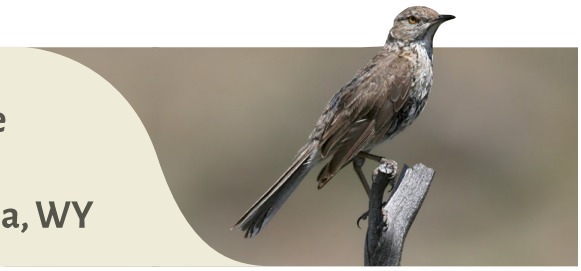
Assessment of Avian Response to Resource Development in the Atlantic Rim Project Area, WY



Sage Thrasher. Wolfgang Wander.

Brewer's Sparrow. Tom Koerner/USFWS

Green-tailed Towhee. Wikipedia CC 3.0

Sagebrush Sparrow. Becky Matsubara

PROGRAM OVERVIEW

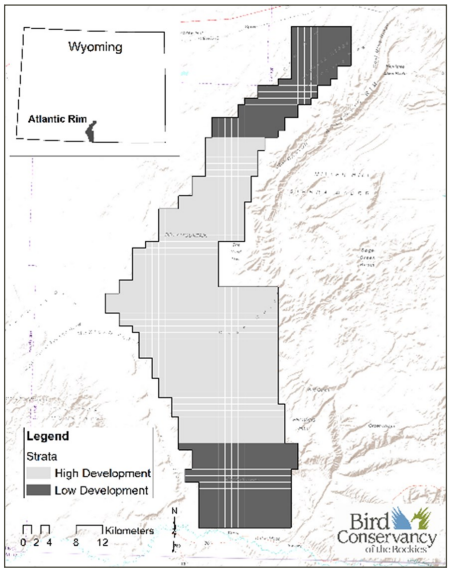
The **Bureau of Land Management** (BLM) is tasked with managing land for multiple uses, including energy development and wildlife habitat. Successful management of public lands requires monitoring and adaptive management to ensure these land use activities are compatible. As oil and gas drilling continues to expand on public and private lands, the Atlantic Rim Project serves as an important case study to understand the impacts of resource development on birds.

Since 2007, numerous well pads and roads have been developed in the project area in high and low development strata. In addition, sagebrush songbirds have declined throughout their range due to a loss of sagebrush habitat. As a result many are now considered species of conservation concern.

Triggers for BLM Priority Species or sagebrush-obligates (Brewer's Sparrow, Sagebrush Sparrow, Sage Thrasher, and Green-tailed Towhee) and Non-Priority Species (non-sagebrush obligate species) were identified by a Working Group comprised of specialists from the BLM, Wyoming Game and Fish Department, and other local agencies. These triggers identify when mitigation and adaptive management are needed to reduce oil and gas impacts on these species.

MANAGEMENT TRIGGERS:

- *For Priority Species*: a 10% decline in occupancy in the high-development stratum (with >90% certainty), which must be greater than population declines in the low-development or reference stratum by 2%.
- *For Non-Priority Species*: a 25% decline in occupancy in the high-development stratum (with >90% certainty), which must be greater than population declines in the low-development or reference stratum by 2%.



METHODS

- The **Integrated Monitoring in Bird Conservation Regions** (IMBCR) sampling design was used to select survey locations in high and low-development strata
- A total of 174 locations were sampled in the project area from 2010-2016, each location consisting of a 1-km^2 grid with 16 evenly spaced points
- Bird populations in the Atlantic Rim Project Area were compared to similar reference areas in other BLM lands within Wyoming
- Small-scale (point count station) and large-scale occupancy (grid-level) were estimated for Priority and Non-Priority Species, as well as annual trends and species richness for multiple bird guilds

Figure 1. *the Atlantic Rim Project Area near Rawlins, WY (Van Lanen et al. 2018).*

RESULTS for PRIORITY SPECIES

There was some evidence that Sage Thrasher occupancy was declining considerably faster in the high- development stratum compared to the reference area, indicating energy development could be negatively impacting them. However, the analysis did not meet all triggers, as there was only a 64% chance the decline was significant when a 90% chance was needed to meet the trigger.

There was some evidence for a decline in Sagebrush Sparrow occupancy in the high-development stratum, but it was <10%, which did not meet the trigger. Both Brewer's Sparrow and Green-tailed Towhee occupancy increased over time in the development strata and/or reference area, so triggers were also not met for these species.

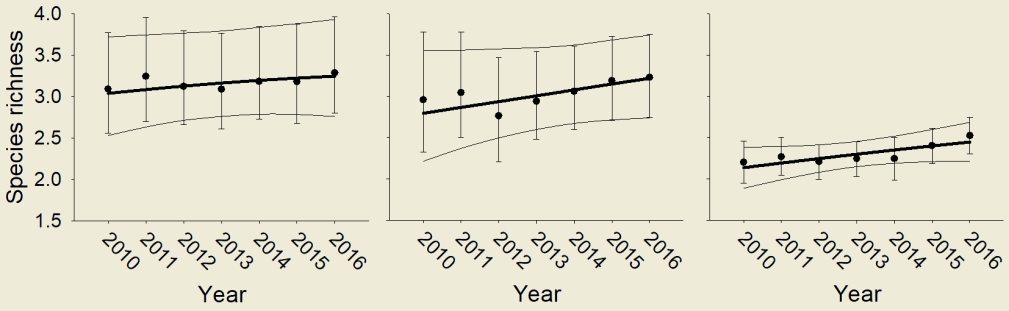


Figure 2. *Species richness of sagebrush obligates in the A) high and B) low-development strata of the Atlantic Rim Natural Gas Development Project Area, and C) BLM reference area, Wyoming, 2010–2016. Bold symbols and trend lines are estimates of mean species richness and the error bars and bounding lines are 95% Credible Intervals (Van Lanen et al. 2018).*

Species richness for sagebrush obligates increased over time in the reference area, but there was less evidence for annual trends in the high and low-development strata (Fig. 2).

MANAGEMENT IMPLICATIONS

While none of the triggers for any species were fully met during this study, the results do suggest that some species, like Sage Thrashers, are negatively affected by resource extraction activities within the high-development stratum, and mitigation efforts may be needed in the future. Species richness was also significantly higher in the Atlantic Rim Project Area compared to BLM reference lands across multiple bird guilds, indicating the Project Area represents important habitat for a diversity of breeding birds.

Because large-scale factors other than natural gas extraction (e.g., climate) could affect populations in the Atlantic Rim Project Area, the comparison between high and low-development strata and surrounding BLM lands for reference was necessary. This comparison between areas of interest and the surrounding region is a critical feature of the IMBCR sampling design. As a result of the analysis, the BLM will continue monitoring to improve the precision of estimates and determine whether the triggers are likely to be met with greater confidence. Monitoring was conducted in 2017 and 2018, with more monitoring scheduled for the 2019 breeding season and possibly beyond.

ACKNOWLEDGEMENTS

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

This project was made possible by the support and collaboration of the Bureau of Land Management and private landowners.

For more information, see the final project report here or contact **Nick Van Lanen** with Bird Conservancy of the Rockies

Van Lanen, N. J., D. C. Pavlacky Jr. and A. W. Green. 2018. Evaluating occupancy rates and species richness of guilds across the Atlantic Rim Natural Resource Project Area, Wyoming (2010–2016). Bird Conservancy of the Rockies. Brighton, Colorado, USA.