

# Model-based estimates of population trends and the importance of vital rates in Arctic- breeding shorebirds



# Disclaimer

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# Arctic Shorebird Demographics Network

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# Arctic Shorebird Demographics Network





# 6 focal species (>30 monitored)



American Golden-Plover



Semipalmated Sandpiper



Red-necked Phalarope



Dunlin



Western Sandpiper



Red Phalarope



# Dataset

- 2010-2014 plus previous years at some sites
- 80-1700 nests monitored per species or subspecies
- 29-713 adults marked (9-59% resighted)



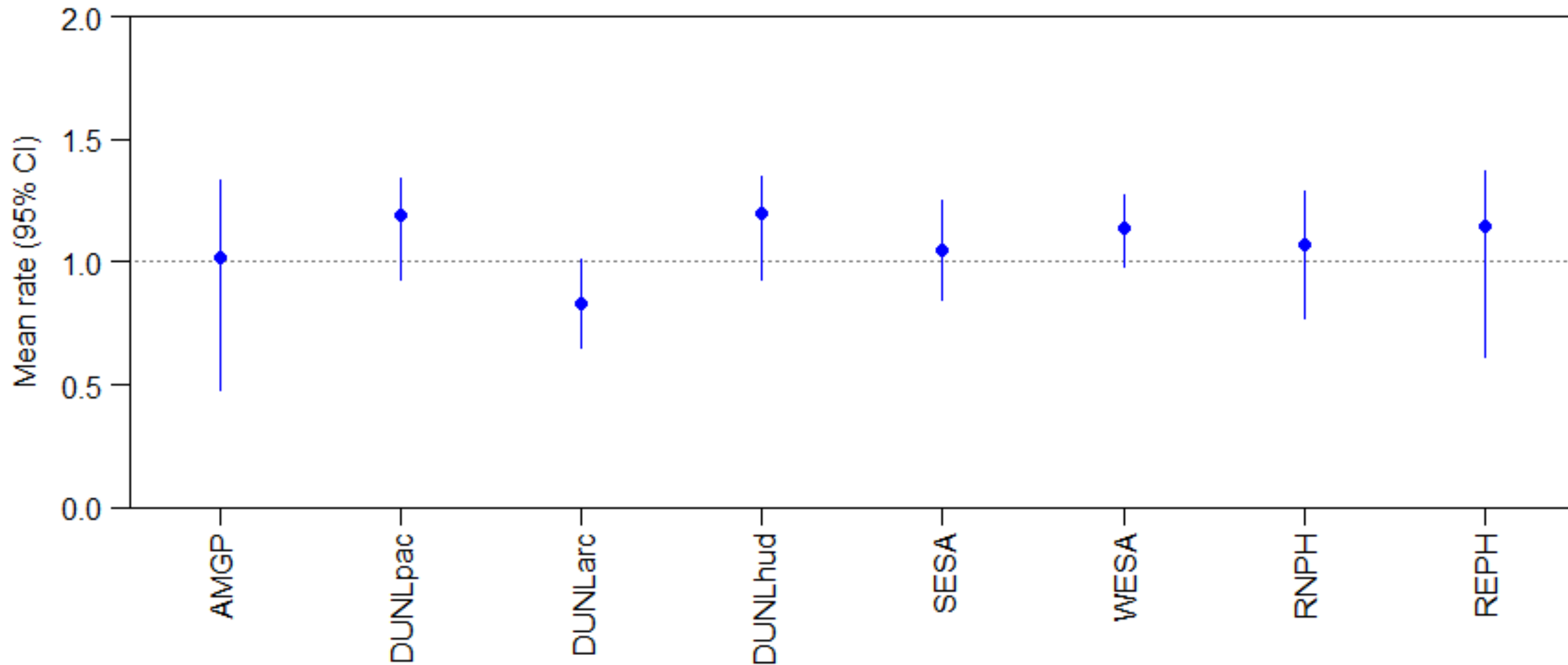


# Population model

- Vital rate estimates (survival, fecundity)
- Stochastic matrix model (age-structured)
- Sensitivity analysis (halve each rate)
- → Pop. growth rate, elasticity

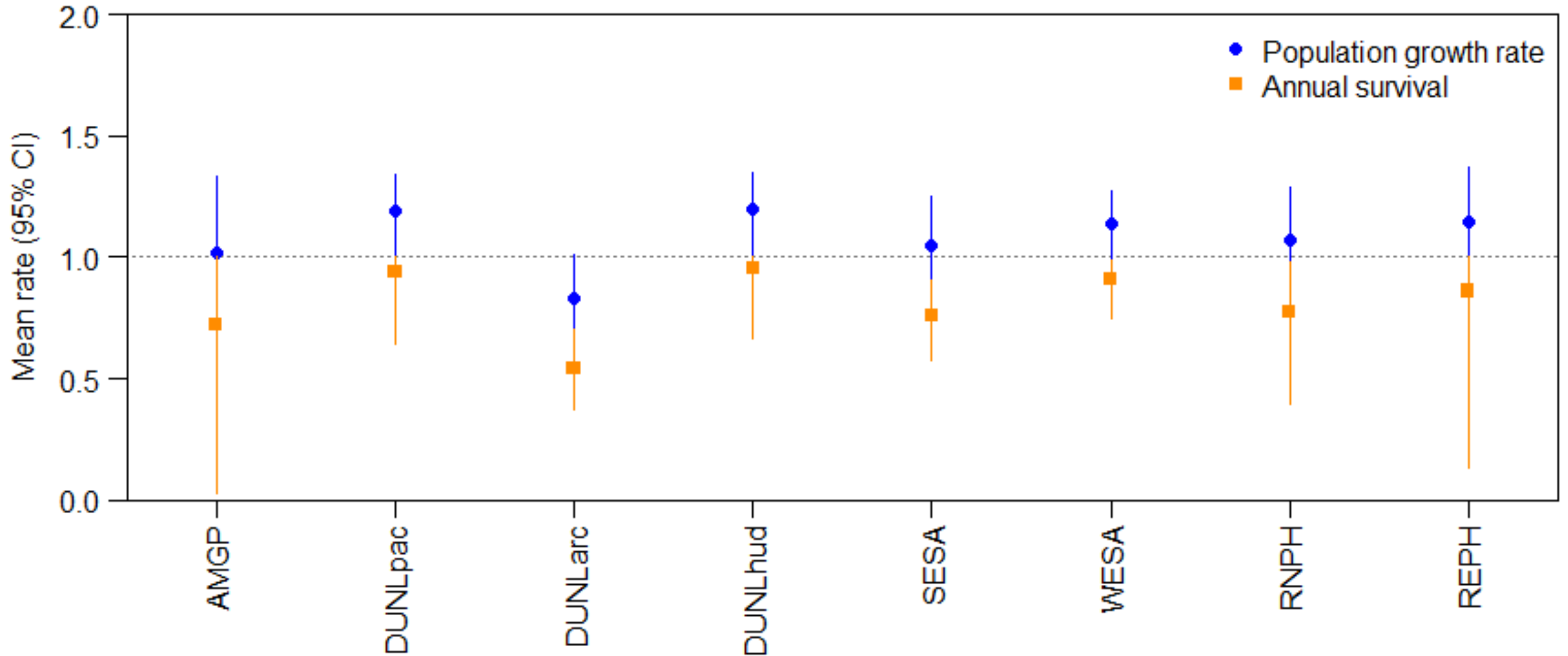


# Population growth rates

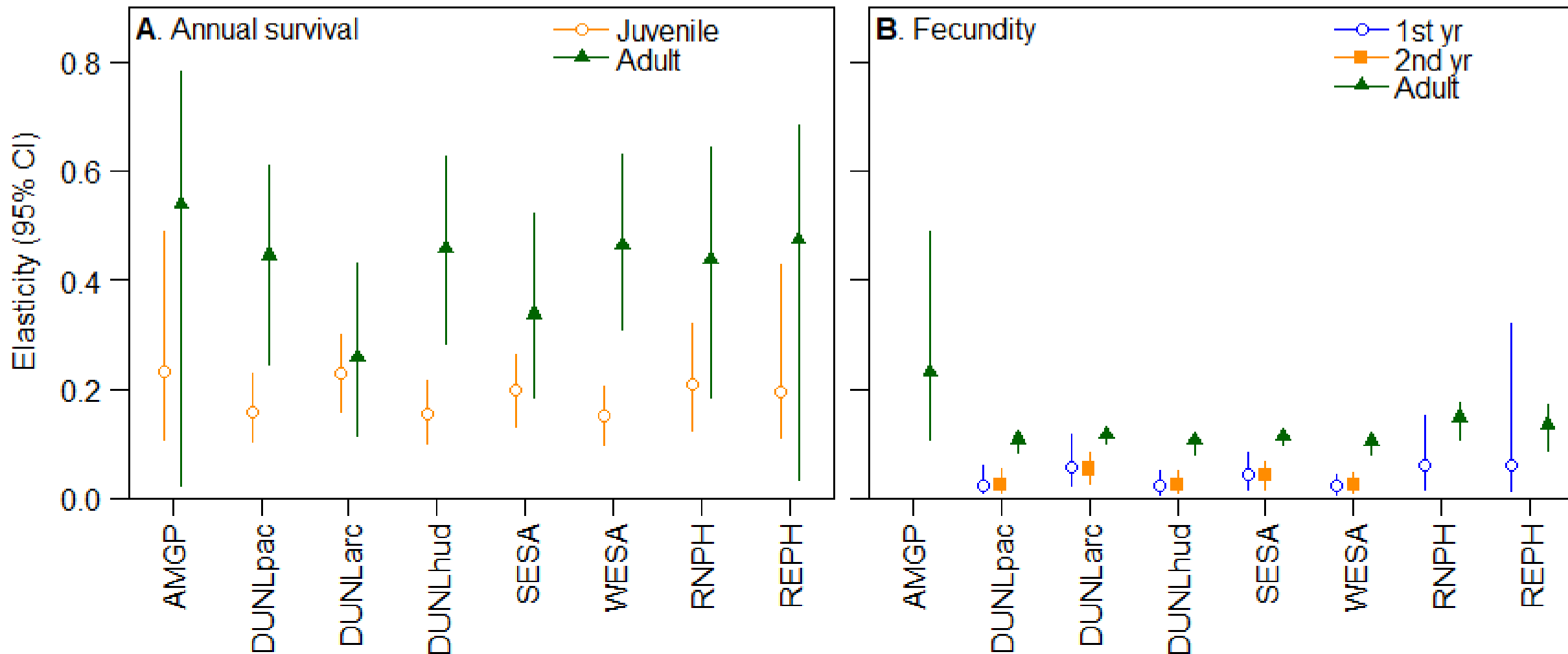




# Population growth rate varies with annual survival

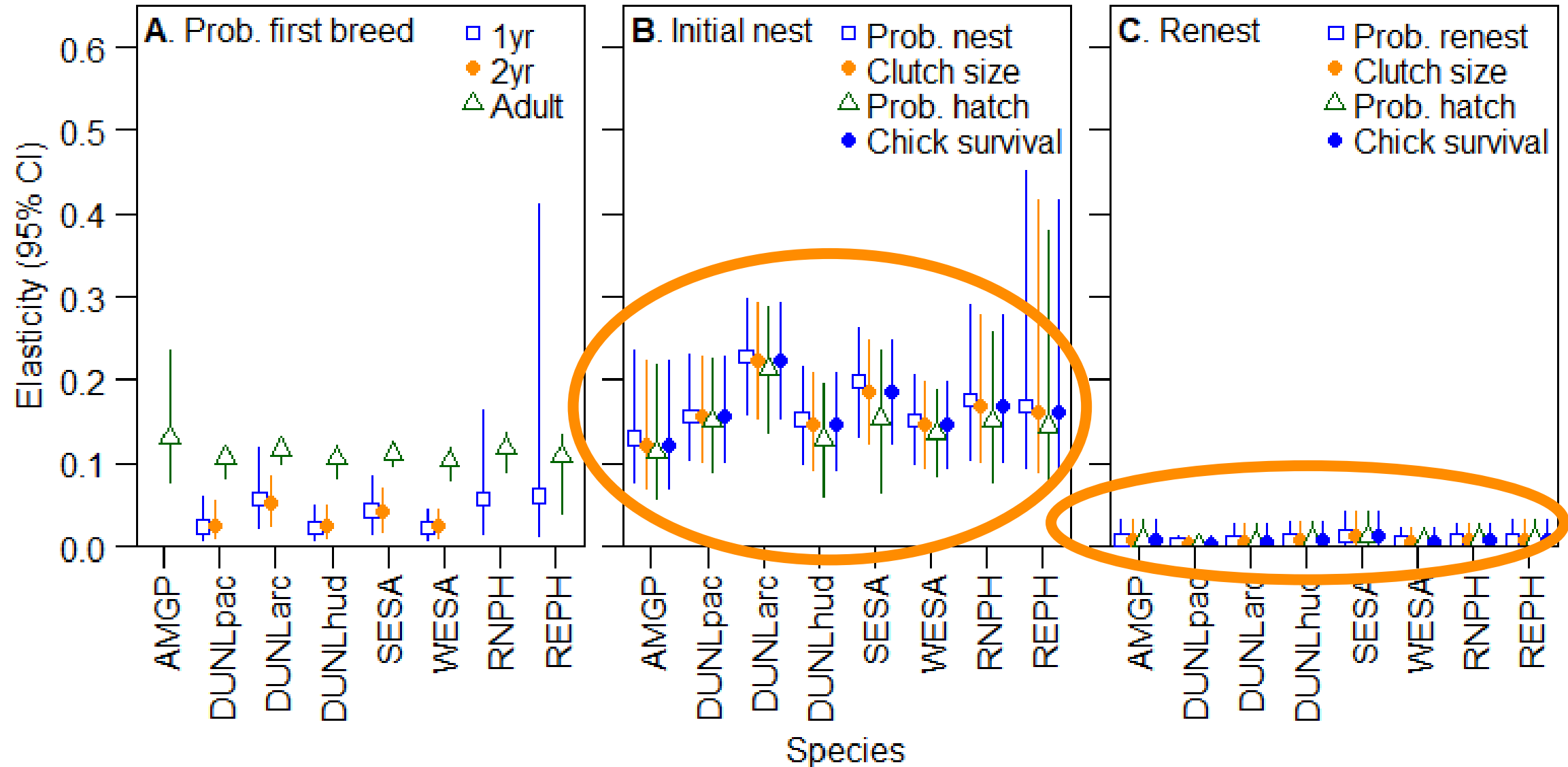


# Elasticity of vital rates

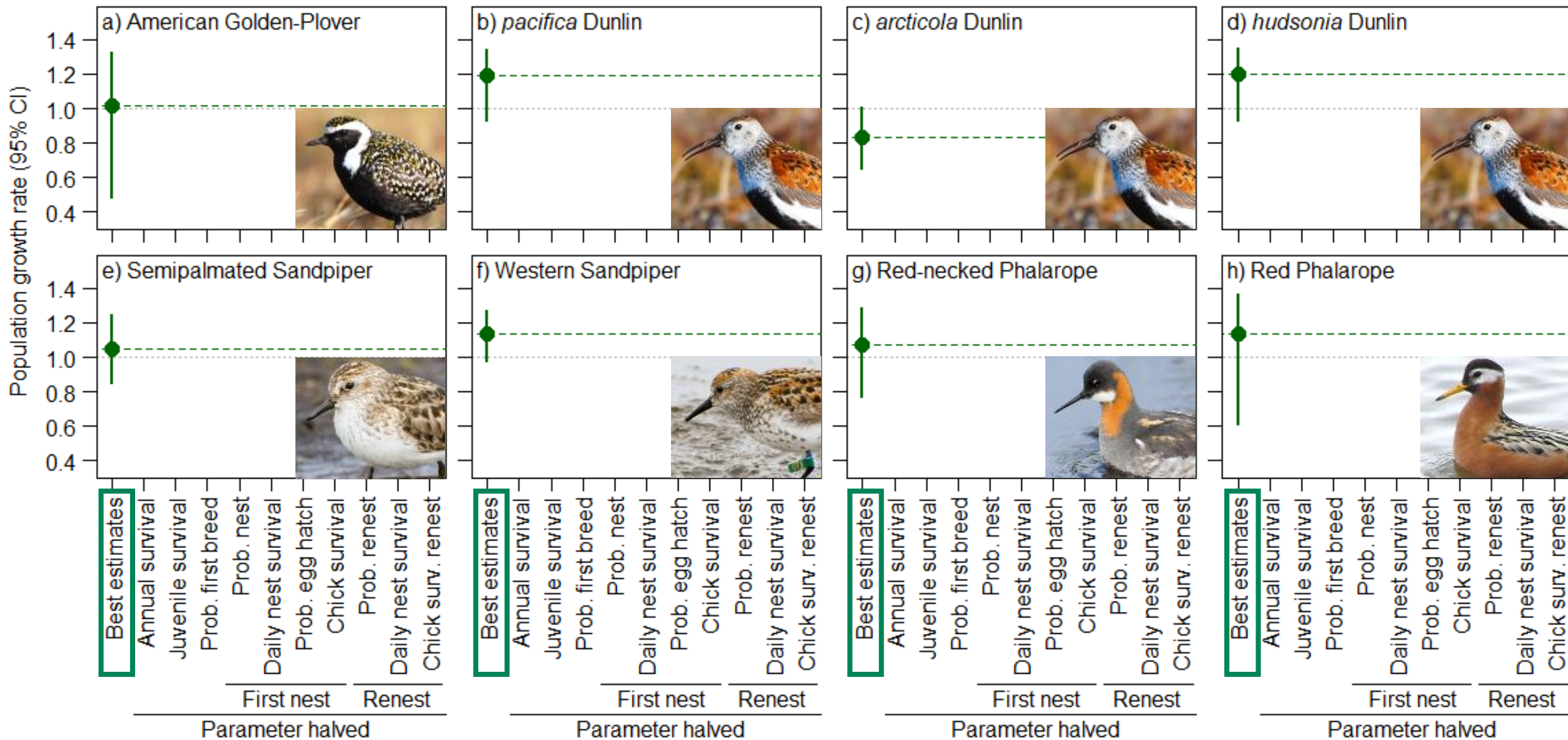




# Elasticity of lower-level vital rates

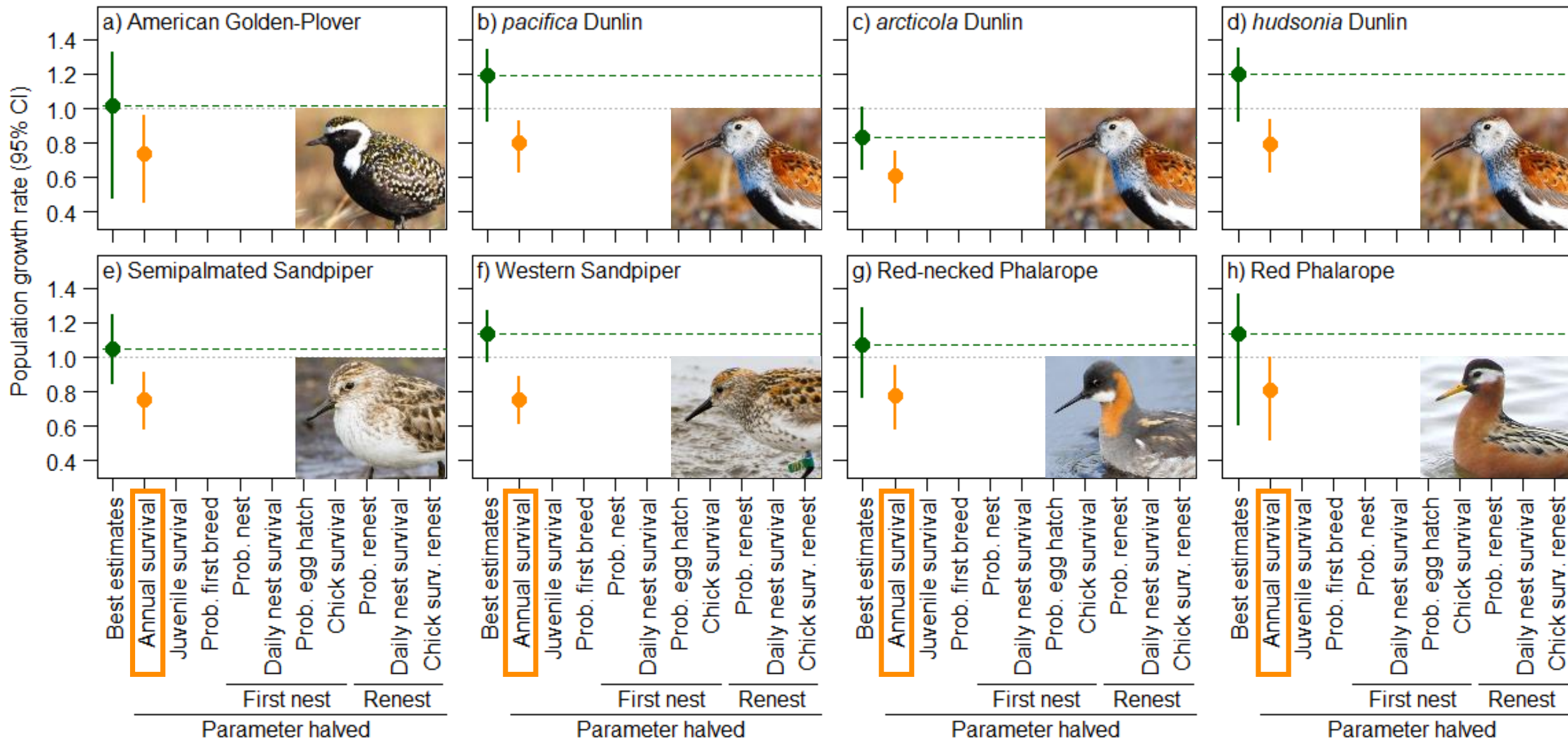


# Sensitivity

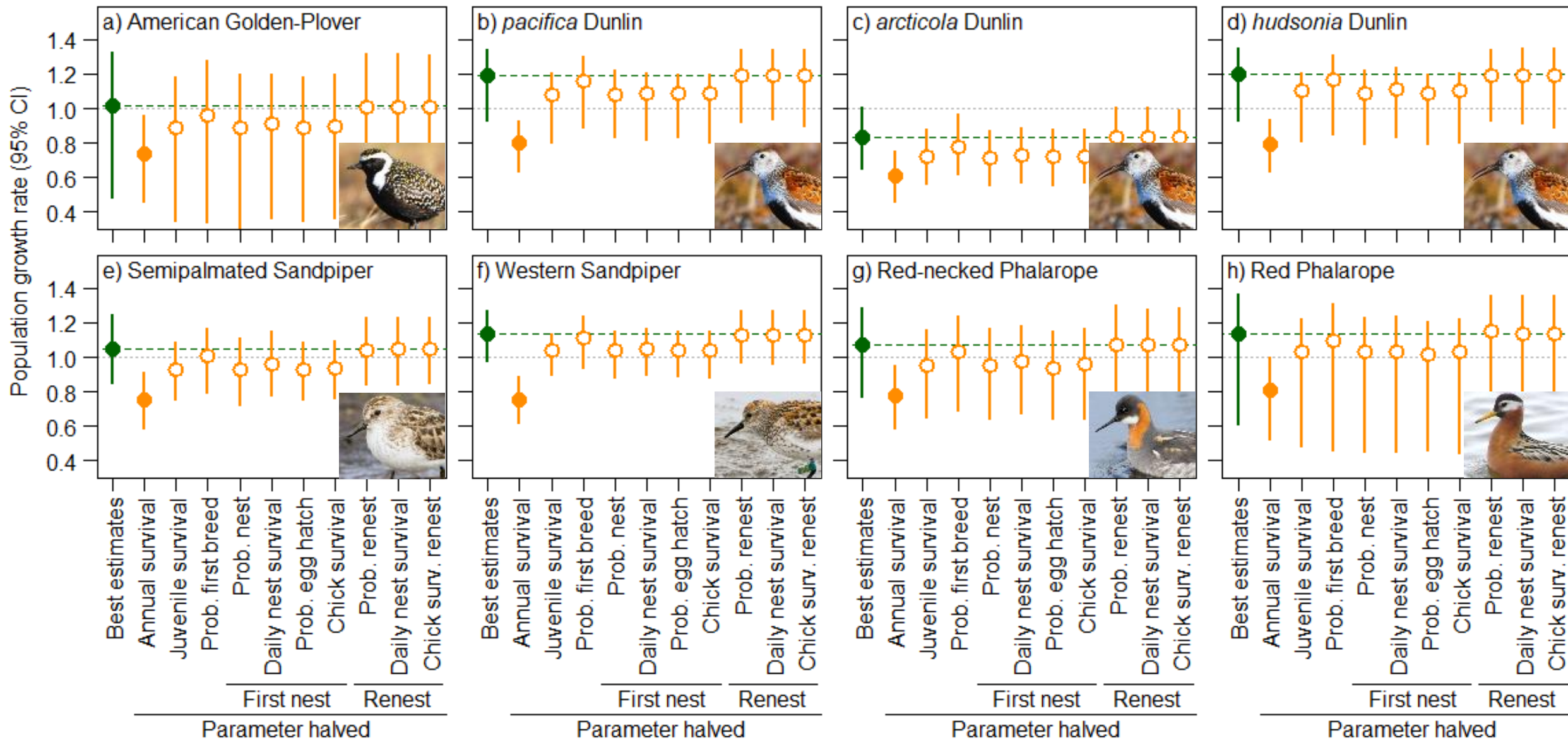




# Sensitivity



# Sensitivity







Previous

This study

- ??

→ ??

*pacifica*



→

+ ?

*arctica*



- -

- -

*hudsonia*



→

+ ?



Previous

This study

- → ?

→ ?



- ???

+



-

+ ?



-

+ ?



# Remaining questions

- Geographic variation
- Seasonal adult survival
- Juvenile survival
- Response to habitat change  
and other change

