Understanding the effects of urbanization and artificial light at night on the wildlife activity in Fort Collins, Colorado

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Field Methods
Two parallel transects of 31 trail cameras was in place from a Urban Wildlife Information Network project; new measurements were taken between 3/29/18 – 5/16/18. 16 of these sites were chosen to add sky quality meters (SQMs) to measure darkness levels. Four SQMs were distributed across the city to measure zenith darkness values.

Mean darkness readings at each site were compared to species information from camera traps.

Conclusions
• SQMs measured ground illuminance, so the brightness gradient predicted across the city was not seen.
• Large carnivores (bobcats and coyotes) were isolated to sites on the outskirts of the city. Red fox were seen in bright sites within the city’s natural areas. Red fox and coyote presence rarely overlapped.
• There was a slight positive correlation between species richness and the darkness of the site.
• More research is necessary to understand the impact of light on activity patterns in wildlife.

Results

Canid Presence Across SQM Sites

Legend
- Western Bobcat
- Coyote
- Red Fox
- South Fox

Time of Activity in Camera Trap Photos

Species Richness Based on Darkness Values