

Testing northern bobwhite reintroduction techniques in the northern edge of their range

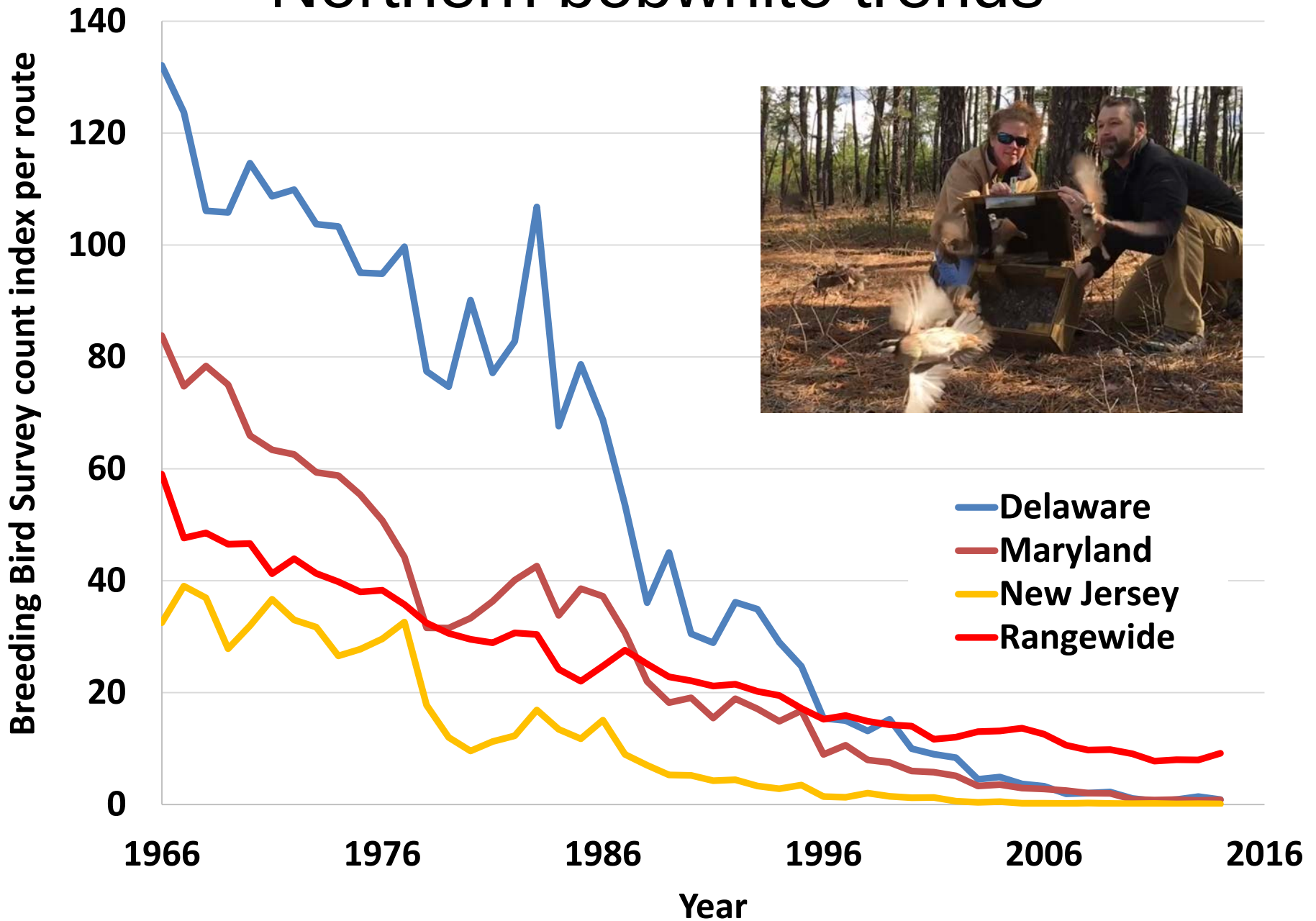
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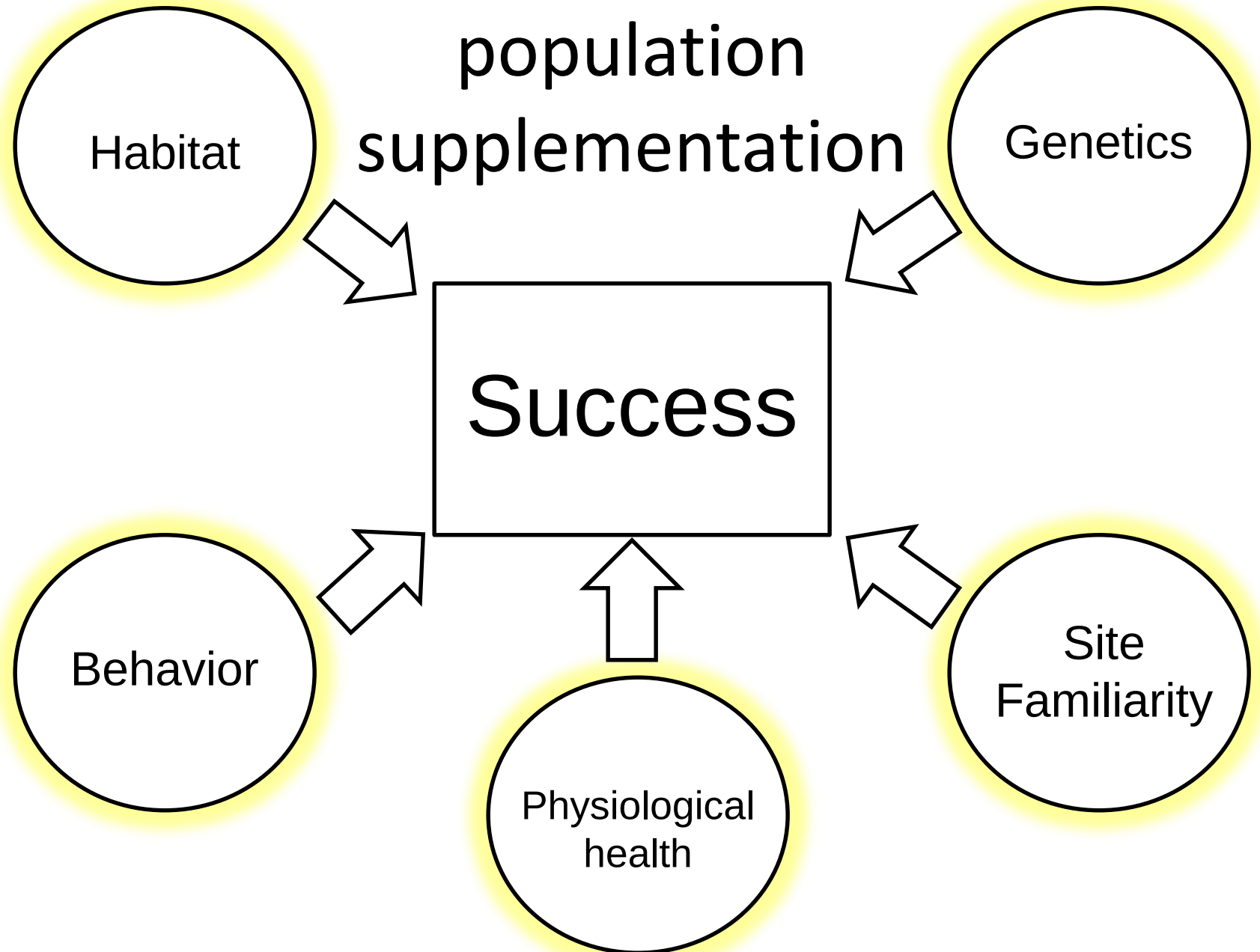
²Tall Timbers Research Station



Northern bobwhite trends



Factors contributing to the success of population supplementation



Genetics

- Given time, captive bred animals deviate from the wild genotype
 - Game-farm quail have less genetic variability than wild or semi-wild quail (Ellsworth et al. 1988)
- Lack of genetic variability or changes in phenotype can hamper reintroduction efforts
- Regional mismatch between translocated and released populations

Behavior

- Early learning develops several key behavioral traits
 - Sexual selection
 - Predator recognition/avoidance
 - Recognition of alarm calls
 - Food selection
 - Parenting skills

Physiological Health

- Stress from captivity, transportation, or release places animals at a disadvantage
- Chronic stress can lead to immune system suppression, increased disease, reduced reproductive capacity, and diminished fight-flight response

Site Familiarity/Fidelity

- Animals that disperse away from the release site may encounter
 - Less suitable habitat
 - Increased predation rates
 - Less likely to encounter conspecifics
 - Reduced reproductive success

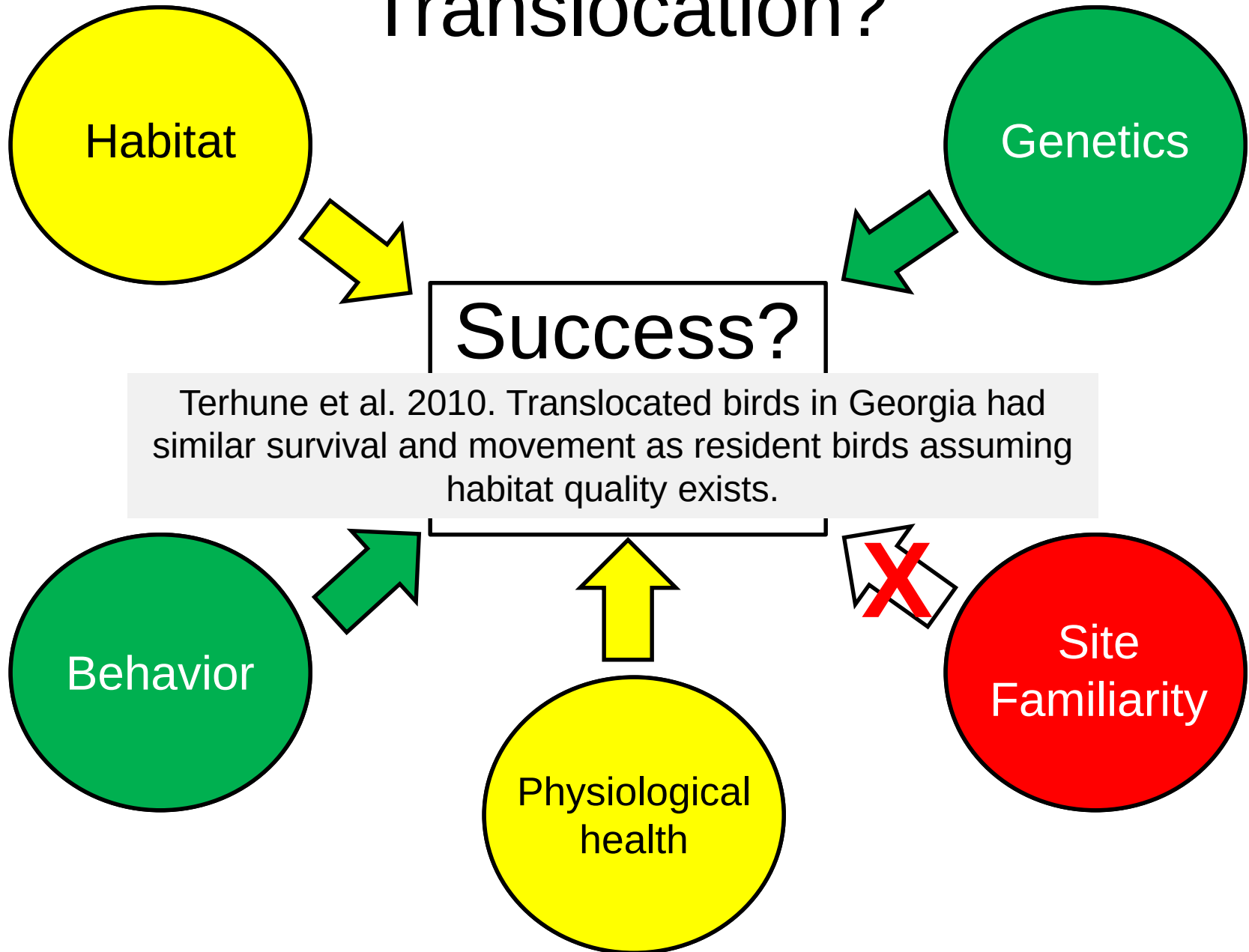
Potential Reintroduction Methods

- Translocation



Photo: www.talltimbers.org

Translocation?



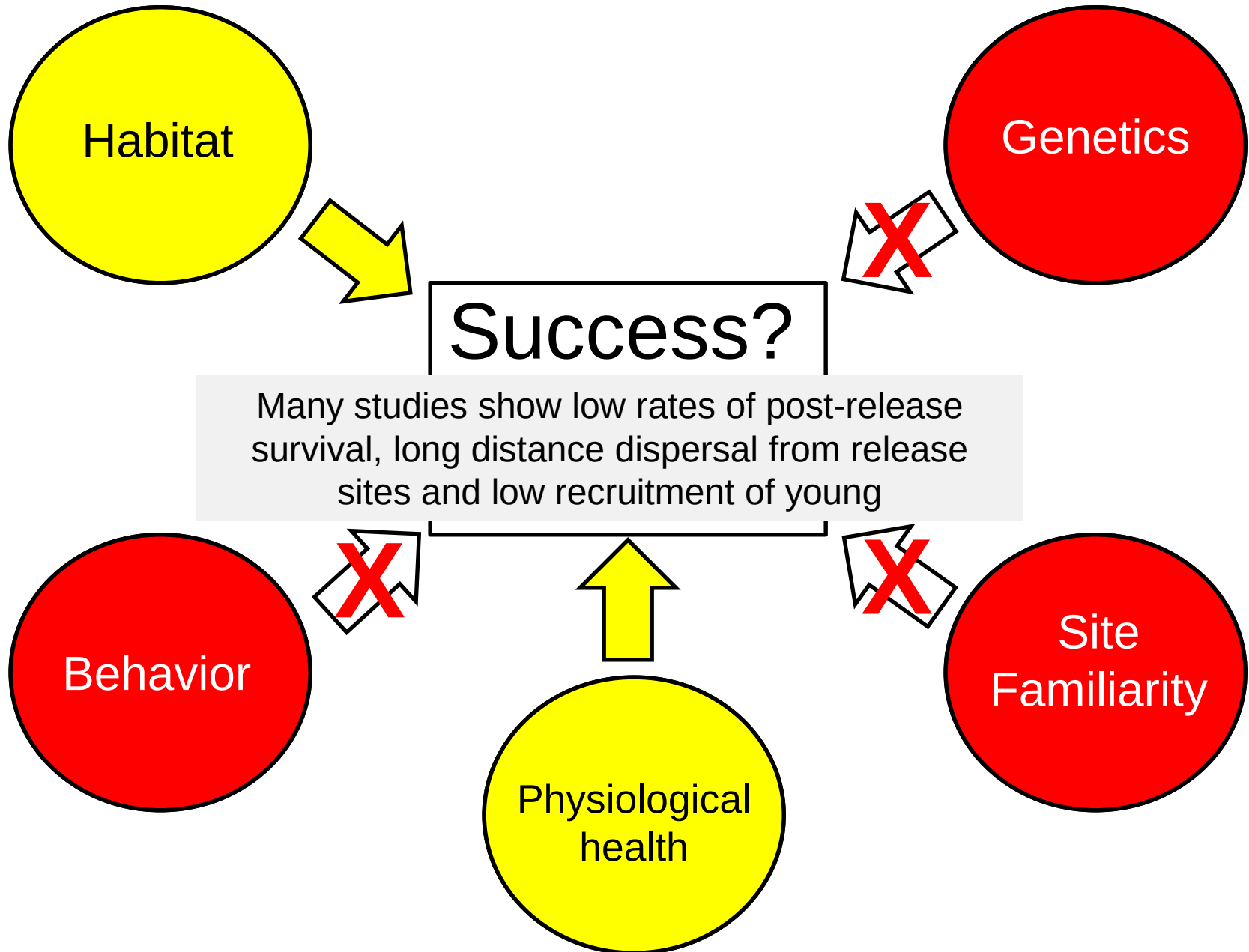
Potential Reintroduction Methods

- Release of pen-reared bobwhites



Photo: www.pointinggundogs.com and www.smithtownmatters.com

Release of pen-reared bobwhites?

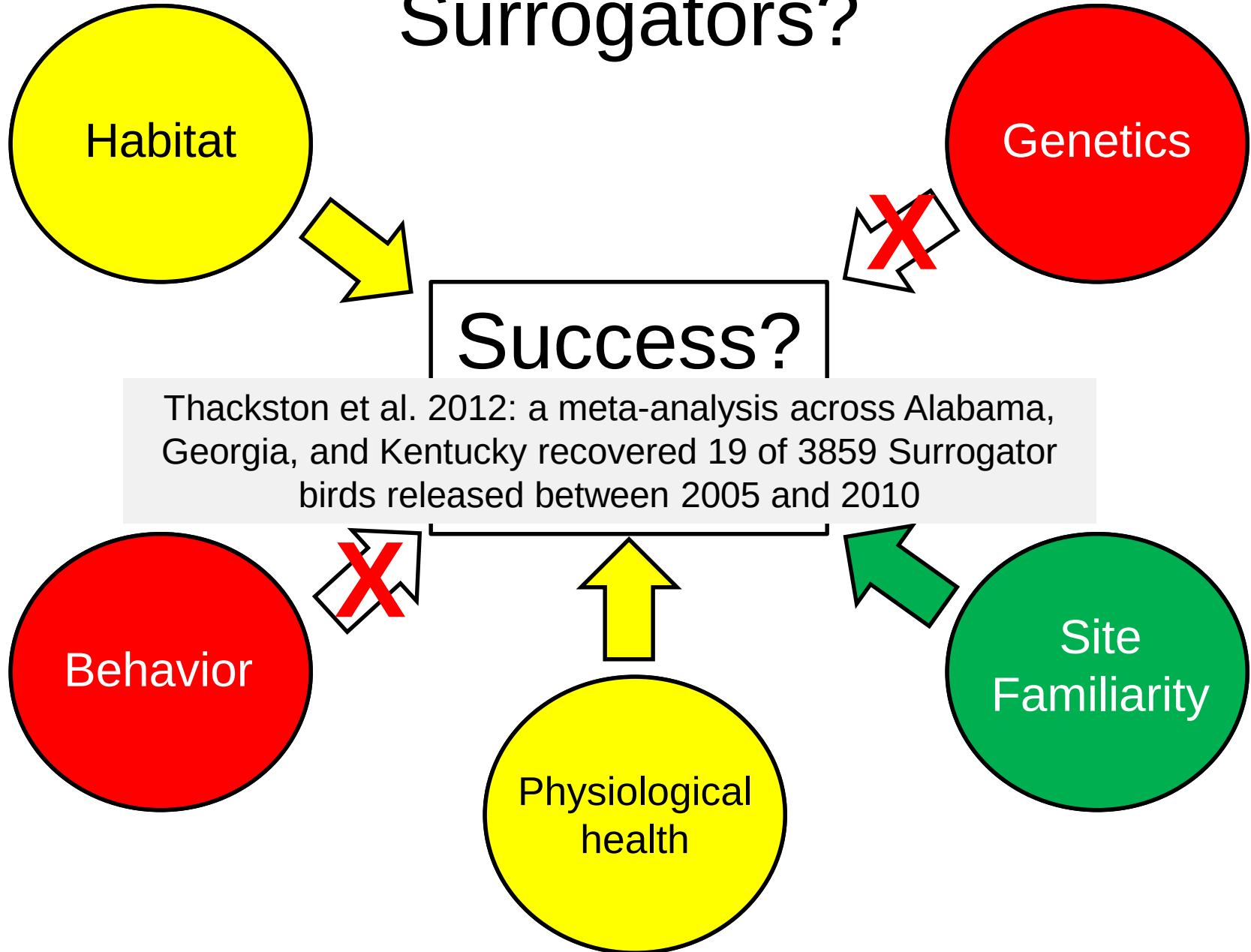


Potential Reintroduction Methods

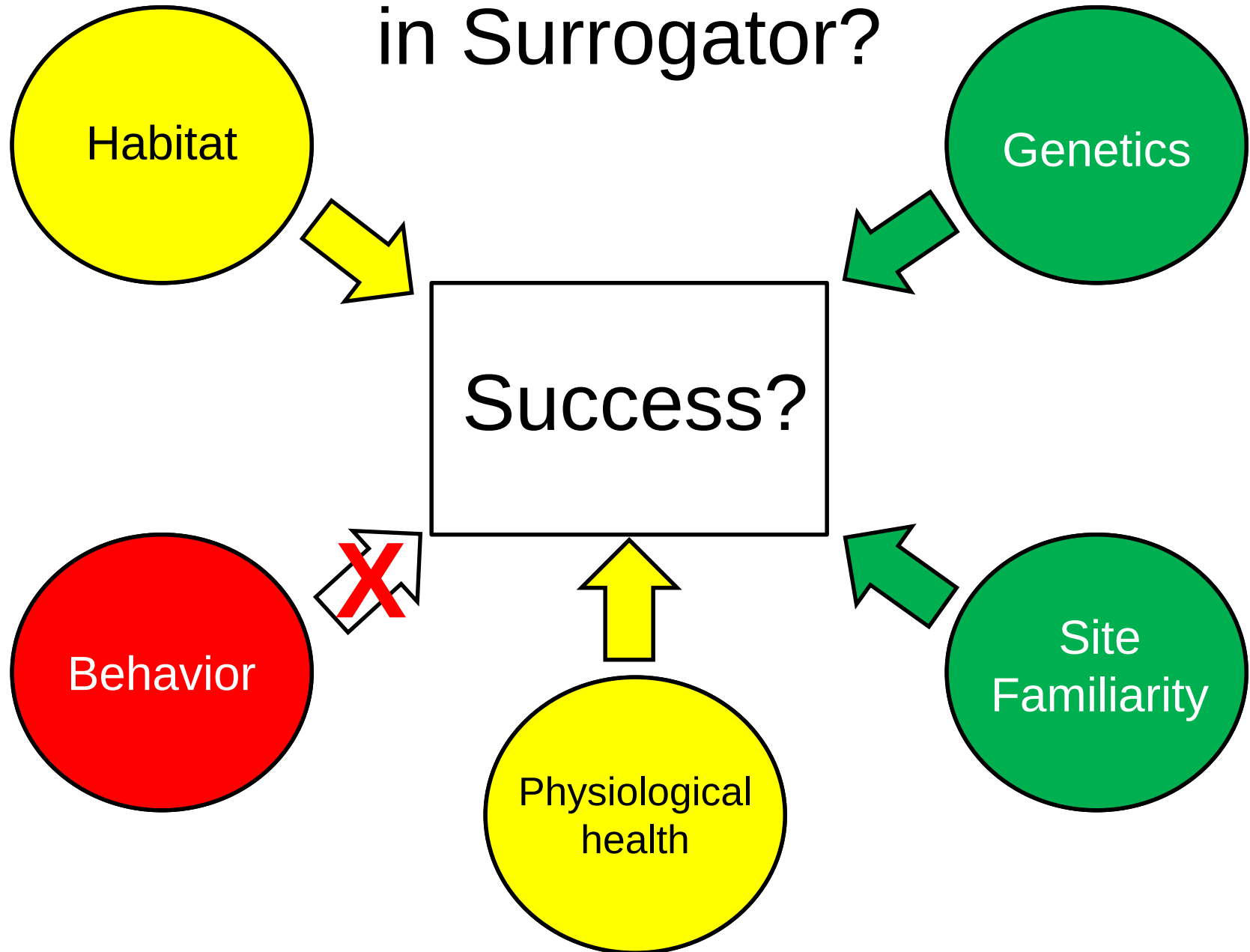
Surrogators



Surrogators?



What if wild strain chicks were used in Surrogator?



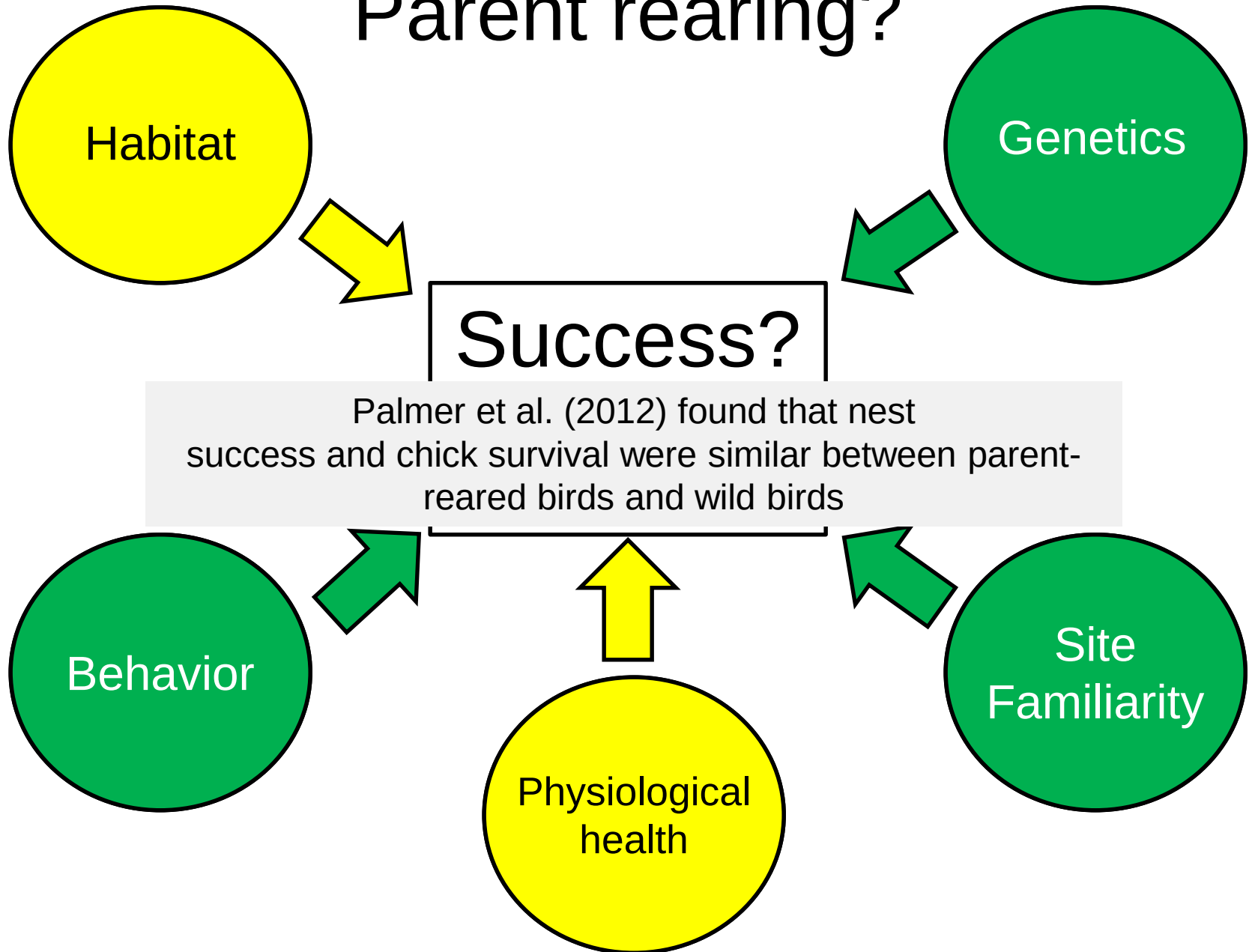
Potential Reintroduction Methods

- Parent-rearing method for bobwhites that includes prenatal and postnatal learning.



Photo: David Poole

Parent rearing?

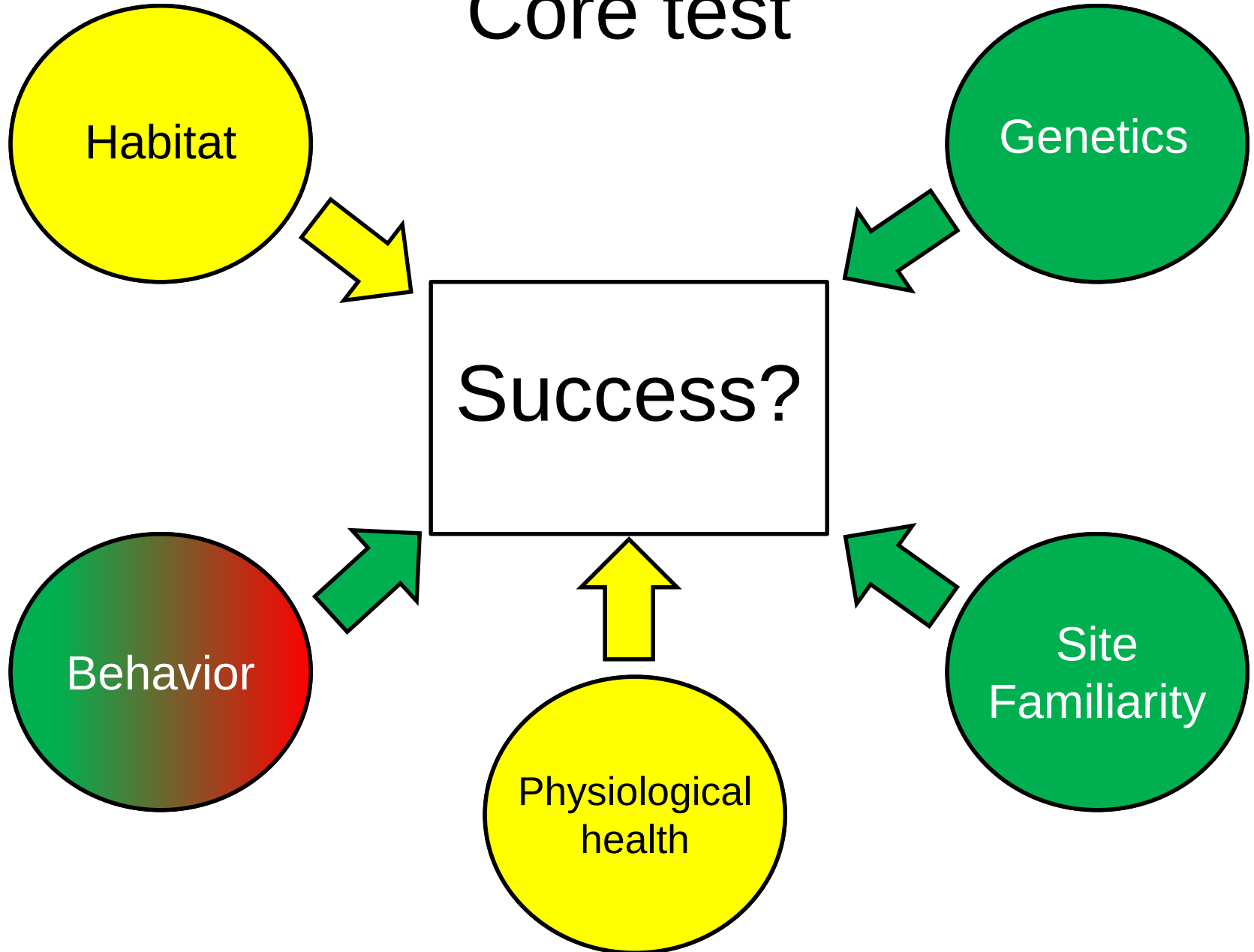


Objectives

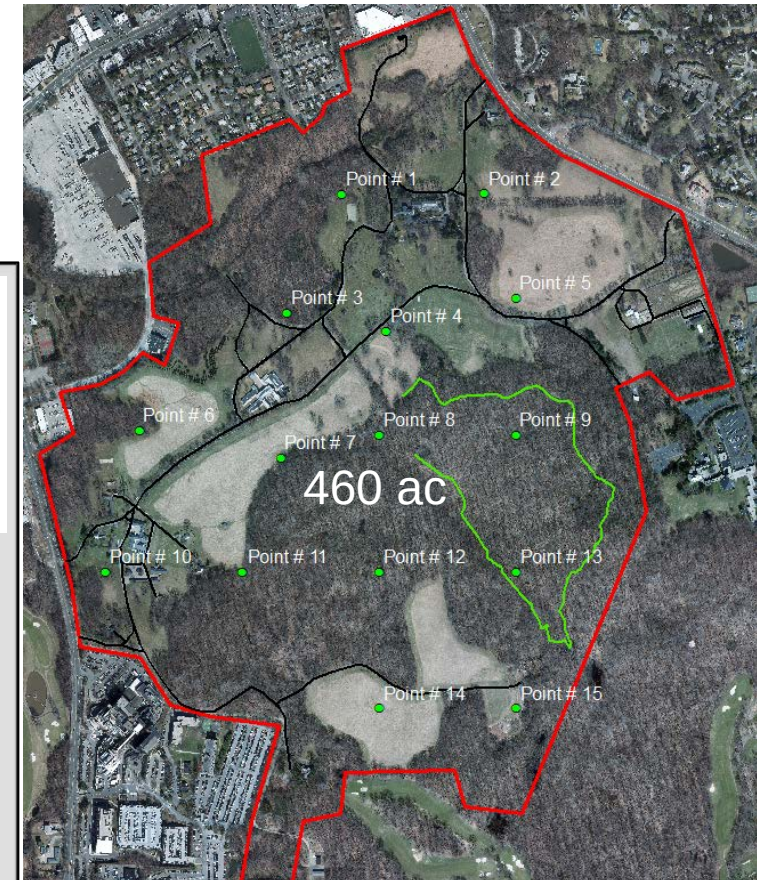
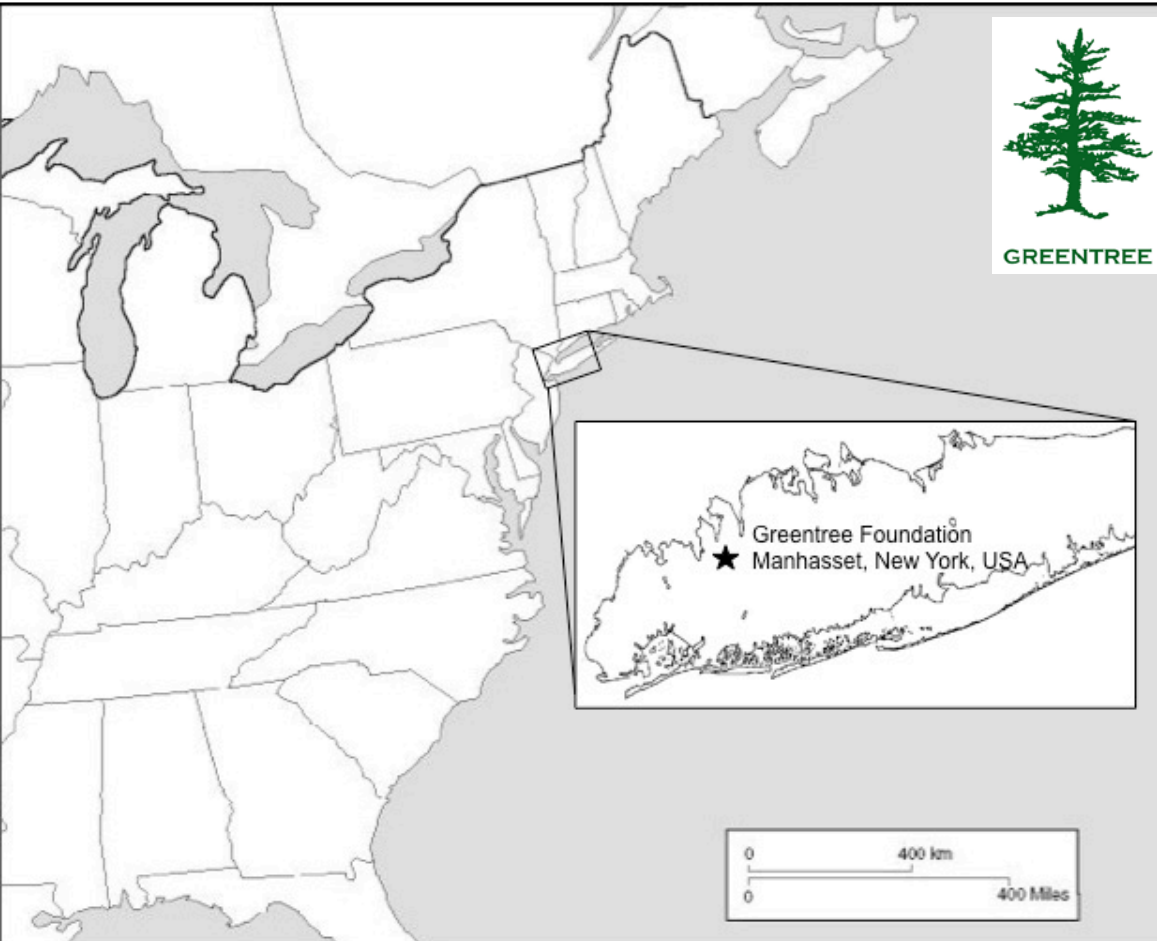
Compare parent-rearing versus Surrogator (WITH same wild strain chicks) young survival. Directly tests the behavior bubble for successful bobwhite reintroduction efforts.

Secondarily, pay attention to 1) body mass at release date as a proxy for the effect of physiological health on post-release survival, and 2) different release dates for optimal functional effectiveness.

Core test



Study Area



Methods

- 3 trials during June, July, and September 2013 and 2014 using 2 paired Surrogators/outdoor rearing pens placed 1.5 km apart.
- We obtained “wild-strain” eggs from Quail Call Farms, Beachton, Florida



~1/2 of eggs were incubated separately
and placed in Surrogator at 1 day old



2nd 1/2 of eggs

- Approximately 36 hours prior to hatching, they were exposed to a recording of the calls hens produce on the nest when their chicks are hatching



- Chicks were imprinted to adult foster birds



Parent-Rearing Methodology



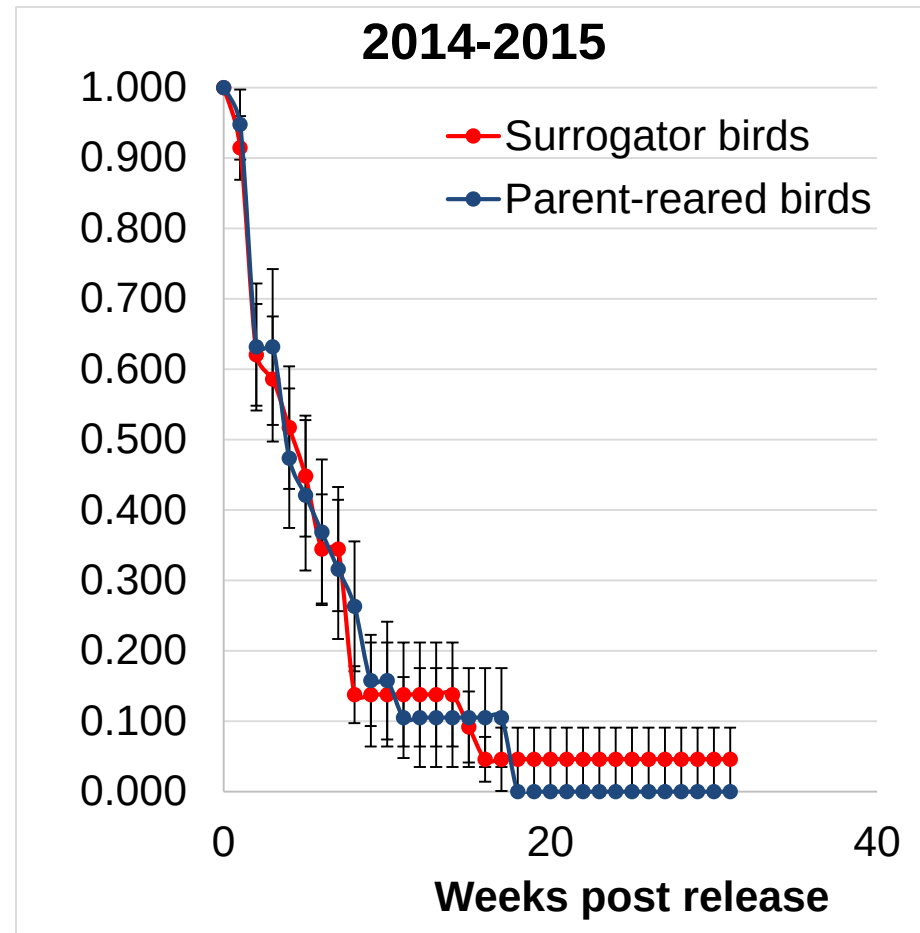
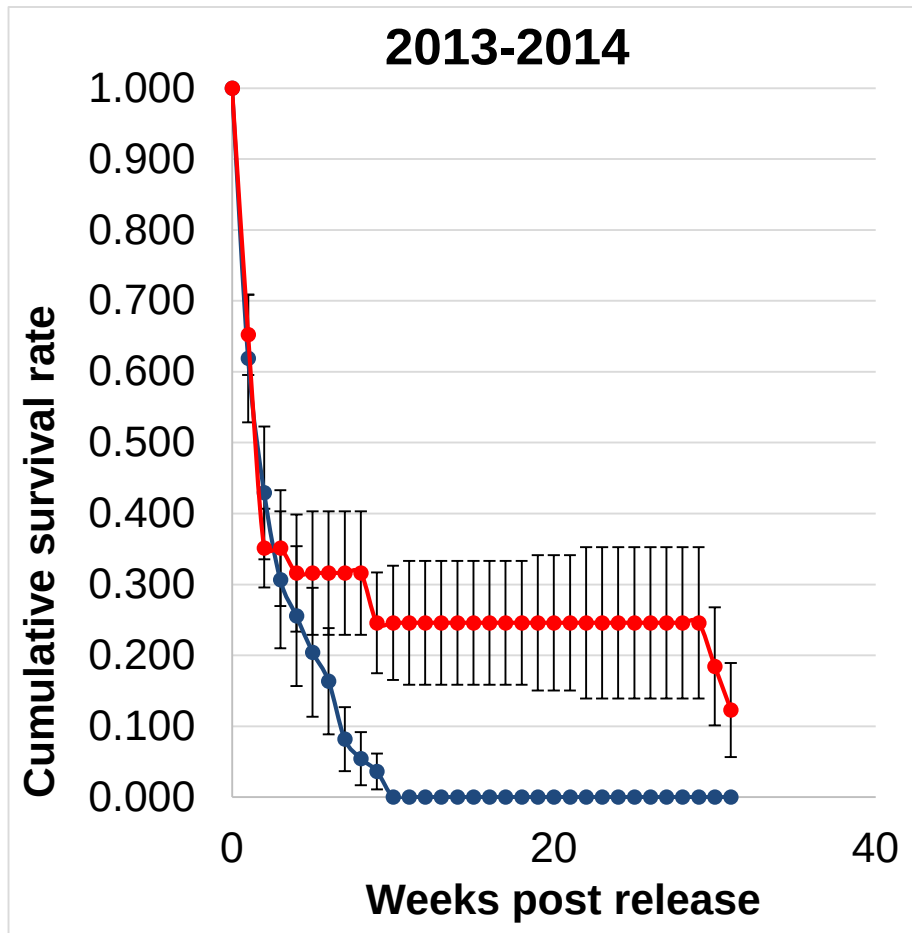
- After 5-weeks, all chicks were banded in both treatments
- Random subset of Surrogator birds were fitted with expanding radio-collar
- In parent rearing treatment, 2-3 birds per brood are fitted radiocollar
- Followed 5-7 times per week during nonbreeding season



Sample Sizes

[illegible]

Results



Average daily survival in Surrogators = 0.95 (95% CI = 0.84–1.0); thus predicting complete failure by 105 days. Better than 0.92 found in Kinsey et al. 2012
Surrogator birds in Texas... but still failure.

Cox Proportional Hazards Model

- Trial had the largest weight.
- But model average betas did not significantly differ from zero

Model	K	AICc	Δ AICc	AICc wt
Null	1	507.6	0.00	0.29
Trial (temporal)	2	508.3	0.66	0.21
Mass	2	509.5	1.87	0.11
Imprint	2	509.6	2.01	0.11
Mass + Trial	3	510.3	2.65	0.08
Imprint + Trial	3	510.4	2.73	0.07
Mass + Imprint	3	511.6	3.95	0.04
Trial x Year	4	511.9	4.25	0.03
Imprint + Trial + Mass	4	512.3	4.66	0.03
Imprint x Year	4	513.0	5.35	0.02
Imprint x Year + Trial	5	513.9	6.26	0.01
Imprint x Year + Trial + Mass	7	517.8	10.11	<0.01

If we squint, should we be thinking about time of release?

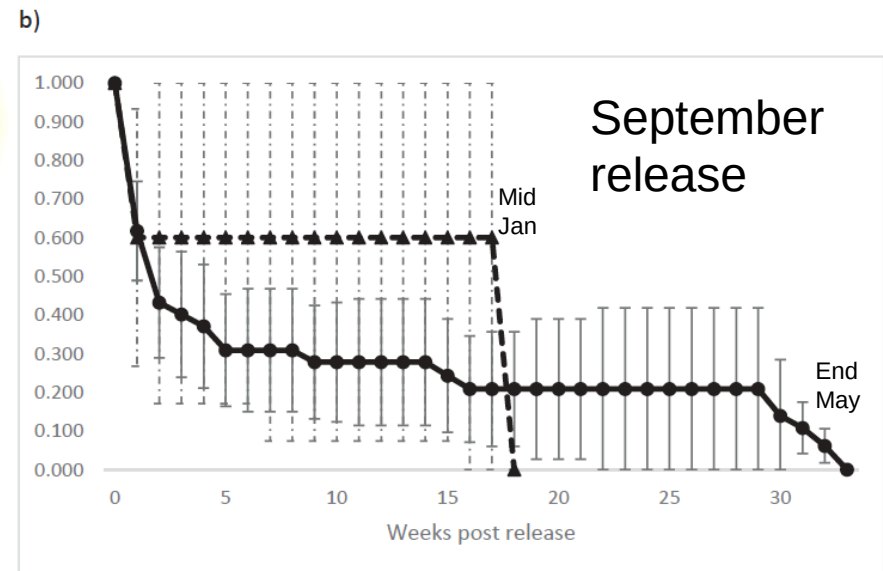
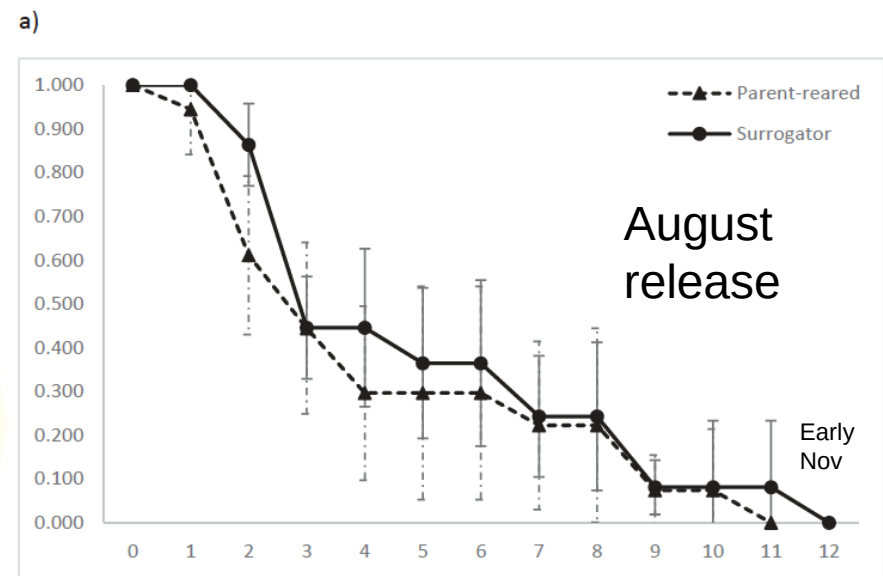
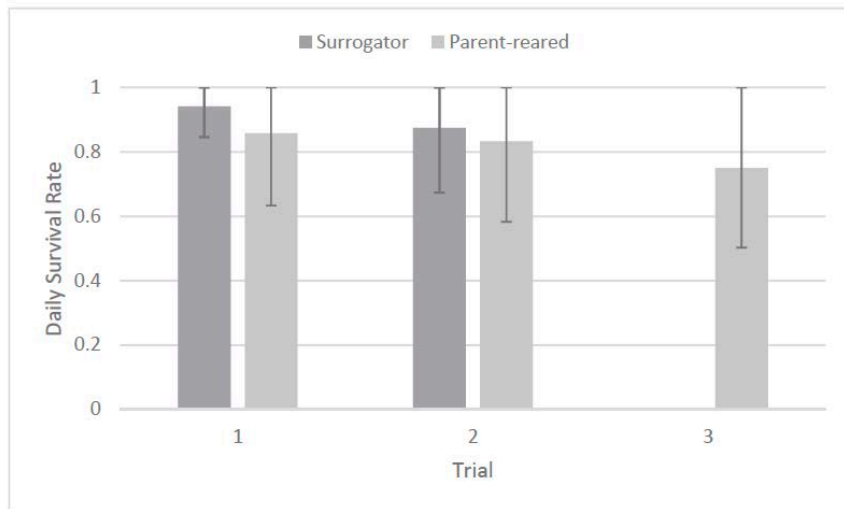
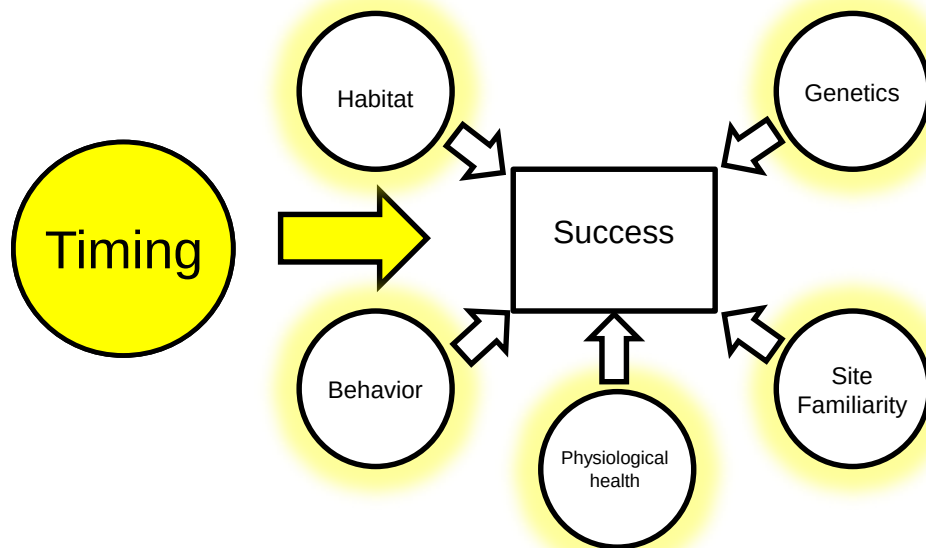
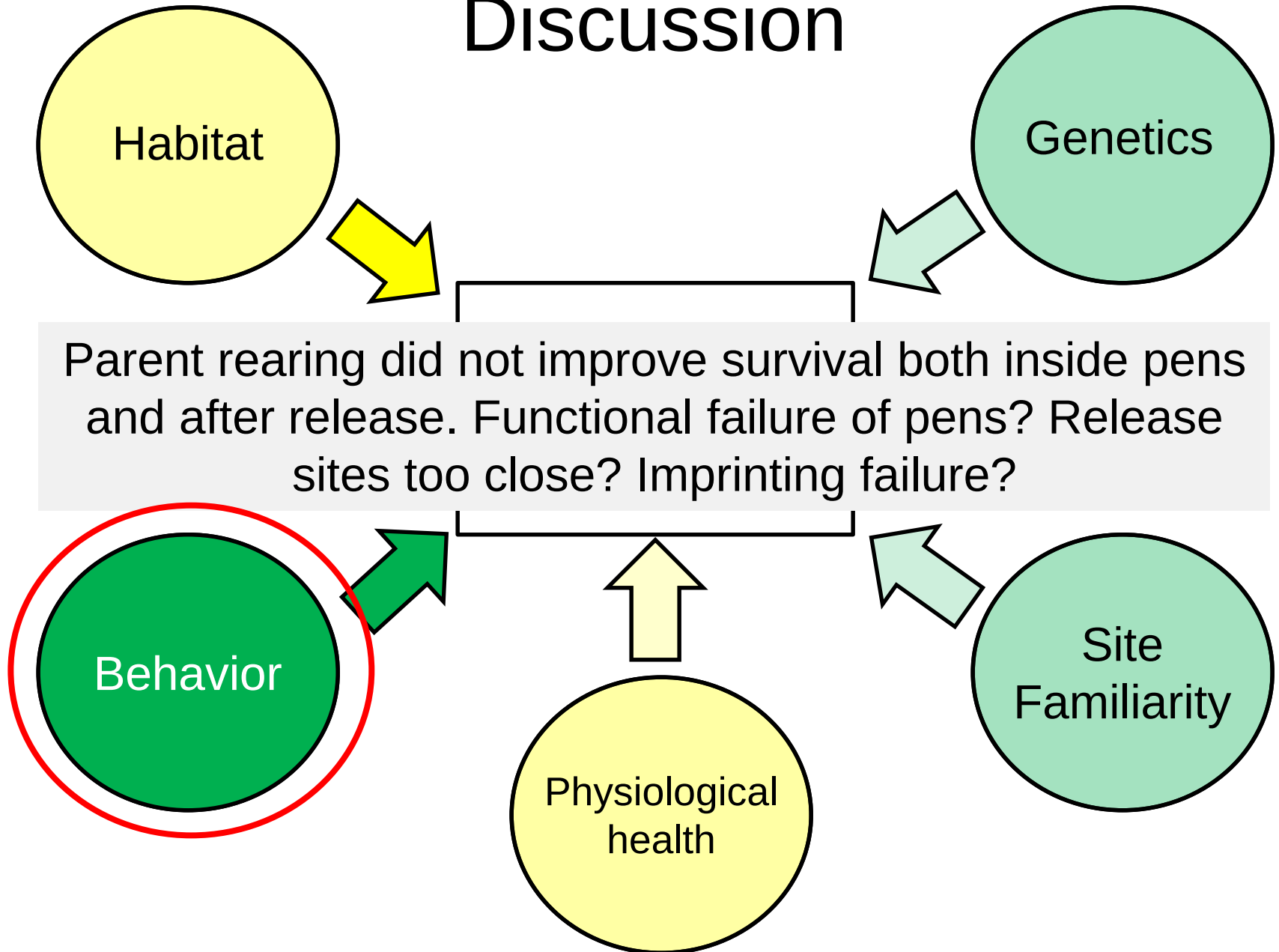
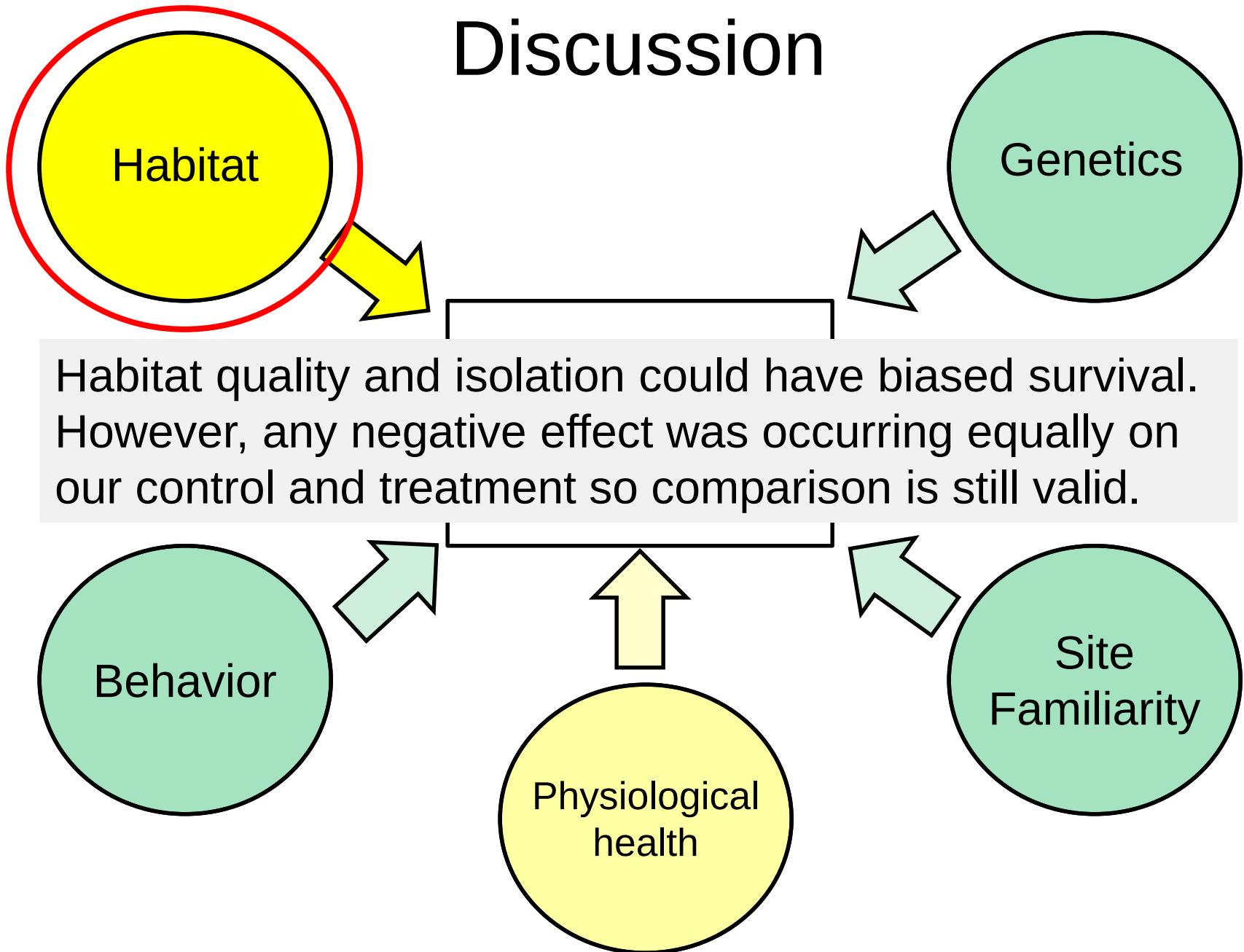


Fig. 2. Survival rates of radiocollared parent-reared and Surrogator northern bobwhite after release on the Greentree Foundation Property with 95% confidence intervals, Manhasset, New York, USA, comparing rates from birds released in the first (a) and second (b) trial per year, 2013–2015.

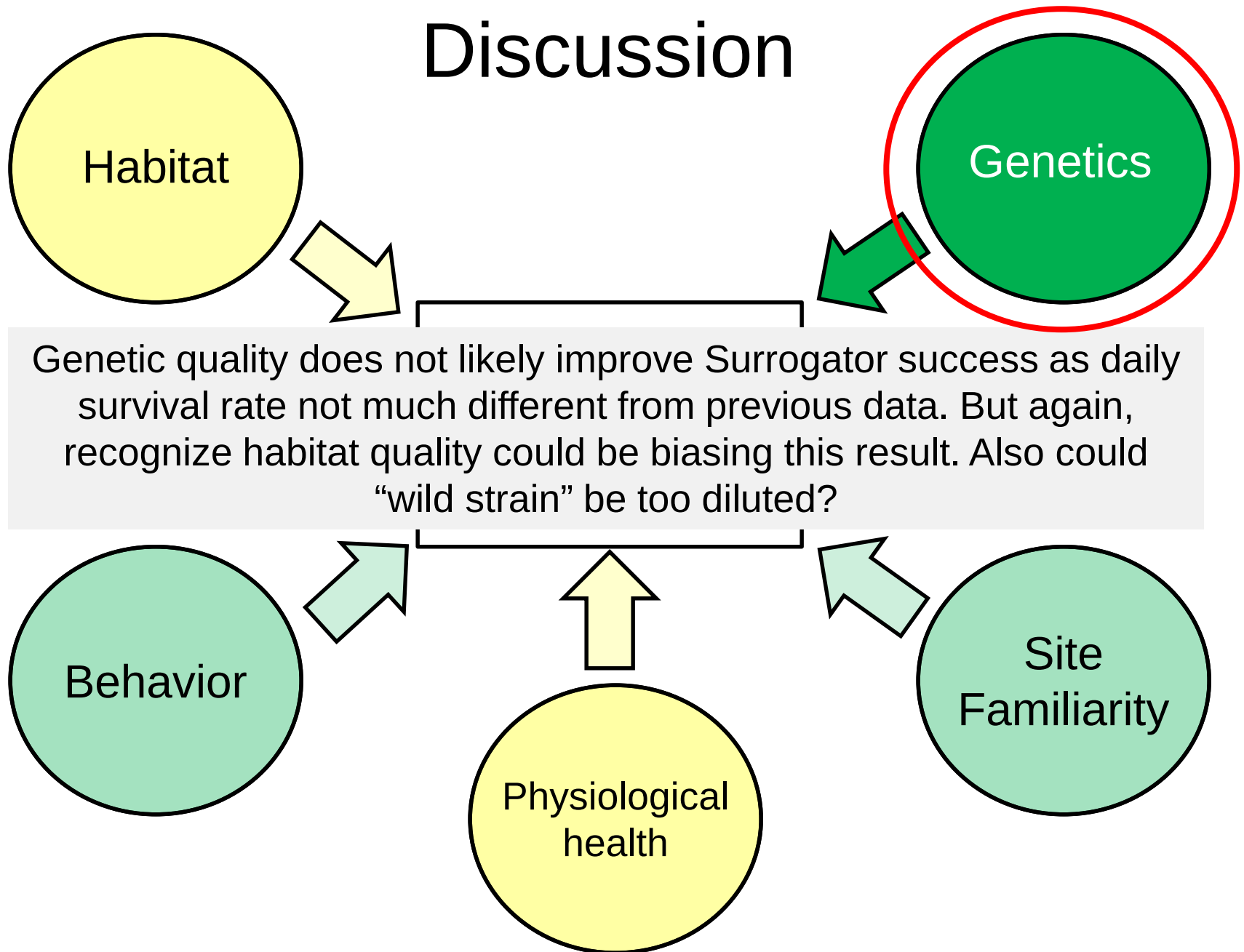
Discussion



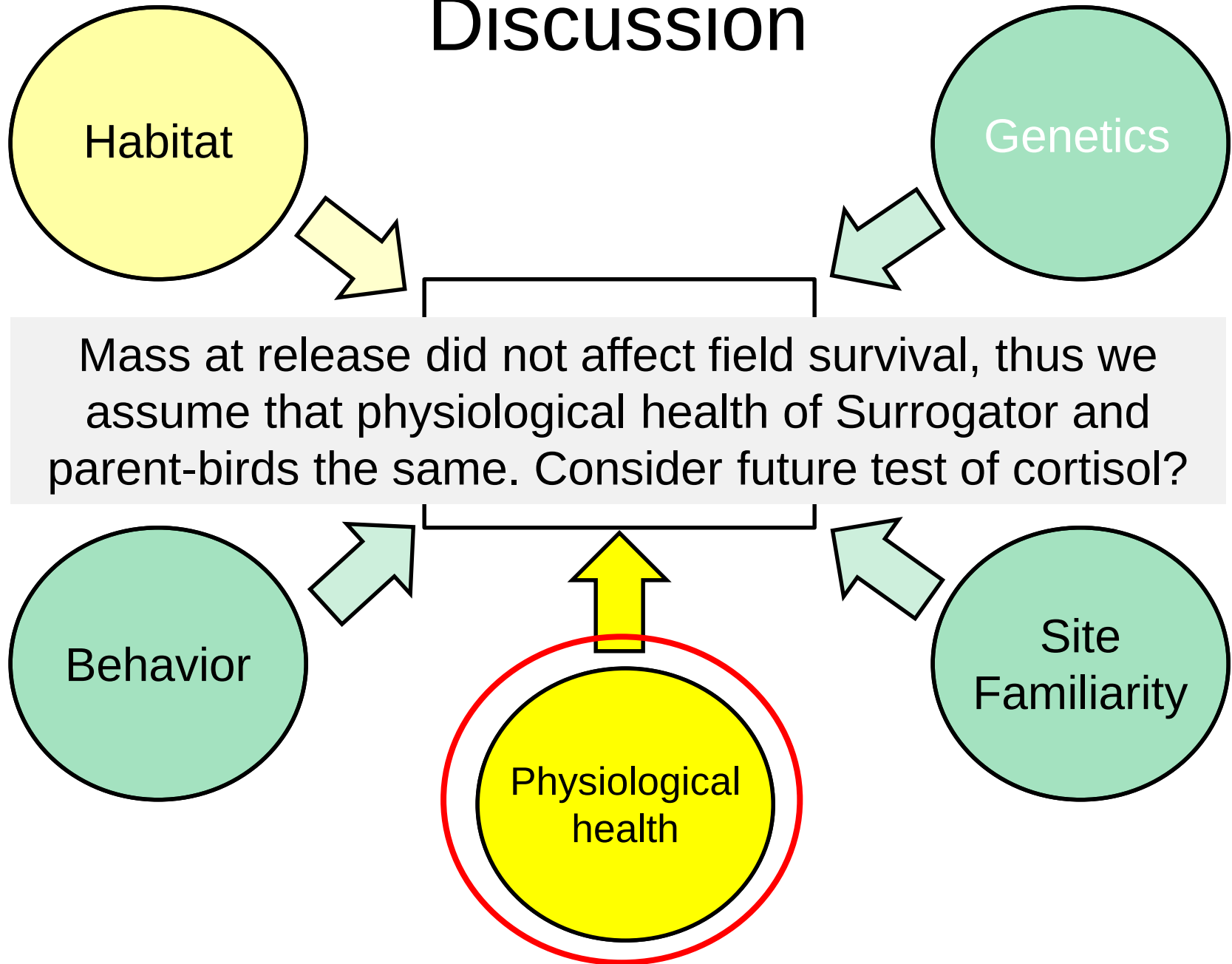
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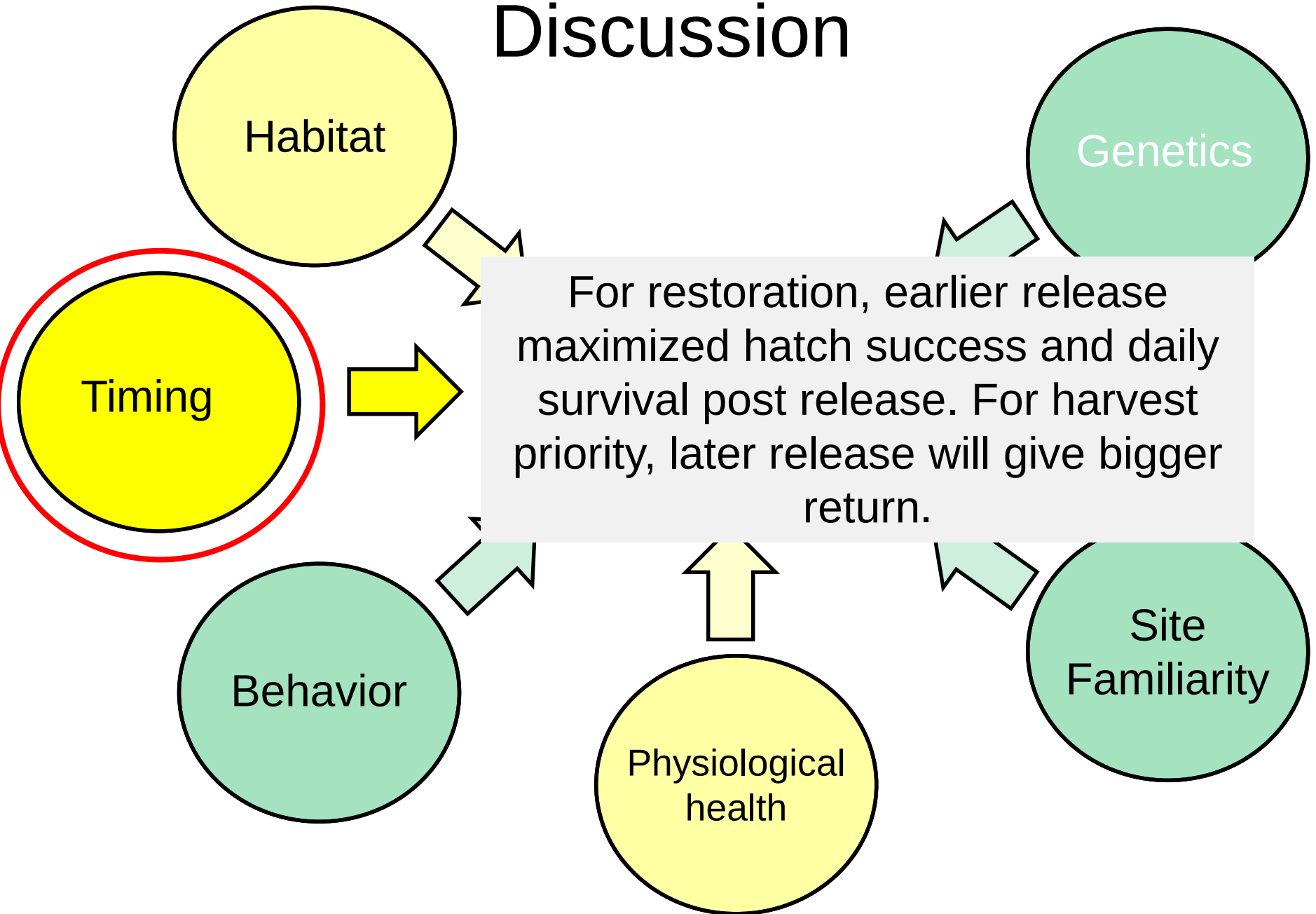
Discussion



Discussion



Discussion



Take home recommendations

- Functionally this was a interesting experimental design and we encourage replication which tackles control/treatment of these bubbles!
 - Release birds early in season
 - Experiment with releasing younger birds
 - Locate aviaries away from release site to reduce predation risk
 - Continue to maintain quality genetic stock
 - And of course make sure habitat quality is strong

Acknowledgements

- Greentree Foundation
- Tall Timbers Research Station
- University of Delaware
- Quail-Call Farms
- Sonrise Quail Farms



GREENTREE

Questions?

