# Cross-Collaborative Recommendations for Balancing Recreation and Wildlife Values on the Deschutes National Forest

**Summary**

| Tier | Focus | Purpose |
|---|---|---|
| 1 | Landscape Strategies | Set the foundation for integrated recreation-wildlife planning |
| 2 | Implementation Tactics | Provide tools to execute those strategies effectively across the landscape |
| 3 | Site-Level Considerations | Ensure smart, adaptive, and locally appropriate design and management |

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**Tier 1: Landscape-Scale Strategies**

These general strategies provide a foundation for balancing wildlife habitat integrity with sustainable recreation access across the forest:

1. Identify priority areas for optimal habitat or recreation function across the landscape – *See Appendix A for full description of Zone types and associated management strategies and agreements.*
    a. Identify and map areas delineating for wildlife emphasis, shared use, or recreation emphasis.
    b. Use spatial data (e.g., Core Habitat and Connectivity Models [Appendix C] wildlife telemetry, observations, trail density, habitat suitability models) to inform priority area delineation and specific strategies and tactics to be employed within each zone.
    c. Delineations should also rely on mapped vegetation types that identify aspen stands, meadows, riparian zones, wetlands, and old growth stands, as well as relevant risk and threat assessments to inform where specific conservation actions will have the greatest benefit for the most vulnerable and/or rare habitat types.
        i. These data sets should be evaluated periodically with input from partners to ensure the best available information is being used.

    d. Rely on recreation expertise and known recreation use trends to identify which areas will be the most suitable for actions to balance habitat conservation and enhancement with recreation needs.
        i. This recommendation doesn't imply no action in the high contention areas, but rather, significantly reduce the extent of non contentious routes in the areas such as redundant and spur roads while not impacting higher value trails and road access to trails to balance wildlife and recreation outcomes.
2. Prioritize Connectivity and Core Habitat Integrity
    a. Maintain and enhance wildlife movement corridors, stepping stones, and a permeable matrix across the forest, especially those connecting particularly valuable habitat patches, along elevation gradients and assisting movement through highly utilized recreation areas.
    b. Protect and restore large patches of contiguous, high-quality habitat.
        i. In areas deemed high priority for wildlife, plan and implement NEPA projects that prioritize wildlife, biodiversity, and habitat benefits utilizing various tools including variable density thinning, ecological prescribed fire treatments, and revegetation.
    c. Utilize widely accepted tactics to reduce fragmentation in all project areas by removing redundant or lower value recreation and access infrastructure, especially redundant roads and user-made routes.
3. Concentrate Recreation Use in Appropriate Areas
    a. Promote use and support investment in infrastructure in zones with lower ecological value or pre-existing high levels of recreation disturbance.
    b. Consider use-intensity and select appropriate strategies to concentrate or disperse use to for the benefit of wildlife as well as recreation experience.
    c. Invest in adequate high-quality infrastructure to accommodate use and reduce expansion pressure elsewhere.
4. Use Adaptive Management and Monitoring
    a. Apply a "test, monitor, adjust" model to recreation and habitat interventions.
    b. Define success metrics for both wildlife and human use and adjust actions as needed.
5. Engage Stakeholders Early and Often
    a. Include diverse voices (e.g., OHV users, hunters, conservationists, Tribal representatives) in planning to understand what routes are vital to keep on the landscape.
    b. Use early engagement to build buy-in, legitimacy, and practical design solutions.
    *c. See Appendix B for a description of the process used in developing these recommendations and the lessons learned.*

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**Tier 2: Implementation Tactics**

These tools and methods can be applied broadly to implement the above strategies at any scale or zone:

1. Education and Behavior Shaping
    a. Co-develop and deploy a forest-wide public messaging campaign with partnering organizations that explains why and how disturbance is harmful to wildlife.
    b. Use progressive signage and trail stewards to guide and reinforce behaviors over time.
    c. Use of signage and other communication methods should be used to guide recreationists towards and through appropriate areas of the forest.
2. Stakeholder Collaboration and Outreach
    a. Co-design projects with community partners and users to ensure that interventions meet both ecological and social needs.
    b. Use community events, social media, and peer-to-peer outreach to build understanding and support.
3. Habitat and Vegetative Treatments
    a. Use treatment techniques such as retaining denser vegetation along specific, high-impact segments of roads and trails to break up sightlines and reduce noise disturbance.
    b. Ensure there are multiple undisturbed, unfragmented access routes to fresh water.
        i. Ensure that trails do not intersect the entirety of waterbody boundaries. (e.g., leave sections or entire sides of waterbodies without trails or human access points).
        ii. To minimize multiple user-created access points to water by trail users, construct intentional and strategic hardened access points to minimize riparian impacts and concentrate disturbance to fewer locations.
    c. Prioritize ecologically-focused treatments that utilize methods such as Individuals, Clumps, Openings (e.g., Franklin et al. 2013) in wildlife and shared use priority areas to increase heterogeneity of both over and understory habitat resources.
4. Strategic Infrastructure Investment
    a. Focus development and use of maintenance resources (e.g., parking, restrooms, signage) in recreation-priority areas to concentrate and sustain use.
    b. Where opportunities exist, relocate trailheads and other recreation launch infrastructure out of prospective movement corridors and to recreation-priority areas.
    c. Employ attractive destination features (views, loop trails, skill zones, boat ramps) to retain users in recreation priority zones.
5. Route Network Optimization
    a. Decommission redundant, user-created, administratively closed, and dead-end routes, especially in sensitive areas.

    b. Reroute trails to avoid high-priority habitat or co-locate within the disturbance buffer of enduring roads to reduce fragmentation.
6. Seasonal, Spatial and User-type Restrictions
    a. Use seasonal or permanent closures in migration corridors or in sensitive areas during particular times of the year (e.g. winter range, calving areas, breeding season)
    b. Reference and utilize education/behavior shaping and outreach bullets below.
    c. Ensure administrative closures are implemented on the ground and consider how to redirect use to other less impactful routes.
    d. Evaluate the effects of different types of recreation user groups on wildlife species, and consider allowing only certain trail users in the area (e.g., motorized vs non-motorized).
7. Monitoring and Evaluation Tools
    a. Install trail counters, cameras, and audio monitors to track human and wildlife use and evaluate the need for habitat-related changes and the impacts of the tactics employed.
    b. Use these data to identify problem areas and inform future planning.

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**Tier 3: Site-Level Considerations**

At the project or trail network level, these considerations ensure strategies and tactics are effectively applied on the ground:

1. Site Suitability
    a. Assess each site's habitat value, recreational intensity, and potential for recreational user displacement before proposing actions.
    b. Avoid interventions that would shift use into more sensitive zones unless mitigation plans are in place.
2. Trail and Infrastructure Design
    a. Use contour-aligned, sustainable trail designs that minimize erosion and discourage up and downslope shortcuts.
    b. Avoid placing trails or infrastructure near key features such as wildlife water sources, calving areas, foraging areas, critical nesting habitats, or migratory routes.
    c. Consider how the trails function as a network and if minor modifications can maximize the functionality and disperse use within the network.
3. Multi-Use Balance
    a. Evaluate trade-offs where fire, timber, cultural access, or other resource needs overlap with recreation and wildlife goals.

    b. Retain some level of permissive access for land management operations while limiting general public use where needed.
4. Communication On-Site
    a. At trailheads and along routes, provide clear information about:
        i. Route status (open/closed)
        ii. Purpose of closures or changes
        iii. Alternative experiences nearby
        iv. Include QR codes, maps, and recommended loops to guide users to designated areas.
        v. Include a list of partnering and supporting organizations to increase buy-in.
    b. Work with online partners and app developers to ensure information is readily available regarding closures and route changes while also providing suggested alternatives.
5. Visibility and Accessibility
    a. When decommissioning routes, use visual deterrents and strategic blocking (e.g., vegetation, tanktraps, logs, berms) to discourage entry.
    b. Clearly delineate and maintain authorized recreation access points.
6. Utilize Enforcement Capacity
    a. Utilize enforcement capacity to support site engineering and maintain the integrity of changes made to reduce the chance of route and use reestablishment.

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# APPENDIX A –

## Landscape Priority Areas and Management Recommendations

*This description of priority area delineation is intended to aid in analysis of tradeoffs and opportunities for recreation and wildlife recommending how the various strategies, tactics, and site-level considerations could be differently employed in areas of The Forest suitable for different management focuses. It is not intended to replace other directions in law and policy. Other resources may also warrant consideration and may not be captured in the descriptions of these zones.*

**Zone A: Wildlife Priority Areas**
*Purpose: Protect, enhance, and restore habitat quality and wildlife movement in the most sensitive and ecologically significant areas. Recreation and access infrastructure is limited and highly managed.*

Strategies

- Maintain or enhance core habitat integrity and size and promote landscape connectivity.
- Minimize human disturbance, especially during sensitive seasons.
- Use habitat restoration, enhancement, and defragmentation as primary tools.

Tactics

- Decommission or close dead-end roads, redundant roads and trails, and user-created routes.
- Apply closures to protect migration, foraging, breeding, or wintering grounds for sensitive species (e.g., mule deer, elk, sensitive songbirds, amphibians).
- Modify trailhead and parking availability to reflect the desired level of use.
- Install visual screens, use natural vegetation to reduce sightlines and noise disturbance in locations where wildlife move into and out of core habitat areas (e.g., wildlife ingress/egress zones).
- In alignment with prior DCFP Zones of Agreement, use mechanical treatments and habitat restoration tools to enhance the diversity of habitat elements and heterogeneity of over and understory vegetation to maximize benefit among wildlife species (i.e., Individuals/Clumps/Openings [ICO] guidelines; Franklin et al. 2014, Churchill et al. 2016) should be prioritized and tailored to local vegetation types.
- Ensure the use of prescribed fire and maintenance treatments in the area does not limit the availability of dense cover patches that provide visual and auditory refuge along wildlife movement areas as well as thermal regulation for cover-sensitive species.
    - Mixed-intensity prescribed fire should promote and retain a mosaic of habitat elements in this zone, including group-tree torching to create snags/openings,

low-intensity surface fire to retain canopy cover and encourage understory plant diversity, and unburned patches to retain dense tree patches, shrubs, and coarse wood.

- Within thinning projects, utilize felled trees along closed and decommissioned roadbeds and skid trails to discourage use across user types (e.g., ample densities of wood to discourage foot traffic).
- Where decommissioning or closures are not feasible, minimize/de-prioritize maintenance of undesired roadbeds.
- Retain established POD boundaries and critical access for fire response but work with fire and fuels personnel to ensure only necessary routes are retained or established.
- Employ wildlife monitoring (wildlife cameras, trail counters, acoustic sensors) to track restoration and conservation corridor effectiveness.

Site-Level Considerations

- Clearly mark closures with educational signage explaining the purpose ("why") and direct users to more appropriate areas to recreate.
- Block access to decommissioned and closed roads with physical barriers and revegetation, especially along entry points and allow vegetation succession to fully close the remainder of the roadbed.
- Prioritize habitat restoration and enhancement in disturbed or fragmented areas within project planning.
- Reroute trails to co-locate within the human disturbance buffer (e.g., up to 300 m on each side) of existing roads where possible, minimizing fragmentation.
- No new development (e.g., trailheads, campsites) within these areas.
- Monitor for emerging user-created trails and respond quickly through design or deterrence.
- Consult with wildlife biologists to determine species presence and fitness (i.e., survival and reproduction) within the area, and adapt habitat and recreation management for those species of concern.
- Tailor vegetation management (i.e., mechanical and prescribed fire treatments) to plant association groups, consistent with DCFP Zones of Agreement and historic range of variation, but allowing for greater vegetation retention within critical movement areas along boundaries of core areas.

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**Zone B: Shared Use Matrix Areas**

*Purpose: Allow for limited and managed recreation use while maintaining sufficient habitat value and minimizing fragmentation, especially serving as movement corridors, stepping stones, and permeable matrix among Wildlife Priority Areas.*

Strategies

- Balance recreation access with ecological function through careful planning and stakeholder input.
- Promote landscape permeability for wildlife to move among wildlife priority areas.
- Use adaptive management to test, monitor, and refine interventions.
- Redirect or concentrate use toward less sensitive areas.

Tactics

- Establish and maintain wildlife corridors, stepping stones, and permeable matrix to connect high value wildlife areas via:
    - Trail reroute or redesign
    - Redundant and dead end road decommissioning and closures
    - Relocation of trailhead and parking lots to establish recreation launch points in concentrated recreation areas
    - Reduce road maintenance for routes to decrease usability while investing in access infrastructure and maintenance for dedicated recreation areas
- Use signage, trail stewards, trailhead information, and progressive messaging to guide behavior (e.g., "You're entering sensitive habitat").
- Monitor for user-created trails and roads, and discourage continued use as quickly as possible (e.g., signage, barricade).
- Consolidate and co-locate infrastructure to reduce the footprint (e.g., parallel trails to roads within disturbance buffers).
- Design routes remaining in wildlife corridors more for access to other concentrated recreation areas to encourage quick and/or limited use of these retained routes.
- Consider seasonal closures in strategic wildlife movement corridors and matrices (e.g., allow summer biking, but close in spring for migration to facilitate passage from summer to winter range or vice versa).
- Ensure administratively closed routes are actually closed on-the-ground.
- Evaluate the effects of different types of recreation user groups on wildlife species, and consider allowing only certain trail users in the area (e.g., motorized vs. non-motorized).
- In alignment with DCFP Zones of Agreement and ICO methods, modify mechanical and prescribed fire strategies and tactics to promote habitat heterogeneity and retain cover patches to minimize human disturbance to wildlife within documented wildlife movement areas and promote movement cover among wildlife priority areas.
- Employ wildlife and recreation user monitoring (wildlife cameras, trail counters, acoustic sensors, trail and road counters) to track wildlife and human use of the area to determine effectiveness of tactics (e.g., road or trail closures, signage, habitat restoration etc.).
- Test and refine threshold-based management (e.g., if trail counters exceed X during Y season, trigger closure or reroute planning).

Site-Level Considerations

- Prioritize reroutes that provide comparable or improved recreational experiences to maintain user satisfaction.
- Use trail stewards or volunteers to provide education during high-use periods or following infrastructure changes.
- Install low-impact infrastructure (e.g., vault toilets, staging areas) where it supports concentrated use and reduces pressure on sensitive zones.
- Ensure data collection protocols are in place before, during, and after changes (e.g., camera traps along rerouted trails).
- Consult user groups to ensure the placement of wildlife corridors doesn't have unintended, significant impacts on recreation experiences.
- Consult with wildlife biologists to determine species presence and fitness within the area, and adapt habitat and recreation management for that species.
- Utilize hazard and fire risk information to determine what levels of dense vegetation patch retention would be feasible at stand scales without compromising fire risk reduction and management objectives at project scales.

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**Zone C: Recreation Priority Zones**

*Purpose: Sustain and enhance high-quality recreation experiences in areas with low wildlife sensitivity, while minimizing unintended expansion and future impacts.*

Strategies

- Focus on intensive recreation use in already disturbed areas with low habitat value.
- Use infrastructure investment and design to attract and retain users in these zones.
- Plan for future growth commensurate with demand and recreation diversity.

Tactics

- Develop high-amenity trailheads: parking, signage, restrooms, varied trail experiences (e.g. Wanoga Sno-Park)
- Provide destination attractions (viewsheds, loops, skills parks) to encourage return visits to designated areas.
- Build durable infrastructure with sustainable design standards to minimize erosion, maintenance, and establishment of user-made alternatives.
- Co-develop a route recommendation system with partnering organizations to produce or modify maps, apps, and signage to clearly identify preferred and approved use areas.
- Integrate fire and fuel management goals into trail design and maintenance.
- Engage with local recreation stakeholder groups to enhance communication and ensure needs are being met.

Site-Level Considerations

- Use visual and experiential design to subtly discourage users from venturing beyond designated zones (e.g., align trail flow to avoid “tempting” social trail creation).
- Monitor for emerging user-created trails and respond quickly through design or deterrence.
- Apply routine maintenance and stewardship programs to retain high-quality experiences and minimize degradation that might push users into zones A or B.
- Test new recreation types (e.g., adaptive trails, equestrian routes, bike parks) where appropriate and low impact.
- Where feasible, retain dense vegetation along trails to reduce sight lines, noise propagation, and enhance user experience.

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**Cross-Zones Considerations (Apply Forest-Wide)**

- Education & Messaging: Use forest-wide branding and signage strategy that links individual behaviors to broader wildlife conservation goals.
- Stakeholder Engagement: Involve recreation and conservation stakeholders early and often, particularly before NEPA scoping.
- Monitoring & Evaluation: Institutionalize data collection (e.g., trail counters, user surveys, wildlife observations) to inform adaptive management.
- Equity & Access: Ensure equitable access to high-quality recreation opportunities while protecting shared public resources.
- Interdisciplinary Planning: Integrate wildlife biologists, recreation planners, fire/fuels experts, and public affairs specialists in early project design.
- Employ strategic planning across multiple spatial scales (Tier 1-3) to identify and balance wildlife and recreation needs.
- Retain established POD boundaries and critical access routes for fire response but work with fire and fuels personnel to ensure evaluate which routes are necessary for retention or establishment.
- Prioritize fuel breaks along major roads while retaining habitat features that may facilitate wildlife movements across roads within critical wildlife movement areas.

# APPENDIX B –

# Engagement Process Description and Lessons Learned

*Process write-up in production. This is intended to be a description of the process employed and lessons learned that others can use and improve over time, not a recommendation to follow this process exactly during future efforts. Because of this, the planning team does not anticipate that consensus needs to be developed for this appendix.*

# APPENDIX C –

# Core Habitat Model Development

*Development process write-up in production. This is intended to be a description of the steps taken, data used, and theoretical frameworks employed to develop the core habitat model intended to inform others in different landscapes should they wish to replicate these efforts for their circumstances. This is not necessarily a recommendation to follow this process exactly during future efforts but a resource to inspire similar efforts, elsewhere. Because of this, the planning team does not anticipate that consensus needs to be developed for this appendix.*