

# Cougar Framework Options

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# Process

Compared multiple states' frameworks and methods against our own

- Integrated Population Model - **missing the monitoring piece**
- Population Reconstruction - **lacking effort to be able to use harvest data**
- Leslie Matrix

Used Leslie Matrices to determine guidelines

- Ran a two-sex model with additional new data
- Resulted in a 1.13 ( $\pm 0.03$  IQR) intrinsic growth rate for cougars (i.e., 10-16%)
- Conflict and harvest were censored from the model so we could count them towards the guideline or cap
- Other mortalities, including roadkill and poaching, were accounted for in the model and should not count towards the guideline or cap

Looked into Resource Selection Function for a spatial density measure but it did not relate to cougar density

- used median density estimate and binary cougar habitat map for available cougar habitat to estimate abundance

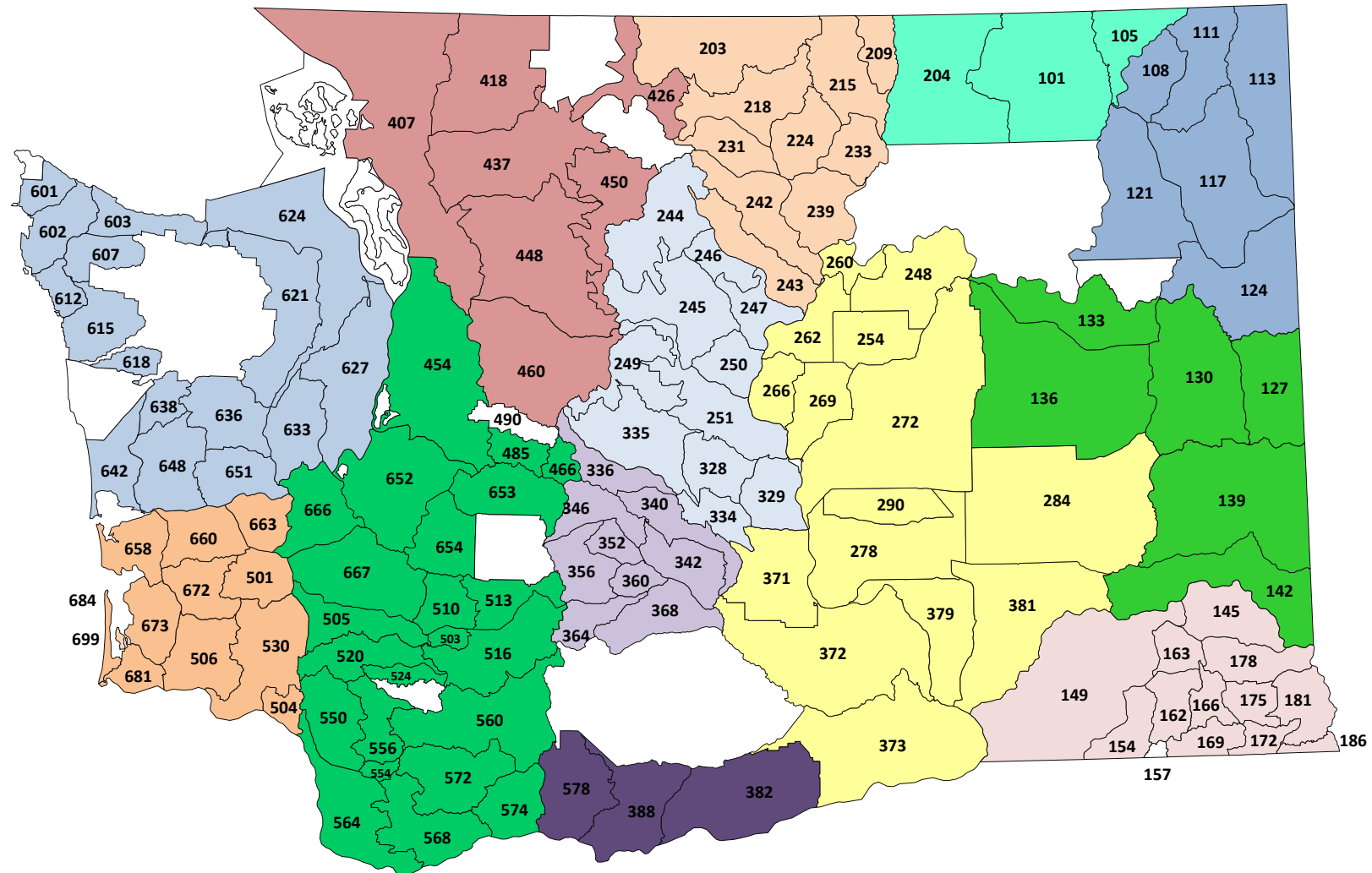


# New Terminology

- Cougar Data Analysis Units (CDAU) are the new population-level scale units that each encompass multiple CHMUs
  - Represent cougar genetically identified populations, potential barriers to movement, prey item herd units (elk and deer), etc.
  - 13 CDAUs

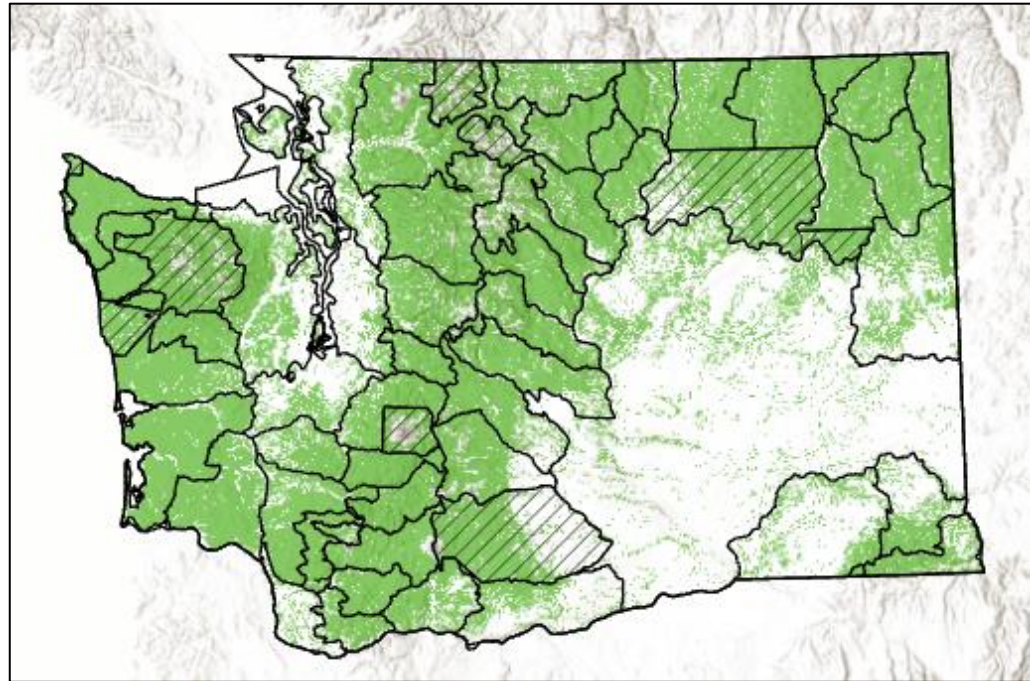


# Cougar Data Analysis Units (CDAUs)



# New Terminology

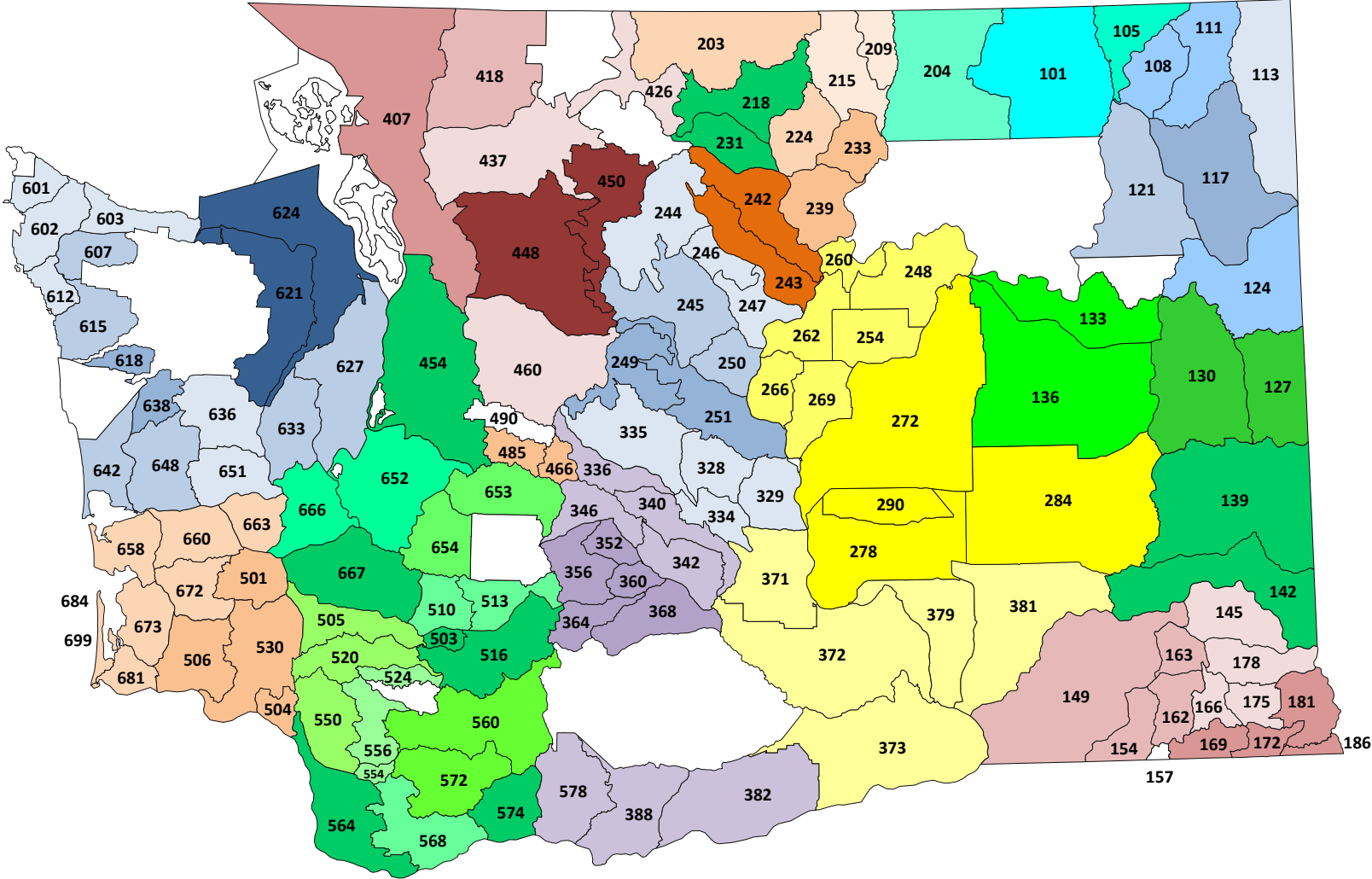
- Population Management Units (PMU) that are used to distribute hunters and harvest across the landscape are now Cougar Hunt Management Units (CHMU)
- Using staff-suggestions to designate boundaries, we went from 50 PMUs to 58 CHMUs



PMUs:



# Cougar Hunt Management Units (CHMUs)



# Overlapping Aspects of each Framework

- 10-16% intrinsic growth rate recommended for management
- In-season closures and counting conflict removals
- Density 2.34; habitat map (91,000 km<sup>2</sup>) = cap value
- License year: April 1 – March 31
- Hunting Seasons: Sept 1 – March 31
- Count conflict removals starting April 1, and include hunter harvest during season until cap is met
- If cap is met prior to hunting season, CHMU will not open
- Counting independent-aged cats ( $\geq$  18 months)
- All CHMUs will have caps

The differing options attempt to address concerns for places where removals consistently go above 16%, while still providing some hunting opportunity.



# Framework Options

	Option A
Goal	<ul style="list-style-type: none"><li>• Manage within 10-16% intrinsic growth rate while providing ample opportunity</li></ul>
Hunting Season Dates	<ul style="list-style-type: none"><li>• Sept 01 – Mar 31</li></ul>
Trigger	<p>Begin with initial assessment of the previous 3 years harvest, then set cap at:</p> <ul style="list-style-type: none"><li>• <b>10%:</b> If &gt;16% mortality at the CDAU scale, then CHMUs within the CDAU that are over 16% are set to a 10% cap.</li><li>• <b>16%:</b> If &lt;16% mortality at the CDAU scale, then CHMUs within the CDAU are set to a 16% cap.</li></ul> <p>Reassess on 3-year cycle.</p>





# Framework Options

	Option B
Goal	<ul style="list-style-type: none"><li>• Manage within 10-16% intrinsic growth rate while providing ample opportunity</li></ul>
Hunting Season Dates	<ul style="list-style-type: none"><li>• Early Season: Sept 01 – Nov 30</li><li>• Late Season: Dec 01 – Mar 31</li></ul>
Trigger	<ul style="list-style-type: none"><li>• If conflict take reaches <b>10%</b> in CHMU prior to the early season starting, then the early season does not open but the late season may remain open in that CHMU.</li><li>• If mortality remains below <b>16%</b>, the late season may commence. Once the 16% cap is reached, the late season would close.</li><li>• If the 16% cap is reached before the late season starts in a CHMU, the late season will not open in that CHMU.</li></ul>



# Framework Options

	Option C
Goal	<ul style="list-style-type: none"><li>• Maintain status quo without additional 20% opportunity</li></ul>
Hunting Season Dates	<ul style="list-style-type: none"><li>• Sept 01 – Mar 31</li></ul>
Trigger	<ul style="list-style-type: none"><li>• No trigger</li><li>• 13% cap</li></ul>



# Framework Options

	Option A	Option B	Option C
Goal	<ul style="list-style-type: none"> <li>Manage within 10-16% intrinsic growth rate while providing ample opportunity</li> </ul>	<ul style="list-style-type: none"> <li>Manage within 10-16% intrinsic growth rate while providing ample opportunity</li> </ul>	<ul style="list-style-type: none"> <li>Maintain status quo without additional 20% opportunity</li> </ul>
Hunting Season Dates	<ul style="list-style-type: none"> <li>Sept 01 – Mar 31</li> </ul>	<ul style="list-style-type: none"> <li>Early Season: Sept 01 – Nov 30</li> <li>Late Season: Dec 01 – Mar 31</li> </ul>	<ul style="list-style-type: none"> <li>Sept 01 – Mar 31</li> </ul>
Trigger	<p>Begin with initial assessment of the previous 3 years, then set cap at:</p> <ul style="list-style-type: none"> <li><b>10%:</b> If &gt;16% mortality at the CDAU scale, then CHMUs within the CDAU that are over 16% are set to a 10% cap.</li> <li><b>16%:</b> If &lt;16% mortality at the CDAU scale, then CHMUs within the CDAU are set to a 16% cap.</li> </ul> <p>Reassess on 3-year cycle.</p>	<ul style="list-style-type: none"> <li>If conflict take reaches <b>10%</b> cap in CHMU prior to the early season starting, then the early season does not open but the late season may remain open in that CHMU.</li> <li>If mortality remains below <b>16%</b>, the late season may commence. Once the 16% cap is reached, the late season would close.</li> <li>If the 16% cap is reached before the late season starts in a CHMU, the late season will not open in that CHMU.</li> </ul>	<ul style="list-style-type: none"> <li>No trigger</li> <li>13% cap</li> </ul>



# Remaining Decisions

- Pelt seal requirement: 3 days excluding weekends and holidays after harvest
- Hotline reporting: remove the hunter reporting option, but keep closures and general info options
- Unit Closure: weekly on Thursdays



# Questions?

