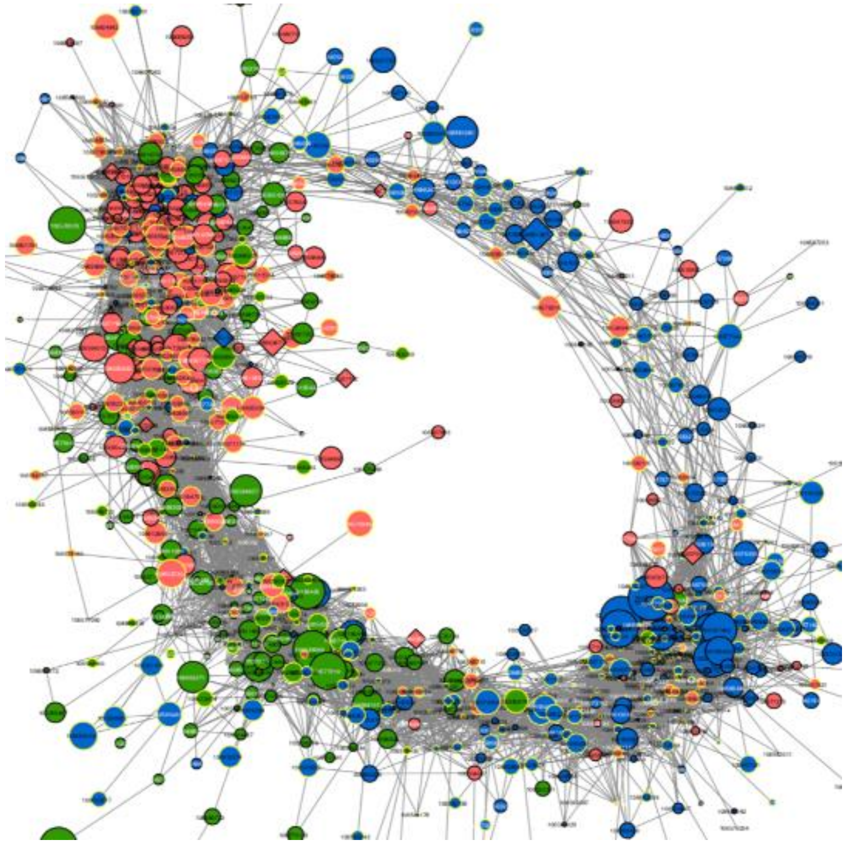
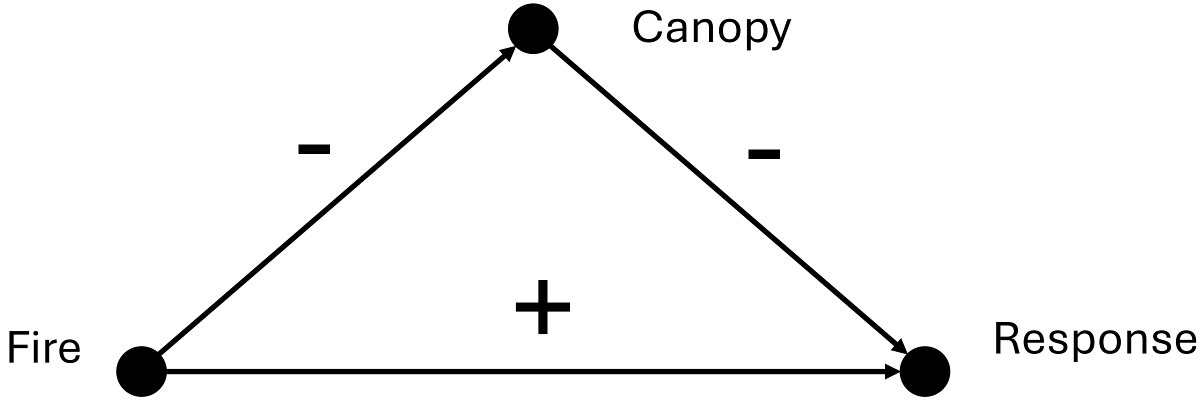
‘Choose your own adventure’ path analysis tutorials

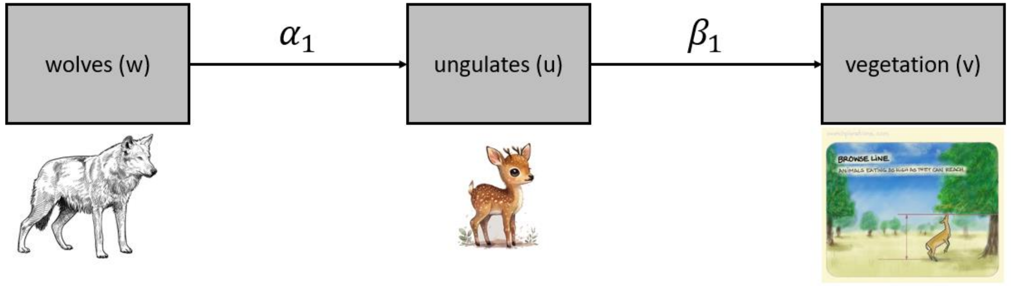




piecewiseSEM examples

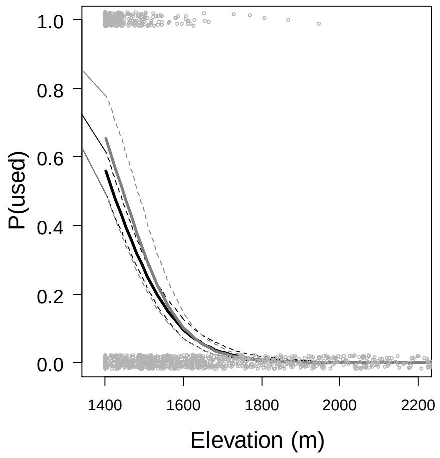
1. Simulated wolves, deer, and ungulates (lm() and JAGS)

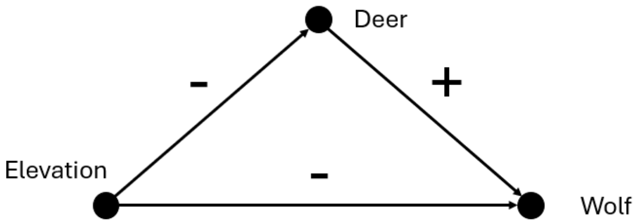
- `SEM_workshop/lecture_pdfs/Lecture2.pdf`
- `SEM_workshop/R_scripts/Lecture2_scripts/Lecture2b_wolves_deer_browse.R`



2. Bow valley wolves (piecewiseSEM and JAGS)

- `SEM_workshop/lecture_pdfs/Lecture2.pdf`
- `SEM_workshop/R_scripts/Lecture2_scripts/Lecture2c_wolf_rsf.R`
- `SEM_workshop/R_scripts/Lecture2_scripts/Lecture2c_wolf_rsf_JAGS.R`

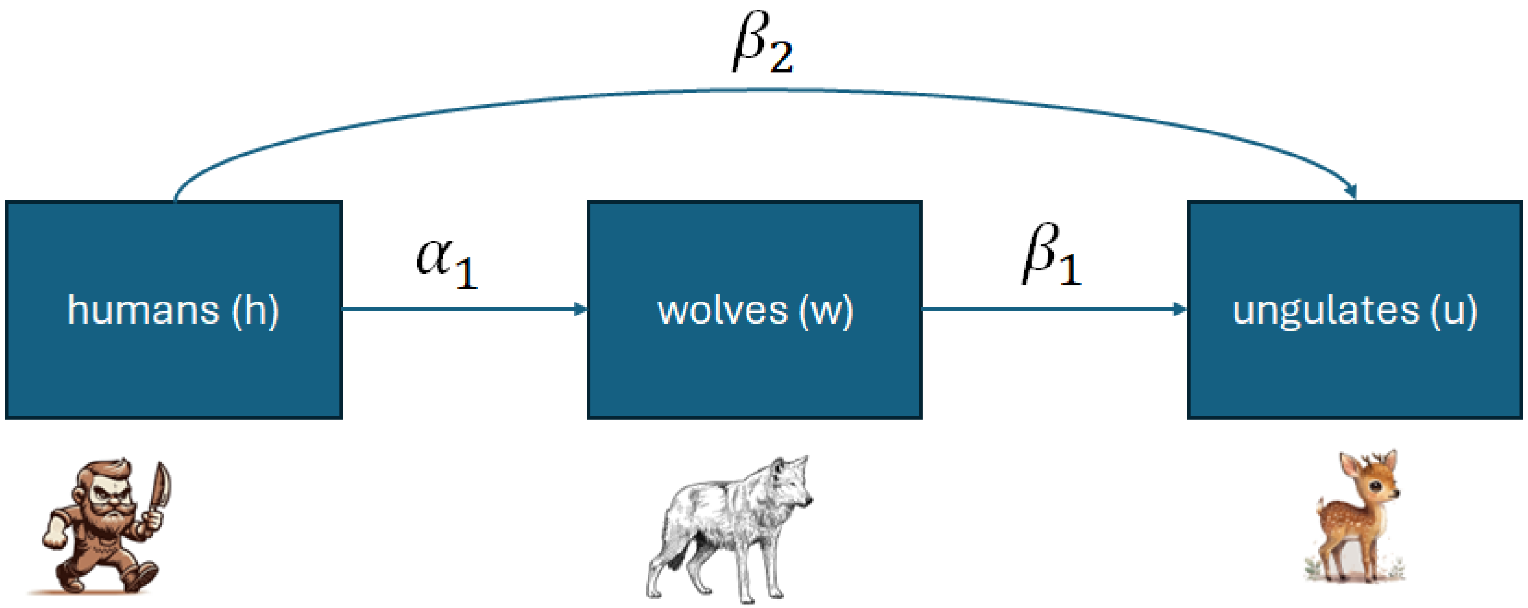




piecewiseSEM examples

3. Simulated human, wolf, and deer abundance

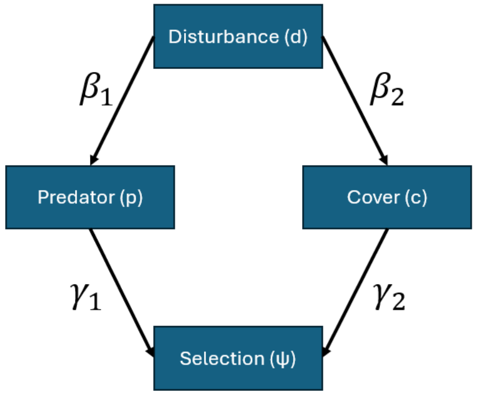
- `ST595/lecture_pdfs/Lecture8.pdf`
- `ST595/final_scripts/Week5/Script_5b_hunters_wolves_deer.R`

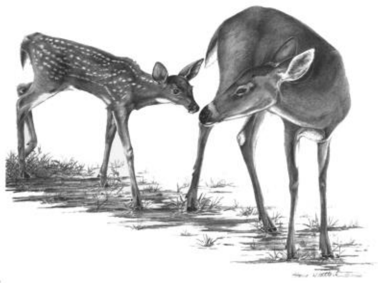


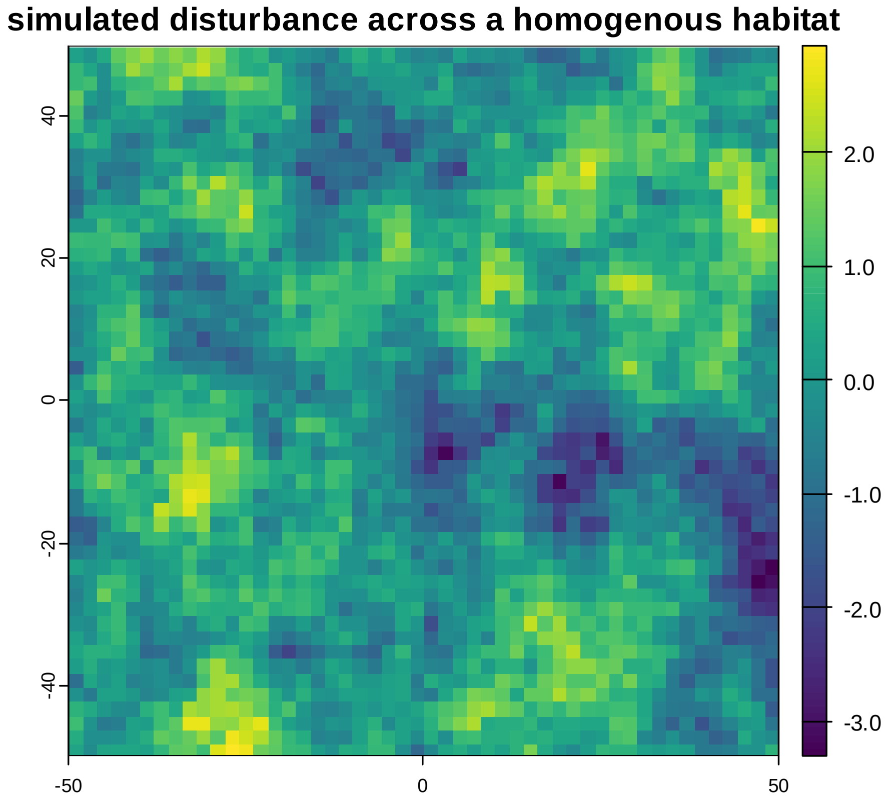
Bayesian implementation examples

1. Simulated parturition site selection (piecewiseSEM and JAGS)

- `ST595/lecture_pdfs/Lecture12_RSF_qualitative_model_construction.pdf`
- `ST595/final_scripts/Week8/case_study_parturition_site_selection.R`



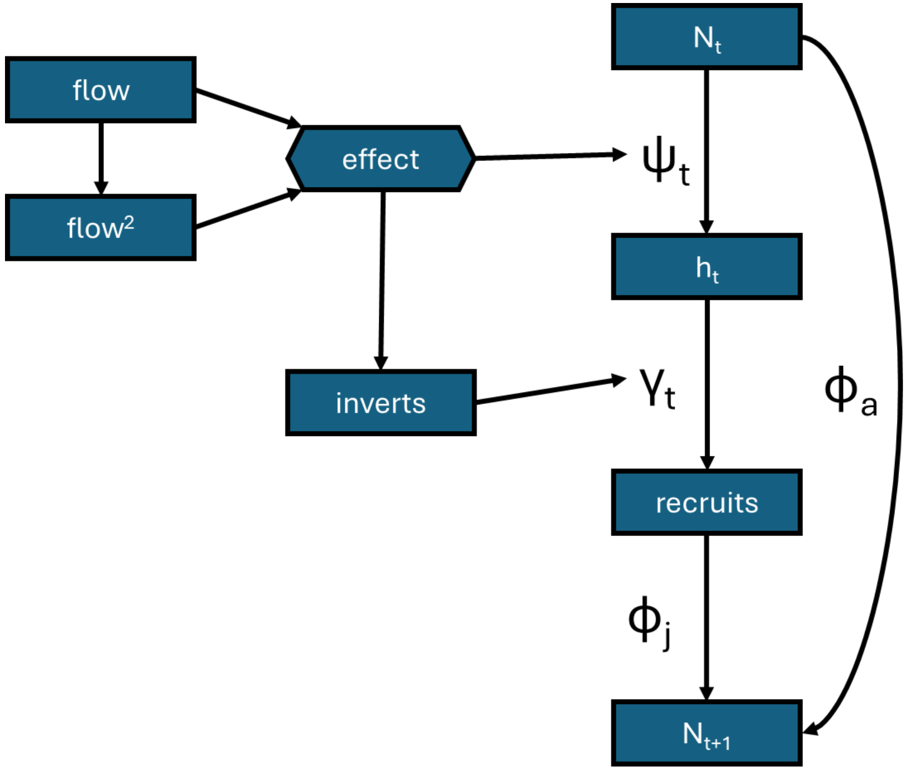




Bayesian implementation examples

2. Simulated dipper population model (JAGS)

- `ST595/lecture_pdfs/Lecture13_reproductive_success_composite_covariate.pdf`
- `ST595/final_scripts/Week8/composite_covariates_to_compress_a_quadratic.R`



Bayesian implementation examples

3. Mallard capture-mark-recovery model (Riecke et al. **2022a**; *JAnE*)

- https://datadryad.org/dataset/doi:10.5061/dryad.k98sf7m80 [data]
- https://zenodo.org/records/6505527 [code]
- https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2656.13747 **[paper]**

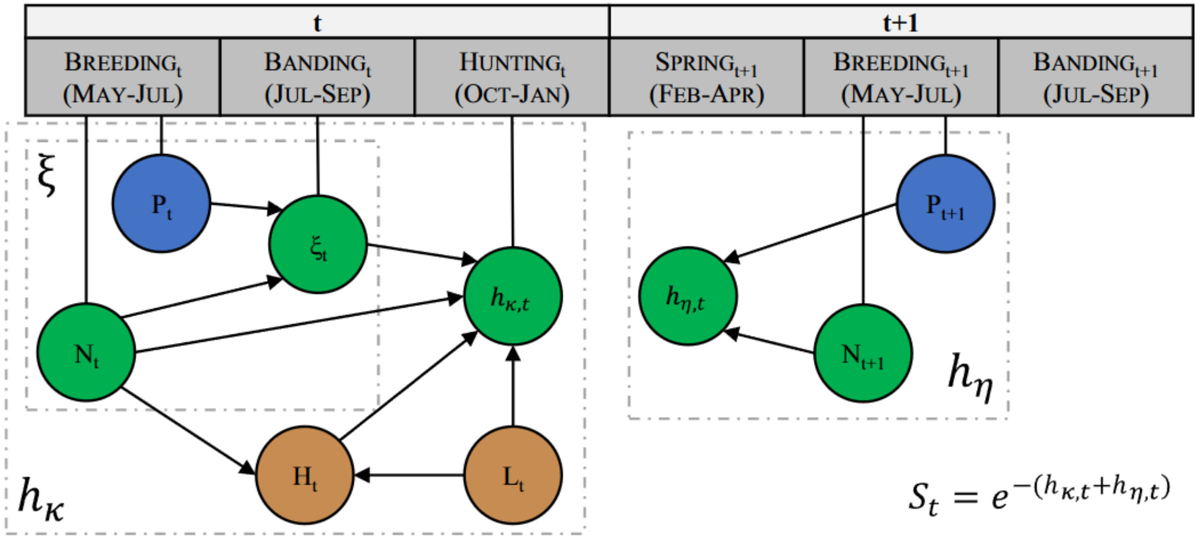
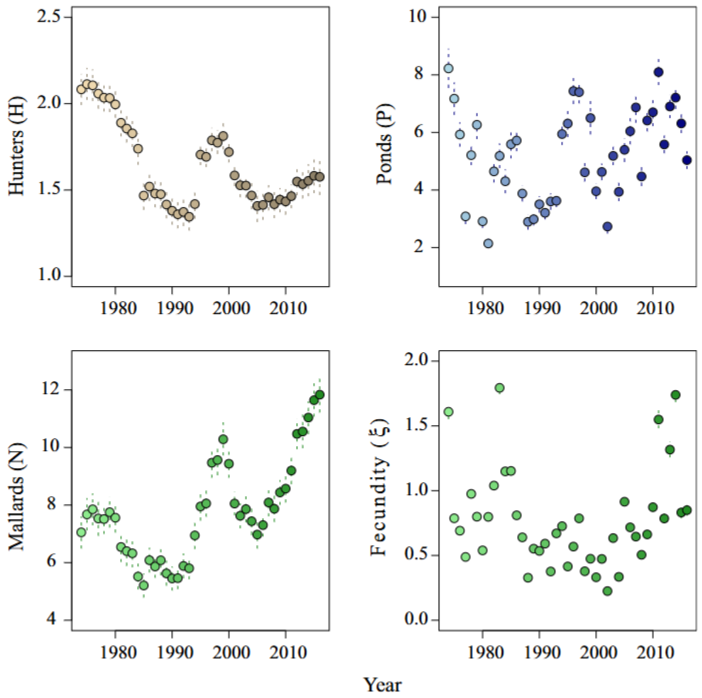


FIGURE 2 Directed acyclic graph demonstrating the hypothesized relationships among mallard breeding pair abundance (*N*), the number of ponds (*P*), harvest limits (*L*), the abundance of duck hunters (*H*), fecundity (ξ), harvest mortality hazard rate (h_κ), natural mortality hazard rate (h_η) and survival (*S*) for mallards marked and released in the Prairie Pothole Region of the United States and Canada, 1974–2016. Arrows represent covariate effects, grey dashed lines enclose separate generalized linear models and vertical solid lines denote the time period or interval when parameters were estimated, where survival (*S*) and natural mortality in year *t* are estimated from banding in year *t* to banding in year *t*+1. We estimated age-specific band recovery probabilities (*f*) as a function of age-specific harvest probability (κ), reporting rate (*r*) and crippling rate (*c*), $f = \kappa(1-c)r_t$. We note that we hypothesized the same relationships among demographic components for both juvenile and adult females.



Bayesian implementation examples

4. Blue-winged teal IPM (Riecke et al. **2022b**; *JAnE*)

- https://datadryad.org/dataset/doi:10.5061/dryad.zpc866tbz [data]
- https://zenodo.org/records/7036551 code]
- https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2656.13807 **[paper]**

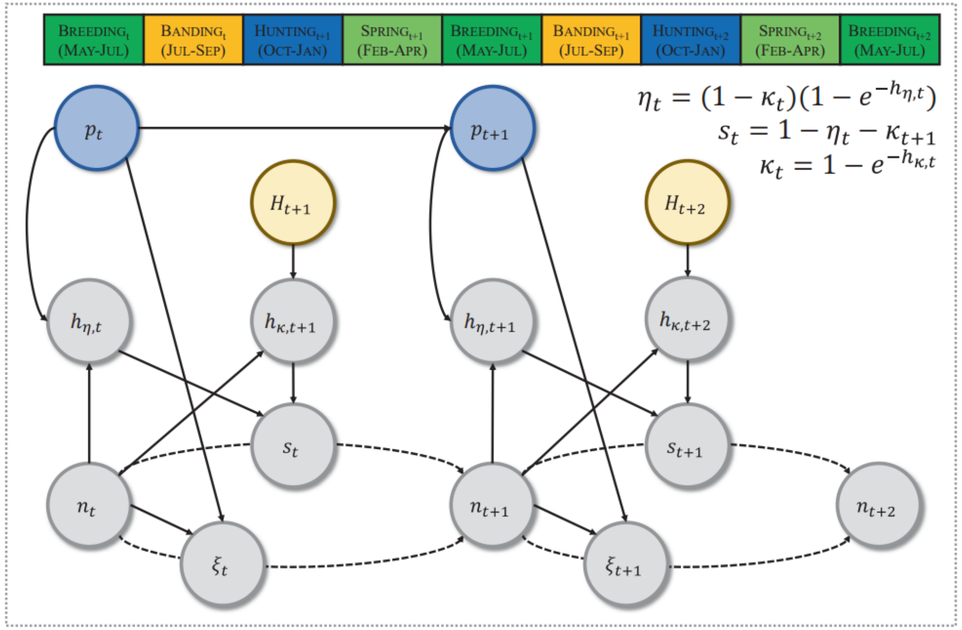


FIGURE 2 A directed acyclic graph demonstrating the relationships among abundance (**n**), ponds (**p**; blue), fecundity (ξ), hunting mortality hazard rate (**h_κ**), natural mortality hazard rate (**h_η**), survival (**s**) and the number of duck hunters (***H***; brown) for blue-winged teal breeding in the North American Prairie Pothole Region across the annual cycle (1973–3016). Solid arrows represent estimated directional relationships, and dashed arrows represent processes leading to changes in population abundance.

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RESEARCH ARTICLE

Density-dependence produces spurious relationships among demographic parameters in a harvested species

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If you brought your own data, go for it!

Causal diagrams are critical!

Observe diagrams and how those diagrams are linked to models in tutorials

Draw your own diagrams and start to build models from them