
POP R: SOFTWARE FOR WILDLIFE MANAGERS

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It is widely recognized that modern computer software makes wildlife management and research easier and allows increasingly complex tasks to become routine. Unfortunately, data storage and reporting rarely keep pace with the rapid expansion of data analysis software. Such disconnects in workflow can lead to missed opportunities where data are not used to their fullest extent and results are slow to emerge. Here we present a server-based software system, PopR (<https://popr.cfc.umt.edu>), which merges wildlife management agency databases with state-of-the-art statistical software for real-time wildlife data analysis, population modeling and reporting. The interface to PopR is a secure website allowing access from any location with internet access and from any platform (personal computer, smartphone, tablet, etc.). PopR connects to remote data sources through an application program interface (API). PopR implements Bayesian integrated population models (IPM) combining multiple data sources. The IPM's efficiently deal with limited data, overcome missing data and facilitate prediction with error. PopR also implements individual data source analyses such as survival, sightability and herd composition, among others. PopR modules are in development or in use in the states of Idaho, Montana and South Dakota where the software is used for a variety of species including deer, elk and mountain lions. Finally, add-on applications include tools for defining biological populations, checking data integrity and eliciting expert opinion. The PopR workflow management system promises to streamline data collection, automate routine analyses and generally save managers time while increasing inference from limited data.