

# OPTIMAL RESERVE SITE SELECTION FOR WESTERN GREY SQUIRREL WITH INTEGER PROGRAMMING

$$\text{Max} \sum_{m,t} c_{m,t} x_{m,t}$$



$$\text{s.t. } \sum_{j \in C} x_{j,t} \leq |C| - 1 \quad \forall C \in \mathbb{C}$$

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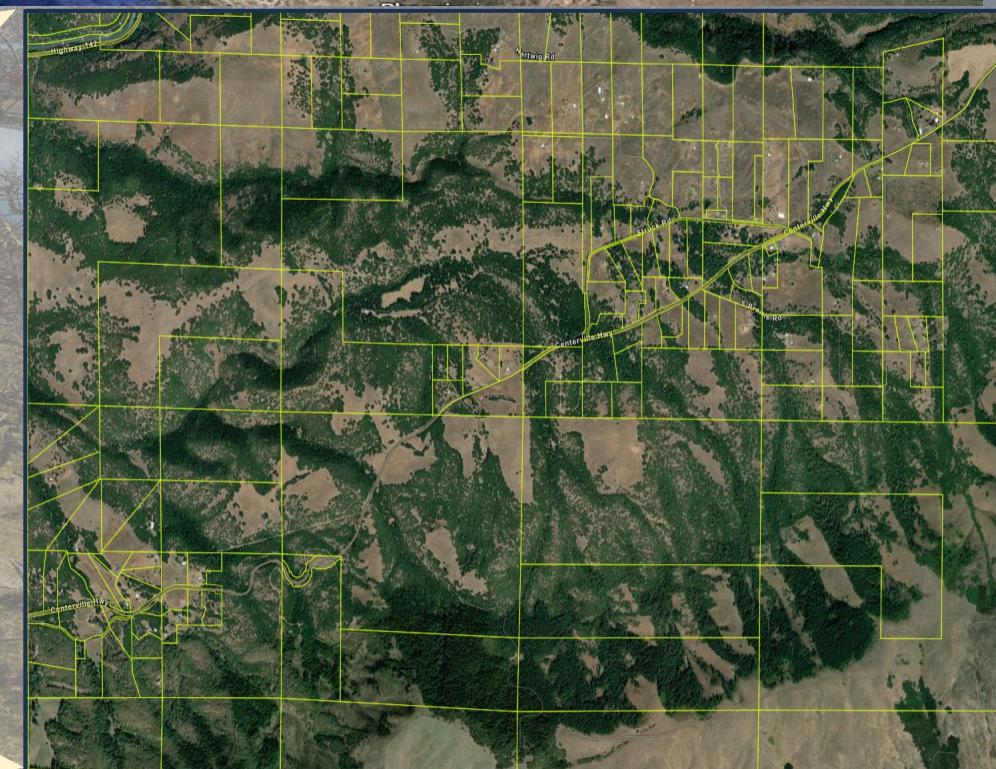
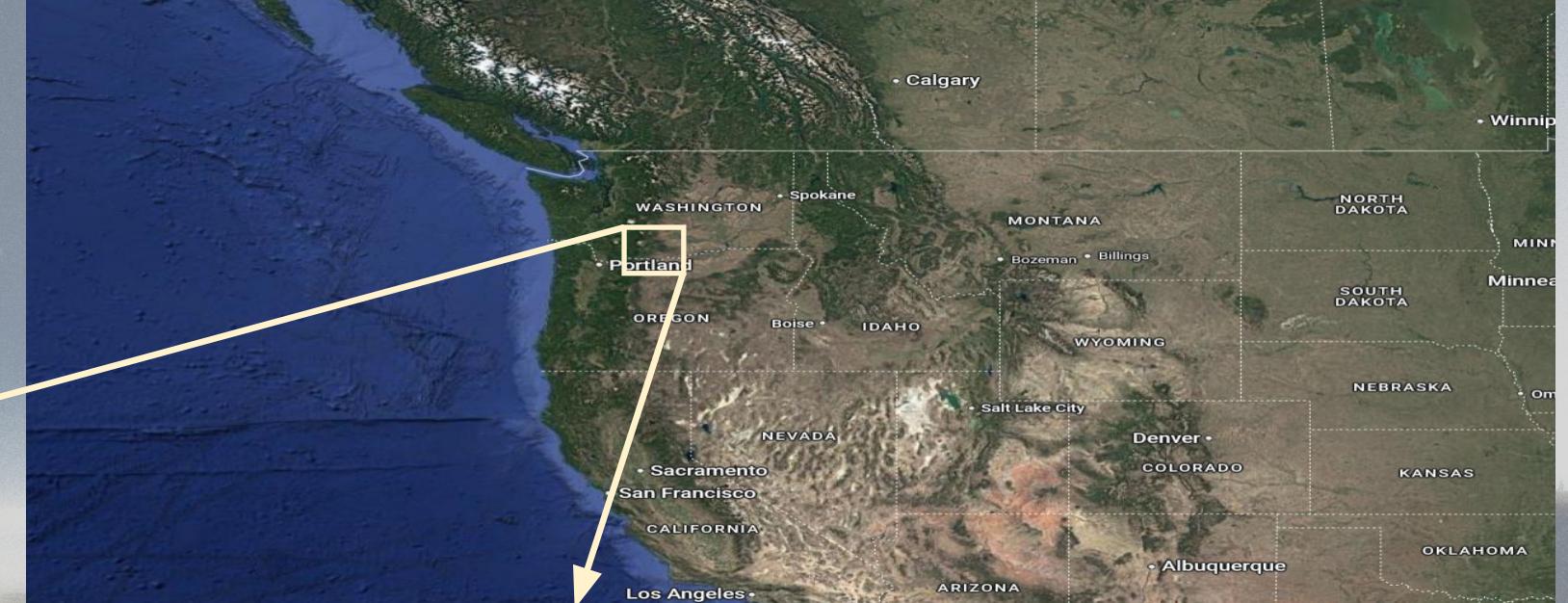
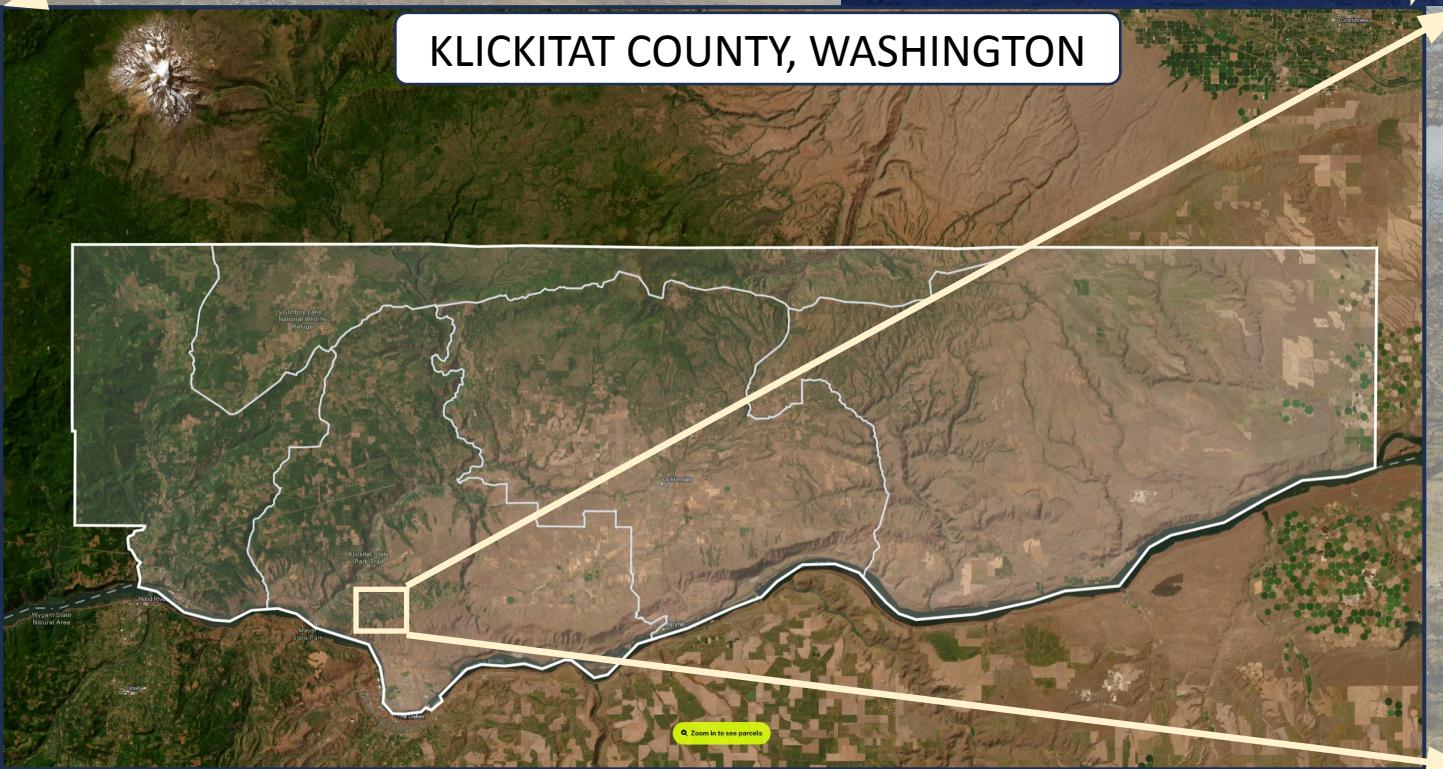


Washington Department of  
**FISH & WILDLIFE**

DecisionES, Porto Seguro, Brazil – July 3, 2025

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# The Problem



# THE MODEL – decision variables

The decision: Which primary and secondary habitat patches should be selected for prioritization?

Decision variables:

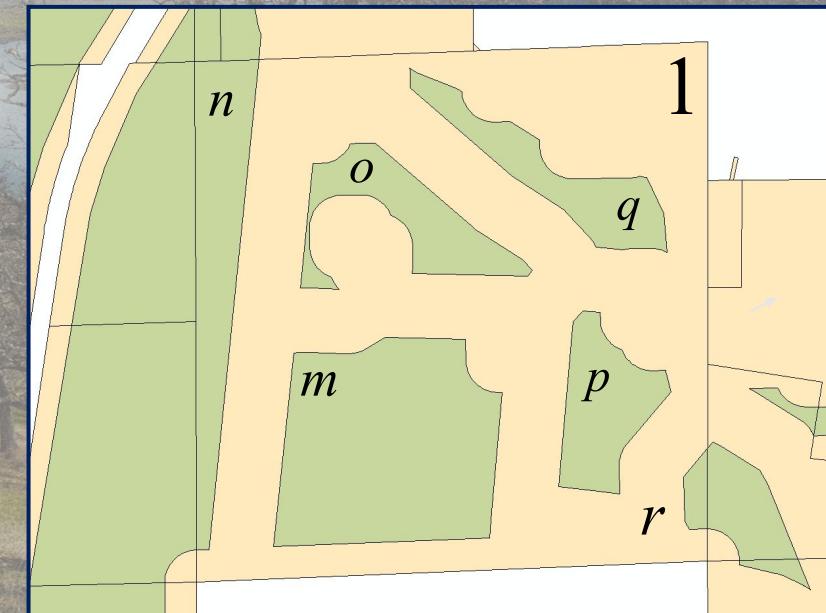
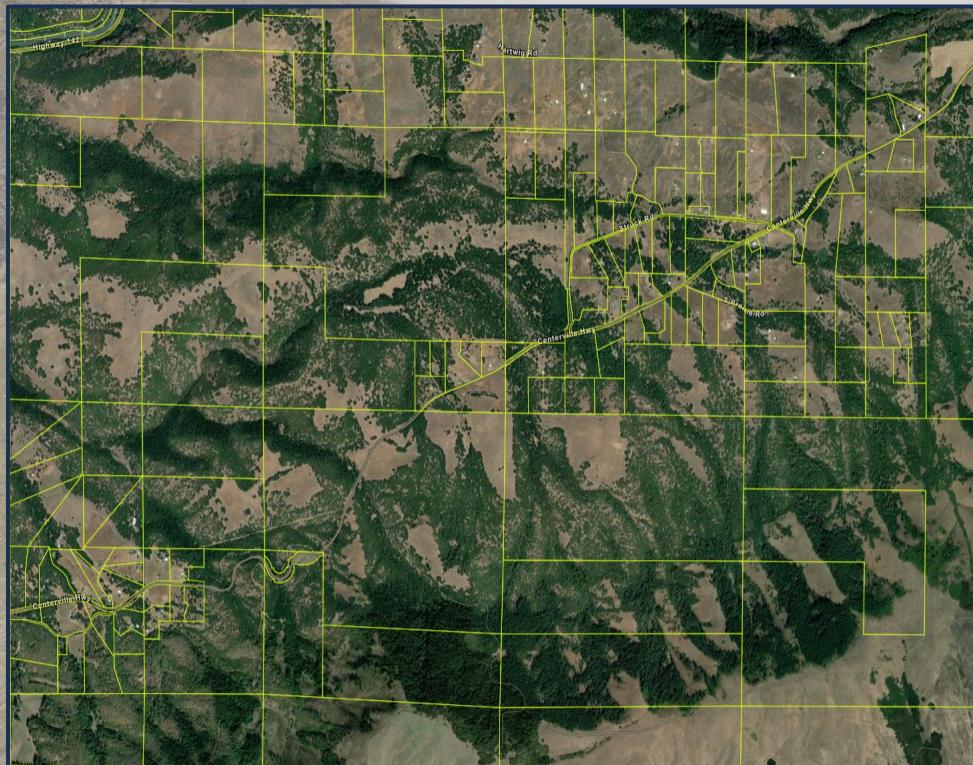
Primary Patch ID

$$x_{\underline{4} \underline{14}} = \begin{cases} 1 & [\text{select Patch #14 in support of Primary Patch #4}] \\ 0 & [\text{don't select Patch #14 in support of Parcel/Patch #14}] \end{cases}$$



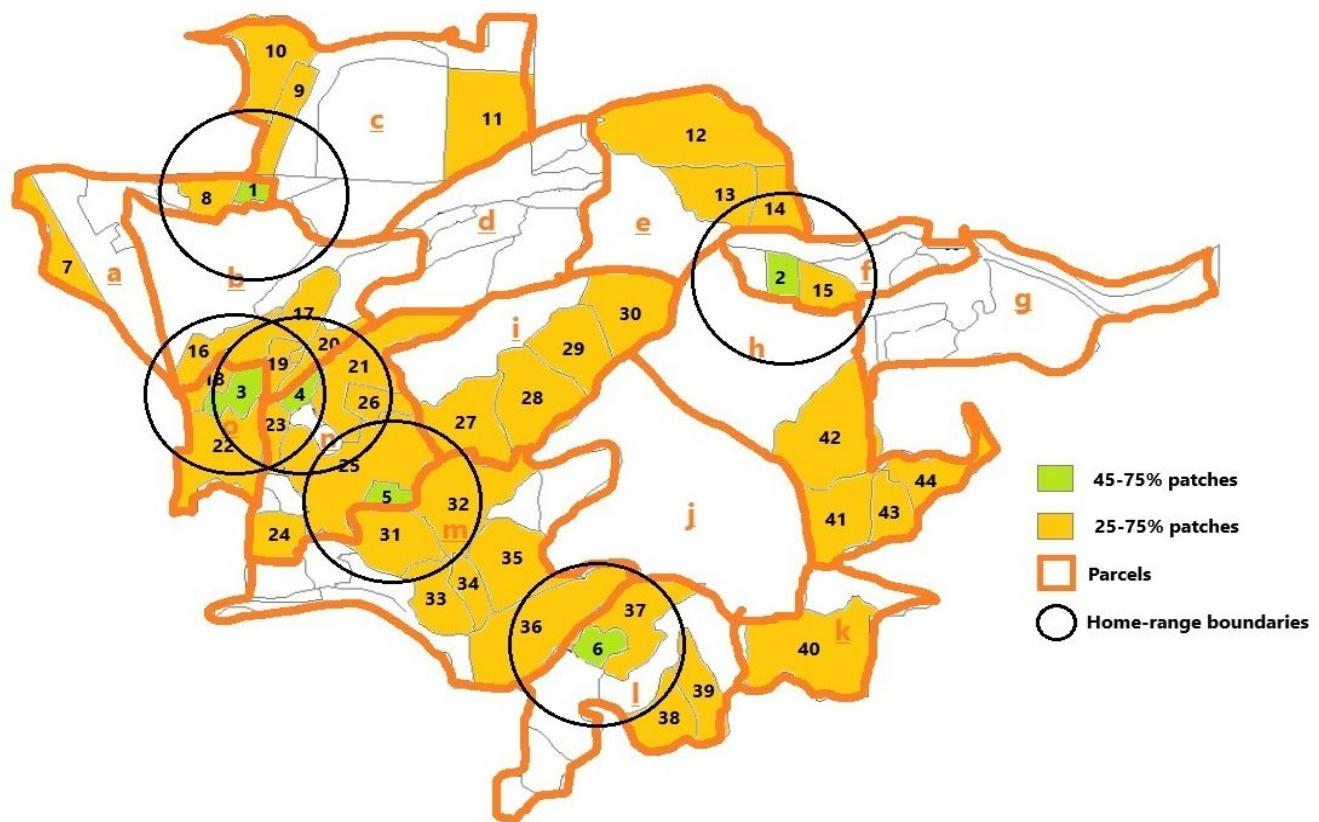
# THE MODEL – constraints

1. *WA Dept. of Fish & Wildlife can only work with 50 landowners and habitat patch- & ownership boundaries don't necessarily line up:*

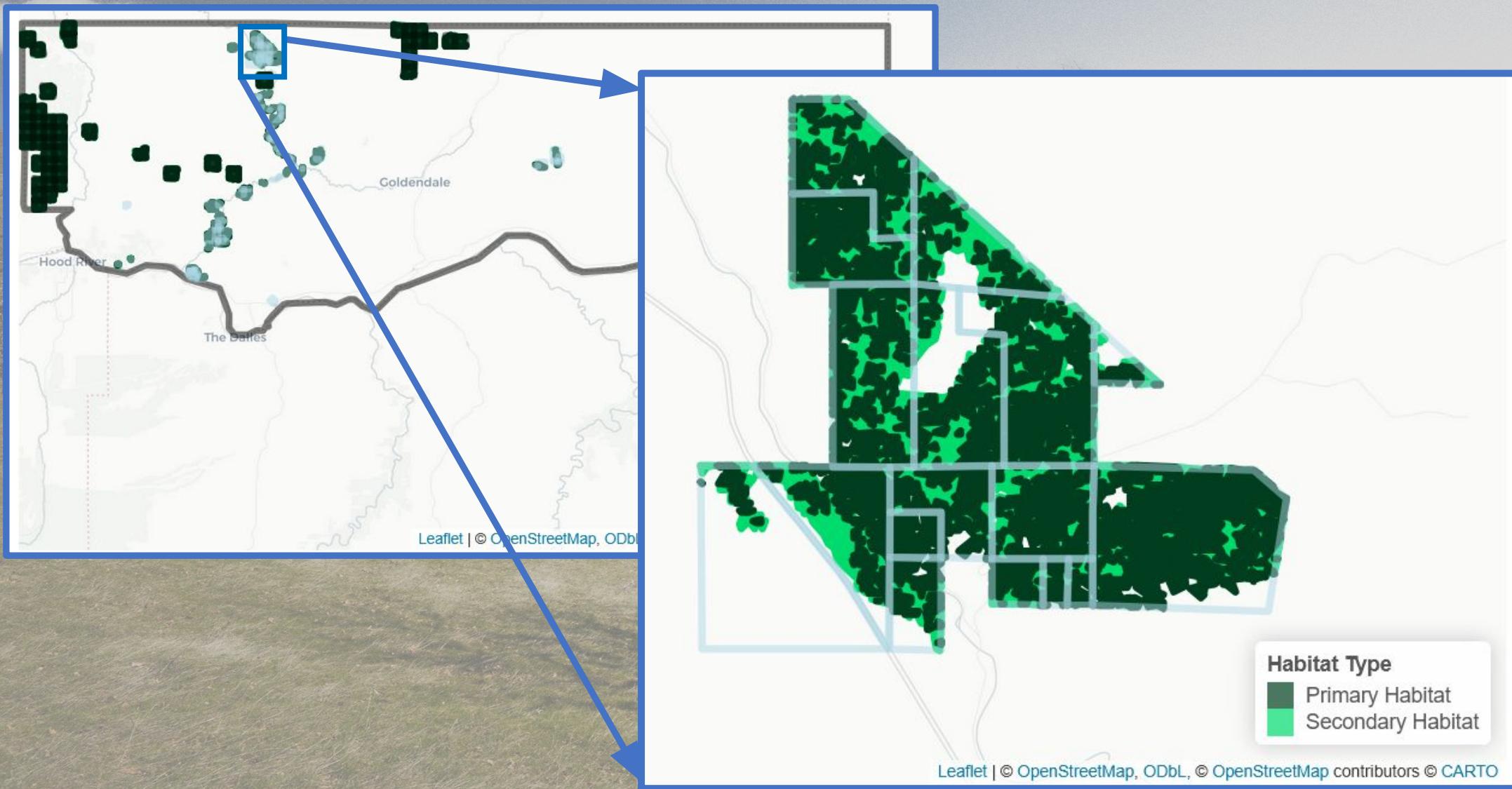


# THE MODEL – constraints (cont.)

2. *Squirrel home ranges must comprise at least 22 ha contiguous habitat and at least 5 ha of each home range must be primary habitat,*
3. *Home ranges must be connected*



# THE SOLUTION



# QUESTIONS?

