

$N_1 = 100 \text{ units} + \text{Mark}$

$N_2 = 100 \text{ units} \text{ } 50 \text{ mark}$

Pop estimate 200 units in there

$$C_{\text{post}} = \frac{50}{100} = .5 = 200$$

5 nights unique marks

- ASSESS Species
Age class
Sex

probability
Heterogeneous over
time

Sample Size to observe
Variation in Heterogeneity of trap
response?
^{assess}

- Simulation

Classic "Ovu" Problem

N animals total

M marked

n sample size

m ? # marked
in the sample

$$P(\textcircled{m} | \overset{\uparrow}{N}, \textcircled{M}, \textcircled{n}) =$$

$$\frac{M!}{m! (M-m)!} \frac{(N-M)!}{(n-m)! (N-M-n+m)!}$$

$$\frac{N!}{m! (N-m)!}$$

Bootstrapable

Gamma Function

$$\Gamma(n) \equiv (n-1)!$$

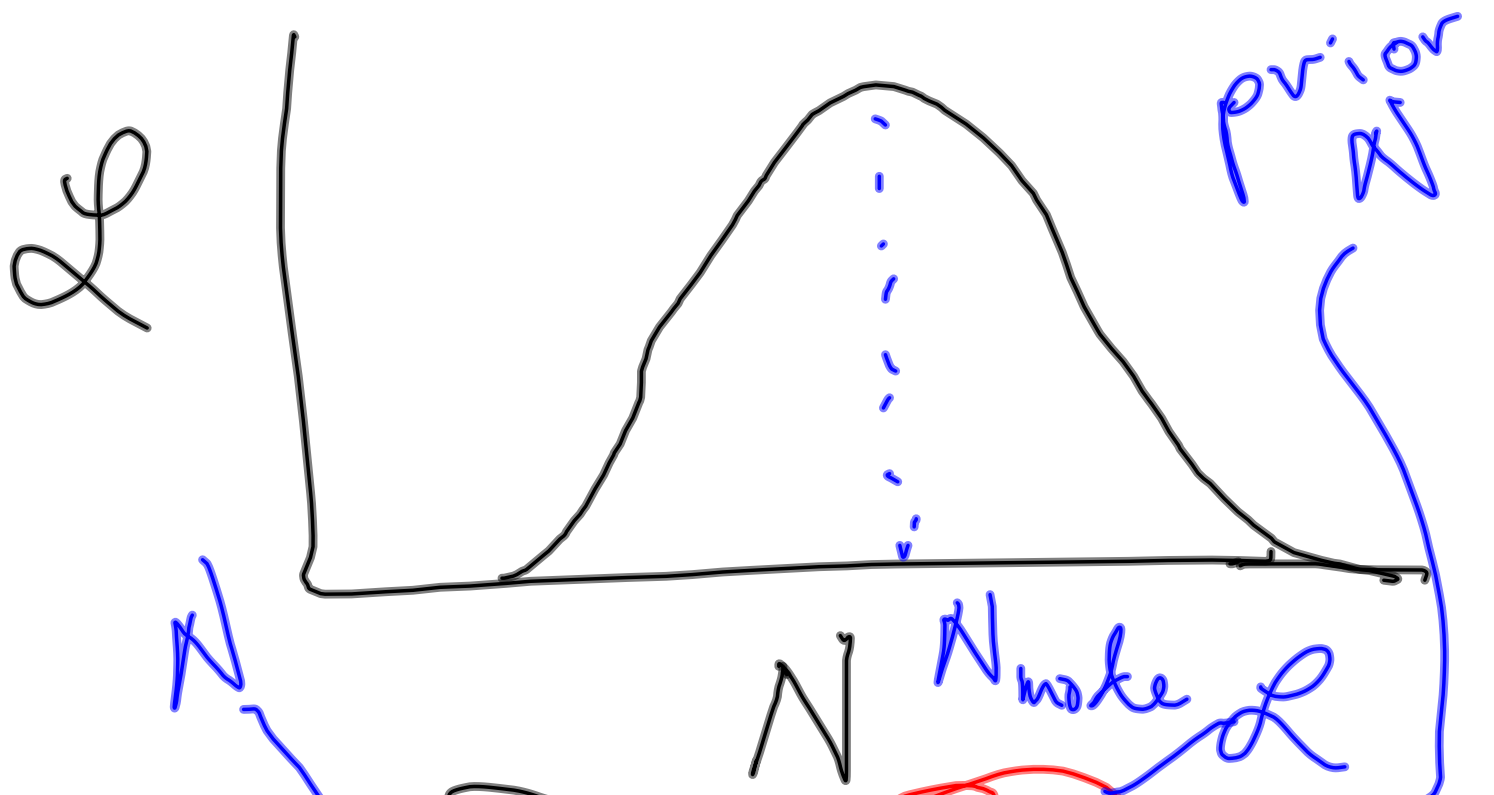
Log Gamma

$P(m | N, M, n) =$ unknown parameter

data (pointing to m)

$$\frac{M!}{m! (M-m)!} \frac{(N-M)!}{(n-m)! (N-M-n+m)!}$$

$$= \mathcal{L} \frac{N!}{m! (N-m)!}$$



Bayes Formula

$$p(\theta|y) = \frac{p(y|\theta)p(\theta)}{p(y)}$$

Annotations: A red circle highlights $p(\theta|y)$ with an arrow labeled 'm'. A red circle highlights $p(y|\theta)$ with an arrow labeled 'N'. A blue circle highlights $p(\theta)$ with an arrow labeled 'N make of ℓ'. The denominator $p(y)$ is crossed out with a blue line.