Vashon/Maury Island Bird Survey:
What We've Learned

Presentation by:
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State of Wildlife in King County

- Lack thorough understanding of King County's Biodiversity

- Paucity of wildlife data for the County
  - Shoreline Master Program
  - KingStat Performance Measures
  - Biodiversity Report

From KingStat

NATURAL ENVIRONMENT

- Marine and freshwater habitat quality

- Amounts of forest and pavement cover

- Wildlife abundance and species diversity

- Air quality and green-house gas emissions

Environment Indicators

- Marine Habitat
- Freshwater Habitat
- Terrestrial Habitat
- Wildlife
- Atmosphere
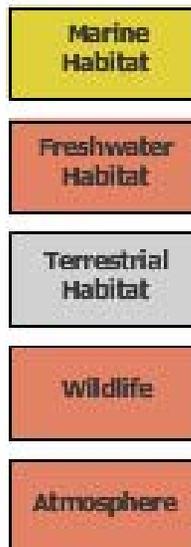
INDICATORS KEY

- Meets or exceeds standard, goal, or improved from prior years
- Approaching standard, goal, or steady with prior years
- Below standard, goal or decline from prior years
- Insufficient data at this time

Criteria of Wildlife Survey:

- Not too expensive / cost-efficient

- Protocols that would allow us to track trends (good-quality, useable data)

- Sustainable in the long-term

- Volunteer-based

SPLASH Grant Request for Proposal:

"The purpose of this grant is to develop a pilot program to identify the presence of wildlife species and begin tracking population trends of terrestrial vertebrates in King County in order to gain a more thorough understanding of King County's biodiversity. This pilot program will be carried out in select habitats and ecosystems on mostly public lands…"

Pilot Wildlife Survey

4 proposals received

2 interviews conducted

- Selected: a proposal by Don Norman and Sherry Hudson to study bird use of madrone forests near shorelines.

Objectives of the Project

- Collect data on bird use of forests adjacent to shorelines

- Compare seasonal use of madrone vs mixed coniferous / deciduous forests

- Examine bird relative abundance and species diversity

- Use volunteers to collect data (citizen science)

- Use publicly owned lands

Questions

1. What bird species are using these forests, to what degree, and in what seasons?

2. Is there a difference in bird use (abundance and/or diversity) of madrone forests versus other shoreline forest plant associations?

3. Are there differences in seasonal use of the madrone and non-madrone forest patches?

4. Are rare or special-status bird species using certain forest types more or differently than others types?
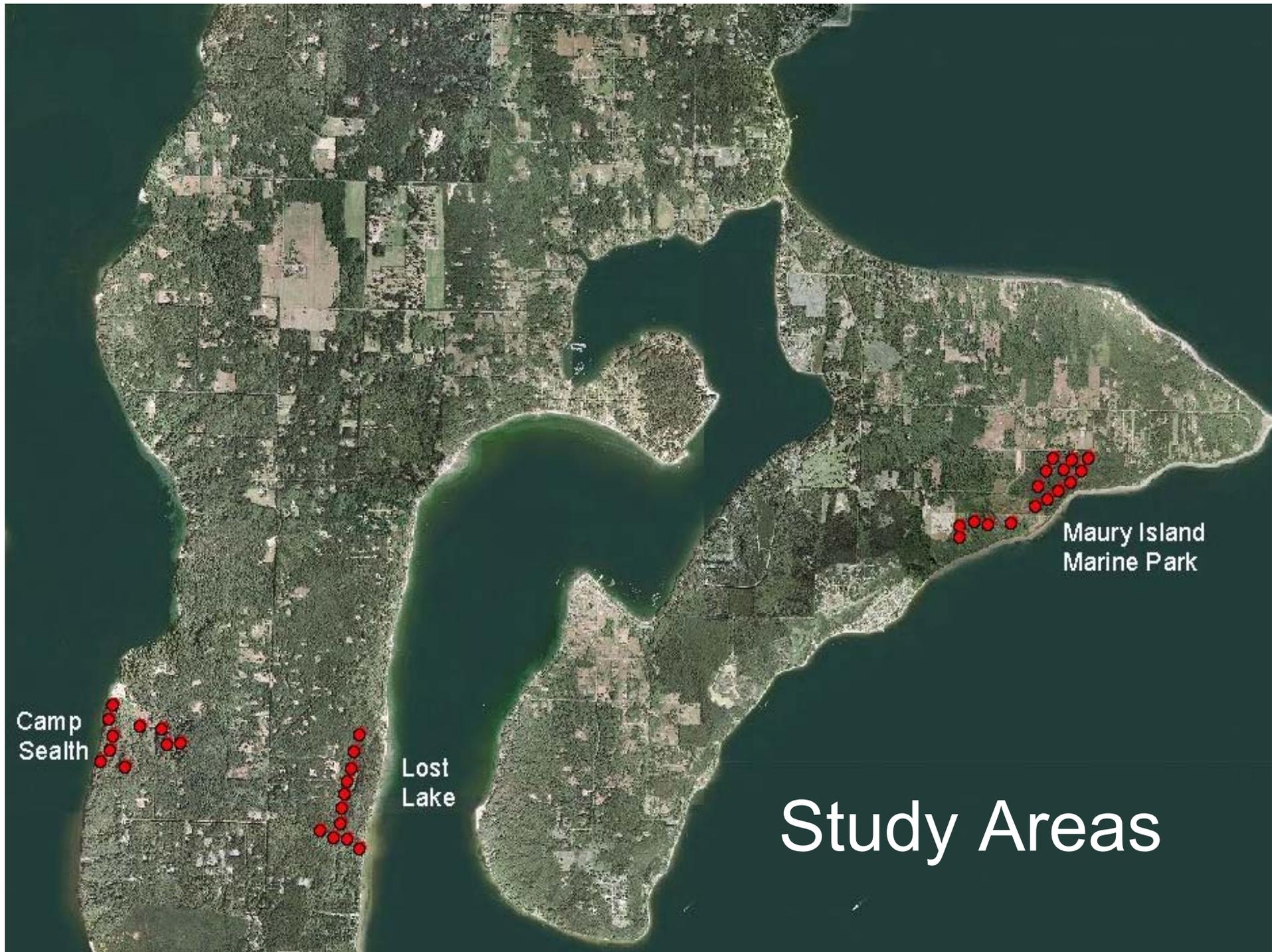
Camp
Sealth

Lost
Lake

Maury Island
Marine Park

Study Areas

Methods:
Bird Surveys

- Stations ~150 meters apart
- 75-meter radius circle within forest (one exception)
- 3 study areas:
  - Maury Island Marine Park
  - Camp Sealth on Vashon Island
  - Lost Lake Park on Vashon Island
- 10-minutes per station
- Start within 30 minutes of local sunrise, complete within 4 hours thereafter

Methods: Bird Surveys

- For each individual bird observed:
  - Species
  - Detection type (visual, song, or call)
  - Distance from observer
    (0-10m, 10-20 m, 20-30 m, 30-40 m, 40-50 m, 50-75 m, and >75 m)

Additional information
- Evidence of breeding
- Flocking behavior

# Methods: Vegetation surveys

For each *50-meter* plot:

- Percent cover, dominant species, and species composition of:
  - Canopy. Trees ≥6 m in height.
  - Sub-canopy. Distinct tree layer below canopy and ≥6 m in height.
  - Mid-story. Vegetation 3 to 6 m in height.
  - Understory. Vegetation 0.5 to 3 m in height.
  - Groundcover. Vegetation ≤ 0.5 m in height.
- Percent of non-living ground-cover (yes, itemized).
- Snag data.

Methods: Volunteer Training

- Volunteers attended 2-3 days of field training:
  - Learned point-count survey methods
  - Reviewed birds of the area by sight, song, and call
  - Practiced estimating distance to birds
 - Conducted practice point-count surveys

Major Project Activities

- Wrote Sampling and Analysis Plan – with help from Tom G. and Klaus
- Established point-count stations
- Conducted the vegetation surveys
- Conducted the bird surveys
- Designed Access database (never implemented)
- Input data to Excel files
- Analyzed data and wrote final report
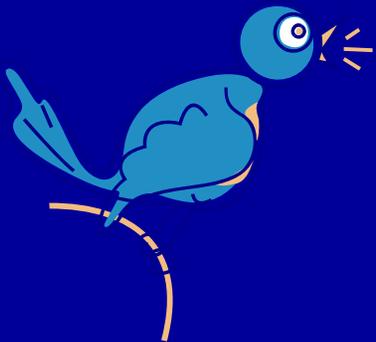
Additional Work Products

- Volunteer Manual

- Winter Bird Call Manual

- Annotated partial list of species detected during the study, with comparisons to literature of bird occurrence on Vashon/Maury Island (Swan 2005) and throughout Pacific Northwest (Hunn 1982)
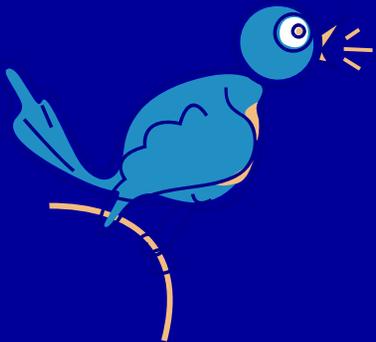
Results: Bird Counts

Out of ~ 220 bird species possible for all
habitat types in King County:

- 82 total species detected
- 73 species detected during point-count surveys
- 54 possible, probable, or confirmed breeding spp.

Results – Species Richness

- Madrone study area: Maury Island Marine Park; n=16
- Mixed conifer-deciduous study areas: Camp Sealth and Lost Lake combined; n=22

	Madrone study area	Mixed conifer-deciduous study areas
Year (April 2006 - March 2007)	68	61
Spring (April - May)	46	32
Summer (June - July)	42	38
Fall (August - October)	46	39
Winter (November - March)	37	35

Results – Relative Abundance

For the Entire Year:

- Camp Sealth > Lost Lake

- Camp Sealth > Maury Island Marine Park

- Lost Lake = Maury Island Marine Park

Seasonal Differences:

- Camp Sealth > Maury Island Marine Park in <u>Spring</u>

Number of Breeding Species

	Possible	Probable	Confirmed	Total Per Area
Camp Sealth	25	15	1	41
Lost Lake	18	20	7	45
Maury Is. Marine Pk.	32	16	3	51
Total unique species	42	24	10	54

Observation

- Most bird abundance = Camp Sealth
- Highest diversity = Maury Is. Marine Park
- Most probable and confirmed breeding = Lost Lake

Questions We Have Not Yet Analyzed:

- Were there patterns with any guilds (e.g., habitat generalists)?

- How did fly-overs impact the analysis?

Some vegetation surveys results

Dominant species at
Maury Island Marine Park,
the "Madrone Area"

Canopy :
1. *Madrone , 10 of 16 plots*
2. *Red alder, 5 of 16 plots*

Mid-story:
1. *Hazelnut, 15 of 16 plots*

Understory:
1. *Salal or Snowberry, 10 of 16 plots*
2. *Scot's Broom or Him. Blackberry, 6 of 16 plots*

More vegetation surveys results

Dominant species at Lost Lake & Camp Sealth,
the "non-Madrone areas"

Canopy :
  1. *Douglas-fir , 14 of 24 plots*
  2. *Red alder, 4 of 24 plots*
  3. *Madrone, 3 of 24 plots*

Sub-canopy:
  1. *Coniferous spp., 6 of 24 plots*
  2. *Red alder, 7 of 24 plots*
  3. *Madrone, 2 of 24 plots*

Snag Observations

Number of snags counted from plot center:

- Camp Sealth: 32
    - most plots had woodpecker sign

- Lost Lake: 86
    - most plots had woodpecker sign

- Maury Island Marine Park: 39
    - almost none with woodpecker sign

Volunteer Results

- 22 people expressed interest

- 8 people trained

- 6 people conducted surveys at least once

- 2 more recruited later conducted surveys at least once

- Over time volunteer participation dropped off, especially in winter months
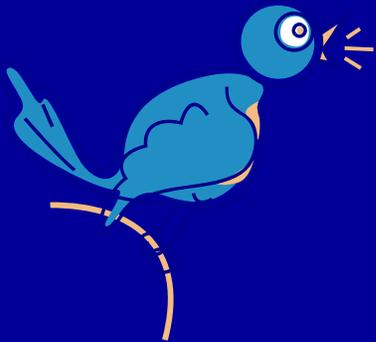
Reasons volunteers gave for not continuing to participate:

- Protocol too difficult

- Surveys took too long

- Not comfortable enough with bird identification skills

- Too difficult to travel to Vashon-Maury Island

- In the end, only one Vashon-based volunteer conducted surveys throughout the study, on an inconsistent basis.

What did we learn?

First – What We Already Knew

- *One year of data is not representative enough to extract patterns of bird use*
- *A narrowly focused study does not allow extrapolation across King County habitats*

Second – What We Anticipated

- *Finding volunteers with appropriate skill level could be difficult*

- *Point-count surveys in fall and winter not ideal*

- *Additional variables may complicate analysis:*
  - *Availability of other winter fruit-bearing shrubs in non-madrone area*
  - *Availability of evergreen trees in all study sites*
  - *Orientation of forest area and resultant weather and sun patterns*
  - *Uneven distribution of other habitat features and characteristics, such as wetlands and snags*

Finally – What We Learned

- It's challenging to conduct a volunteer-based survey on an island

- Volunteers' time commitment needs to be manageable ("make it easy on them")

- A project such as this is too time-intensive to be sustainable long-term

- Setting up a project with a narrow focus (an hypothesis) may prove too restrictive

- This project might function better as long-term inventory than answering questions about madrone forest

Conclusion

This is not a great model for a long-term, cost-efficient county-wide bird monitoring program

Recommendations

- Other models for high-quality volunteer-based wildlife surveys should be explored
  - Ex.: brand-new seabird study sponsored by Seattle Audubon
  - Ex.: winter wildlife tracking sponsored by Wilderness Awareness School
- Database development for future projects will be imperative
- A future program should encompass more of the County's ecosystems and habitats
- Future SAP should explore using a wider range of descriptive and hypotheses testing statistics

Acknowledgments

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- King County SPLASH Grant program

- King County Water and Land Resource Division: Klaus Richter, Tom Georgianna

- Vashon-Maury Island Audubon Society

- Vashon-Maury Island Land Trust

- Seattle Audubon Society