

Power Analysis

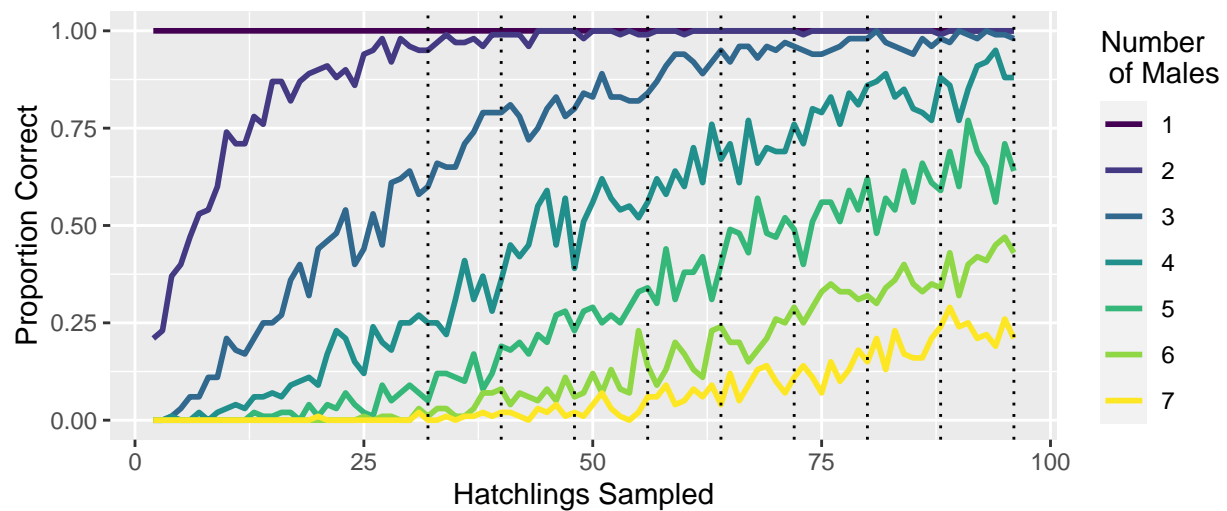
Question 1: How many hatchlings should be sampled from a nest to robustly estimate the number of males that contributed to it?

assuming one dominant sire that fertilizes 90% of eggs

```
source('hatchlings_to_sample.R')

hatchlings_to_sample(n_hatchlings = 100,
  max_hatchlings = 96,
  max_males = 7,
  breeding = 'dominant',
  n_sims = n_sims,
  dom = 0.9,
  n_sizes = c(32, 40, 48, 56, 64, 72, 80, 88, 96))
```

[[1]]



##

[[2]]

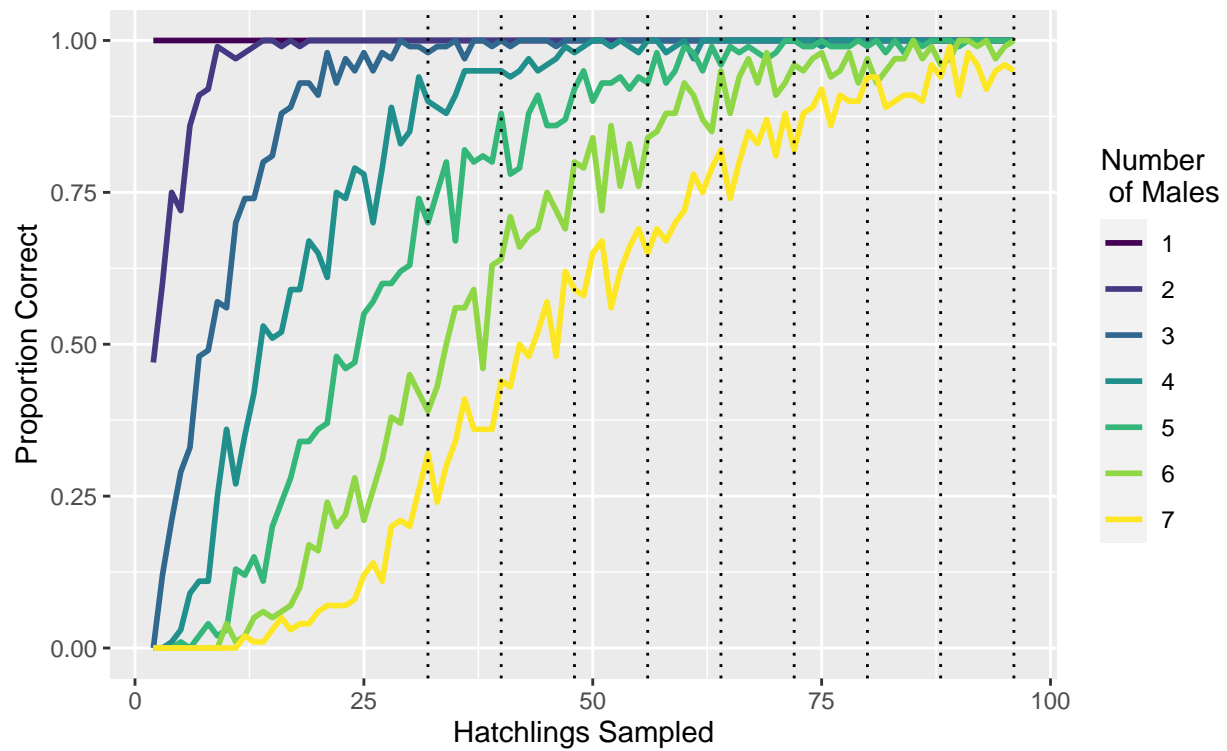
##	Males	32	40	48	56	64	72	80	88	96
## 1	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
## 2	2	0.95	0.99	1.00	0.99	1.00	1.00	1.00	0.99	1.00
## 3	3	0.60	0.79	0.80	0.84	0.95	0.96	0.98	0.98	0.98
## 4	4	0.25	0.36	0.39	0.56	0.67	0.76	0.86	0.88	0.88
## 5	5	0.05	0.19	0.23	0.34	0.40	0.49	0.62	0.59	0.64
## 6	6	0.01	0.08	0.06	0.14	0.24	0.29	0.32	0.34	0.43
## 7	7	0.00	0.02	0.02	0.06	0.04	0.11	0.15	0.24	0.21

assuming one dominant sire that fertilizes 70% of eggs

```
source('hatchlings_to_sample.R')

hatchlings_to_sample(n_hatchlings = 100,
  max_hatchlings = 96,
  max_males = 7,
  breeding = 'dominant',
  n_sims = n_sims,
  dom = 0.7,
  n_sizes = c(32, 40, 48, 56, 64, 72, 80, 88, 96))
```

```
## [[1]]
```



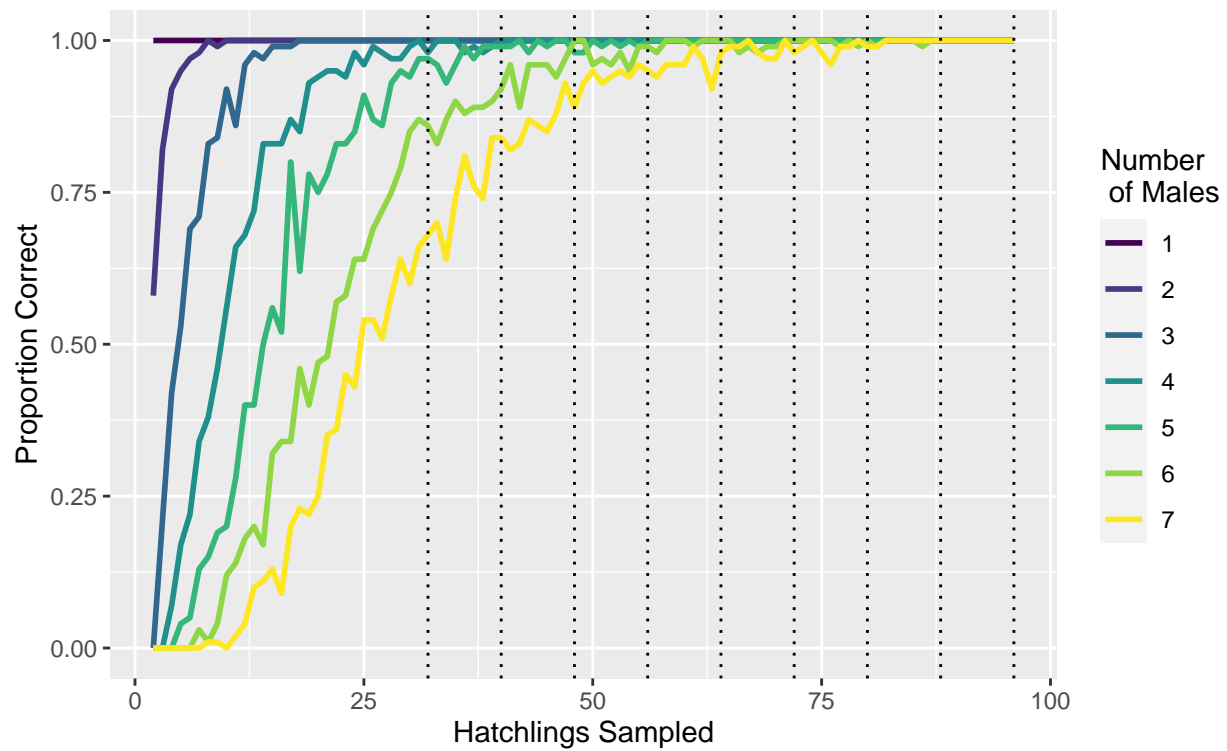
```
##
## [[2]]
## Males 32 40 48 56 64 72 80 88 96
## 1 1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
## 2 2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
## 3 3 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
## 4 4 0.90 0.95 0.98 1.00 1.00 1.00 1.00 1.00 1.00
## 5 5 0.70 0.88 0.92 0.93 0.96 1.00 0.99 1.00 1.00
## 6 6 0.39 0.64 0.80 0.84 0.95 0.96 0.97 0.96 1.00
## 7 7 0.32 0.44 0.59 0.65 0.82 0.82 0.94 0.94 0.95
```

assuming one dominant sire that fertilizes 50% of eggs

```
source('hatchlings_to_sample.R')

hatchlings_to_sample(n_hatchlings = 100,
  max_hatchlings = 96,
  max_males = 7,
  breeding = 'dominant',
  n_sims = n_sims,
  dom = 0.5,
  n_sizes = c(32, 40, 48, 56, 64, 72, 80, 88, 96))
```

```
## [[1]]
```



```
##
## [[2]]
## Males 32 40 48 56 64 72 80 88 96
## 1 1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1 1
## 2 2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1 1
## 3 3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1 1
## 4 4 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1 1
## 5 5 0.97 0.99 0.98 1.00 1.00 1.00 1.00 1 1
## 6 6 0.86 0.92 1.00 0.99 1.00 1.00 1.00 1 1
## 7 7 0.68 0.84 0.89 0.95 0.98 0.98 0.99 1 1
```