Dear Dr. O’Hara,

With this letter, please consider our paper "Integrating Resource Selection Information with Spatial Capture-Recapture” for publication in Methods in Ecology and Evolution.

In this paper we extend recently developed Spatial Capture-Recapture (SCR) models to accommodate explicit models of animal space-usage or resource selection consistent with standard notions of “resource selection functions” (e.g., the book by Manly et al. 2002). In our paper: (1) We show that SCR models are models of space usage; (2) we extend SCR models to accommodate resource selection information; (3) we integrate auxiliary data on animal telemetry data into SCR models; (4) provide a joint estimation framework based on marginal likelihood, and (5) we evaluate (by simulation) the improvement in RMSE by using such information, and (6) the bias in estimating N by misspecification by an ordinary SCR model (roughly -20%), thus establishing the importance of the proposed modeling framework.

Our paper represents a major advance in the field of capture-recapture as it allows ecologists to develop explicit models of animal space usage and test hypotheses based only on sparse individual-level capture-recapture data, and it allows for the improvement of estimates based on SCR by including telemetry information from RSF studies. Our paper is, equivalently, a major advance in modeling resource selection for the same reasons. The merger of these two distinct methodological themes should be immediately useful in many studies, and has substantial implications in the design and conduct of essentially all future studies of animal populations. Because our paper is, fundamentally, a methodology paper, it is extremely well-suited for MEE and, we believe, it will be well-received by the Journal’s readership.

Sincerely yours,

J. Andy Royle