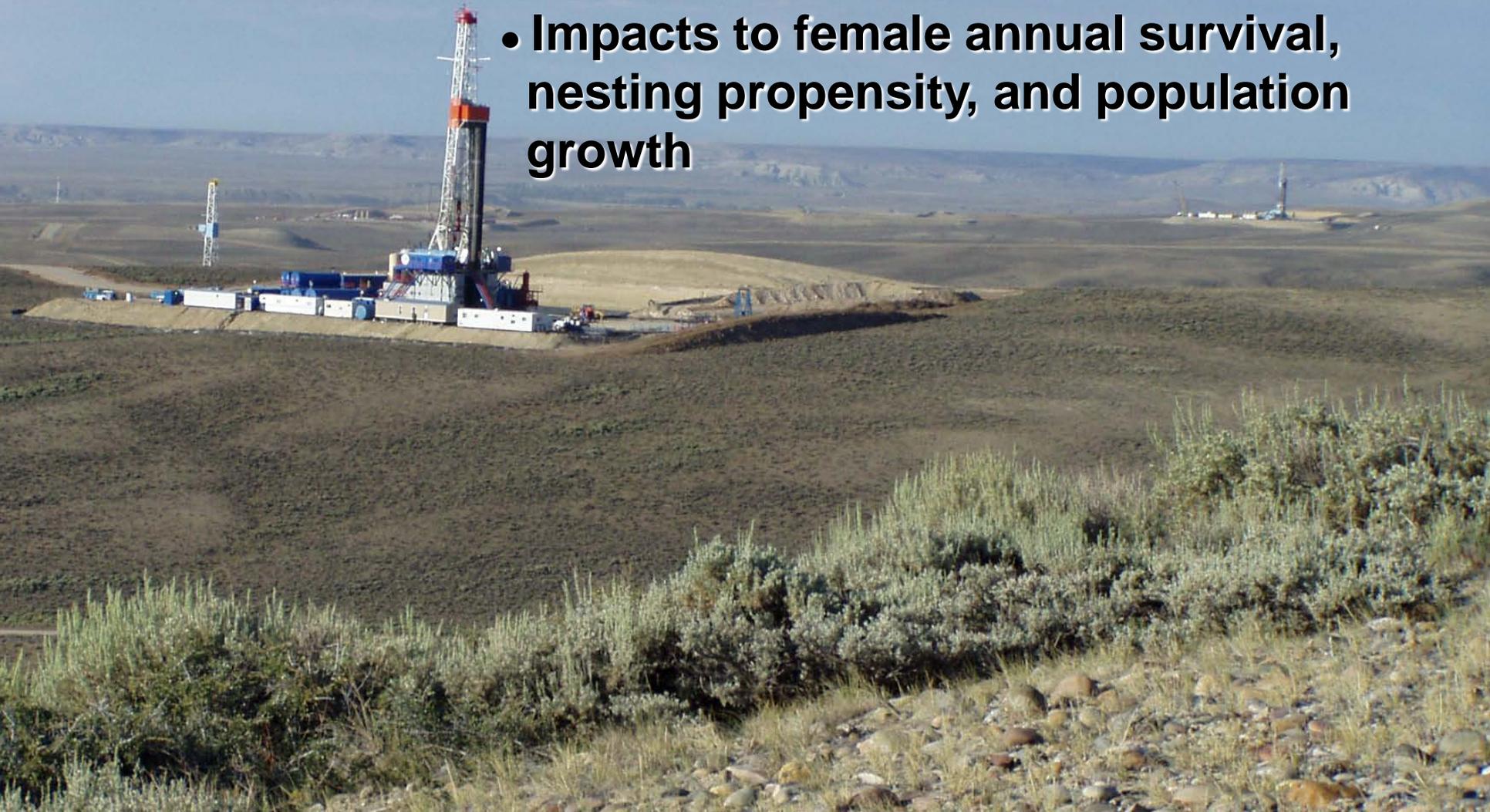


Sage-Grouse and Natural Gas Development: Lessons Learned

Matt Holloran; Wyoming Wildlife Consultants LLC



- Impacts to lek attendance at least 6 km;
Lek inactivity within 3 to 5 years
- Impacts to nesting, brood-rearing and
winter habitat selection
- Impacts to female annual survival,
nesting propensity, and population
growth



Reason for Lag...?







**Response
Similarities...**



- 
- The background image shows an industrial site in a desert landscape. On the left, a tall, lattice-structured oil rig stands prominently, with a large orange rectangular structure attached to its side. Below the rig, there are several blue cylindrical tanks and other industrial equipment. In the foreground, a row of white modular buildings or trailers is visible. The background features a vast, flat desert plain leading to a range of mountains under a clear blue sky.
- No surface disturbance with 0.4 km of a lek;
 - No activity within a 0.8-km radius of active leks between 0000 and 0900 hrs during the breeding season;
 - No construction or drilling activities during the breeding season within 1.6 km of active leks;
 - Restricted construction activity during the breeding and nesting seasons in suitable nesting habitat within 3.2 km of active leks;

A suitable habitat designation requires that an active nest be located during an on-site review of the proposed development area.

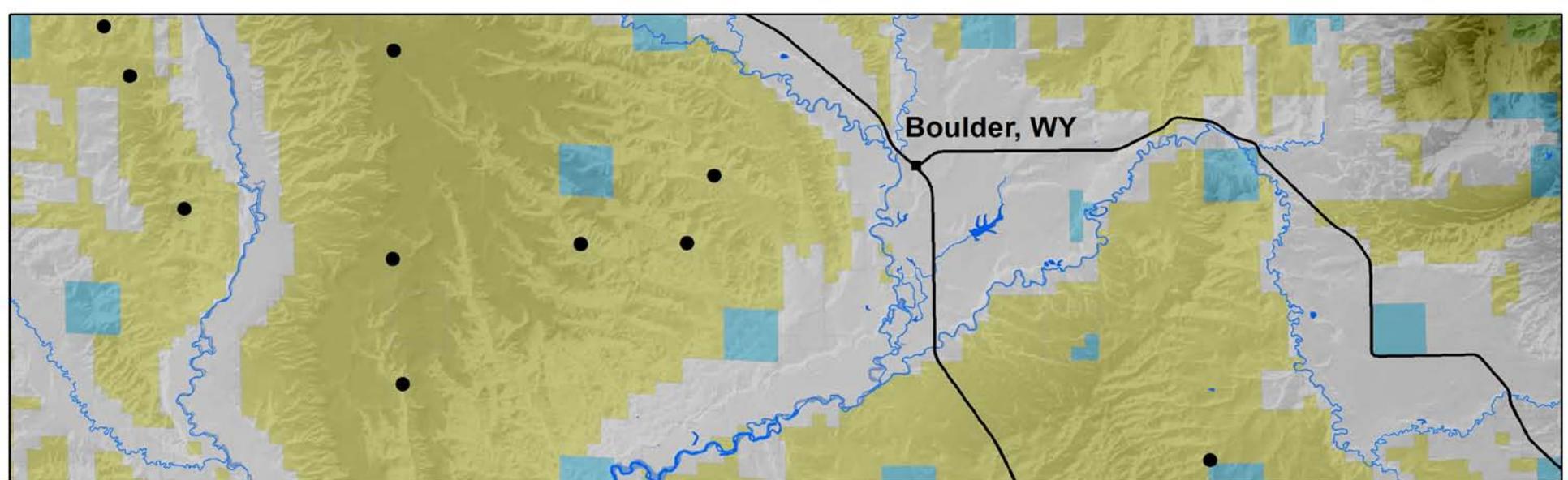
>\$175,000



Effectiveness of Offsite Mitigation...?

\$630,000





>\$19,500,000

- **Predict long-term, population-level responses of wildlife to energy development**
- **Quantify seasonal habitat quality**
- **Assess the effectiveness of mitigation**



Empirically-based predictive models of sage-grouse habitat selection and demographic response to infrastructure

- Time-lag
- Population Growth





Did the mitigative efforts implemented offset the impacts incurred?



