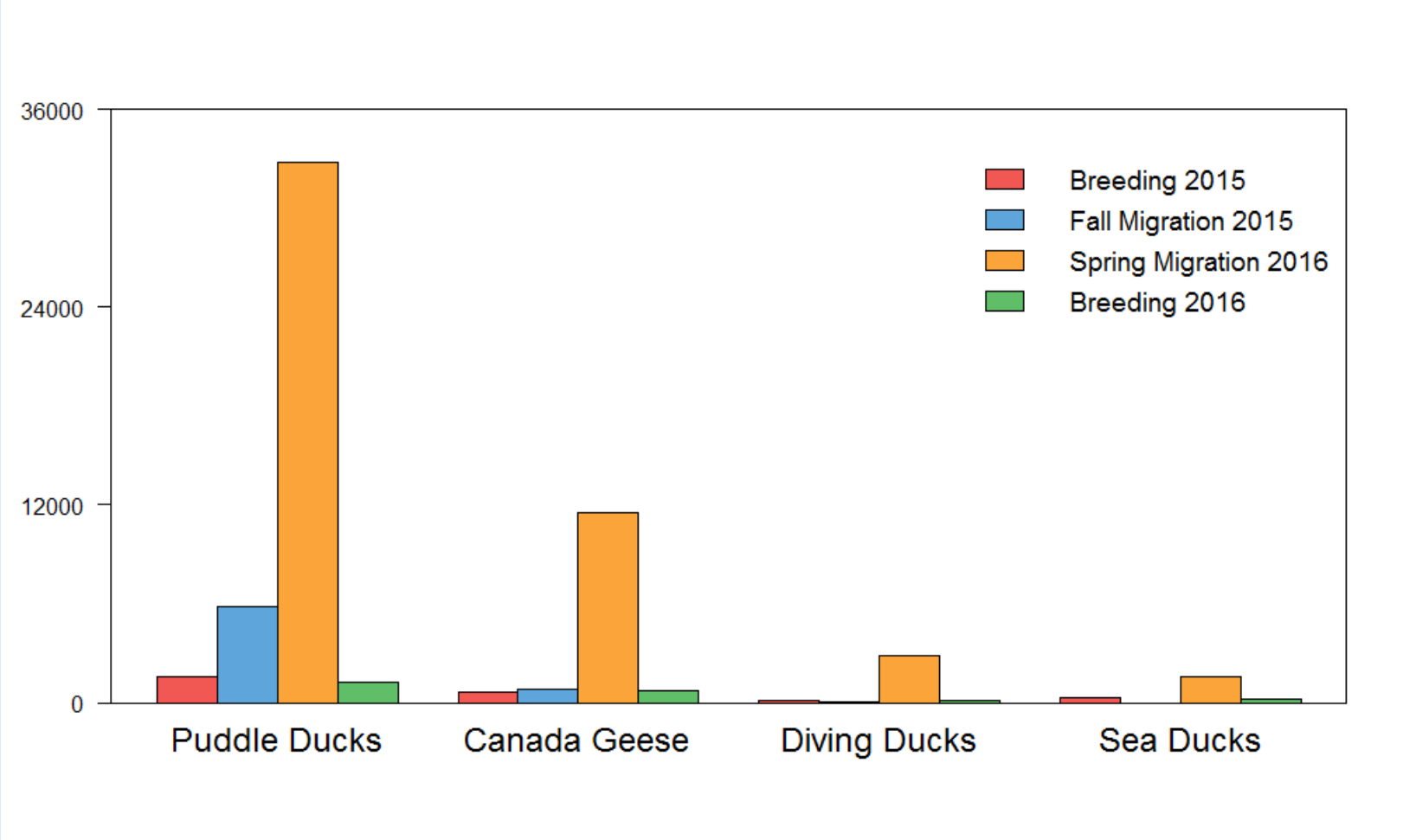
Habitat Associations

SPECIES	OPEN WATER	FORESTED AND SHRUB-SCRUB WETLANDS	HERBACEOUS WETLANDS
American Wigeon	0	– –	+
Green-winged Teal	0	– –	+ +
Mallard	– –	–	+
Northern Pintail	0	0	+ +
Wood Duck	+ +	+	–
Common Merganser	+	– –	0
Hooded Merganser	0	+	–
Common Goldeneye	0	– –	– –
Ring-necked Duck	0	0	+
Scaup	+ +	– –	0
Double-crested Cormorant	0	0	– –
Pied-billed Grebe	+	–	0

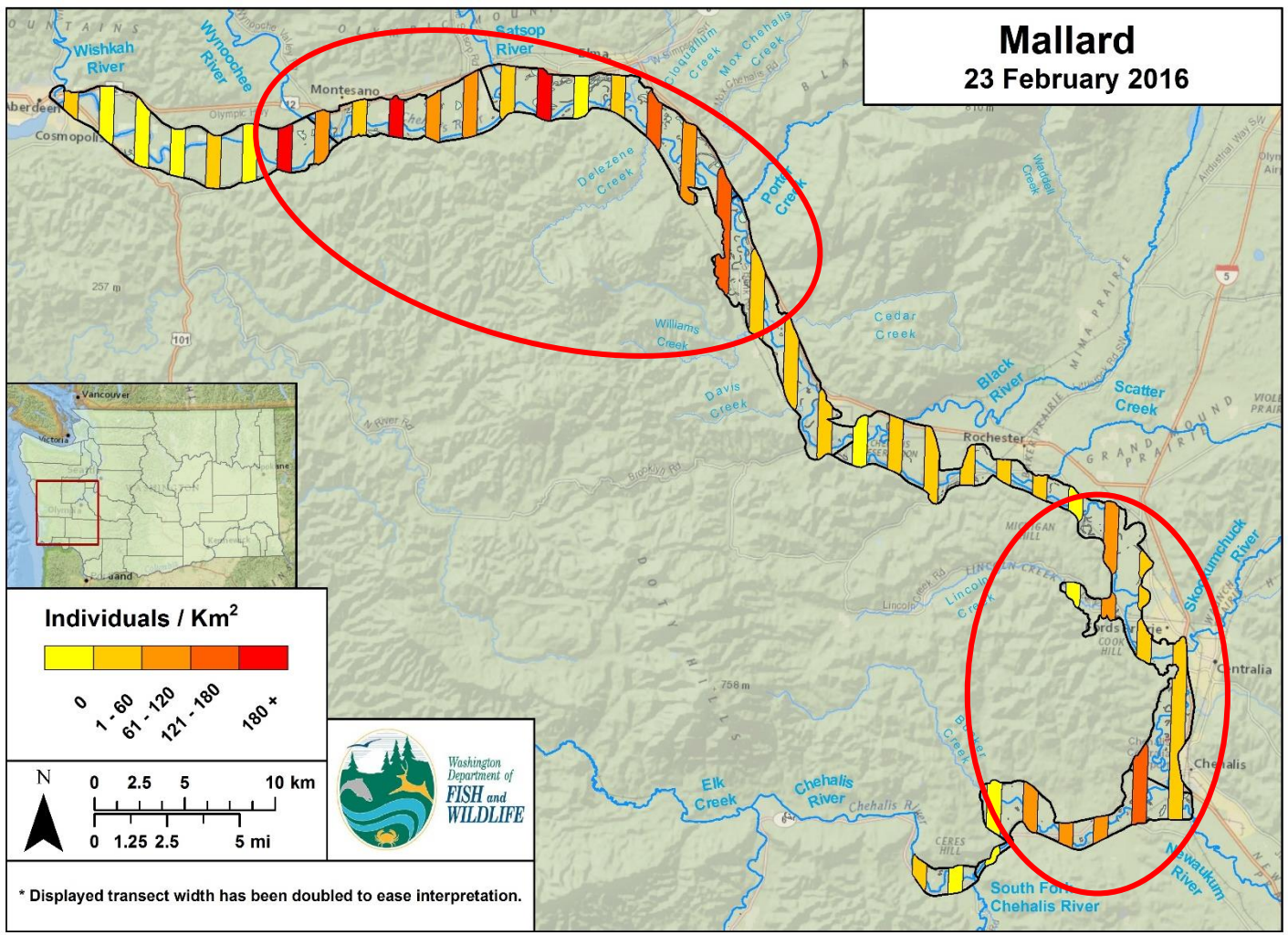
Wetland Prairie



Floodplain Population Estimates



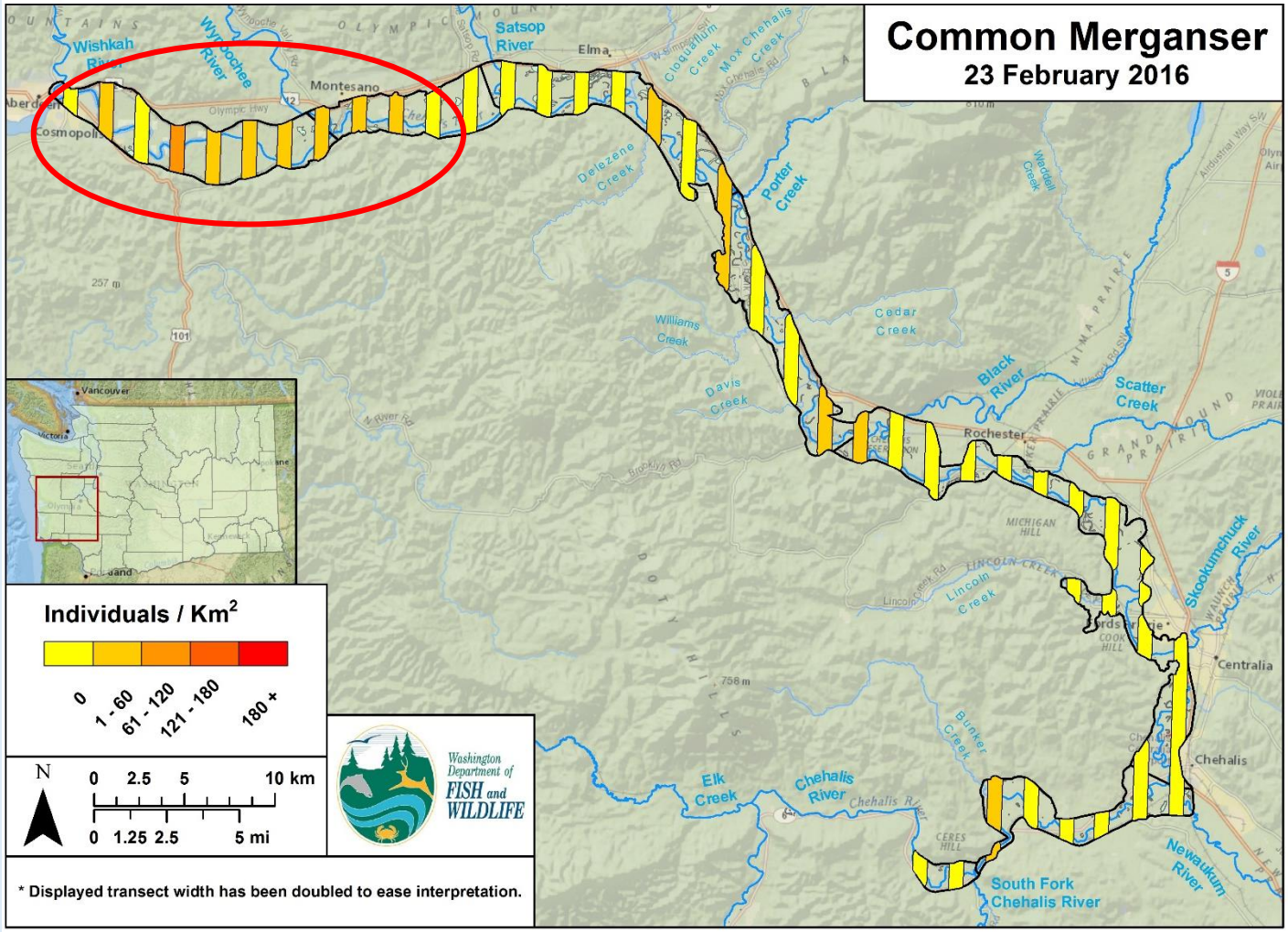
Generalist



MALLARD DENSITIES (Km²) 23 February 2016	
Minimum	0
Maximum	286
Average	59

Spring Migration

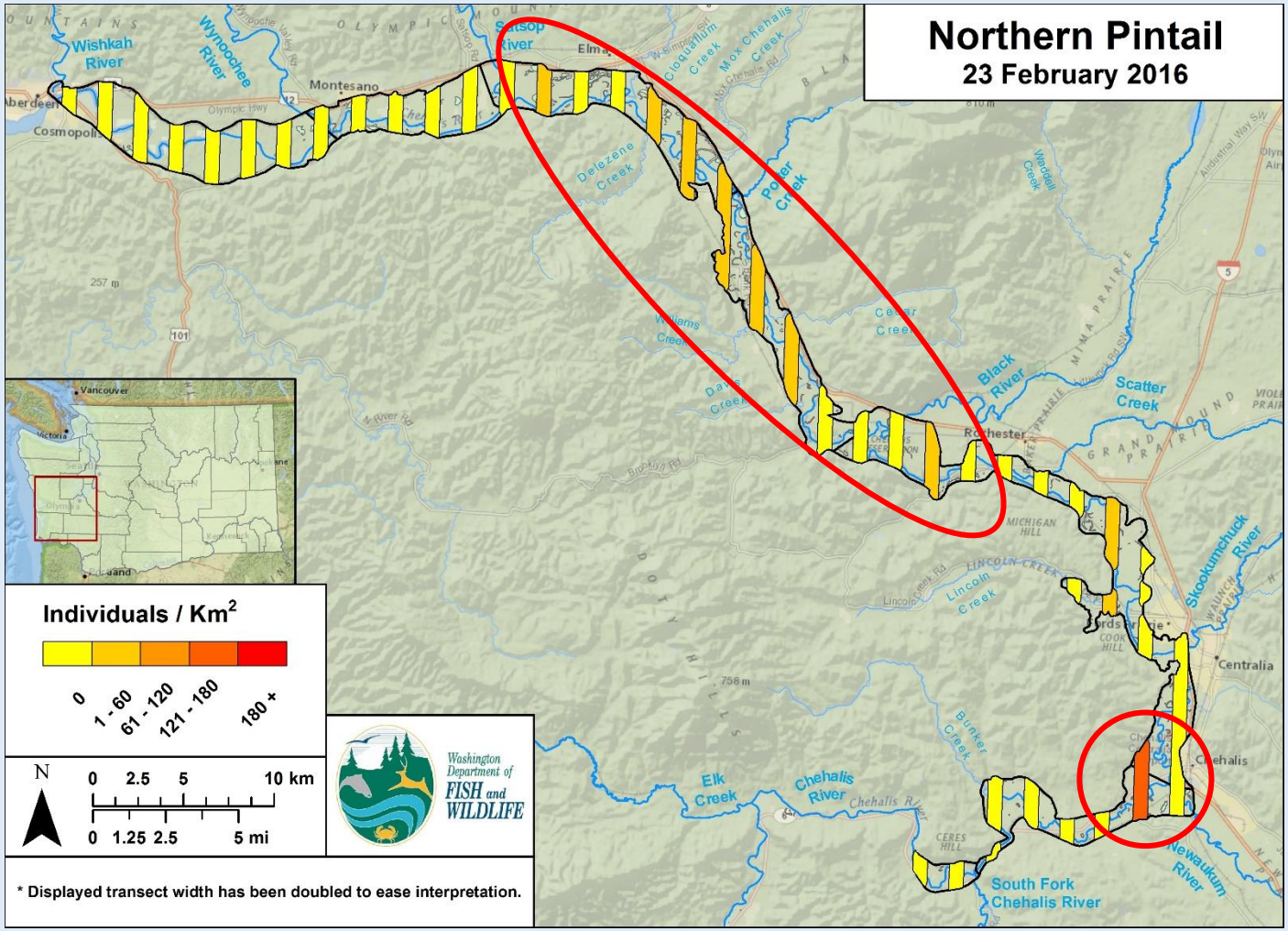
Piscivores: Fish-eating Ducks



COMMON MERGANSER DENSITIES (Km²) 23 February 2016	
Minimum	0
Maximum	68
Average	4

Spring Migration

Herbaceous Wetland Specialist



NORTHERN PINTAIL DENSITIES (Km²) 23 February 2016	
Minimum	0
Maximum	124
Average	8

Spring Migration

Benefits of Winter/Spring High Water

- Waterfowl use shallowly inundated (<10”) fields*
  - Primarily utilized by puddle ducks
- Flood pulse lateral retraction/downstream movement
  - New feeding areas
  - Increased invertebrate production**
  - Increased access to grass seed and unharvested grain**

* Fredrickson and Reid 1988

** Bayley 1995; Fredrickson 1988

Benefits of Winter/Spring High Water

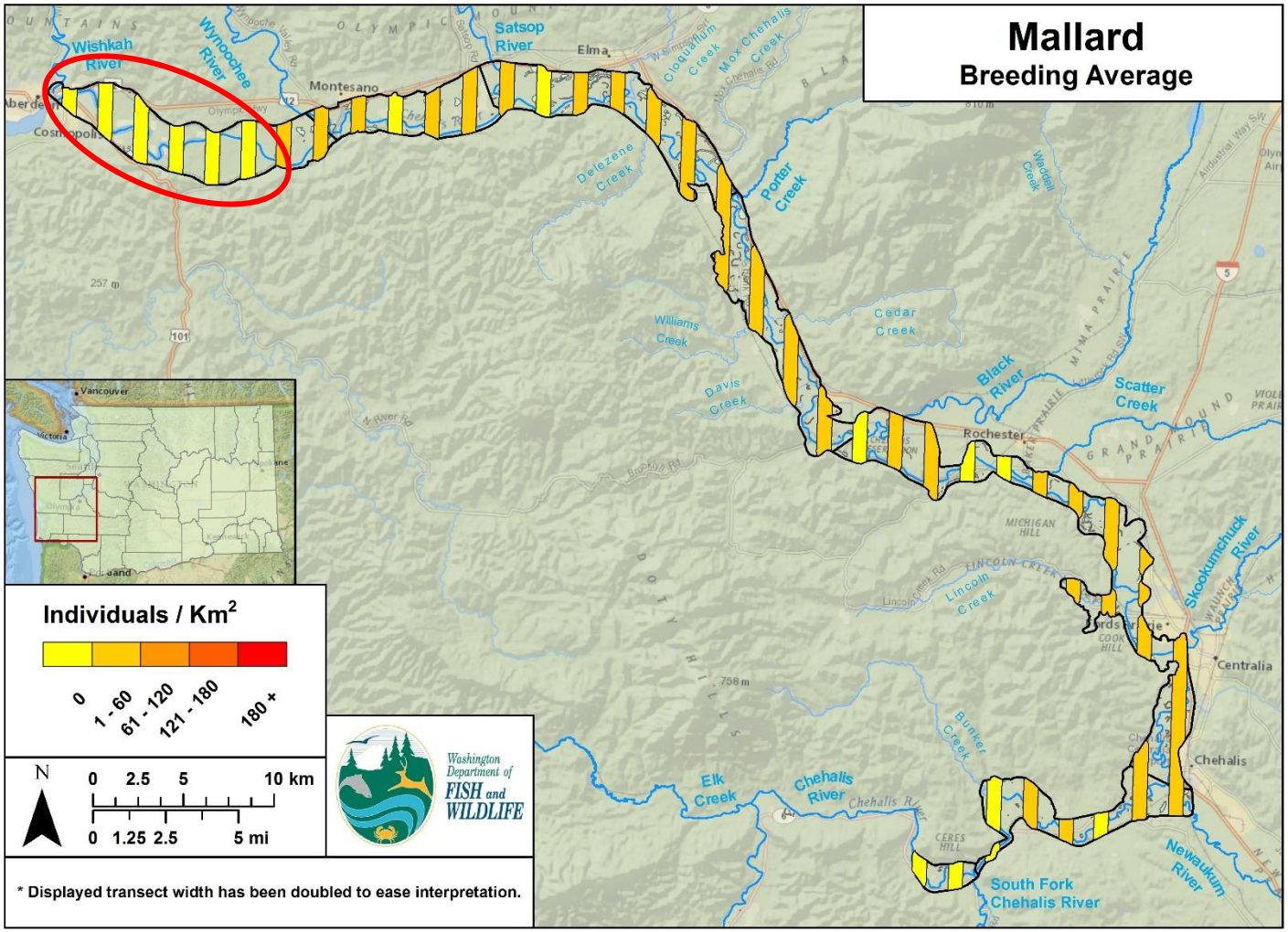
- Inundation longer than 8–10 days allows for additional body mass gain **
- Late-winter inundation is more beneficial
  - Temporal proximity to spring migration**

** Heitmeyer 2006

Waterfowl Production

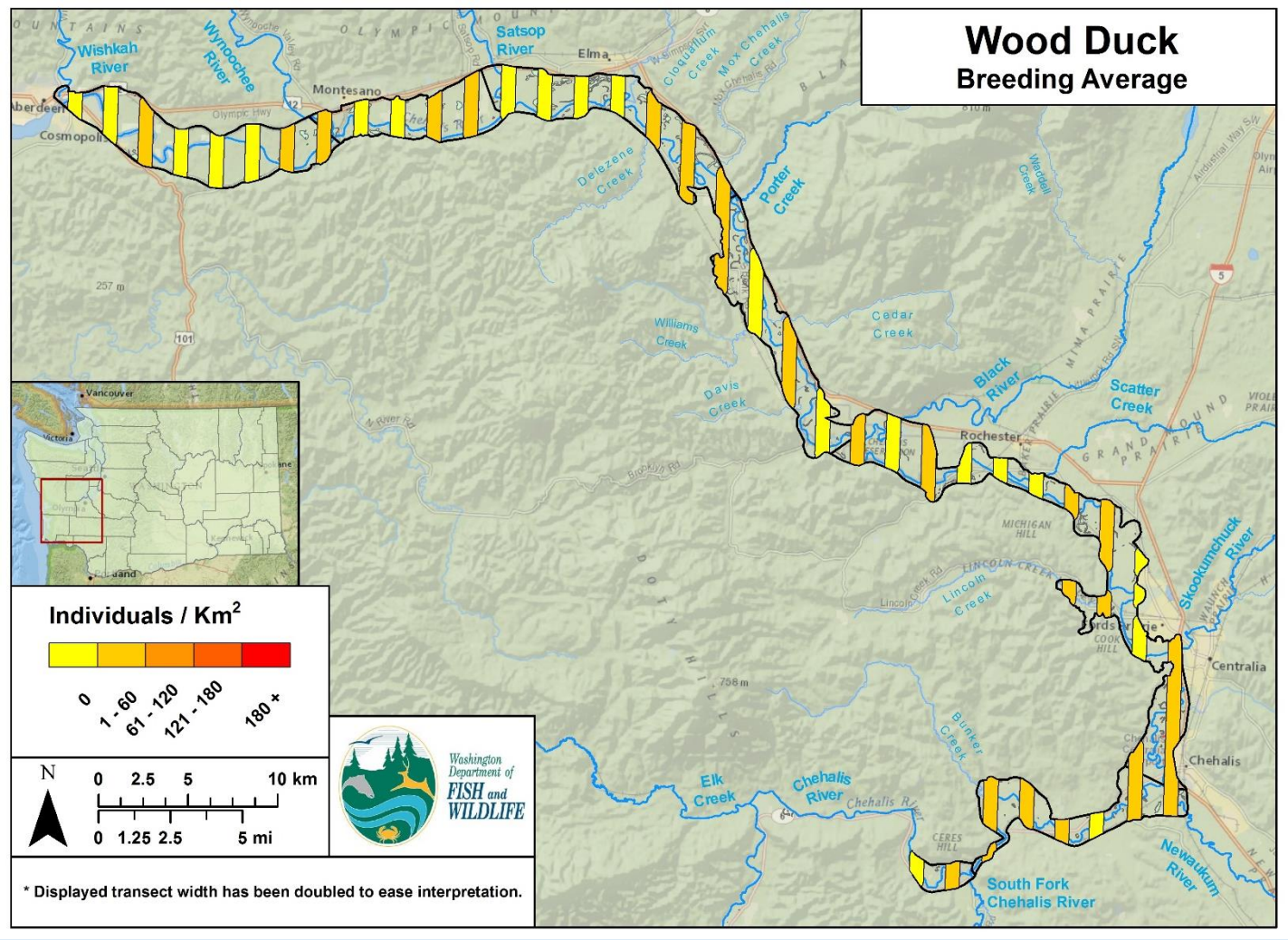
SPECIES	# OF SITES BROOD PRESENT	# OF BROODS OBSERVED	MEAN BROOD SIZE (SE)	PRODUCTION ESTIMATE (SD)
Mallard (*Anas platyrhynchos*)	13 of 36	30	4.5 (0.6)	763 (218)
Wood Duck (*Aix sponsa*)	9 of 36	18	4.2 (0.4)	137 (43)
Canada Goose (*Branta canadensis*)	2 of 36	5	4.2 (1.0)	-
Cinnamon Teal (*Anas cyanoptera*)	2 of 36	2	6.0 (1.0)	-
Hooded Merganser (*Lophodytes cucullatus*)	2 of 36	3	4.3 (1.5)	-
Blue-winged Teal (*Anas discors*)	1 of 36	1	-	-
Common Merganser (*Mergus merganser*)	1 of 36	1	-	-
Pied-billed Grebe (*Podilymbus podiceps*)	1 of 36	1	-	-

Mallard Breeding Density



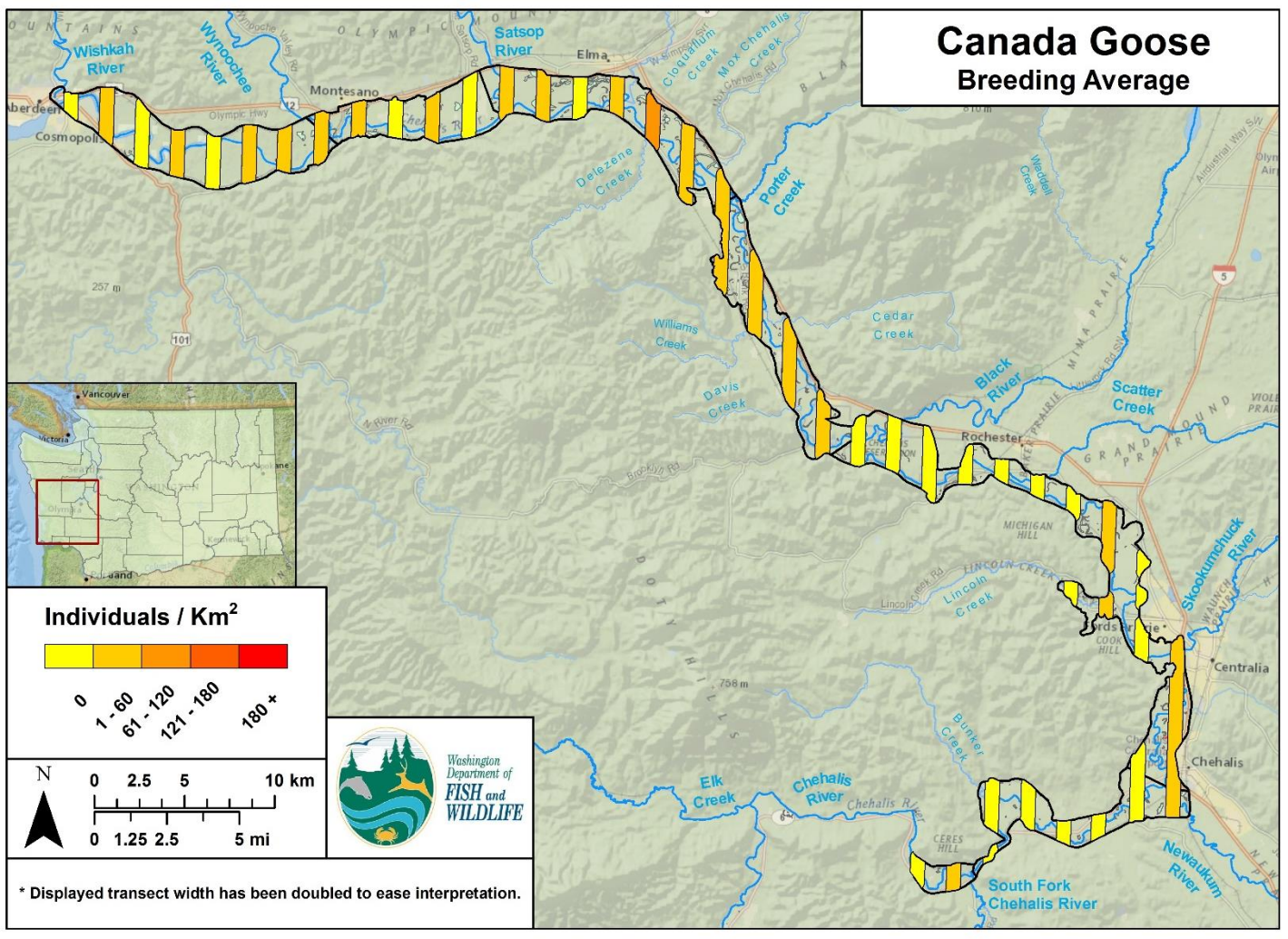
MALLARD DENSITIES (Km²) BREEDING AVERAGE	
Minimum	0
Maximum	25
Average	4

Wood Duck Breeding Density



WOOD DUCK DENSITIES (Km²) BREEDING AVERAGE	
Minimum	0
Maximum	8
Average	0.7

Canada Goose Breeding Density



CANADA GOOSE DENSITIES (Km²) BREEDING AVERAGE	
Minimum	0
Maximum	65
Average	3

Conclusion

- Further analysis of this data set in conjunction with future habitat modeling is required to understand
  - Changes in off-channel habitats and possible changes in use
  - Differing levels of field inundation
  - The future role that climate change will play

Acknowledgments & Works Cited

- Andrew Annanie
- Carol Cloen
- Tom Cyra
- Keith Douville
- Joe Evenson
- Marc Hayes
- Ilai Keren
- Don Kraege
- Warren Michaelis
- Debbie Moe
- Bryan Murphie
- Carol Powers
- Kyle Spragens
- Julie Tyson
- Habitat Program's Intensive & Extensive Crews
- Private Landowners
- Hillsboro Aviation

- Bayley, Peter B. "Understanding large river: floodplain ecosystems." *BioScience* 45.3 (1995): 153-158.
- Fredrickson, Leigh H. "13.3. 1. Invertebrate Response to Wetland Management." (1988).
- Fredrickson, Leigh H., and Frederic A. Reid. "13.2. 1. Waterfowl Use of Wetland Complexes." (1988).
- Heitmeyer, Mickey E. "The importance of winter floods to mallards in the Mississippi Alluvial Valley." *Journal of Wildlife Management* 70.1 (2006): 101-110.

Questions?