Species and Habitat Studies: Waterfowl and Waterbird Studies

Matthew Hamer, Andrew Annanie, Joseph Evenson
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
Ground Surveys
• 36 Off-Channel Sites
• Wintering and Migration Survey
  o November 2015 – May 2016
• Production Survey
  o 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

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

**Sea Ducks**
1. Bufflehead
2. Hooded Merganser
3. Common Goldeneye
4. Common Merganser
5. Red-breasted Merganser
6. Surf Scoter
# Habitat Associations

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>OPEN WATER</th>
<th>FORESTED AND SHRUB-SCRUB WETLANDS</th>
<th>HERBACEOUS WETLANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Wigeon</td>
<td>0</td>
<td>− −</td>
<td>+</td>
</tr>
<tr>
<td>Green-winged Teal</td>
<td>0</td>
<td>− −</td>
<td>+ +</td>
</tr>
<tr>
<td>Mallard</td>
<td>− −</td>
<td>−</td>
<td>+</td>
</tr>
<tr>
<td>Northern Pintail</td>
<td>0</td>
<td>0</td>
<td>+ +</td>
</tr>
<tr>
<td>Wood Duck</td>
<td>+ +</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>Common Merganser</td>
<td>+</td>
<td>− −</td>
<td>0</td>
</tr>
<tr>
<td>Hooded Merganser</td>
<td>0</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>Common Goldeneye</td>
<td>0</td>
<td>− −</td>
<td>− −</td>
</tr>
<tr>
<td>Ring-necked Duck</td>
<td>0</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>Scaup</td>
<td>+ +</td>
<td>− −</td>
<td>0</td>
</tr>
<tr>
<td>Double-crested Cormorant</td>
<td>0</td>
<td>0</td>
<td>− −</td>
</tr>
<tr>
<td>Pied-billed Grebe</td>
<td>+</td>
<td>−</td>
<td>0</td>
</tr>
</tbody>
</table>
Generalist

Mallard
23 February 2016

<table>
<thead>
<tr>
<th>MALLARD DENSITIES (Km²) 23 February 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

* Displayed transect width has been doubled to ease interpretation.
Piscivores: Fish-eating Ducks

**Common Merganser**
23 February 2016

**COMMON MERGANSER DENSITIES (Km²)**
23 February 2016

- Minimum: 0
- Maximum: 68
- Average: 4

Spring Migration
Herbaceous Wetland Specialist

Northern Pintail
23 February 2016

NORTHERN PINTAIL DENSITIES (Km²)
23 February 2016

Minimum 0
Maximum 124
Average 8

* Displayed transect width has been doubled to ease interpretation.

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

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

**Mallard Breeding Average**

<table>
<thead>
<tr>
<th>MALLARD DENSITIES (Km²) BREEDING AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

* Displayed transect width has been doubled to ease interpretation.*
Wood Duck Breeding Density

WOOD DUCK DENSITIES (Km²)

<table>
<thead>
<tr>
<th>BREEDING AVERAGE</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>8</td>
<td>0.7</td>
</tr>
</tbody>
</table>

* Displayed transect width has been doubled to ease interpretation.
Canada Goose Breeding Density

**Canada Goose Breeding Average**

**CANADA GOOSE DENSITIES (Km²)**

- **Breeding Average**
  - Minimum: 0
  - Maximum: 65
  - Average: 3
• Further analysis of this data set in conjunction with future habitat modeling is required to understand
  o Changes in off-channel habitats and possible changes in use
  o Differing levels of field inundation
  o 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

Questions?