ASER Workshop

Waterfowl Task on the Oak Ridge Reservation (ORR)

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National Transportation Research Center
Waterfowl Project

Field

- Annual Roundup
  - Apply legbands and neck collars
  - Determine age (HY or AHY) and sex
  - Translocate geese
  - Weigh and conduct whole-body counts

- Fixed route surveys
  - Record observations (2-52 times/year)

Administrative

- Data management
- Compile reports
- Respond to calls

Oak Ridge National Laboratory
U. S. Department of Energy
What we survey for . . .

- **Gaviidae**
  - Loons
- **Podicipedidae**
  - Grebes
- **Ardeidae**
  - Herons
  - Egrets
  - Bitterns
- **Threskiornithidae**
  - Ibises
  - Spoonbills
- **Phalacrocoracidae**
  - Cormorants
- **Gruidae**
  - Cranes
What we survey for . . .

- **Rallidae**
  - Rails
  - Coots

- **Charadriidae**
  - Plovers

- **Scolopacidae**
  - Sandpipers

- **Laridae**
  - Gulls
  - Terns

- **Anatidae**
  - Ducks
  - Geese
  - Swans

- **Accipitridae**
  - Hawks
  - Eagles
What we survey for . . .

- State-listed species
  - In need of management
  - Threatened
  - Endangered

- Species of special concern
  - Out of range
  - Out of season

Falconidae
Falcons

Stigidae
Owls

Alcedinidae
Kingfishers
Canada Geese
*Branta canadensis*
11 recognized races

- Canada Geese *Anser canadensis*
  - Giant (*maxima*)
  - Interior
  - Atlantic
  - Dusky

- Cackling Geese *Anser hutchinsii*
  - Richardson’s
  - Aleutian
  - minima
  - Lesser (in part)
History of Canada Geese In Tennessee

- Large numbers of Canada geese at Reelfoot Lake (1881)
- “maxima” race believed extinct (Delacour 1954)
- Canada geese extirpated from Tennessee (1900)
- Hunting begins at Old Hickory Lake (1979)
- Hunting in much of east Tennessee (1987)
- TVA joins TWRA effort (1970)
- Geese stocked on Melton Hill Reservoir (1972)
- TWRA begins stocking geese to produce a resident, huntable population (1966)
- State population ~38,000; 11.3% annual growth rate (1992)

Timeline:
- 1880
- 1900
- 1920
- 1960
- 1980
- 2000
Canada Geese on the ORR
Year of initial legband application

Canada Geese introduced on Melton Hill Reservoir


Number of geese

n = 22

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U. S. DEPARTMENT OF ENERGY

Waterfowl Task_0410
Canada Geese on the ORR
Year of initial legband application

n = 3319

Number of geese

Canada Geese on the ORR
Application of neck collars

n = 2799

Number of geese


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Canada Geese on the ORR
Age in years – current flock

n = 308

Number of geese

Year Class

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Canada Geese on the ORR
Numbers of geese observed per survey

Population

- 1500
- ~1620
- ~850
- ~1420

506 geese translocated
1995–1999
The story of Canada goose C62T

Banded 6/23/92 at ETTP

Observed on 14 of 23 surveys at ORNL only

Recaptured 6/25/98 at Building 1505
54 pCi/g Cs-137

Recaptured 6/24/97 at the Swan Pond
0.16 pCi/g Cs-137

ORNL release limit
54 pCi/g Cs-137

5
0.16


Waterfowl Task_0410

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Canada Geese on the ORR
Numbers of geese sacrificed

- Number of geese sacrificed: 91
- Years: 1988 to 2004
Destinations of 28 Canada Geese banded on the ORR

- banding location
- location of hunter harvest
- location of recapture
- sight record

Parallel scale at 45°N 90°W
### ORR Canada Geese Hunter harvest

<table>
<thead>
<tr>
<th>h</th>
<th>known hunter harvest rate</th>
<th>0.1736789</th>
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</thead>
<tbody>
<tr>
<td>r</td>
<td>reported harvest</td>
<td>516</td>
</tr>
<tr>
<td>p</td>
<td>total population</td>
<td>2971</td>
</tr>
</tbody>
</table>

\[ h = \frac{r}{p} \]

17% of geese are known to be harvested

<table>
<thead>
<tr>
<th>e</th>
<th>expected harvest rate</th>
<th>0.3240278</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>reported harvest</td>
<td>516</td>
</tr>
<tr>
<td>p</td>
<td>total population</td>
<td>2971</td>
</tr>
</tbody>
</table>

\[ e = \frac{r}{0.536p} \]

32% of geese are expected to be harvested

<table>
<thead>
<tr>
<th>x</th>
<th>expected harvest of migrant geese</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>known harvest of migrant geese</td>
<td>25</td>
</tr>
</tbody>
</table>

\[ x = \frac{y}{0.536} \]

47 geese expected to be harvested out-of-state
## ORR Canada Geese

Migrants in the population/migrant harvest

### m = x/e

<table>
<thead>
<tr>
<th>m</th>
<th>number of migrant geese in the population</th>
<th>145</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>expected harvest of migrant geese</td>
<td>47</td>
</tr>
<tr>
<td>e</td>
<td>expected harvest rate</td>
<td>0.3240278</td>
</tr>
</tbody>
</table>

145 geese expected to migrate out-of-state

### g = m/p

<table>
<thead>
<tr>
<th>g</th>
<th>% of geese that migrate</th>
<th>0.0488051</th>
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<tbody>
<tr>
<td>m</td>
<td>number of migrant geese in the population</td>
<td>145</td>
</tr>
<tr>
<td>p</td>
<td>total population</td>
<td>2971</td>
</tr>
</tbody>
</table>

4.9% of ORR Canada geese migrate out-of-state

### z = y/r

<table>
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<th>z</th>
<th>reported migrant harvest</th>
<th>0.0484496</th>
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</thead>
<tbody>
<tr>
<td>y</td>
<td>known harvest of migrant geese</td>
<td>25</td>
</tr>
<tr>
<td>r</td>
<td>reported harvest</td>
<td>516</td>
</tr>
</tbody>
</table>

4.8% of ORR Canada goose harvest occurs out-of-state
# Tennessee birds
## In need of management

**ORR record**
- Anhinga
- Little Blue Heron
- Snowy Egret
- Great Egret
- Bald Eagle
- Northern Harrier
- Sharp-shinned Hawk
- Barn Owl
- Yellow-bellied Sapsucker
- Olive-sided Flycatcher
- Loggerhead Shrike
- Golden-winged Warbler
- Cerulean Warbler
- Vesper Sparrow

**ORR (1950-1953)**
- Common Moorhen
- King Rail
- Black-capped Chickadee

**No ORR record**
- Least Bittern
- Mississippi Kite
- Swainson’s Warbler
- Henslow’s Sparrow
Tennessee birds
Threatened and Endangered

**ORR record**
- Peregrine Falcon (E)
- Bachman’s Sparrow (E)

**ORR (1950-1953)**
- Northern Saw-whet Owl (T)
- Bewick’s Wren (E)

**No ORR record**
- Least Tern (E)
- Golden Eagle (T)
- Common Raven (T)
- Lark Sparrow (T)
ORR Waterfowl
One known occurrence on the ORR

- **White-rumped Sandpiper**
  - May 1994

- **Anhinga**
  - June 1994

- **Eared Grebe**
  - Mar 1995

- **Snowy Egret**
  - Apr 1996

- **White Ibis**
  - Aug 1996

- **Least Sandpiper**
  - Aug 1996

- **Ross’s Goose**
  - Feb 2002
ORR Waterfowl
Population trends

Blue-winged Teal

Green-winged Teal
ORR Waterfowl Population trends

Northern Shoveler

Northern Pintail
ORR Waterfowl Population trends

Wood Duck

American Wigeon
ORR Waterfowl
Population trends

Hooded Merganser

Ring-necked Duck
ORR Waterfowl
Population trends

Mallard

Gadwall
ORR Waterfowl
Population trends

Canada Goose

Snow Goose
ORR Waterfowl
Population trends

Killdeer

Kingfisher
ORR Waterfowl Population trends

Great Egret

Great Blue Heron
ORR Waterfowl
Population trends

Double-crested Cormorant
Black-crowned Night-Heron
ORR Waterfowl
Population trends

Bonaparte’s Gull

Ring-billed Gull
ORR Waterfowl Project
Why it is important

• Reduce/eliminate human consumption of contaminated geese (C62T story)

• Ability to monitor individual geese
  – Local movements
  – Migration
  – Translocation and returns

• Barometer of wetland habitat and health

• Indicators of diversity and relative abundance

• Identification of “new” ORR bird species

• Management of nuisance geese
BMAP Waterfowl Project
Cooperating Agencies

- Appalachian Regional Commission
- Bechtel Jacobs Company, LLC
- Oak Ridge National Laboratory
- Tennessee Department of Environment and Conservation
- Tennessee Technological University
- Tennessee Wildlife Resources Agency
- USDA Wildlife Services
- U.S. Department of Energy
- U.S. Fish and Wildlife Service
- USGS Bird Banding Laboratory
- University of Tennessee
- UT-Battelle, LLC