# Spatial Capture Recapture Interpretation and Designs

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# Our first study area?



# Spatial Capture Recapture Estimates

Coefficients						
	beta	SE	lcl	ucl		
D	-4.53	0.24	-5.00	-4.05		
lambda0	2.75	0.08	2.59	2.90		
sigma	5.73	0.03	5.67	5.79		
Parameter Estimates						
	link	Estimate	SE	Icl	ucl	
D	log	0.01	0.0026	6.71e-03	18e-03	
lambda0	Log	15.57	1.22	13.4	18.14	
sigma	Log	308.69	9.41	2.91E+02	327.69	
Abundance Estimate						
	estimate	SE.estimate	lcl	ucl	n	
Abundance	25.39	3.75	20.63	36.346	17	



• Detection Probability (or Encounter rate) at activity centers

- 15.57 (95% CI: 13.4 - 18.14)



 Detection Probability (or Encounter rate) at activity centers

- 15.57 (95% CI: 13.4 - 18.14)





# Data requirements

Multiple encounters to build detection functions

 Several snow leopards encountered on more than one unit

# Let's take the message to snow leopards



### Random distribution

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### **Random distribution**



### Scenario 1: large sampling frame Ħ ⊞¥ Ħ H × Ð, Ħ H ⊞ ⊞ ⊞ Ð H = ×

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# Scenario 1: large sampling frame



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# Scenario 1: large sampling frame





# Scenario 2: Small sampling frame





# Scenario 3: Intermediary sampling frame



# Scenario 3: XXREMOVEXX

# Intermediary sampling frame





# Scenario 4: Clustered sampling frame



# What if we had traps everywhere



# What do the four scenarios show?



### Effective sampling





# What are we estimating?

- Activity Centers (number of animals)
- Activity Range (How far animals range)
- Encounter Rate (How many encountered at activity center)

# What is our sampling unit?

- Number of snow leopards
- Number of encounters
- Number of distances





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How do we reduce errors?

# What is our sampling unit?

- Number of snow leopards
- Number of encounters
- Number of distances





How do we reduce errors?

- Increase samples
- Stratify
- Model

# Sampling advisory

- Exclude areas not represented or used by snow leopards from integration area
- Survey long-enough to get several encounters
- Use enough traps to get several encounters of several animals on several traps

# What if...

• Not enough snow leopards?

# What if...

• Not enough cameras

# What if...

Not enough identifiable encounters