

Cougar Framework Options

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Washington's framework

Total take = density \times habitat \times intrinsic growth rate

Population
size

Population
dynamics



Metrics for Adaptive Management

- Density
 - Median 2.34 cougars/100km²
 - Range 1.55 - 2.79 from 5 study areas
 - Conservative estimate; density varies considerably on the landscape and by sex and age class, and we don't know the upper end for the northeast
 - Risk analysis framework – Beausoleil et al. 2021 – Approach to analyze management risk and minimize uncertainty around our density estimates
- Cougar Habitat
 - 91,000 km² managed by WDFW
 - Population size = median density * total habitat
- Intrinsic Growth Rate
 - Mean 1.13 (IQR 1.10-1.16)
 - Want to allow this estimate to vary within minimized risk zone of the risk analysis framework (1.12-1.16, Beausoleil et al. 2021)





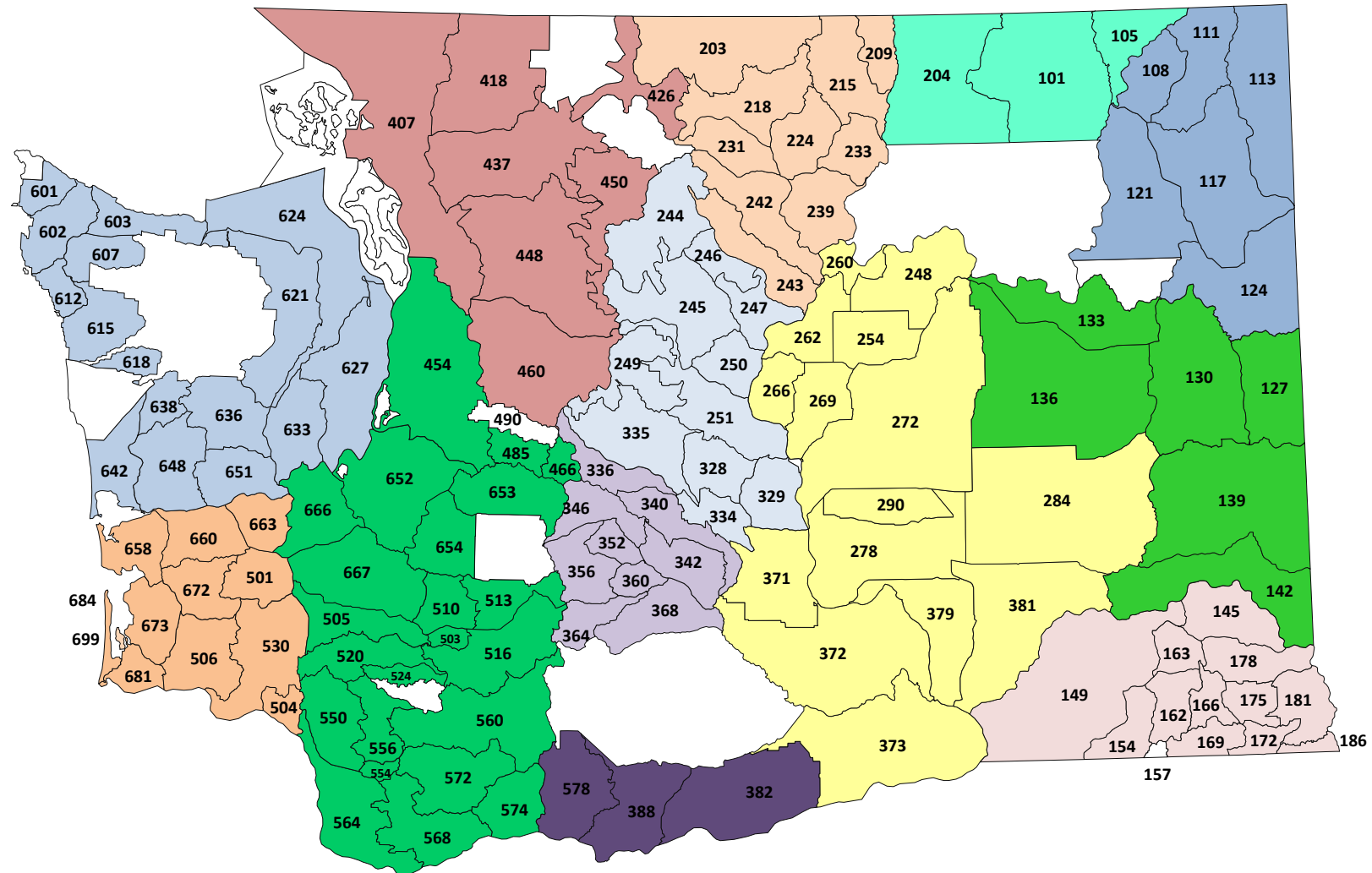
New Terminology

New Terminology

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



Cougar Data Analysis Units (CDAUs)



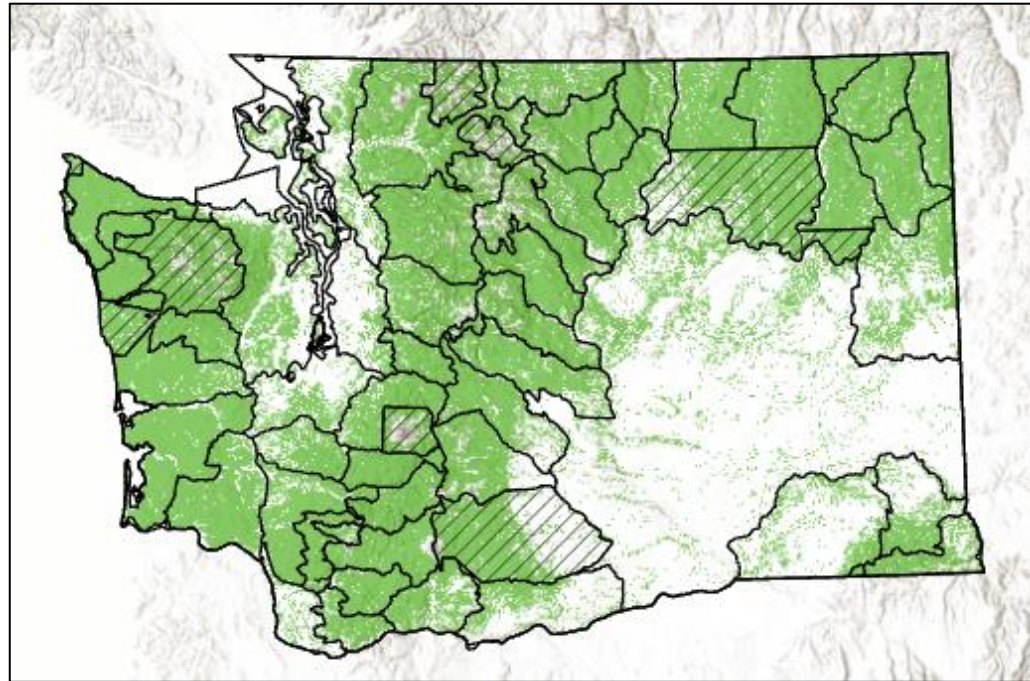
Purpose of the CDAUs

- Purpose is to distribute harvest in the PMUs within these larger population-level units and allow *immigration* and *emigration* to occur if the risk for overharvest or underharvest is reached in a PMU.
- Our proposed adaptive management option reduces potential harvest in those PMUs to allow for immigration/emigration & dispersal events to “refill” those PMUs.



New Terminology Continued

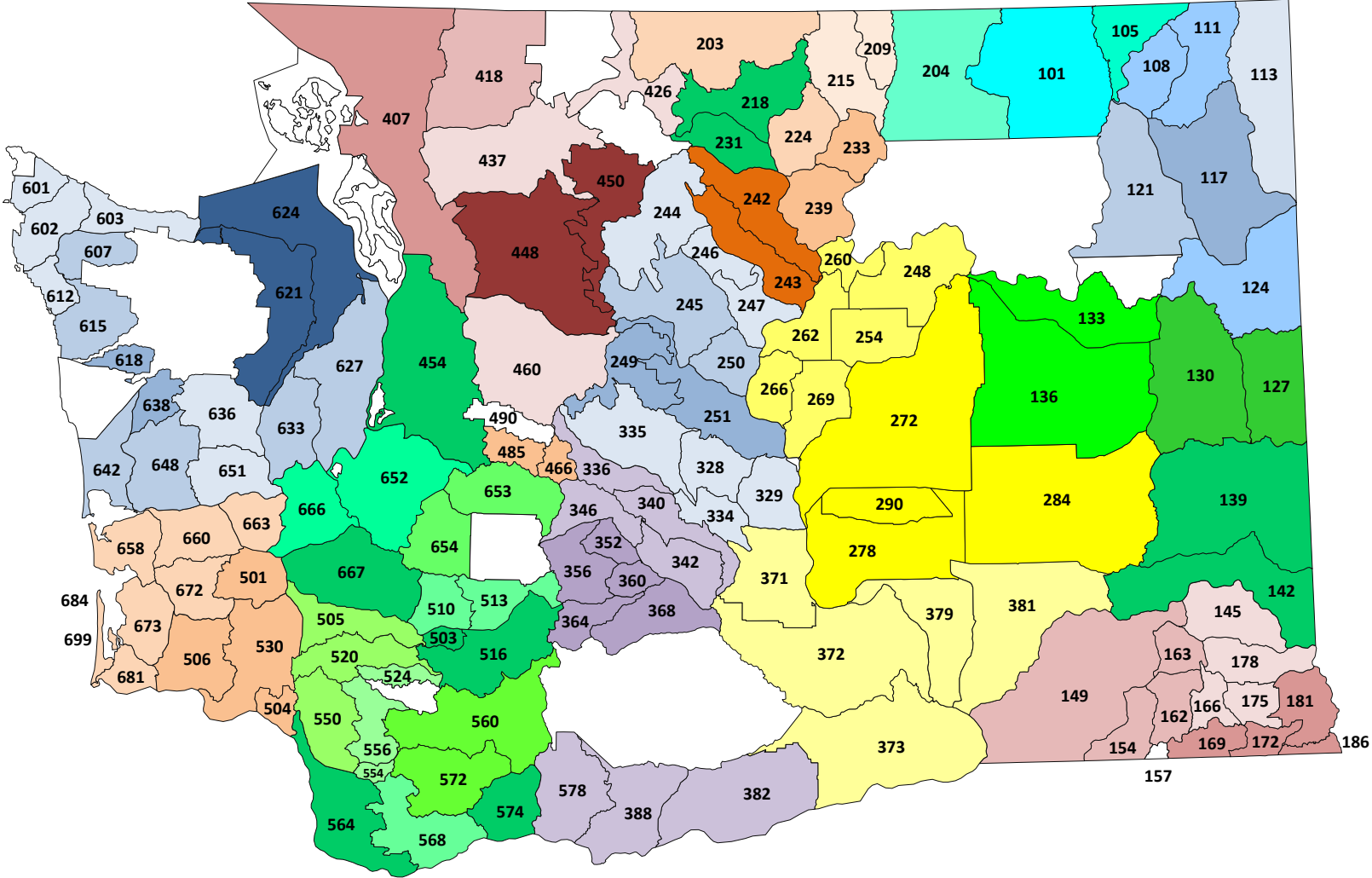
- Population Management Units (PMU) that are used to distribute hunters and harvest across the landscape are now Cougar Hunt Management Units (CHMU)
- Using staff-suggestions to designate boundaries, we went from 50 PMUs to 58 CHMUs



PMUs:



Cougar Hunt Management Units (CHMUs)





Adaptive Management Framework Options

Overlapping Aspects of each Framework

- 10-16% intrinsic growth rate recommended for management
- In-season closures and counting conflict removals
- Density 2.34 * habitat per CHMU * intrinsic growth rate = 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.



Original Framework Options

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

Recommended Framework Options

	Recommended Proposal	Status Quo
Goals	<ul style="list-style-type: none"> • Conserve cougar populations • Manage within 10-16% intrinsic growth rate • Provide hunting opportunity 	<ul style="list-style-type: none"> • Conserve cougar populations • Manage at 13% intrinsic growth rate • Provide hunting opportunity
Season Dates	<ul style="list-style-type: none"> • Sept 01 – Mar 31 	<ul style="list-style-type: none"> • Sept 01 – Mar 31
Trigger	<p>Begin with initial assessment of the previous 3 years, then set cap at:</p> <ul style="list-style-type: none"> • 10%: at the CDAU scale, then CHMU. If >16% mortality s within the CDAU that are over 16% are set to a 10% cap; the rest receive a 16% cap. • 16%: If <16% mortality at the CDAU scale, then CHMUs within the CDAU are set to a 16% cap. <p>Reassess on 3-year cycle.</p>	<ul style="list-style-type: none"> • No trigger • 13% cap • If CHMU reaches 13% before Sept 1, CHMU opens until a cap of 20% is reached. When CHMU reaches 20% cap, CHMU is closed.



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?

