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Geolocator tags reveal Golden-crowned Sparrow migration secrets

Although the wintering and breeding ranges of many North American migratory birds are well-known, the details of migratory pathways for many populations remain unknown. This gap in knowledge is a challenge to the conservation and study of birds, as the survival and fitness of birds are influenced by all components of their life cycle. Insight into where birds migrate can help us understand population trends and direct future research questions. Recent advances in microtechnology have allowed larger songbirds to be fitted with light-level geolocator tags that, when recaptured following migration, reveal where a bird has migrated.

Golden-crowned Sparrows breed from British Columbia to Alaska and winter from British Columbia to Baja. Decades of banding data have produced little insight into their migratory connectivity. We attached geolocators to 33 Golden-crowned Sparrows at PRBO's Palomarin Field Station in Point Reyes National Seashore, and at a nearby study site in Bolinas, in central coastal California. Eleven of the tagged birds were recaptured the next winter, four still bearing their tags.

Data downloaded from the geolocators revealed that all four birds migrated to the coast of the Gulf of Alaska for the breeding season. These birds migrated twice as fast in spring as in fall (averaging 29 vs. 53 days, respectively), and used a predominantly coastal route. Although all birds went to the same region, their breeding-season locations spanned approximately 1200km.

We did not detect negative effects of tags in our examination of tag effects, which included comparisons of tagged birds to control birds, but we

encourage researchers in this new field to continue evaluating possible effects.

Main Points

- Golden-crowned Sparrows wintering in central California migrated to the Gulf of Alaska to breed.
- Spring migration was twice as fast as in fall, and individual birds' breeding locales spanned 1200 km.
- No negative impacts of tags were detected.
- Determining migratory connectivity of Golden-crowned Sparrows and other birds will allow us to better understand trends and direct conservation and management activities.

Paper Citation

Seavy, N. E., D. L. Humple, R. L. Cormier, and T. Gardali. 2012. Establishing the breeding provenance of a temperate-wintering North American passerine, the Golden-crowned Sparrow, using light-level geolocation. *PLoS ONE* 7: e34886. Available at: <http://dx.plos.org/10.1371/journal.pone.0034886>