

DUCKS9 Band-Recovery Workshop

facilitated by:

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PRIOR TO WORKSHOP

- 1) Install working version of R**
<https://cran.r-project.org/bin/windows/base/>
- 2) Install working version of RStudio**
<https://posit.co/downloads/>
- 3) Install most recent version of JAGS**
<https://sourceforge.net/projects/mcmc-jags/>
- 4) Install 'jagsUI' and 'vioplot' packages**
<https://bookdown.org/nana/intror/install-and-load-packages.html>
- 5) Run test script ensuring that JAGS functions correctly. If it does not, please work with a colleague or contact instructors for assistance prior to the conference via email (thomas.riecke@umontana.edu; please put 'band-recovery workshop' in the subject line). We may also be able to help immediately prior to the workshop in person, but it would be best to resolve any issues prior to the workshop if possible.**

TENTATIVE SCHEDULE

1300-1345: Section 1: How band-recovery models work: data formatting and coding
1345-1400: Break
1400-1450: Section 2: Priors: estimating band-recovery and harvest probability
1445-1500: Break
1500-1545: Section 3: Survival models: random effects and covariates
1545-1600: Break
1600-1645: Section 4: Lincoln estimates and cross-seasonal models
1645-1700: Break
1700-1745: Section 5: Path analysis and downloading data from the BBL

COURSE CONTENT

All the R scripts and data files for the workshop will be available on GitHub:

<https://github.com/thomasriecke/DUCKS9>

Readings are simply provided as examples of application of the tools and techniques we'll discuss in the workshop.

REFERENCES

Section 1

- Brownie, C., Andersen, D. R., Burnham, K.P, and Robson, D.S. 1978. *Statistical inference from band recovery data: a handbook* (Vol. 131). US Department of the Interior, Fish and Wildlife Service.
- Brownie, C., Andersen, D. R., Burnham, K.P, and Robson, D.S. 1985. *Statistical inference from band recovery data: a handbook* (Vol. 156). 2nd Edition. US Department of the Interior, Fish and Wildlife Service.
- <https://www.mbr-pwrc.usgs.gov/software/doc/StatisticalInferenceFromBandRecoveryData.pdf>

Section 2

- Banner, K.M., Irvine, K.M. and Rodhouse, T.J., 2020. The use of Bayesian priors in Ecology: The good, the bad and the not great. *Methods in Ecology and Evolution*, 11(8), pp.882-889.
- Lemoine, N.P., 2019. Moving beyond noninformative priors: why and how to choose weakly informative priors in Bayesian analyses. *Oikos*, 128(7), pp.912-928.
- Northrup, J.M. and Gerber, B.D., 2018. A comment on priors for Bayesian occupancy models. *PLoS One*, 13(2), p.e0192819.

Section 3

- Thompson, J.M., Riecke, T.V., Daniels, B.L., Spragens, K.A., Gabrielson, M.L., Nicolai, C.A. and Sedinger, B.S., 2022. Survival and mortality of green-winged teal banded on the Yukon-Kuskokwim Delta, Alaska. *The Journal of Wildlife Management*, 86(5), p.e22223.
- Arnold, T.W., Clark, R.G., Koons, D.N. and Schaub, M., 2018. Integrated population models facilitate ecological understanding and improved management decisions. *The Journal of Wildlife Management*, 82(2), pp.266-274.

Section 4

- Arnold, T.W., Afton, A.D., Anteau, M.J., Koons, D.N. and Nicolai, C.A., 2016. Temporal variation in survival and recovery rates of lesser scaup. *The Journal of Wildlife Management*, 80(5), pp.850-861.
- Otis, D.L., 2006. Mourning dove hunting regulation strategy based on annual harvest statistics and banding data. *The Journal of Wildlife Management*, 70(5), pp.1302-1307.
- Alisauskas, R.T., Rockwell, R.F., Dufour, K.W., Cooch, E.G., Zimmerman, G., Drake, K.L., Leafloor, J.O., Moser, T.J. and Reed, E.T., 2011. Harvest, survival, and abundance of midcontinent lesser snow geese relative to population reduction efforts. *Wildlife Monographs*, 179(1), pp.1-42.
- Alisauskas, R.T., Arnold, T.W., Leafloor, J.O., Otis, D.L. and Sedinger, J.S., 2014. Lincoln estimates of mallard (*Anas platyrhynchos*) abundance in North America. *Ecology and Evolution*, 4(2), pp.132-143.

Devers, P.K., Emmet, R.L., Boomer, G.S., Zimmerman, G.S. and Royle, J.A., 2021. Evaluation of a two-season banding program to estimate and model migratory bird survival. *Ecological Applications*, 31(7), p.e02425.

Section 5

Gimenez, O., Anker-Nilssen, T. and Grosbois, V., 2012. Exploring causal pathways in demographic parameter variation: path analysis of mark–recapture data. *Methods in Ecology and Evolution*, 3(2), pp.427-432.

Nakash, E., Celis-Murillo, A., Malorodova, M., Howes, L.-A. 2023. North American Bird Banding Program Dataset 1960-2023 retrieved 2023-07-12. Data Release, USGS Digital Object Identifier Catalog. Eastern Ecological Science Center. DOI: 10.5066/P97LQNHY

Gibson, D., Riecke, T.V., Catlin, D.H., Hunt, K.L., Weithman, C.E., Koons, D.N., Karpanty, S.M. and Fraser, J.D., 2023. Climate change and commercial fishing practices codetermine survival of a long-lived seabird. *Global Change Biology*, 29(2), pp.324-340.

Riecke, T.V., Sedinger, B.S., Arnold, T.W., Gibson, D., Koons, D.N., Lohman, M.G., Schaub, M., Williams, P.J. and Sedinger, J.S., 2022. A hierarchical model for jointly assessing ecological and anthropogenic impacts on animal demography. *Journal of Animal Ecology*, 91(8), pp.1612-1626.

Riecke, T.V., Lohman, M.G., Sedinger, B.S., Arnold, T.W., Feldheim, C.L., Koons, D.N., Rohwer, F.C., Schaub, M., Williams, P.J. and Sedinger, J.S., 2022. Density-dependence produces spurious relationships among demographic parameters in a harvested species. *Journal of Animal Ecology*, 91(11), pp.2261-2272.