

Monitoring maternity colonies of little brown bats to understand WNS impacts



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The Nature Conservancy
Protecting nature. Preserving life.



Colorado State University



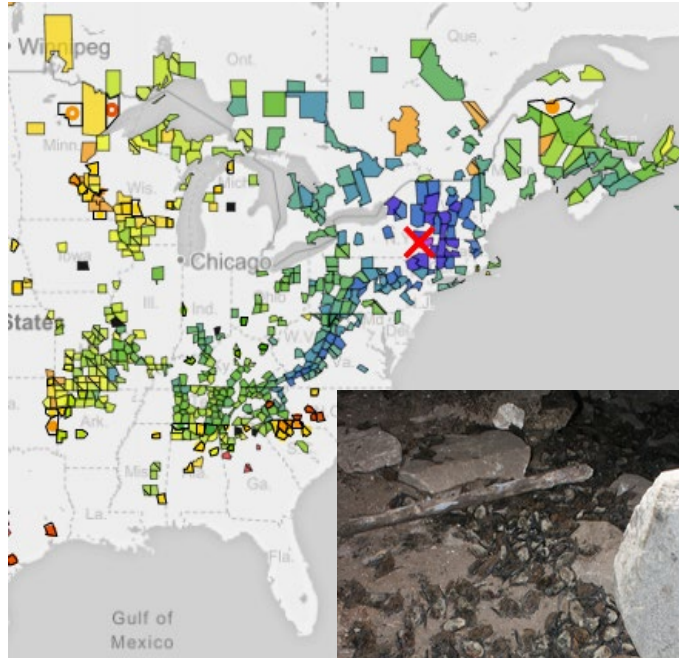
Monitoring maternity colonies

Eastern N Amer.

Mass mortality at caves
and mines

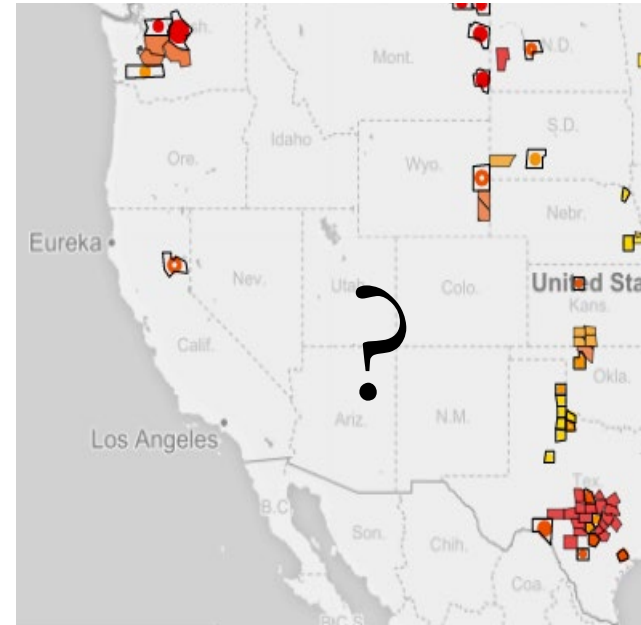
Why?

- Access
- Sample size
- Part of NABat
- Need more than occupancy change



Western N Amer.

Fewer hibernacula
in caves and mines



Why
maternity
colonies?

Capture/tagging

Capture: mist nets, harp traps, *H*-nets

Measurements: sex, age, forearm, mass*

Tagging: 8mm/9mm RFID tags (Biomark)

*have captured individuals that were 6.5g at 9pm, then 10g at 12am after feeding. Mass fluctuates daily/hourly.



Sampling



Antenna systems (Biomark)

- 2'x2' "window" antenna (not good)
- 25-ft cord antenna/reader
- Small scale monitoring system (SMS)
up to 16 antennas per reader



Antennas

Powering the systems

Plug-in or solar

This panel didn't provide enough power at this site. Now using a 320W panel (bottom left)



Prefer these 200W panels



Power



Do not trust Rob's pricing!

100 tags/implanter: \$400

Handheld reader: \$700

25ft rope antenna: ~\$2200

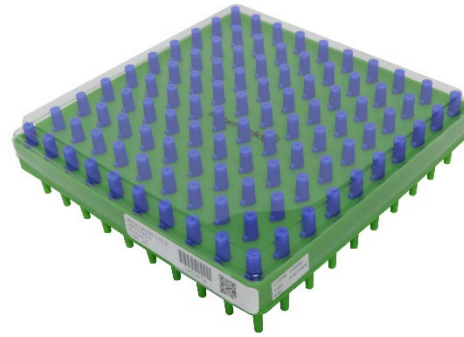
SMS: 16 antennas ~\$3500

SMS: 8 antennas ~\$2500

Battery 100Ah 12v: ~\$150

200W panel: <\$250

Solar charge controller: \$250

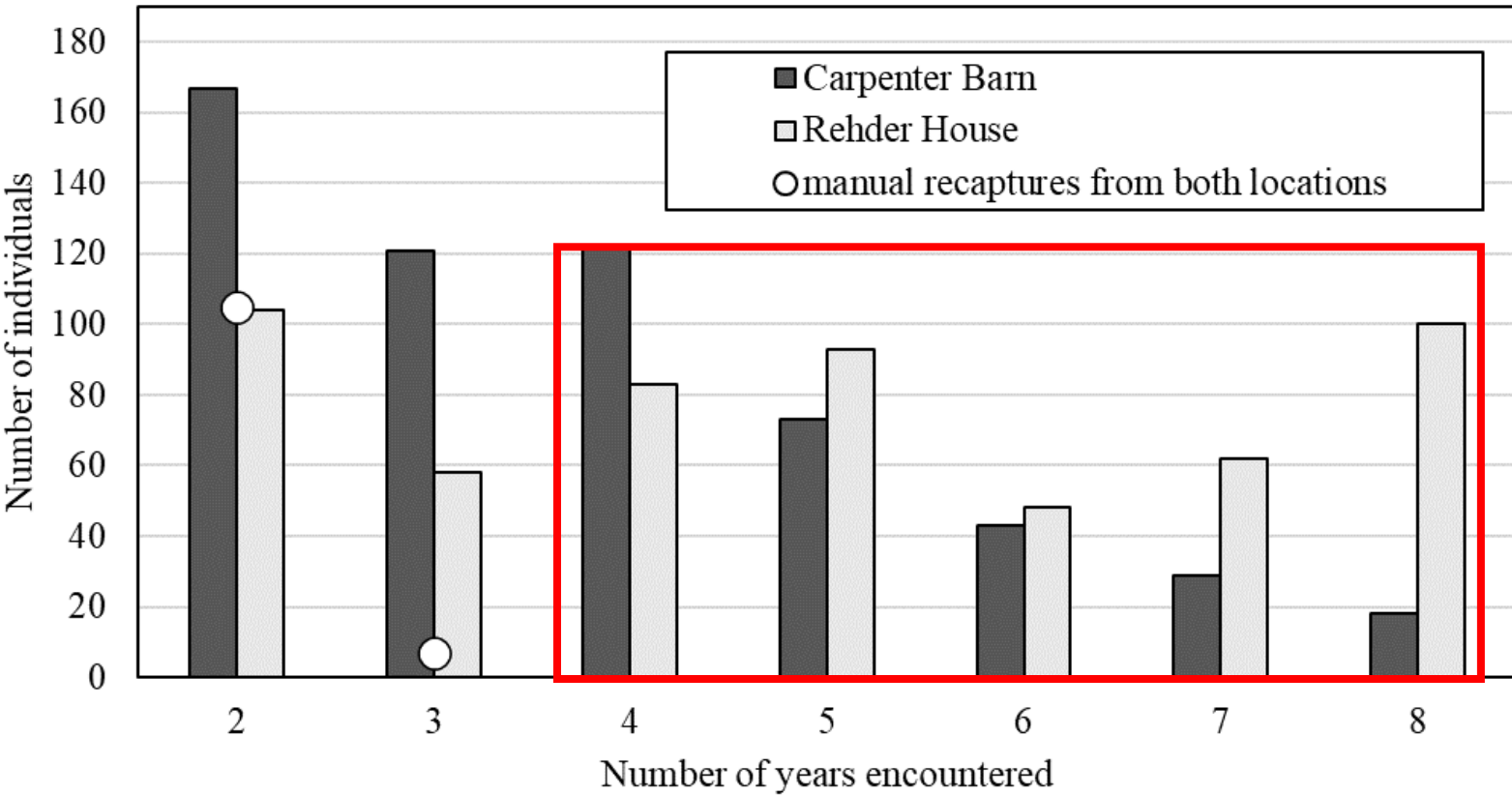


Equip



What do PIT tags/antennas get you?

Number of recaptures for an individual little brown bat (*Myotis lucifugus*) using manual recapture, or PIT-tagging reading antenna, Yampa Valley, Colorado (2015 to 2022).



Recaptures

Detection probability comparisons (huge difference)



Precision

Handgrab:

0.009 (SE = 0.005) - 0.05 (SE = 0.02)

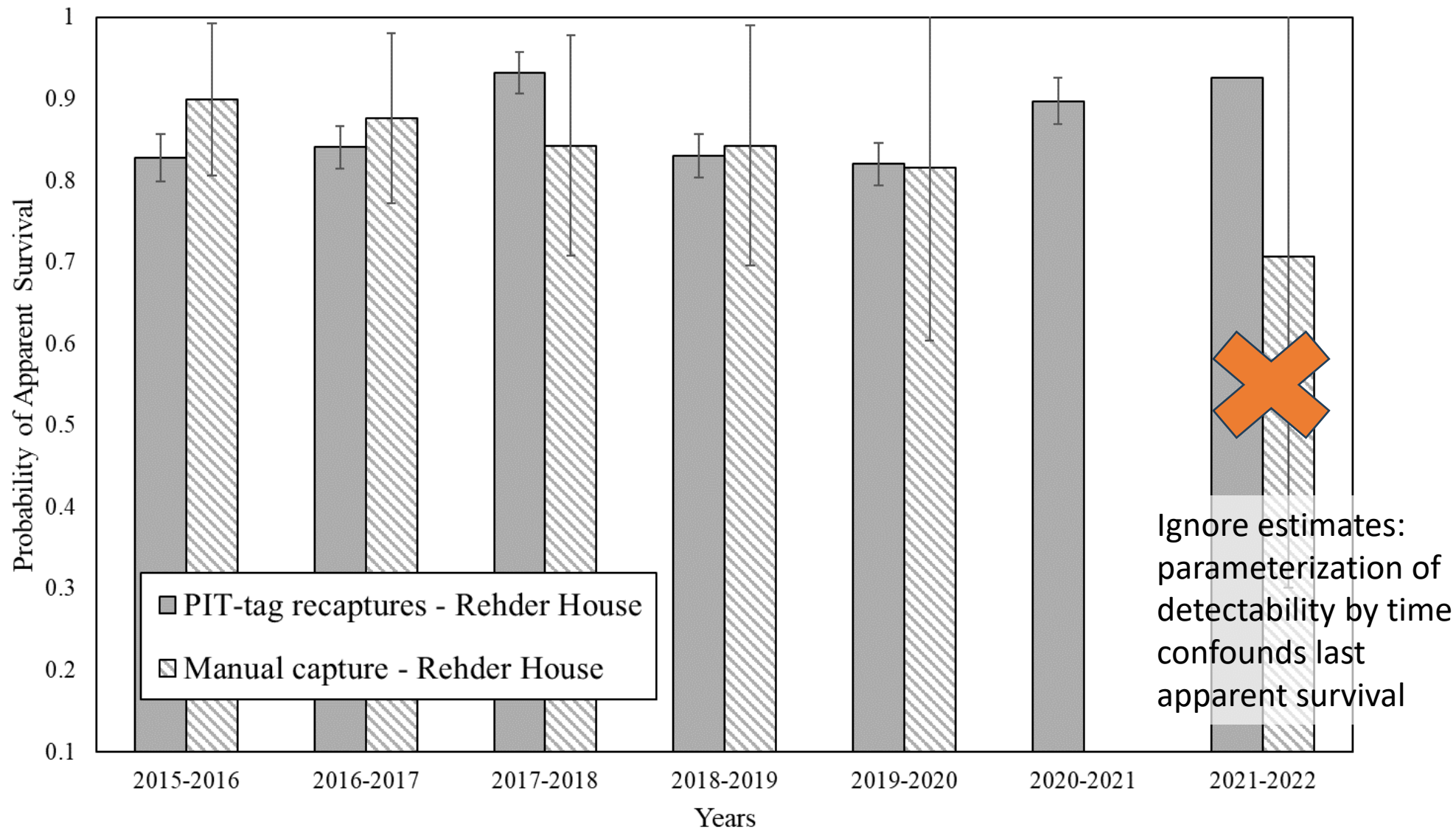
0.016 (SE = 0.007) - 0.260 (SE = 0.008)

PIT-tag:

0.73 (SE = 0.03) - 0.90 (SE = 0.02)

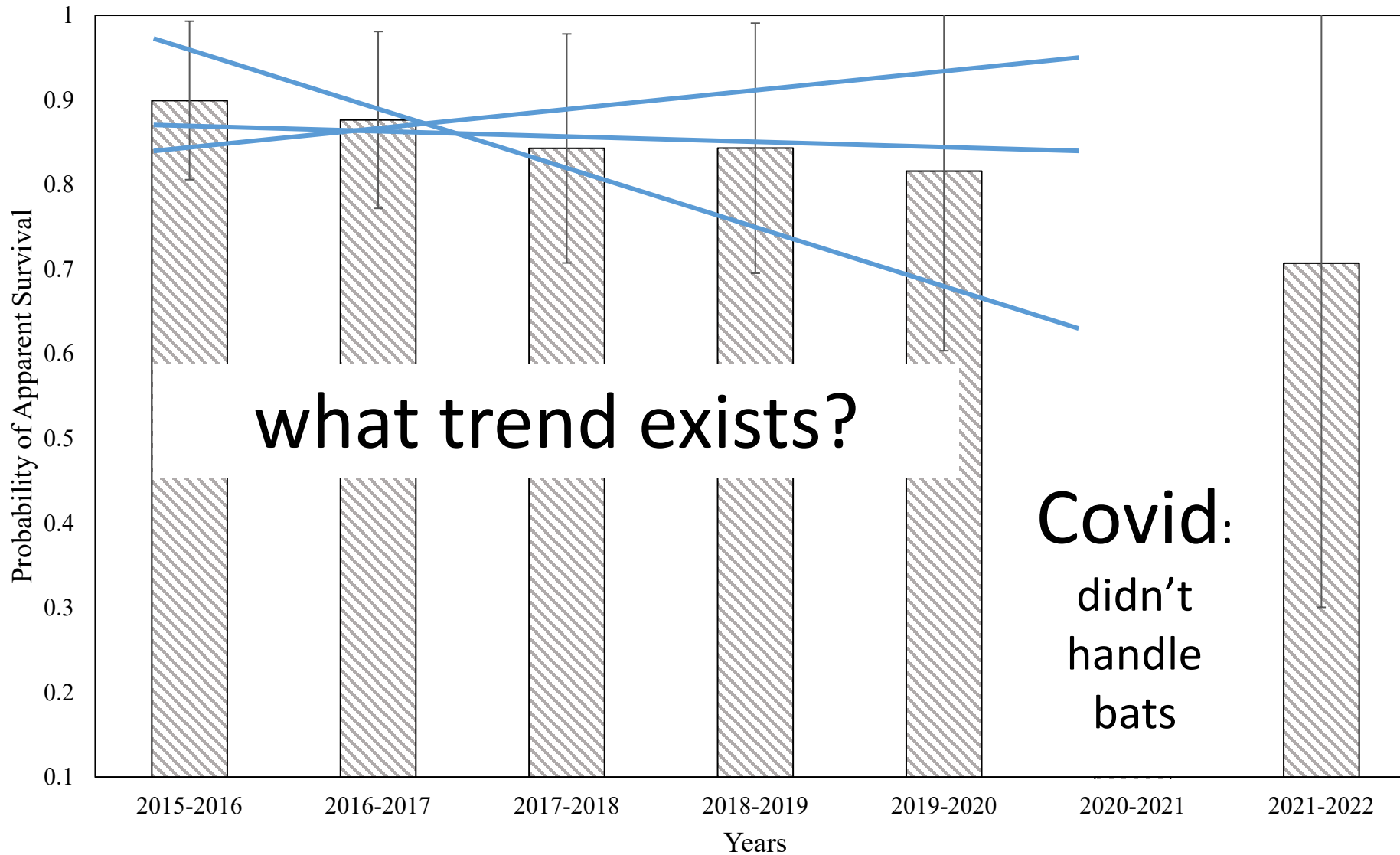
0.88 (SE = 0.02) - 0.97 (SE = 0.01)

Comparison of apparent survival estimates (\pm SE) of little brown bats (*Myotis lucifugus*) based on manual recaptures (lighter) and PIT-tag recaptures (darker), Yampa Valley, Colorado, 2015 to 2022.



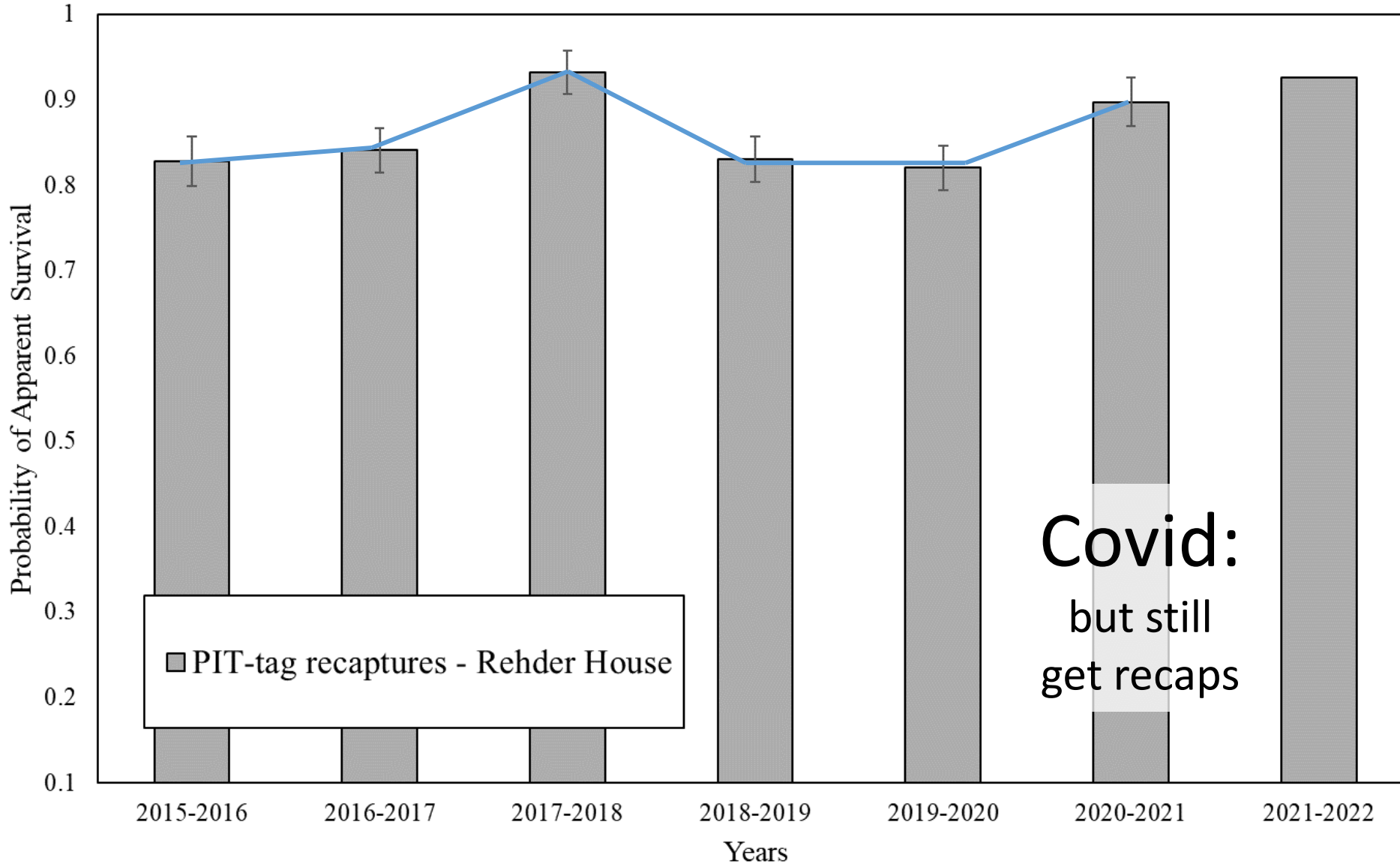
Precision

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Comparison of apparent survival estimates (\pm SE) of little brown bats (*Myotis lucifugus*) based on manual recaptures (lighter) and PIT-tag recaptures (darker), Yampa Valley, Colorado, 2015 to 2022.



Precision

Covid:
but still
get recaps



Questions?