THE UNIVERSITY OF ARIZONA

OVERCOMING DATA CHALLNEGES TO FORECAST SPECIES' RESPONSES TO CLIMATE CHANGE

SPEAKER: Erin Zylstra, Tucson Audubon Society

DATE: Wednesday, March 1st

TIME: 3:00-4:00 pm

LOCATION: ENR2 S210 & Zoom

ABSTRACT:

Understanding how climate change is impacting—and will impact—wildlife species is essential to develop effective conservation strategies. Forecasting responses to climate change is challenging, however, because data needed to describe the effects of climate on wildlife populations are often limited in space and/or time and because accurate forecasts must account for numerous sources of both model- and climate-related uncertainties. I discuss approaches for overcoming these challenges, highlighting recent work on monarch butterflies in eastern North America. We integrated data from multiple butterfly monitoring programs and covariates describing conditions at various stages along the monarch's migratory route to identify factors driving population dynamics and declines. We found that monarch population sizes between 2004 and 2018were driven primarily by weather conditions on both the spring and summer breeding grounds. We then combined our retrospective population model with seasonal climate projections for these areas under a range of emissions scenarios to forecast monarch population sizes over the next century. Our results suggest that the eastern monarch population is likely to fall below the historical minimum multiple times before the middle of the 21st century. We also generated spatially explicit forecasts of local monarch abundances on the summer breeding grounds to identify places that may be more or less suitable for monarchs in the future, information that could be used to help target conservation efforts.

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