



CHAPTER 7

EFFECTS OF GAS-WELL-COMPRESSOR NOISE ON THE ABILITY TO DETECT BIRDS DURING SURVEYS IN NORTHWEST NEW MEXICO

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ABSTRACT.—We used three site types to address whether noise from gas well compressors interfered with our ability to detect birds in the Rattlesnake Canyon Habitat Management Area, San Juan County, New Mexico: (1) gas wells without compressors (control), (2) gas wells with compressors turned off only during surveys (T-off), and (3) gas wells with compressors running during the surveys (T-on). We conducted 571 bird surveys at 294 point-count locations, which were 50–150 m from gas well pads. We measured sound pressure levels (SPLs) at point locations: control mean = 38.6 ± 3.0 (SD) dB(A); T-off mean = 55.0 ± 5.2 dB(A), measured with compressors on; and T-on mean = 52.7 ± 4.5 dB(A). We observed significant differences in species richness, individual abundance, and bird diversity among site types; the differences existed between control and T-on sites and between T-off and T-on sites, but not between control and T-off sites. Species richness, individual abundance, and species diversity were all significantly and negatively influenced by SPL values. A significantly higher proportion of birds were detected on T-off sites compared with T-on sites for 13 species; this compares with only one species that was detected more at T-on sites than at T-off sites. Our results strongly suggest that noise emitted from gas well compressors significantly impaired our ability to detect birds. We determined that the detection threshold is ~45 dB(A), beyond which noise impairs human ability to detect birds within 60 m. These results are relevant to bird surveys in areas where natural and anthropogenic noise may negatively bias detections.

Key words: bird surveys, compressor noise, detection, gas wells, New Mexico.

Efectos de los Compresores de Pozos de Gas Natural en la Habilidad de Detectar Aves durante Censos en el Noreste de Nuevo México

RESUMEN.—Usamos tres tipos de localidad para determinar si el ruido de los compresores de pozos de gas natural interfiere con nuestra habilidad de detectar aves en el Área de Administración del Hábitat de Rattlesnake Canyon, condado de San Juan, Nuevo México: (1) pozos de gas sin compresores (control), (2) pozos de gas con compresores apagados sólo durante los censos (T-off), y (3) pozos de gas con compresores encendidos durante los censos (T-on). Hicimos 571 censos de aves en 294 localidades de puntos de conteo, que se ubicaron entre 50 y 150 m de las plataformas de pozos de gas. Medimos los niveles de presión del sonido (NPSs) en los puntos de conteo: media del control = 38.6 ± 3.0 (DE) dB(A); media de T-off = 55.0 ± 5.2 dB(A), medida con los compresores encendidos; media de T-on = 52.7 ± 4.5 dB(A). Observamos

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