Well stimulation technology (WST) can potentially impact wildlife and vegetation. Habitat loss and fragmentation is the best documented ecological impact from increased oil production. This can result from new construction, new roads, more traffic, and other human activities.

Other potential impacts include:
- Invasive species
- Releases of harmful fluids
- Ingestion of litter by wildlife
- Noise and light pollution

Habitat Loss

WST can enable new oil wells to be drilled, which can contribute to habitat loss. However, not all new wells cause habitat loss.

Some densely developed oil fields have no remaining natural habitat to lose. Some oil fields coexist with other human land uses like agriculture. New wells have little effect on natural habitat.

Other Potential Impacts of WST

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>WST-related activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of invasive species</td>
<td>Facilitated by disturbance, vehicle and foot traffic</td>
</tr>
<tr>
<td>Exposure to harmful fluids</td>
<td>Release of stimulation fluids, formation water and/or hydrocarbons</td>
</tr>
<tr>
<td>Diversion of water from waterways</td>
<td>For mixing stimulation fluid and use in oil and gas production</td>
</tr>
<tr>
<td>Ingestion of litter by wildlife</td>
<td>Discarded by workers</td>
</tr>
<tr>
<td>Vehicle collisions</td>
<td>With vehicles transporting materials for well stimulation, or other WST-related material</td>
</tr>
<tr>
<td>Noise and light pollution</td>
<td>From equipment being used</td>
</tr>
</tbody>
</table>

Background Information

Habitat loss and fragmentation are a leading cause of biodiversity loss on the planet.

Examples of important habitats and vulnerable species in WST-related areas:
- Saltbush Scrub
- Grasslands
- Chaparral
- Kit Fox
- California condor
- Bakersfield cactus
- Southern steelhead
- California red-legged frog

Key Questions

- Habitat: What are the potential impacts?
- WST Activities: How can they impact plants and animals?
- Pollution: What are the potential impacts?
- Special-status species: Do they occur near WST areas?
- Mitigation: How to avoid or minimize potential impacts?

Next Steps

Case studies of ecological impacts of WST, including habitat loss and potential fluid releases.

Contact Information

California Council on Science and Technology
Email: ccstreports@ccst.us  http://www.ccst.us
Lawrence Berkeley National Laboratory
Email: Carol Chien  ccchien@lbl.gov  http://www.lbl.gov

TABLE TOPIC: WILDLIFE and VEGETATION
ENVIRONMENTAL HEALTH STUDY OF WST INCLUDING HYDRAULIC FRACTURING

San Joaquin Valley
Monterey Source Rock