2008

Rapid Assessment of 2008-2012 Highway Development Projects in Region 6: Threats and Opportunities to Terrestrial Wildlife Resources

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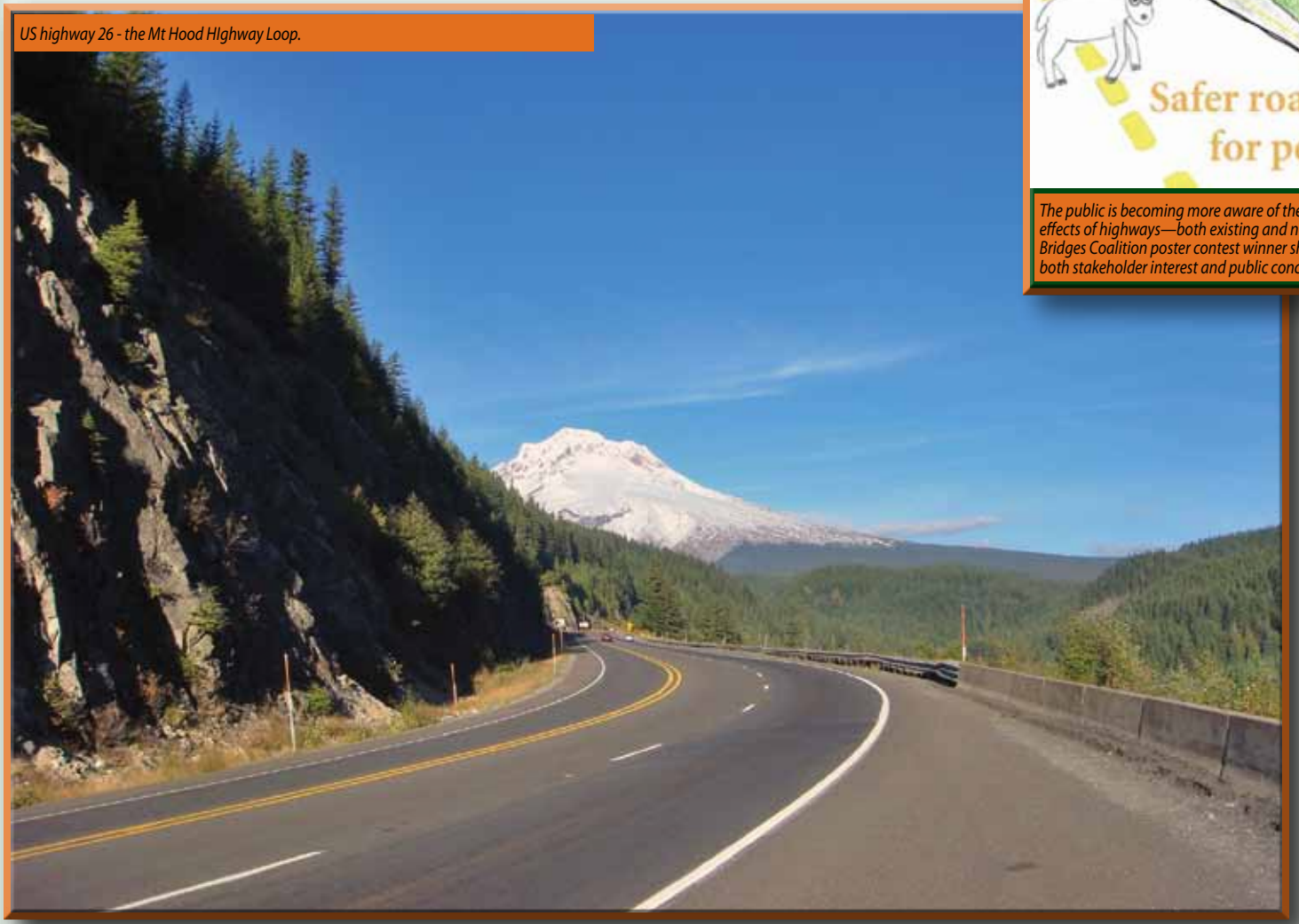
Summaries of Highway Development Projects in Region 6 National Forests

Spring 2010



US highway 26 - the Mt Hood Hlghway Loop.

The public is becoming more aware of the importance of recognizing and mitigating the effects of highways—both existing and new construction—on wildlife. This I-90 Wildlife Bridges Coalition poster contest winner shows the engagement of the public in terms of both stakeholder interest and public concern. (Image: I-90 Wildlife Bridges Coalition)

Cover photographs show the Oregon Silverspot Butterfly, a federally listed species on the Siuslaw National Forest in Oregon that is adversely affected by vehicle collisions, and an artist's rendition of a new wildlife overpass on the I-90 Snoqualmie Pass East project on the Okanogan-Wenatchee National Forest in Washington.

Summaries of Highway Development Projects in Region 6 National Forests

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As a premier natural resources agency, the USDA Forest Service offers expertise as a cooperating agency with transportation departments to create sustainable and lower impact highways. American citizens have come to expect swift and safe travels on our Nation's highways, and now it is our opportunity to recreate the same benefit to the travelling wildlife on our National Forest System lands.

This Rapid Assessment of the current highway development plans of the two states in Region 6, Oregon and Washington, investigates projects in the Statewide Transportation Improvement Plans, or STIPs. The Rapid Assessment produced two separate documents. In this document, the summary results of the Rapid Assessment of each state STIP are displayed in spatial and tabular formats. Another section contains analysis tools and background information designed to help line officers and wildlife program managers analyze and interpret information in the STIP Tracking Tools.

On the following pages, each Region 6 forest map is displayed along with a summary of the most important highway development projects listed in the 2008-2012 STIP. Projects listed are in the respective state STIP as of August 2009. It is likely that some changes have been made from the original STIP, including the completion of some projects listed as 2008 or 2009 construction dates. Each STIP Tracking Tool in this summary is taken from a complete STIP Tracking Tool currently stored in the Region 6 Natural

Resources collaborative filing system. Greater information on each project is in the expanded STIP Tracking Tool (see page XXX for an example of the full STIP Tracking Tool). The full STIP Tracking Tool is designed to allow users to access information from the state transportation departments (DOT) and can also be used to input and track information found to be useful by Forest Service managers facing previous highway development projects. The STIP Tracking Tool format has been modified from a tracking form developed by Richard Clark (Forest Service liaison to Wyoming DOT).

The STIP Tracking Tools shown in this section reflect one STIP cycle's projects, currently officially updated every four years. An objective of the Rapid Assessment project was to improve the timeliness of the current system. Thus, a recommendation of the Rapid Assessment team is to update the Tracking Tools with current information at least twice each year to better reflect changing projects. The Tracking Tools are designed to provide an update overview for all projects on a forest, and to also provide a tickler and information storage system for managers to track pertinent information about any given project as it moves from planning to implementation. An example of a complete STIP Tracking Tool is placed at the end of this brochure.

This document contains a summary of higher complexity projects selected for their interest to line officers and resource managers. These projects represent not only the current STIP projects but also a sample of the types of projects that will be on future STIPs. Thus, readers are urged to glance at the tracking tools and narratives for all forests to gain a quick glimpse of the types of projects potentially facing each forest. The summary has extracted brief information on project locations and types, the program year of construction, estimated project cost, Resource Needs Levels, and possible opportunities and threats for terrestrial wildlife resources. The program year of construction may indicate the onset of planning, depending on the type of project. Estimated project cost provides an approximate at-a-glance estimator of project complexity. Resource Needs Level is explained fully in the Analysis Tools section; it provides managers with an estimate of the amount of natural resource specialist time and experience needed to respond to project complexity. Higher Resource Needs Levels indicate increased complexity and staff involvement. Threats and opportunities are also more fully explained in the Analysis Tools section; the summaries here provide ideas for what project attributes may need to be investigated.

The Rapid Assessment team identified a number of constraints and barriers in the current system to the delivery of information on highway development projects of interest to Region 6 wildlife program managers.

- *STIPs represent a snapshot in time of planned projects, but are not updated frequently enough in the published STIPs for resource managers to respond in a timely manner. STIPs are updated as project funding, unavoidable delays, new information, or changes in priority occur.*
- *STIPs do not contain all highway projects, such as emergency*

projects, which can be extensive in nature and provide excellent opportunities to improve conditions for aquatic and terrestrial movement. These projects will require an extra coordination effort to take full advantage of each situation.

- *Oregon and Washington DOTs do not have a simple method of querying STIPs for spatial locations of projects on National Forest System (NFS) lands. The states also do not have a simple process to query projects that occur within National Forest boundaries.*

- *States vary greatly in the information presented in STIPs. States do not have standardized terms for project descriptions, nor do they have the same information in STIPs. They have vast amounts of information useful to state DOTs, but lack key information needed by resource agencies. Thus, each state must be queried uniquely to locate information needed by Forest Service wildlife program managers.*

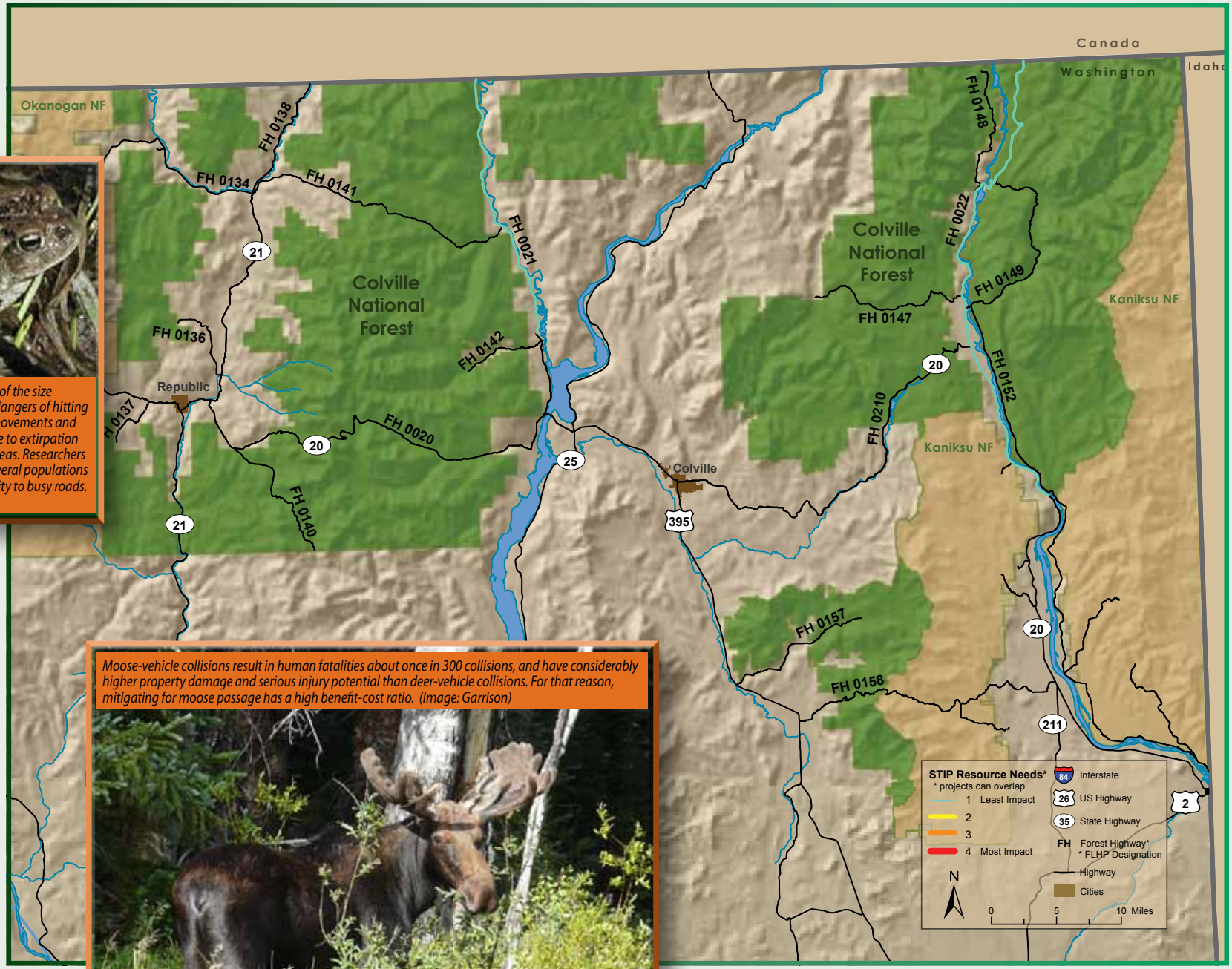
- *Each state DOT uses an agency-specific method of spatially locating highway projects. It was very difficult to transcribe the information into a format usable to the Forest Service.*

The Rapid Assessment team developed a process to identify and spatially pinpoint highway projects on National Forest System lands that can be updated in less than a day's time. However, the process depends on cooperation with the state DOTs, and also with Regional information managers to process and house pertinent data. The Rapid Assessment team recommends updating the spatial and temporal tracking tools at least twice annually. Additionally, updates caused by emergency or unusual situations (such as the American Recovery and Reinvestment Act projects) can be facilitated with the STIP Tracking Tool but will not automatically occur without support by all agencies to update the information as needed.

It is crucial to note that once a project is on the STIP, several opportunities for early planning have been passed. Ideally, natural resource managers who identify issues and opportunities before the STIP is approved will have the greatest probability of successful implementation. However, current practice does not facilitate resource specialist input.

The Rapid Assessment team would like to acknowledge the assistance of both the Washington and Oregon Departments of Transportation for their help in locating and processing the information needed to compile this report. We especially appreciate the enthusiasm the departments showed in working to improve the process to share relevant information.

Boreal toads are at the opposite end of the size spectrum when compared with the dangers of hitting a moose, but because of their slow movements and relatively long life they are vulnerable to extirpation when highways are near breeding areas. Researchers have documented extirpations of several populations of anurans in Europe in close proximity to busy roads. (Image: Steve Kozlowski, USFS)



Moose-vehicle collisions result in human fatalities about once in 300 collisions, and have considerably higher property damage and serious injury potential than deer-vehicle collisions. For that reason, mitigating for moose passage has a high benefit-cost ratio. (Image: Garrison)

COLVILLE

Highway development projects on the Colville National Forest during this planning cycle have minimal threats and opportunities for terrestrial wildlife. However, the Forest Service can propose projects for future STIPs to address currently recognized issues.

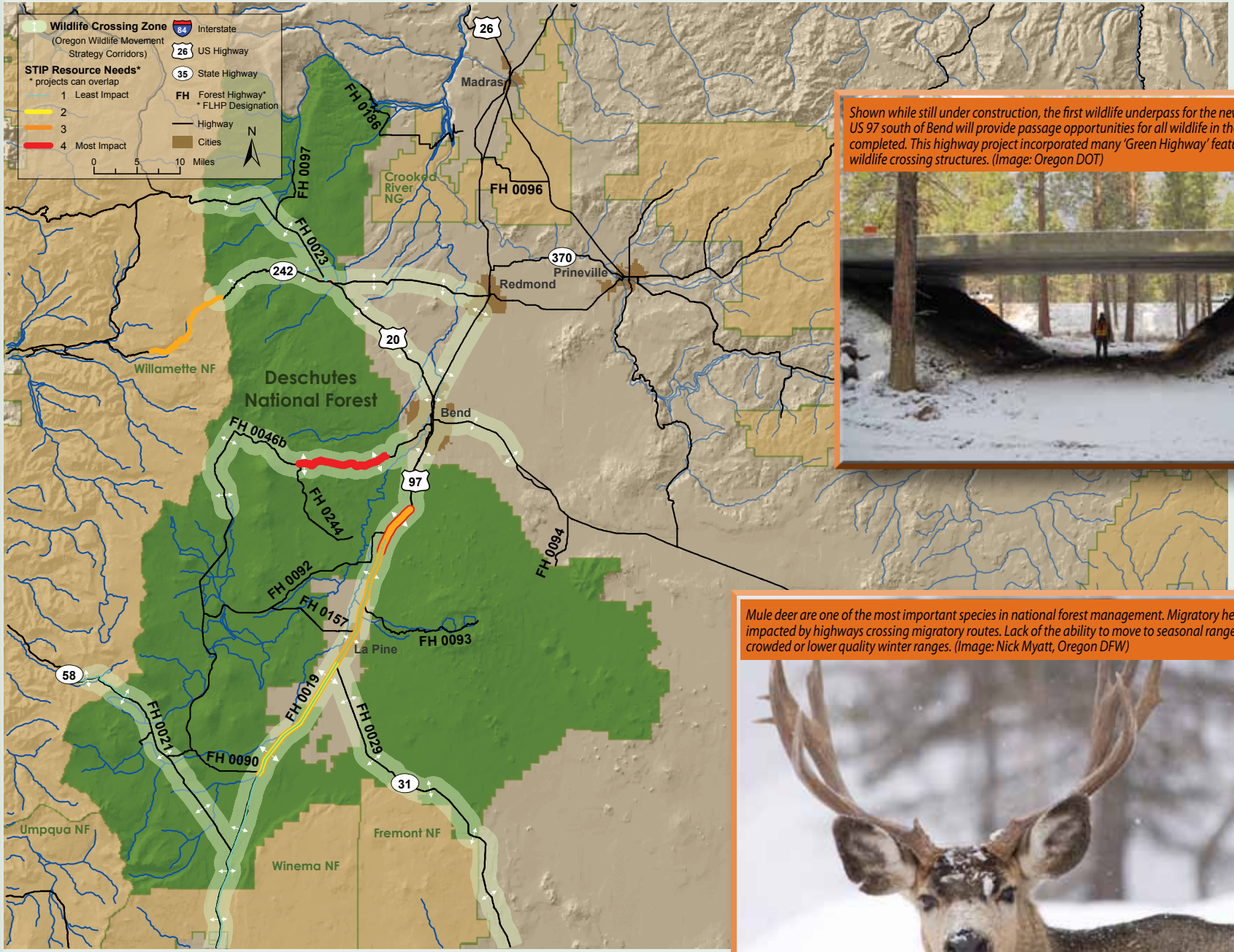
Drivers through the Colville National Forest face a risk rare in Region 6: a possible vehicle collision with a towering moose. Technology to reduce the risk of moose-vehicle collisions is available, and could be considered as a proposal from the forest in future STIPs. Drivers on the Colville National Forest also face collision risks associated with several other ungulate species including mule and white-tailed deer.

Although the Colville National Forest is home to several large highly mobile mammals, collisions with rare species such as grizzly bears and wolves are uncommon. Many of the large carnivores are easily disturbed by highway noise and human presence, and avoid highways even at low levels of traffic volume. Thus highways can invisibly fragment habitat. None of the projects identified on the current STIP will enable treatment of these issues, but Forests can propose projects to reduce habitat fragmentation while retaining the ability of highways to provide safe and efficient transport of goods and services.

State Transportation Improvement Program (STIP) Projects

Colville National Forest

PROCESS ELEMENT		Highway Name / *(Project Section)*			
		SR 31/Slate Crk Br - Deck Rehab	**US 395/Boyds to Canada - 2009 Chip Seal**	**SR 31/Tiger to Canada - 2008 Chip Seal**	**SR 20/Tiger to Ruby Mt - 2008 Chip Seal**
Project Information	**Description of Work**	Bridge 31/042 deck repair. Repair and overlay the existing bridge deck to preserve the structural integrity of the bridge 8.79 miles north of Metaline Falls on SR 31.	2009 chip seal Bituminous surface roadways require a pavement surface treatment on a six-year cycle to maintain the integrity of the pavement and provide skid resistance for stopping. Application of a Bituminous Surface Treatment for the 2009 Chip Seal to 21.7 miles	2008 chip seal Bituminous surface roadways require a pavement surface treatment on a six-year cycle to maintain the integrity of the pavement and provide skid resistance for stopping. Application of a Bituminous Surface Treatment for the 2009 Chip Seal to 21.7 miles	2008 chip seal Bituminous surface roadways require a pavement surface treatment on a six-year cycle to maintain the integrity of the pavement and provide skid resistance for stopping. Application of a Bituminous Surface Treatment for the 2008 Chip Seal to 14.00 miles
	Program Year for Construction	2015	2009	2008	2008
	Estimated Project Cost ($)				
Forest Service	**Resource Needs Level**	1	1	1	1
	Opportunities				
	Threats	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Consider effects of hazardous materials on amphibians.	Consider effects of hazardous materials on amphibians.	Consider effects of hazardous materials on amphibians.



Shown while still under construction, the first wildlife underpass for the newly divided US 97 south of Bend will provide passage opportunities for all wildlife in the area when completed. This highway project incorporated many 'Green Highway' features, including wildlife crossing structures. (Image: Oregon DOT)

Mule deer are one of the most important species in national forest management. Migratory herds are seriously impacted by highways crossing migratory routes. Lack of the ability to move to seasonal ranges can restrict animals to crowded or lower quality winter ranges. (Image: Nick Myatt, Oregon DFW)

DESCHUTES

The Deschutes National Forest is the site of an important milestone in Oregon's transportation ecology history. The US 97 Lava Butte project incorporated two wildlife crossing structures to restore wildlife movement across US 97 south of Bend, Oregon. These structures are the first of their kind in Oregon. Very high traffic volume on US 97 has caused a nearly complete barrier for mule deer migrating between summer and winter ranges. High vehicle collision rates indicate that crossing structures are key to reducing mortality and increasing traveler safety.

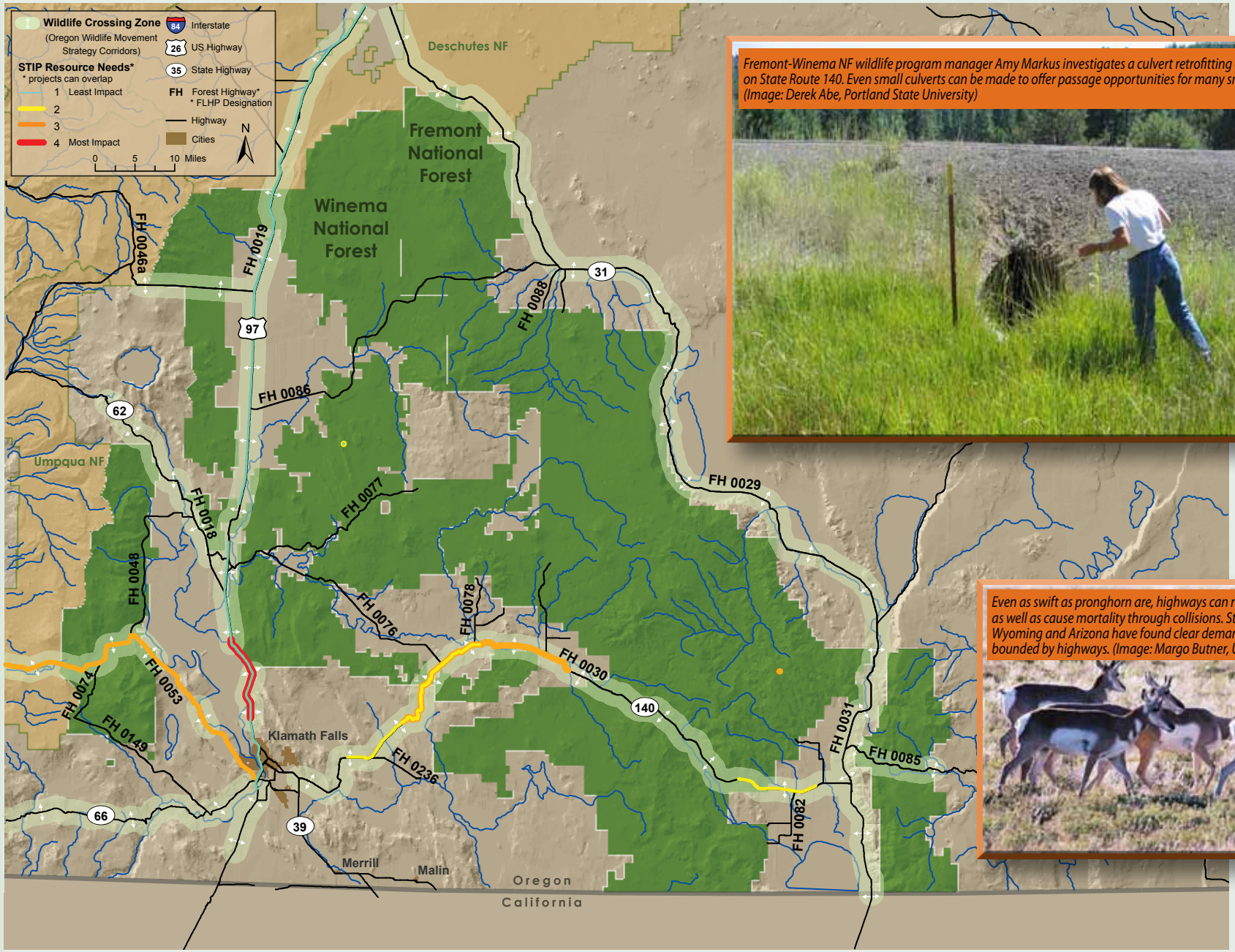
Other firsts are the experimental incorporation of vegetation under the structures, and a naturally landscaped wildlife travel lane on the underpass that accesses the Lava Lands Visitor Center. The additional wildlife travel lane was an inexpensive added feature that will allow wildlife another crossing opportunity under busy US 97. Wildlife can travel undisturbed during most of the year, because the visitor center is open during daylight summer hours when most wildlife species are least active.

Other projects planned on the Deschutes National Forest, including those on Forest Highways, have opportunities to restore or maintain wildlife movement as traffic volumes increase in this rapidly developing area of central Oregon.

State Transportation Improvement Program (STIP) Projects

Deschutes National Forest

PROCESS ELEMENT		Highway Name / (Project Section)				
		US97: LAVA BUTTE - S CENTURY DRIVE	**S CENTURY DRIVE- GEN'L PATCH BRIDGE - BURGESS RD**	**US97: OR31 - CRESCENT SCL, PHASE 2**	**US97: LAVA BUTTE - HWY OR31 JCT**	**US97: OR31 HWY JCT - SCL CRESCENT**
Project Information	Description of Work	Add travel lanes, close accesses and build frontage roads	Widen roadway, grade, improve road base and drainage, and pave Forest Hwy 92	Widen Shoulders	Environmental Analysis to Widen US97	Pavement preservation; replace guardrail and signs; install or replace curbs and sidewalks.
	Program Year for Construction	2009	2009	2010	2008	2009
	Estimated Project Cost ($)	$24,024,000	$10,230,000	$1,088,000	$252,000	$8,178,000
Forest Service	Resource Needs Level	4	4	3	3	2
	Opportunities	Restore historic migratory mule deer passage.	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures.	Investigate the need for wildlife crossing structures.	Investigate the need for wildlife crossing structures; identify existing wildlife issues.	Use guardrail as a wildlife deterrent fencing; install new or replacement water conveyance structures.
	Threats	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Increasing human access into less developed areas; increasing traffic volume & speed; cumulative effects of incrementally increasing barrier.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	



Fremont-Winema NF wildlife program manager Amy Markus investigates a culvert retrofitting opportunity on State Route 140. Even small culverts can be made to offer passage opportunities for many small animals. (Image: Derek Abe, Portland State University)

Even as swift as pronghorn are, highways can readily disrupt movements as well as cause mortality through collisions. Studies on pronghorn in Wyoming and Arizona have found clear demarcations of movements bounded by highways. (Image: Margo Butner, USFS)

The Fremont-Winema National Forests share with the Deschutes National Forest one of the highways most affecting migratory mule deer in Region 6: US 97 along the eastern flank of the Cascades. This highway was recognized in the Oregon Wildlife Movement Strategy as being key to deer seasonal movements in this section of the state. The Fremont-Winema National Forests are participating in a proactive interagency effort to locate and prioritize specific sites for mitigation by using a 'Stepdown' process in the areas broadly identified in the Oregon Wildlife Movement Strategy along US 97. The products from the 'Stepdown' process will enable Forest Service and transportation officials to propose new mitigation projects or incorporate mitigation measures into planned projects to effectively restore wildlife movement

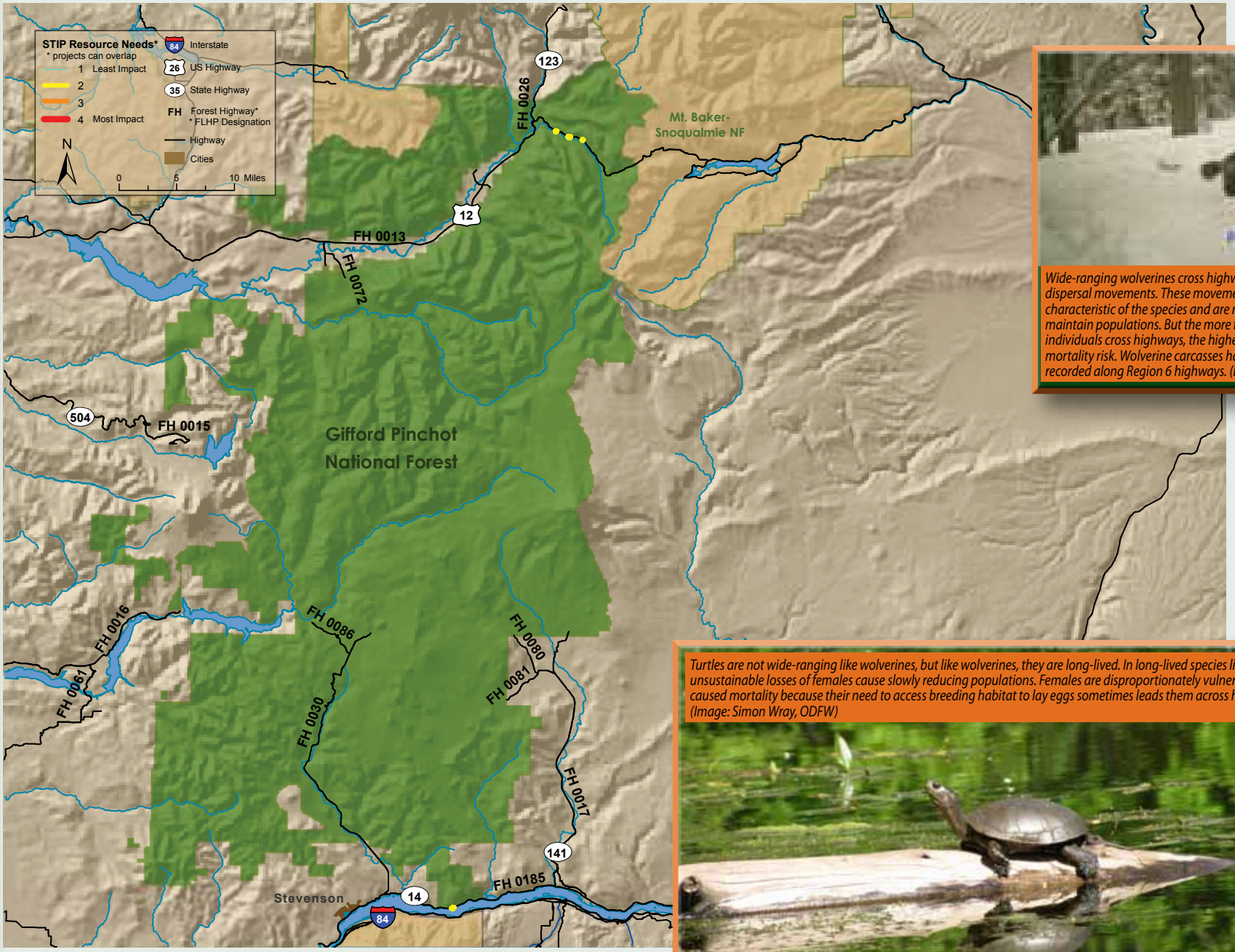
Prior to 2009, opportunities to provide better wildlife passage by retrofitting existing structures have not been systematically investigated. The Fremont-Winema National Forests is cooperating with the Pacific Southwest and Pacific Northwest Research Stations to research innovative approaches to retrofit existing structures for wildlife passages.

Bridge replacements are occurring in several locations on the Fremont-Winema National Forests. Whenever older bridges are replaced, major opportunities for increasing wildlife passage occur.

State Transportation Improvement Program (STIP) Projects

Fremont-Winema National Forest

PROCESS ELEMENT		Highway Name / (Project Section)								
		US97: MODOC POINT - SHADY PINE	OR140: RITTER RD - DEER RUN RD (BLY MTN)	OR31/US395:CATT LEPASS-CROOKED CR - BUNDLE 404	OR140: MODOC BILLY CR - FISH HOLE CR (BEATTY/BLY)	OR140:N LITTLE BUTTE CREEK-GREAT MEADOW SNOW PARK	OR140: SUMMIT SNOW PARK RD-FOURMILE FLAT RD	OR140: DREWS GAP - MADDOCK CORNER (LAKEVIEW)	OR140: LAKESHORE DRIVE - GREEN SPRINGS HWY	OR62: FORT CREEK FISH PASSAGE
Project Information	Description of Work	Preserve Pavemnet, Rockfall Protection, Widen, Add Retaining Walls and Guardrail	ODOT and County Contribution to Widen, Realign Curves and Preserve Pavement Partnering with FHWA	Replace Bridges 03913, 03915	Overlay Pavemenr; Adjust Guardrail Ends; Fix Areas with Settling Subbase; Thin Treatment	Overlay, Guardrail	Overlay, Guardrail	Pavement Preservation and Upgrade Guardrail	Pavement Preservation, Add Left Turn Lane Refugde, Upgrade Guardrail, Replace Drain Pipes	Various Fish Passage Imporvements New RCRB, Possibly a 2400 MM X 2400 MM
	Program Year for Construction	2009	2009	2008	2008	2008	2009	2010	2008	2008
	Estimated Project Cost ($)	$19,444,000	$10,112,000	$4,998,000	$4,073,000	$8,900,000	$5,965,000	$4,091,000	$3,564,000	$711,000
Forest Service	Resource Needs Level	4	3	3	3	2	2	2	2	2
	Opportunities	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures; use barrier to divert animals to a safer crossing area.	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Use guardrail as a wildlife deterrent fencing.	Use guardrail as a wildlife deterrent fencing.	Use guardrail as a wildlife deterrent fencing.	Use guardrail as a wildlife deterrent fencing; install new or replacement water conveyance structures.	Use guardrail as a wildlife deterrent fencing; install new or replacement water conveyance structures.	Improve passage for terrestrial species.
	Threats	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier; increased speed.	Impact of the removal of lead-based paint; disturbance to migratory birds.	Clear zone barrier effect; potential that guardrails will divert animals to less safe locations.	Potential that guardrails will divert animals to less safe locations.	Potential that guardrails will divert animals to less safe locations.	Potential that guardrails will divert animals to less safe locations.	Potential that guardrails will divert animals to less safe locations.	Fish passage structures might impede terrestrial passage.



Wide-ranging wolverines cross highways in their dispersal movements. These movements are characteristic of the species and are needed to maintain populations. But the more frequently individuals cross highways, the higher their mortality risk. Wolverine carcasses have been recorded along Region 6 highways. (Image: USFS)

Turtles are not wide-ranging like wolverines, but like wolverines, they are long-lived. In long-lived species like turtles, unsustainable losses of females cause slowly reducing populations. Females are disproportionately vulnerable to vehicle-caused mortality because their need to access breeding habitat to lay eggs sometimes leads them across highways. (Image: Simon Wray, ODFW)

The Gifford Pinchot National Forest has several similar projects on the current STIP. Rockslope protection projects might have virtually no wildlife impacts and opportunities, or conversely these projects may provide opportunities to use the slope for a diversion barrier to funnel animals to a crossing location that is safer for the travelling public and the animals themselves.

Several projects incorporate replacement of drains. Depending on the location and type of drains being replaced, opportunities may arise for accommodating small animal passage.

Although the projects planned during this cycle may have few opportunities to consider wildlife issues, it is likely that there are other highways on the Gifford Pinchot National Forest with wildlife issues needing mitigation that could be incorporated into the next planning cycle.

State Transportation Improvement Program (STIP) Projects

Gifford Pinchot National Forest

PROCESS ELEMENT		Highway Name / (Project Section)				
		SR 14/ 1.5 Miles East of Bergen Road - Rockfall Mitigation	**US 12/3 Miles East of SR 123 - Stabilize Slope**	**US 12/4.5 Miles East of SR 123- Stabilize Slope**	**US 12/4.4 Miles East of SR 123- Stabilize Slope**	**US 12/West Side White Pass - Stabilize Slope**
Project Information	Description of Work	Rock scaling, rock bolting, wire mesh, cable net installation Install rockfall mitigation measures.	Scaling, rock bolts, rock dowels and drape with wire mesh. Repairs unstable rock slope by removing loose rocks, constructing a fence at the base of the western part of the slope, and installing nets and mesh on the slope. Reduces the likelihood of future rock fall reaching the roadway surface.	Scaling, rock bolts, dowels, draped cable mesh, horizontal drains. Stabilize an unstable rock slope by removing loose rocks and using rock bolts and dowels to reinforce large rock blocks. The project also will install horizontal drains and drape slope with cable net slope protection.	Trim blasting, scaling, rock bolts, dowels, horizontal drains, mesh. Stabilize an unstable rock slope by removing loose rocks and using rock bolts and dowels to reinforce large rock blocks. The project also will install horizontal drains and drape slope with cable net slope protection.	Scaling, fiber-reinforced shotcrete, rock dowels, rock bolts. Stabilize an unstable rock slope by removing loose rocks and using fiber-reinforced shotcrete, rock bolts, and rock dowels to reinforce large rock blocks. The slope will also be draped with cable-net slope protection.
	Program Year for Construction	2009	2009	2010	2010	2009
	Estimated Project Cost ($)	$1,592,000	$1,517,000	$1,438,000	$958,000	$463,000
Forest Service	Resource Needs Level	2	2	2	2	2
	Opportunities	Use barrier to divert animals to a safer crossing area.	Use barrier to divert animals to a safer crossing area.	Replacement of drains can produce greater terrestrial passage opportunities.	Replacement of drains can produce greater terrestrial passage opportunities.	Use barrier to divert animals to a safer crossing area.
	Threats	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incremental increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock; construction disturbance from blasting.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.

Among the anti-predator defenses a rattlesnake possesses is coiling to confront danger. This behavior is not effective with vehicles. Snakes face a social problem as well because studies have shown that drivers will aim to kill snakes on highways. (Image: USFS)

Badgers readily use existing or added culverts to cross highways. However, often in their desert haunts too few culverts occur to provide frequent passage opportunities. Some studies have indicated a high frequency of badger mortalities are due to vehicle collisions. (Image: unknown)

The Ochoco and Malheur National Forests are treated together in this rapid assessment because few highway development projects are planned during this round for either of the forests, and highways affect similar species on both forests.

Highways with relatively low to moderate traffic volume typically have the highest rate of wildlife-vehicle collisions of any size highway. This is because traffic gaps are large enough that animals tend to underestimate the danger, and traffic is not noisy or frequent enough to cause as much avoidance as occurs on high volume highways. The Ochoco and Malheur National Forests are likely to have highways with a high rate of wildlife-vehicle collisions because of moderate traffic volume. Transportation departments tend to have more tools to solve the safety aspects than ecological aspects of animal/vehicle collisions.

Involvement by the Forest Service, especially specialists in interpreting wildlife and highway interactions, can guide projects towards meeting both transportation and resource agency missions. Due to less noise from high traffic volume, highways in remote areas usually will be relatively permeable to most wildlife species. An awareness of trigger points for when issues become population-level impacts will help reduce future problems. If the rate of vehicle caused mortality is acceptable from an ecological and safety perspective, mitigation can be deferred to higher priority forests while recognizing opportunities associated with highway projects as they come on line.

Fish passage improvements on US 26 might provide an opportunity to increase terrestrial wildlife passage as well.

State Transportation Improvement Program (STIP) Projects

Malheur and Ochoco National Forests

PROCESS ELEMENT		Highway Name / (Project Section)	
		US26:BRIDGE CREEK FISH PASSAGE IMPROVEMENTS	US26: OCHOCO CREEK-BRIDGE CREEK- BUNDLE A05
Project Information	Description of Work	Bridge Creek Fish Passage Improvements	Replace Bridges 07649, 02553, 02201
	Program Year for Construction	2011	2008
	Estimated Project Cost ($)	$346,000	$11,848,000
Forest Service	Resource Needs Level	1	3
	Opportunities	Consider installing terrestrial passage simultaneously with aquatic passage.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottle-neck, such as with shelving.
	Threats	Fish passage structures might impede terrestrial passage.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.

Birds may not be obviously affected by highway impacts because they can fly above traffic. However, studies have shown that songbird density is lower near highways. Interior forest species are particularly affected, as well as songbirds from other habitats. (Image: USFS)

The Mt Baker-Snoqualmie National Forest shares with the Okanogan-Wenatchee National Forest one of the most heavily travelled interstates in the United States, Interstate 90. This massive route is not being upgraded on the western flank of Snoqualmie Pass at this time, but numerous other projects of significance are planned for the forest. Two planned bridge replacements might offer many opportunities for improving wildlife passage opportunities. Realignment of the road at Nooksack River may pose substantial issues with sediment, aquatics passage, and disturbance, while potentially providing opportunities to improve passage for wildlife in the area. Some project descriptions in the STIP are difficult to assess for threats or opportunities to wildlife resources, and need to be investigated as to the project extent.

Here, mountain lions use a newly constructed wildlife underpass in Montana. Large projects provide opportunities to plan wildlife crossing structures that can be used by many species. (Image: Confederated Salish Kootenai Tribe)

State Transportation Improvement Program (STIP) Project Planning & Development Tracking Form

Mount Baker-Snoqualmie National Forest

PROCESS ELEMENT		Highway Name / (Project Section)									
		SR 542/Nooksack River - Redirect River and Realign Roadway	US 12/Tieton River W Crossing - Replace Bridge	US 12/Tietion River E Crossing - Replace Bridge	US 2:Stevens Pass West - Unstable Slopes	US 12/Rimrock Lake Vicinity _ Stabilize Slope	US 12/Timrock Tunnel Vicinity - Stabilize Slope	I-90/Tinkham Rd Interchange Bridge - Seismic	I-90/Hansen Creek Road Bridge - Seismic	SR 20/Concrete Vicinity Bridges - Seismic	SR 542/Chain-up Creek Culvert
Project Information	Description of Work	Chronic environment deficiency retrofit. This project will address numerous repetitive damage locations along the Nooksack River and its tributaries on SR 542. Improvements will use a combination of road relocations and re-directing the river to prevent further erosion.	Replace existing Bridge 12/316. Existing bridge does not meet current standards. A new bridge will be constructed in order to meet current standards and maintain safe operation of the highway.	Replace existing Bridge 12/317. Existing bridge does not meet current standards. A new bridge will be constructed in order to meet current standards and maintain safe operation of the highway.	Slope stabilization on US-2 west of Stevens Pass. Existing slopes have uncontrolled rock fall. Stabilize rock slopes. Stabilization will reduce rocks falling on roadway.	Scaling, rock bolts and dowels Stabilize an unstable rock slope by removing loose rocks and reinforcing potentially unstable large rock blocks with long bolts and dowels.	Scaling, rock bolting, rock dowels, debris removal left side Repairs unstable rock slope by removing loose rocks, and by installing long bolts and dowels in potentially unstable large rock blocks. Reduces the likelihood of future rock fall reaching the roadway surface.	Seismic retrofit The existing Tinkham Road Bridge does not meet current design standards for withstanding earthquakes. Bringing the bridge up to current design standards will maintain overall safety of the highway.	Seismic retrofit. The existing Hansen Creek Road Bridge does not meet current design standards for withstanding earthquakes. Bringing the bridge up to current design standards will maintain overall safety of the highway.	Seismic retrofit on bridges - 20/259, 20/280, AND 20/338 Retrofit existing bridges to bring them up to current seismic standards and reduce the risk of catastrophic failure.	Fish barrier removal
	Program Year for Construction	2009	2009	2009	2010	2010	2010	2012	2012	2013	2009
	Estimated Project Cost ($)	$12,120,000	$7,405,000	$5,601,000	$7,029,000	$170,000	$160,000				$924,000
Forest Service	Resource Needs Level	4	3	3	2	2	2	2	2	2	1
	Opportunities	Investigate opportunities to improve drainage for terrestrial crossing.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Use barrier to divert animals to a safer crossing area.	Use barrier to divert animals to a safer crossing area.	Use barrier to divert animals to a safer crossing area.	Investigate the extent of action to determine wildlife passage opportunities.	Investigate the extent of action to determine wildlife passage opportunities.	Investigate the extent of action to determine wildlife passage opportunities.	Consider installing terrestrial passage simultaneously with aquatic passage.
	Threats	Investigate down stream effects; investigate the extent of action to determine threat level.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Investigate the extent of action to determine threat level.	Investigate the extent of action to determine threat level.	Investigate the extent of action to determine threat level.	Fish passage structures might impede terrestrial passage.

Gray squirrels were recognized in the Oregon Wildlife Movement Strategy as a species affected by habitat fragmentation and mortality from highways. Gray squirrels are representative of common species that can be adversely affected much more than wildlife managers normally recognize until populations are greatly reduced. (Image: Kathy Munsell, ODFW)

Emergency projects, by definition, are not planned, so they will not be listed on STIPs except under unusual circumstances. Bridge damage from Mt Hood debris flows resulted in the need for major bridge replacements and other reconstruction. Opportunities for improving ecosystem function are still available on fast-moving emergency projects, such as the case here where repairs will enable more natural floodplain functions, but responding rapidly can be challenging. (Image: S. Jacobson)

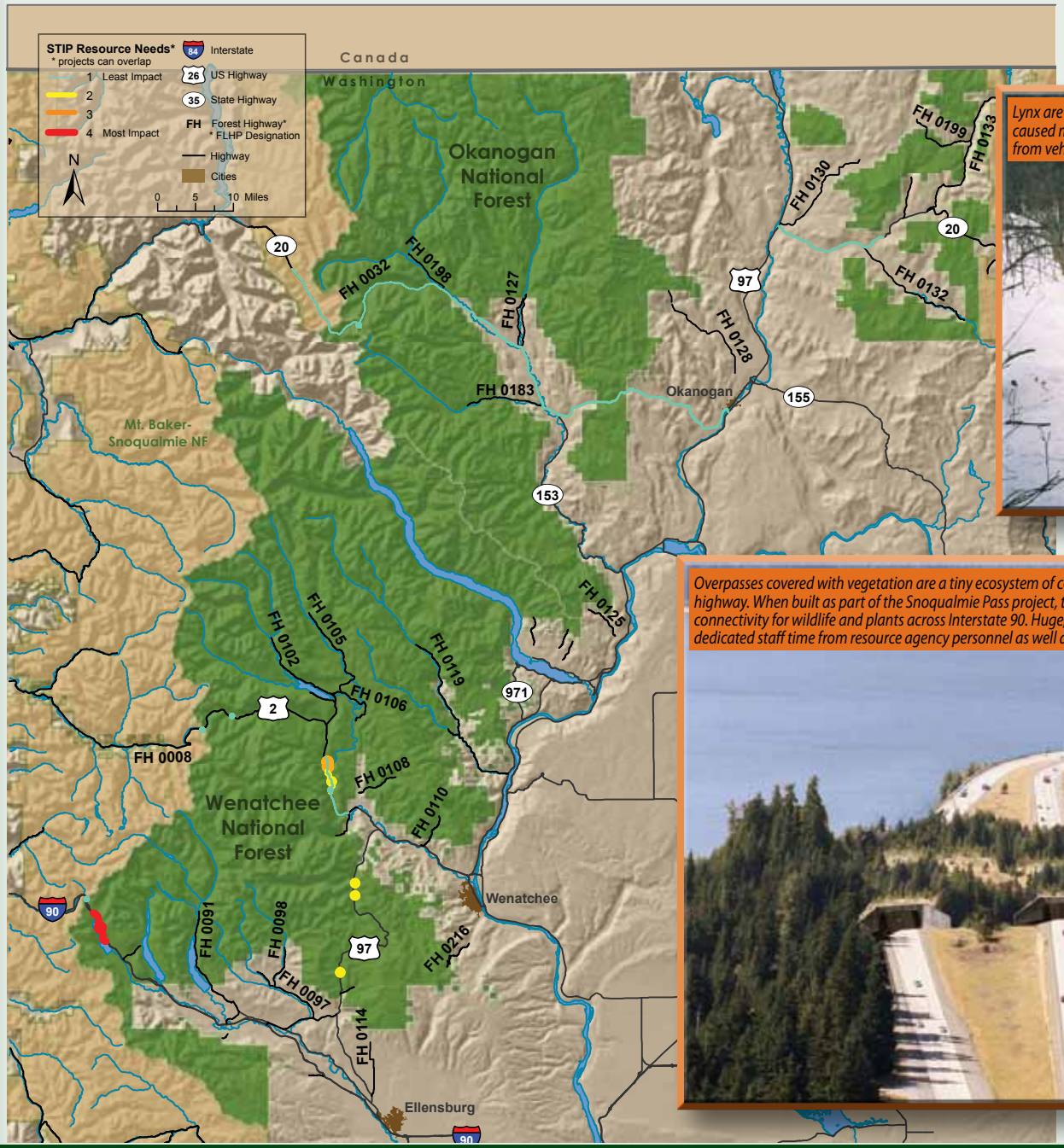
The Mt Hood National Forest has numerous projects listed in the STIP, some of which may have substantial threats or opportunities to terrestrial wildlife. Not all highway projects are on the STIP, however, including emergency repairs. One of the largest and most significant projects on the Mt Hood National Forest is an emergency repair project on State Route 35 which includes several underpasses potentially capable of improving wildlife passage for the next half century. Emergency repairs, especially at stream-road crossings, are fleeting opportunities with little lead time to improve passage for both aquatic and terrestrial animals, so it is important to request assistance in identifying and designing passage improvements.

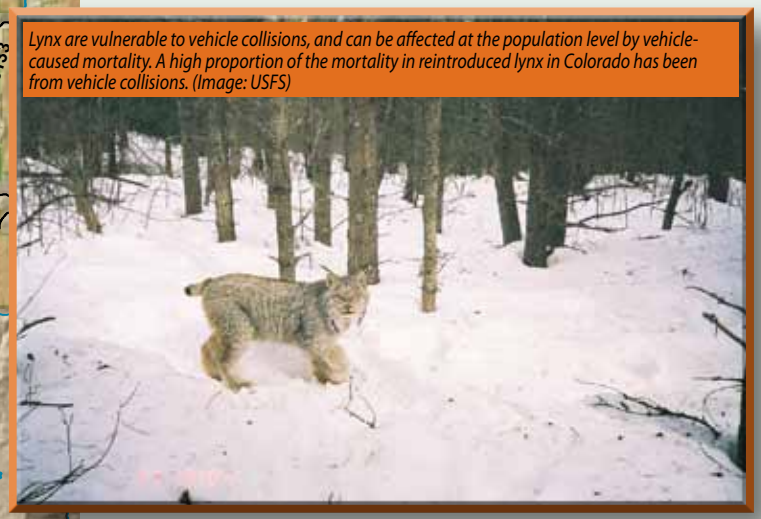
Other planned projects that warrant consideration for terrestrial wildlife resources are bridge replacements and passing lane additions. Passing lane additions are incremental increases in a highway's barrier effect. These types of improvement projects are often complex projects with opportunities for substantial mitigation for new and existing impacts.

State Transportation Improvement Program (STIP) Projects

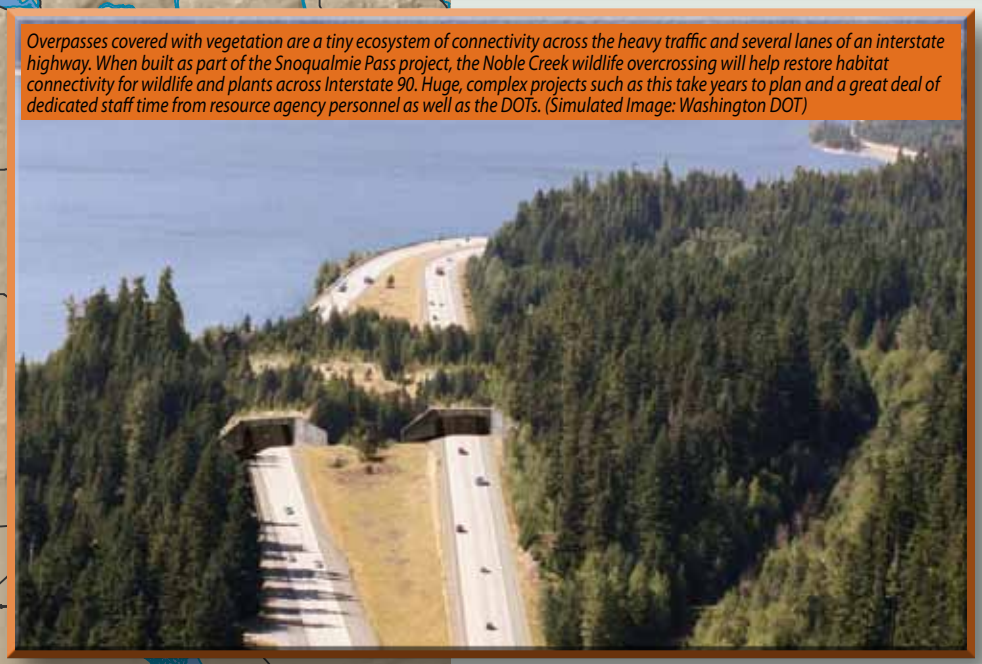
Mount Hood National Forest

PROCESS ELEMENT		Highway Name / (Project Section)								
		I-84: DODSON - TANNER CREEK BUNDLE 209	I-84:CASCADE LOCKS - 2ND ST(HOOD RIVER)BUNDLE 208	US26: MP 49.20 - MP 51.2	I-84: ACCESS IMPROVEMENTS (CASCADE LOCKS) PROJECT	US 26: FS ROAD 35 TO FS ROAD 36	I-84 SANDY RIVER - THE DALLES (FENCING)	US30: CLATSKANIE RIVER-BUNDLE 459	CASCADE LOCKS MARINE PARK UNDERPASS	US26: BEAVER CREEK REALIGNMENT REFINEMENT
Project Information	Description of Work	Repair Bridge# 2176A, Replace Bridges # 02194B, 02062A, 02062B	Repair 07458A, 08610, 08610W, 08623, 08662, Replace #08605, #08605W	Install Downhill Passing Lane	Planning Access Accomodation of Anticipated Resort/ Casino EIS,IAMP,8-PT DEC REP	Install Slow Movin Vehicle Turnout and Chain-Up Area	Repair or Reconstruct Fencing Along I-84	Repair and Widen Bridge #07519	Improvements to Marine Park Underpass	Planning Phase For Project
	Program Year for Construction	2008	2008	2011	2008	2011	2008	2010	2008	2008
	Estimated Project Cost ($)	$18,438,000	$16,889,000	$12,544,000	$3,000,000	$2,151,000	$1,697,000	$1,659,000	$892,000	$204,000
Forest Service	Resource Needs Level	3	3	3	2	2	2	2	2	2
	Opportunities	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Investigate the need for wildlife crossing structures.			Consider wildlife fencing to divert animals to a safer crossing area.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures.	Investigate the need for wildlife crossing structures; identify existing wildlife issues.
	Threats	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier; increasing speed; increasing traffic in area.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.		Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.		Clear zone barrier effect; cumulative effects of incrementally increasing barrier.





Lynx are vulnerable to vehicle collisions, and can be affected at the population level by vehicle-caused mortality. A high proportion of the mortality in reintroduced lynx in Colorado has been from vehicle collisions. (Image: USFS)



Overpasses covered with vegetation are a tiny ecosystem of connectivity across the heavy traffic and several lanes of an interstate highway. When built as part of the Snoqualmie Pass project, the Noble Creek wildlife overcrossing will help restore habitat connectivity for wildlife and plants across Interstate 90. Huge, complex projects such as this take years to plan and a great deal of dedicated staff time from resource agency personnel as well as the DOTs. (Simulated Image: Washington DOT)

The Okanogan-Wenatchee National Forest is famous in transportation ecology circles because of its application of the best available science in wildlife and highway interactions on the Interstate 90 Snoqualmie Pass East project. The Interstate Highway System that tied all corners of the nation together is now slightly over 50 years old, and many sections are now requiring substantial modernization and reconstruction. Interstates carry so many vehicles on so many lanes that they pose an almost complete barrier to wildlife movement. The I-90 Snoqualmie East project is a huge improvement project that dwarfs all other infrastructure projects in Region 6.

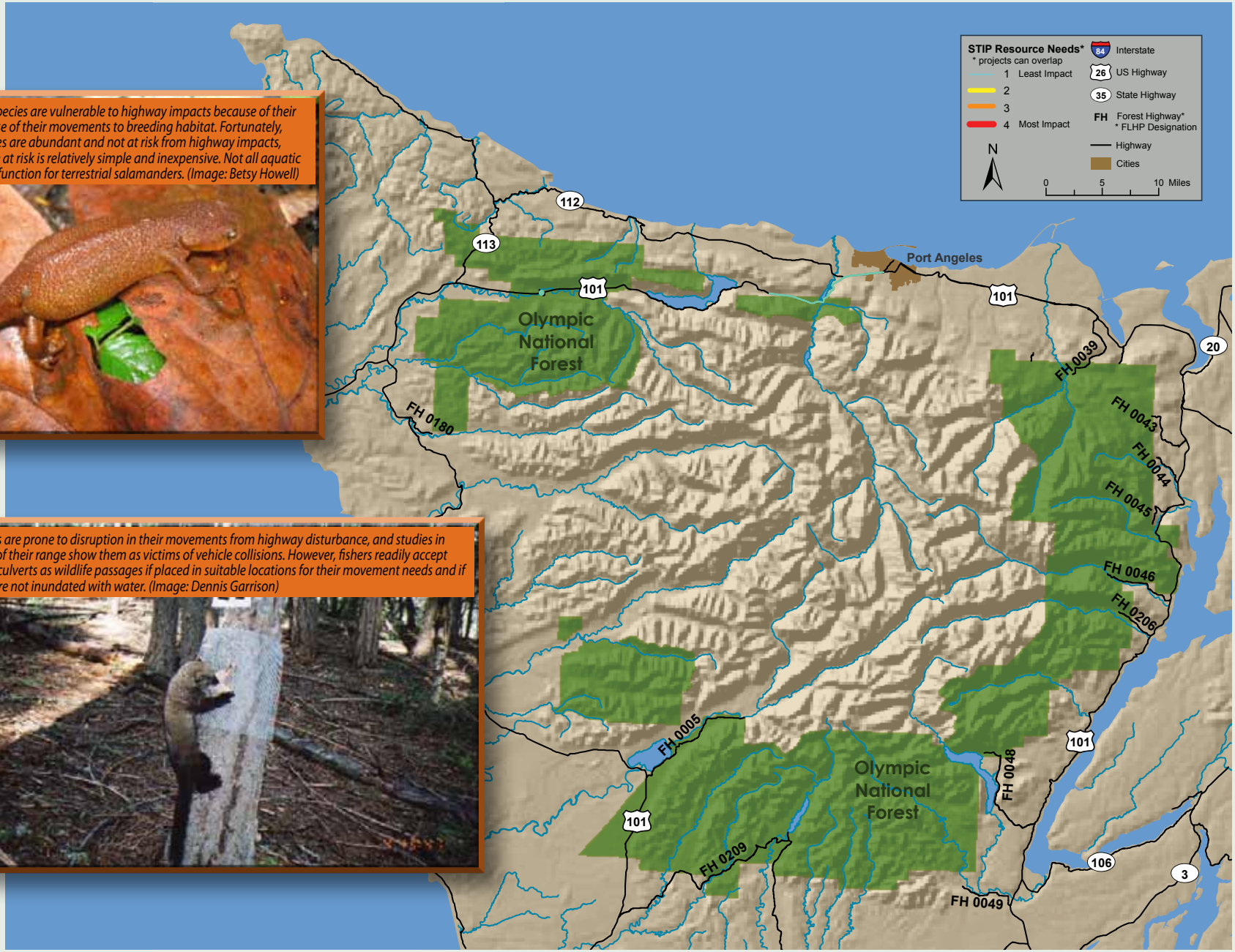
The I-90 Snoqualmie East project will result in increased traveler safety as well as a partial restoration of animal movement capabilities. Motorists along I-90 will enjoy greater safety from avalanche protection and restored pavement surfaces as well as reduced risk of wildlife-vehicle collisions. Wildlife overpasses and underpasses are designed to restore movement across the highway. The forest's intensive involvement in all phases of the planning of this project are testament to the complexity of highway projects, and also to the excellent results that can be obtained when the Forest Service fully engages in projects that affect the land and resources.

As if I-90 were not enough, the Okanogan-Wenatchee National Forest has several other substantial projects, especially bridge replacements. Overall, these projects applied carefully can result in a restoration of wildlife passage opportunities in several locations.

State Transportation Improvement Program (STIP) Projects

Okanogan-Wenatchee National Forest

PROCESS ELEMENT		Highway Name / (Project Section)						
		I-90/Snoqualmie Pass East - Hyak to Keechelus Dam - Corridor Improvement	US 2/Chiwaukum Creek - Replace Bridge	US 2/Wenatchee River Bridge - Replace Bridge	US 2/W of Leavenworth - Unstable Slopes	US 97/North of Blewett Pass _ Unstable Slope	US 97/8 Miles S of US 2 Intersection - Unstable Slope	US 97/Blewett Pass - Add Passing Lane
Project Information	Description of Work	Construct new roadway The section of I-90 between Hyak and Lake Keechelus Dam experiences congestion due to increasing traffic volumes and closures for avalanche control. By adding lanes to this section and realigning the roadway, the project will decrease congestion, minimal	Replace Bridge 2/212 The Existing roadway across the bridge is narrow. Replace the existing bridge with a new bridge designed to current standards. The added width will increase the safety for the traveling public.	Replace bridge 2/215 The Existing roadway across the bridge is narrow. Replace the existing bridge with a new bridge designed to current standards. The added width will increase the safety for the traveling public.	Stabilize Rock Slope Repairs unstable rock slope by removing loose rocks, constructing wire mesh slope protection, and/or widening the roadside ditch. Reduce the likelihood of future rock fall reaching the roadway surface.	Unstable slope Existing slope has uncontrolled rock fall. Stabilize rock slope. Stabilization will reduce rocks falling on roadway.	Prevent Rock Fall Existing slope has uncontrolled rock fall. Stabilize rock slope. Stabilization will reduce rocks falling on roadway.	Construct passing lane Numerous passing related collisions have occurred at this location. Construct a passing lane for northbound US 97 traffic. This will reduce the risk of head-on collisions.
	Program Year for Construction	2009	2011	2011	2010	2009	2009	2009
	Estimated Project Cost ($)	$500,058,000	$5,603,000		$2,781,000	$832,000	$275,000	
Forest Service	Resource Needs Level	4	3	3	2	2	2	2
	Opportunities	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Use barrier to divert animals to a safer crossing area.	Use barrier to divert animals to a safer crossing area.	Use barrier to divert animals to a safer crossing area.	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures.
	Threats	"Increasing human access into less developed areas; increasing traffic volume & speed; cumulative effects of incrementally increasing barrier."	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.



Salamanders of many species are vulnerable to highway impacts because of their low mobility and because of their movements to breeding habitat. Fortunately, some salamander species are abundant and not at risk from highway impacts, and mitigation for those at risk is relatively simple and inexpensive. Not all aquatic organism passages will function for terrestrial salamanders. (Image: Betsy Howell)

Fishers are prone to disruption in their movements from highway disturbance, and studies in parts of their range show them as victims of vehicle collisions. However, fishers readily accept small culverts as wildlife passages if placed in suitable locations for their movement needs and if they are not inundated with water. (Image: Dennis Garrison)

A recent success of the Olympic National Forest, the reintroduction of fishers, highlights some of the movement needs of animals as they attempt to meet their basic life history needs. Reintroduced animals often travel widely before finding a location to settle down, and incur increased risk of mortality while traveling across highways. Several reintroduction projects have been severly hindered by vehicle cause mortality.

Many wildlife species disperse great distances while seeking mates or establishing their own territories, and these movements are key to animals recolonizing habitat. Enabling animals of many species to move as a result of changing habitat or other conditions is likely to be a key management need in light of climate change.

Highways provide Americans with safe access to almost all corners of our country, but National Forest System lands are among the least fragmented and developed. Highways with increasing traffic volume threaten the ability of animals to move freely across the last best places. Fortunately, there are mitigation measures to assist transportation planners in reducing impacts or even restoring former habitat connectivity. The Olympic National Forest does not have major highway projects planned in the STIP for this cycle, but might consider proposing projects for the future to maintain or enhance wildlife movement.

State Transportation Improvement Program (STIP) Projects

Olympic National Forest

PROCESS ELEMENT		Highway Name / (Project Section)	
		US 101/Sol Duc River Bridge - Upgrade Bridge Rail	US 101/Indian Creek to W of Nicholas Rd - Paving
Project Information	Description of Work	Upgrade bridge rail 101/320 The existing bridge rail does not meet current standards. Motorist safety will be enhanced by retrofitting the existing bridge rail to meet current standards.	Pavement condition rating is projected to drop below the adopted standard. By overlaying the existing roadway with hot mix asphalt, the existing pavement condition rating will be increased to be within adopted standards.
	Program Year for Construction	2009	2011
	Estimated Project Cost ($)	$245,000	
Forest Service	Resource Needs Level	1	1
	Opportunities		
	Threats	Consider disturbance effects to wildlife during construction	Consider disturbance effects to wildlife during construction

When any bridge project is planned, it provides an opportunity to create habitat for bats. Simple and inexpensive designs can be added to bridges for bats. (Image: Norman Barrett, USFS)

Salamanders as a group can be seriously affected by highways because they are highly vulnerable to fragmentation and vehicle-caused mortality. Population-level impacts from highways do not always occur, but simple mitigation measures are available and are recommended in some cases. (Image: Karen West, USFS)

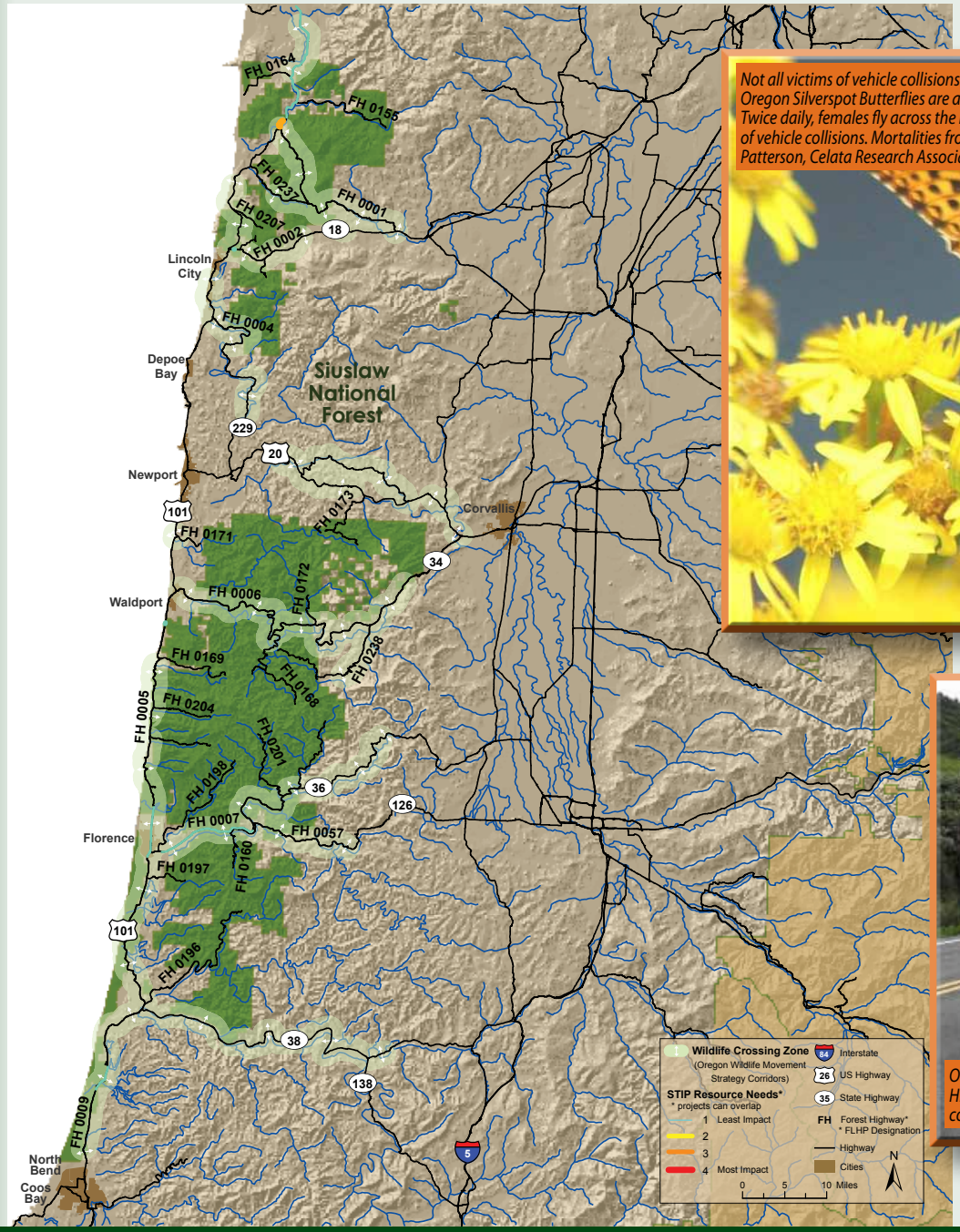
The Rogue River-Siskiyou National Forests have planned bridge repair and replacements that could be utilized as opportunities for greater large mammal passages and bat habitat. Bridge replacements have the potential to greatly enhance aquatic and terrestrial movement capabilities, or to cause serious new problems. Bridge replacements can enhance passage by widening the area under the bridge, or providing an unsubmerged pathway alongside the stream. Alternatively, bridge replacements can cause much greater obstruction of terrestrial animal movement if rock armament is overused. Early planning can help ensure a suitable design to allow for greater animal passage.

Several paving and overlay projects in this planning cycle might be investigated for opportunities to provide additional small culverts for small animal passages. Planned guardrail improvements may provide opportunities for deterring larger animals such as deer from entering the highway at locations with collision risks.

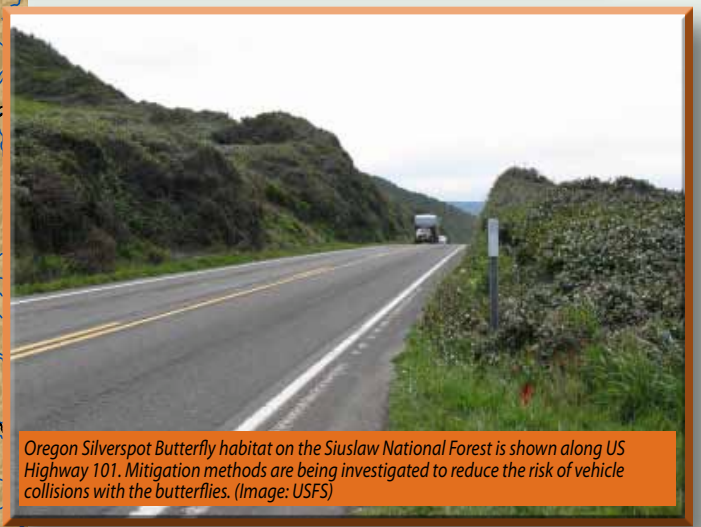
State Transportation Improvement Program (STIP) Projects

Rogue River-Siskiyou National Forest

PROCESS ELEMENT		Highway Name / (Project Section)						
		OR230/ OR138:NORTH UMPQUA-UPPER ROGUE D/B B520	OR140: N LITTLE BUTTE CREEK - GREEN SPRINGS HWY	OR 62: TRAIL TO CASEY RESURFACING	AGNESS ROAD (CURRY COUNTY)	I-5 @ MP74 SAFETY IMPROVEMENTS	ROGUE RIVER BIKE/ PED PATH (CURRY COUNTY)	ROGUE-UMPQUA SCENIC BYWAY ENHANCEMENT #5
Project Information	Description of Work	Repair Bridge 02496, 07904, 16861, & Replace Bridges 03461	Pavement Preservation, Add Left Turn Refuge, Upgrade Guardrail, Replace Drain Pipes	Inlay/Overlay/ Roadway	Agness Road (Curry County) Local Earmark Proposed	Replace Paving, Super elevation & Drainage	Rouge River Bicycle/ Pedestrian Path (Curry County) Local Earmark Proposed	Paved Parking, Visitor Access/Info
	Program Year for Construction	2010	2008	2008	2008	2008	2008	2009
	Estimated Project Cost ($)	$13,987,000	$3,564,000	$2,792,000	$2,229,000	$1,200,000	$750,000	$520,000
Forest Service	Resource Needs Level	3	3	1	1	1	1	1
	Opportunities	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Use guardrail as a wildlife deterrent fencing; new drain pipes may provide wildlife passage.			Install new or replacement water conveyance structures.		
	Threats	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Consider disturbance effects to wildlife during construction.				



Not all victims of vehicle collisions are even noticed, especially if they cause no property damage or injury. Oregon Silverspot Butterflies are an example of a species that needs to move to meet its life history needs. Twice daily, females fly across the highway between foraging areas and breeding areas, placing them at risk of vehicle collisions. Mortalities from collisions are likely unsustainable to this tiny population. (Image: Mike Patterson, Celata Research Associates)



Oregon Silverspot Butterfly habitat on the Siuslaw National Forest is shown along US Highway 101. Mitigation methods are being investigated to reduce the risk of vehicle collisions with the butterflies. (Image: USFS)

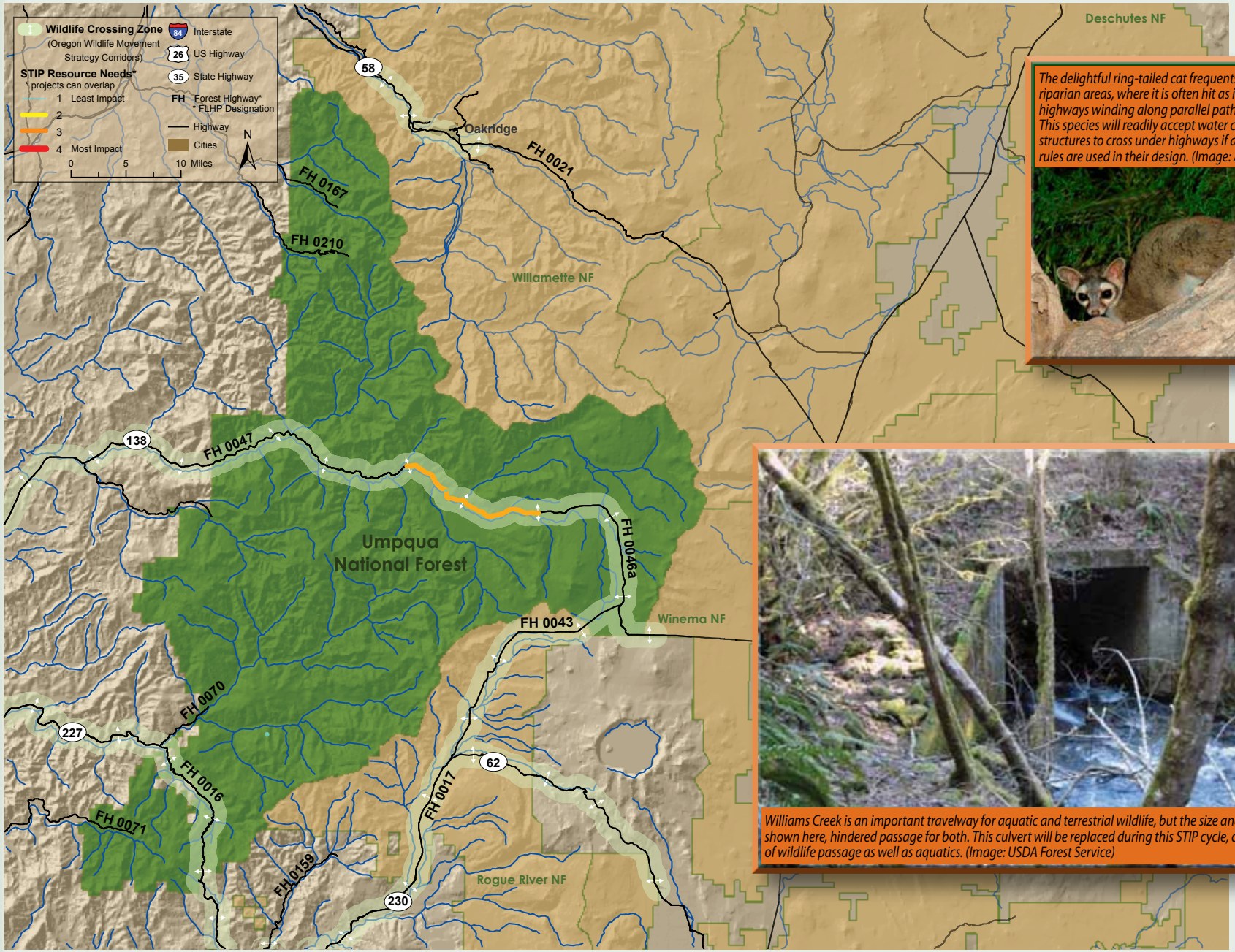
The Siuslaw National Forest is unique in Region 6 because one of its rarest denizens is an invertebrate heavily impacted by roadkill. Highway 101 along the Oregon coast separates the foraging and breeding habitat of the Oregon Silverspot Butterfly. Egg-depositing females travel the most frequently across the busy highway and are subject to vehicle-caused mortality. Collaborative interagency research is helping to develop innovative mitigation measures. Investigations here will assist in other areas of the world that are also grappling with vehicle-caused impacts to rare invertebrates.

Other important highway projects on the Siuslaw are the construction of new passing lanes and pavement overlay projects. New passing lanes result in incremental increases in the width of a highway that over time can signal a dramatic reduction in the ability of animals to move across the landscape. Pavement overlay projects might allow installation of inexpensive dry culverts that function as small animal passages. Both types of projects need investigation into cumulative effects, and consideration of identified wildlife movement areas.

State Transportation Improvement Program (STIP) Projects

Siuslaw National Forest

PROCESS ELEMENT		Highway Name / (Project Section)							
		US101: OLD CONDOR ROAD-HEBO	OR126: HORSESHOE CREEK-MAPLETON	US101: 12TH ST (TILLAMOOK) - FARMER CR RD	OR126: CEMETERY RD - HORSESHOE CR	US101: SUTTON CR-SIUSLAW R BRIDGE	US101: TUGMAN STATE PARK - SPINREEL RD. PAVING	US101: BIG CREEK BRIDGE #01430A	OR18: OTIS JCT VMS SIGN
Project Information	Description of Work	Construct Passing Lanes	Overlay	Preservation Project	4" Overlay	Overlay and Sidewalk Work	Grind/Inlay and Overlay Pavement	Cathodic Protection; Repair Cracks; Strengthen Crossbeams	Install Variable Message Signs
	Program Year for Construction	2009	2009	2008	2012	2010	2012	2011	2012
	Estimated Project Cost ($)	$7,970,000	$5,561,000	$5,304,000	$4,828,000	$3,757,000	$2,459,000	$1,185,000	$345,000
Forest Service	Resource Needs Level	3	1	1	1	1	1	1	1
	Opportunities	Install new or replacement water conveyance structures; investigate the need for wildlife crossing structures.				Investigate the need for bat structures.		Investigate the need for bat structures.	Notify drivers of high animal vehicle collision danger.
	Threats	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Consider disturbance effects to wildlife during construction.	Consider disturbance effects to wildlife during construction.	Consider disturbance effects to wildlife during construction.	Consider disturbance effects to wildlife during construction.	Consider disturbance effects to wildlife during construction.	Impact of the removal of an old bridge such as lead paint; disturbance to migratory birds.	



The delightful ring-tailed cat frequents rocky riparian areas, where it is often hit as it crosses highways winding along parallel paths with rivers. This species will readily accept water conveyance structures to cross under highways if a few simple rules are used in their design. (Image: Arizona GFD)

Williams Creek is an important travelway for aquatic and terrestrial wildlife, but the size and shape of the culvert, shown here, hindered passage for both. This culvert will be replaced during this STIP cycle, considering the needs of wildlife passage as well as aquatics. (Image: USDA Forest Service)

The Umpqua National Forest has a major opportunity to engage in planning the widening of State Route 138, which is identified in the Oregon Wildlife Movement Strategy as a wildlife movement corridor for several species. Widening projects incrementally increase the barrier effect of highways, but also provide many opportunities to mitigate existing impacts. During major construction projects, a variety of mitigation measures can be incorporated to restore or to prevent loss of the ability of animals to move freely across the highway. Major widening projects are intensive and usually they require special expertise to recognize and handle complex threats and opportunities. Considerable staff time can be expected if an environmentally sensitive highway project is desired.

Bridge replacements on the Umpqua National Forest also provide excellent opportunities for increasing wildlife passage opportunities if early engagement in the planning occurs. Opportunities to watch for include ensuring that bridge replacements provide for both aquatic and terrestrial passage through appropriate design.

State Transportation Improvement Program (STIP) Projects

Umpqua National Forest

PROCESS ELEMENT		Highway Name / (Project Section)		
		OR138: NORTH UMPQUA HWY WIDEN/ OVERLAY	OR230/OR138:NORTH UMPQUA-UPPER ROGUE D/B B520	BARNETT ROAD - BLUE HERON PARK UNIT 2C
Project Information	Description of Work	Widen, Overlay, GR, DR, BS, PV	Repair Bridges 02496, 07904, 16861 & Replace Bridges 03461	Complete Another Portion of the Overall Trail System
	Program Year for Construction	2011	2010	2009
	Estimated Project Cost ($)	$14,791,000	$13,987,000	$775,000
Forest Service	Resource Needs Level	3	3	1
	Opportunities	Investigate the need for wildlife crossing structures.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	
	Threats	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	

Elk vie with deer as the animal drivers fear a collision with most, with good reason. In collisions, elk are far more lethal to drivers and cause greater property damage than deer but tend to cause fewer accidents overall due to their fewer numbers. Elk are easily disturbed by high traffic volume and they tend to avoid highways more than deer.

Black-tailed jackrabbits have been declining across the west due to habitat fragmentation and other causes. Lagomorphs are surprisingly very susceptible to collisions with vehicles because of their zigzagging behavior--a behavior highly adpatable to evading coyotes but much less so when running from a sedan.

The Umatilla and Wallowa-Whitman National Forests are combined in this rapid assessment because very few projects are identified on the forests for this round of highway project developments. However, both forests have several highways identified on the Oregon Wildlife Movement Strategy as important wildlife corridors or high mortality areas. In particular, Interstate 84 winds through both forests, in areas with high elk concentrations. During this round of relative quiet on highway project developments, it is possible for either of the forests to work collaboratively with Oregon DOT and Western Federal Lands Highway Program partners to identify opportunities for projects that propose safety measures to reduce animal-vehicle collisions. The Forest Service can propose projects for inclusion on future STIPs to plan and construct effective mitigation measures such as underpasses, especially in those areas identified in the Oregon Wildlife Movement Strategy.

State Transportation Improvement Program (STIP) Projects

Umatilla and Wallowa-Whitman National Forest

PROCESS ELEMENT		Highway Name / (Project Section)	
		I-84 CORRIDOR ROCKFALL CORRECTIONS	I-84 LA GRANDE - PENDLETON CHAIN UP AREAS
Project Information	Description of Work	Rockfall Corrections	Construct new or expand existing chain up areas
	Program Year for Construction	2008	2009
	Estimated Project Cost ($)	$616,000	$500,000
Forest Service	Resource Needs Level	2	2
	Opportunities	Use barrier to divert animals to a safer crossing area.	
	Threats	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.

Studies have shown that forest grouse are rarely represented as roadkill, and they avoid habitat within hundreds of meters of highways. This suggests that highways linearly fragment grouse habitat more than previously suspected because grouse avoid highways. (Image: Ray Davis, USFS)

Some species rarely stray from their aquatic habitat and would not benefit from terrestrial passages. Conversely, as resource agencies have focused on improving aquatic organism passages, terrestrial passage opportunities may not have been provided. Considerations differ for the two groups, and newer designs and decision protocols are needed to allow for both terrestrial and aquatic passages. (Image: Chris Hatten)

Bridge replacements on the Willamette National Forest offer several opportunities for increasing wildlife movement across highways. Drainages are natural travelways for many wildlife species, and bridges can be readily designed to provide passage for terrestrial as well as aquatic species. Bridge replacements are important opportunities because bridges have a very long design life, and replacements occur as seldom as a half century or longer. It is key to ensure that opportunities are taken to incorporate passage design at the time of replacement because of this short window of opportunity.

Several smaller projects on the Willamette National Forest such as pavement overlays may have the potential to provide passage for small mammals and amphibians by including installation of simple dry culverts. Paving projects are often noisy with much commotion, potentially causing disturbance to sensitive wildlife during construction periods.

State Transportation Improvement Program (STIP) Projects

Willamette National Forest

PROCESS ELEMENT		Highway Name / (Project Section)					
		MCKENZIE HWY:WHITE BRANCH SNOW GATE-LINN CO LINE	OR 58: SALT CREEK HALF VIADUCTS - BUNDLE 252	MCKENZIE HWY: MP 66.7 & 68.4 BR REPLACE	OR22: PAMELIA RD - SANTIAM JCT	OR58: SALT CREEK TUNNEL - ODELL MAINT STATION	US20: HOGG ROCK ROCKFALL MITIGATION
Project Information	Description of Work	Resurface and Bridge Replacement White Branch Snow Gate - Linn Co Line	Replace 4 Bridges #07185, 7186, 7987, 7188	Resurface	Inlay/Overlay	Inlay/Overlay	Construct Rock Fall Mitigation
	Program Year for Construction	2008	2007	2008	2012	2012	2009
	Estimated Project Cost ($)	$3,250,000	$1,514,000	$1,000,000	$9,213,000	$7,031,000	$7,077,000
Forest Service	Resource Needs Level	3	3	1	2	1	1
	Opportunities	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	Investigate bridge issues.	Investigate the need for wildlife crossing structures; identify existing wildlife issues.	Investigate the need for wildlife crossing structures; identify existing wildlife issues.	Use barrier to divert animals to a safer crossing area.
	Threats	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	Consider disturbance effects to wildlife during construction.	Consider disturbance effects to wildlife during construction.	Consider disturbance effects to wildlife during construction.	Cumulative effects of incrementally increasing barrier with slope protection: sedimentation & water quality concerns from scraping away pieces of rock.

Complete STIP Tracking Tool

The previous pages provide examples of the information available in state STIPs to Forest Service line officers and wildlife program managers. The Rapid Assessment team has provided a mechanism to identify and track projects of interest. No other such tool is available to any Forest Service staff in the nation. However, STIPs are living documents, and these tracking tools will require updating to remain useful. The updating process is not automatic and will require an active decision to implement on a continuing basis.

Shown on this page is a complete version of the summarized STIP Tracking Tools displayed in the rest of this document. Each forest has a complete tracking tool, stored on the Region 6 "O" Drive* as well as on the Wildlife Crossings Toolkit website (http://www.fs.fed.us/wildlifecrossings). These sites contain further information on how to use the tools, and the complete STIP Tracking Tools for some forests include additional projects of low impact.

The STIP Tracking Tool serves two purposes: to display current projects and to organize project-level details as projects progress.

The summary STIP Tracking Tools display projects in the current STIP as obtained from the respective state DOTs. The Tracking Tool can be used in its summary form for updates from the states.

The second purpose of the STIP Tracking Tool is to provide a mechanism for regional or forest staff to track important project details. These fields can be updated by any user as needed, but they are recommended to be managed by the primary point of contact between a unit and the DOT or Federal Lands Highway Program.
The STIP Tracking Tool has limitations in that some projects will not show up in the state DOT STIPs. Some of these, such as emergency projects or shuffled priority projects, may need to be entered manually. To be most useful, the most current Tracking Tool will need to be updated with these special projects as well.

The STIP Tracking Tool provides some information useful to Forest Service natural resource staff that is not obtainable from the state STIPs. Most notable are the fields identifying Threats and Opportunities to terrestrial wildlife, and the Resource Needs Level. Threats and Opportunities provide a starting place for those unfamiliar with highway projects to identify typical issues. Resource Needs Level provides line officers with an approximation of the complexity of a project to allow planning for staff and skill needs.

State Transportation Improvement Program (STIP) Project
Umpqua National Forest

	PROCESS ELEMENT	Highway Name / (Project Section)		
		OR138: NORTH UMPQUA HWY WIDEN/OVERLAY	OR230/OR138:NORTH UMPQUA-UPPER ROGUE D/B B520	BARNETT ROAD - BLUE HERON PARK UNIT 2C
Project Information	STIP Tracking Number	13931	14608	15233
	Work Type	Special Programs	Bridge	Bicycle/Pedestrian
	Description of Work	Widen, Overlay, GR, DR, BS, PV	Repair Bridges 02496, 07904, 16861 & Replace Bridges 03461	Complete Another Portion of the Overall Trail System
	Program Year for Construction	2011	2010	2009
	Estimated Project Cost ($)	$14,791,000	$13,987,000	$775,000
	County	Douglas County	Douglas County	Douglas County
	ODOT Resident Engineer			
	ODOT Env. Svcs. Project Coord	Michael Baker (541)957-3658	Michael Baker (541)957-3658	Michael Baker (541)957-3658
	STIP Contact	3	3	3
	ODOT Region			
Forest Service	USFS Project Coordinator	North Umpqua Hwy	Various Highways	Various Highways
	WFLHD/Forest Highways			
	Project Delineation (Mileposts)			
	Type of NEPA Document		3	1
	Habitat Connectivity	3		
	Resource Needs Level			
	Action/Involvement Status			
	Opportunities	Investigate the need for wildlife crossing structures.	Best opportunity in 50-70 years to restore or maintain habitat connectivity; chance for input on where bridge is situated; install new or replacement bat structures; ability to fix bottleneck, such as with shelving.	
	Threats	Clear zone barrier effect; cumulative effects of incrementally increasing barrier.	Impact of the removal of an old bridge such as lead paint; increased erosion and sedimentation in stream.	
Project Notes	Project Development Notes			
	ARRA Stimulus Status			Yes
Preliminary Design Phase	Program year for Planning		Yes	
	Land Purchase Needed?			
	Utility Relocation Needed?			
	Preliminary Plans (15%)			
	Grading Plans (60%)			
Final Design Phase	Right-of-Way & Engineering Inspection Plans (80%)			
	Right-of-Way & Utility Plans (90%)			
	Final Plans (100%)			
Construction				

As with most complex projects, coordination with all stakeholders as early in the planning process as possible is important to the quality of the outcome. In this image, Forest Service employees share innovative solutions to complex challenges faced on the I-90 Snoqualmie Pass East project. The project is the largest in the country on National Forest System lands, and has resulted in several state of the art best practices that will be incorporated on other projects internationally. (Image: Washington DOT)

Glossary of Terms and Acronyms Used

DOT: Department of transportation. In Region 6, Oregon and Washington state departments are ODOT and WSDOT respectively.

Federal Lands Highway Program (FLHP): The Office of Federal Lands Highway (FLH) provides program stewardship and transportation engineering services for planning, design, construction, and rehabilitation of the highways and bridges that provide access to and through federally owned lands. The primary purpose of the FLHP is to provide financial resources and technical assistance for a coordinated program of public roads that service the transportation needs of Federal and Indian lands. The Forest Service's Region 6 is served by the Western Federal Lands Highway Division in Vancouver, WA.

Highway Project Development: Transportation departments typically use this term for the environmental analysis and design phase of a highway project.

Transportation planning is a term used for longer term, strategic planning, somewhat analogous to the Forest Service's forest planning process.

Oregon Wildlife Movement Strategy: An interagency product of Oregon's State Wildlife Action Plan that provides a large scale assessment of wildlife movement needs in Oregon.

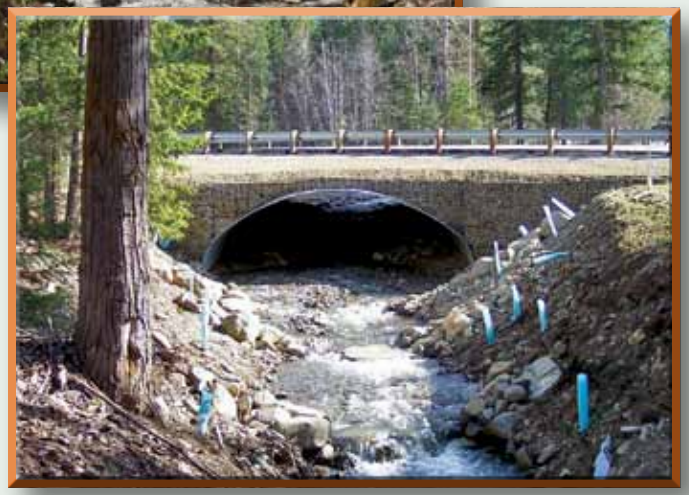
Resource Needs Level: Resource Needs Levels help line officers and program staff estimate staff and skill needs based on the complexity of a highway development project. Resource Needs Levels increase in complexity, beginning with simple projects at RNL 1 and increasing in complexity to major construction projects at RNL4. The Resource Needs Levels concept was developed by Rick Clark, Forest Service liaison to Wyoming DOT, and modified here for Region 6 terrestrial wildlife issues. The concept can also apply generally for other resource areas once threats and opportunities are identified for those disciplines.

SAFETEA-LU: The current federal surface transportation bill. Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users.

STIP: Statewide Transportation Improvement Program, a planning document itemizing funded highway development projects and spanning multiple years. Each state has a different process to develop their STIP.

STIP Tracking Tool: Spatial and tabular information on current STIP highway projects of interest to the Forest Service. The Tool is a spreadsheet and can be readily edited as needed.

Threats and Opportunities: The STIP Tracking Tool categorizes highway development projects by their typical threats and opportunities for terrestrial wildlife. Not all projects in a state's STIP are included in the tracking tools because some are not likely to have either threats or opportunities with regards to terrestrial wildlife.



Replacing culverts to enable aquatic passage does not always help to increase wildlife passage, but it did in this example on Little Boulder Creek in Washington. Perched culverts are barriers to many terrestrial wildlife species as well as aquatics. A wider opening combined with natural substrate of small to moderately sized materials facilitates passage by many terrestrial animals. (Images: Washington DOT)

An undersized culvert on the Umpqua National Forest's Williams Creek hindered both aquatic and terrestrial passage across the highway. Umpqua National Forest staff worked hard to obtain funding, including funding from the American Reinvestment and Recovery Act, to replace the culvert with a bridge that will enable aquatic and terrestrial passage when completed. (Images: USDA Forest Service)