

Appendix B: Minimum Requirement Decision Guide

ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER



MINIMUM REQUIREMENTS DECISION GUIDE WORKBOOK

“...except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act...”

-- The Wilderness Act of 1964

Project Title: Mount Rainier National Park and North Cascades National Park Service Complex Fisher Restoration Plan / Environmental Assessment

MRDG STEP 1

Determine if Administrative Action is Necessary

Description of the Situation

What is the situation that may prompt administrative action?

In accordance with the Wilderness Act of 1964, the Washington Parks Wilderness Act (1988) designated as wilderness approximately 216,855 acres (97 percent) of Mount Rainier National Park (MORA) as the Mount Rainier Wilderness and approximately 634,614 acres (94 percent) of North Cascades National Park Service Complex (NOCA) as the Stephen Mather Wilderness.

Since the designation of these wildernesses, the Washington Department of Fish and Wildlife (WDFW) has determined that the fisher (*Pekania pennanti*), a medium-sized carnivore in the weasel family, has been extirpated from its historic range throughout the State, including the Mount Rainier and Stephen Mather Wildernesses, due to the combined effects of over-trapping and habitat loss and fragmentation in low to mid-elevation coniferous forests (Aubry and Houston 1992, Lewis and Stinson 1998). This determination has been further confirmed by extensive surveys completed by WDFW, the National Park Service (NPS), and the U.S. Forest Service (USFS) (Lewis and Stinson 1998, Aubry and Lewis 2003, Hayes and Lewis 2006, Christophersen et al. 2005, Christophersen 2006, Reid et al. 2010). In light of this extirpation, the Washington Fish and Wildlife Commission listed the fisher as endangered in 1998, and due to the depleted status of the fisher throughout portions of its former range, including Washington, the U.S. Fish and Wildlife Service listed the West Coast Distinct Population Segment of the fisher as a federal candidate species in 2004 (USFWS 2004b).

In an effort to restore the fisher to its historic range in Washington State, WDFW is proposing to

reintroduce fishers to the SW and NW Cascades, including MORA and the Mount Rainier Wilderness and NOCA and the Stephen Mather Wilderness, and monitor individual fishers once reintroduced. While WDFW and the NPS are not considering reintroducing fishers directly in wilderness, it is assumed that fishers would travel to and through and establish home ranges within these wildernesses, thereby impacting wilderness character. Furthermore, because fishers would be present in wilderness, WDFW and the NPS are proposing to complete monitoring within both wildernesses in order to gather ample information to inform reintroductions in the following years of this proposed project (implement adaptive management) and evaluate success of the reintroductions in the SW and NW Cascades (see "Objectives" in chapter 1 of the Plan/EA).

Please see chapter 1 of the Plan/EA for more background on the fisher, its extirpation in the SW and NW Cascades, and plans to restore this species to its historic range.

Options Outside of Wilderness

Can action be taken outside of wilderness that adequately addresses the situation?

- ☐ YES **STOP – DO NOT TAKE ACTION IN WILDERNESS**
- ☒ NO **EXPLAIN AND COMPLETE STEP 1 OF THE MRDG**

Explain:

WDFW and the NPS are not proposing to reintroduce fishers directly in wilderness. However, it is assumed that fishers would travel to and through and establish home ranges in the Mount Rainier and Stephen Mather Wildernesses, and if present in either or both wildernesses, monitoring fishers within that wilderness would be necessary. As identified in chapter 1 of this Plan/EA, some of the primary objectives of this proposed action are to: 1) restore self-sustaining fisher populations that are capable of surviving and reproducing by natural means 2) protect and perpetuate the natural distribution and abundance of fishers throughout suitable habitat in MORA and NOCA, and 3) expand scientific understanding regarding habitat use, movement, reproduction and survival, and use such information to adaptively manage fisher restoration in the SW and NW Cascades. All of these objectives require monitoring to detect fishers in the parks/wildernesses, estimate the survival rate of reintroduced fishers, and determine the number of reproducing females and the number of fisher that establish home ranges. This monitoring cannot occur outside wilderness if fishers are located within the wilderness.

Criteria for Determining Necessity

Is action necessary to meet any of the criteria below?

A. Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that requires action? Cite law and section.

- ☐ YES ☒ NO

Explain: This proposed action does not entail mineral access, water rights, rights-of-ways, or access to inholdings.

B. Requirements of Other Legislation

Is action necessary to meet the requirements of other federal laws? Cite law and section.

- ☒ YES ☐ NO

Explain: The Endangered Species Act of 1973 requires all federal agencies to use their authorities in furtherance of the purposes of the Endangered Species Act by carrying out programs for the conservation of endangered and threatened species (Section 7(a)).

C. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character, including: Untrammeled, Undeveloped, Natural, Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation, or Other Features of Value?

Untrammeled

☐ YES ☒ NO

Explain: The wilderness character of the Mount Rainier and Stephen Mather Wildernesses are already "trammed" due to the extirpation of the fisher; taking no action would have no additional impact to the "untrammeled" quality of wilderness character of either Wilderness.

Undeveloped

☐ YES ☒ NO

Explain: This proposal would not preserve the undeveloped quality of wilderness character in either the Mount Rainier or Stephen Mather Wilderness.

Natural

☒ YES ☐ NO

Explain: The fisher, native to the SW and NW Cascades (including MORA and NOCA), has been extirpated from the region since at least the early 1990s and is currently a stated-listed endangered species and federally-listed candidate species (federal listing is for the West Coast Distinct Population Segment [DPS] of the fisher). This extirpation not only threatens the overall strength and resiliency of the species, but it also has had a negative impact on the SW and NW Cascades ecosystems and the natural quality of the wilderness character of the Mount Rainier and Stephen Mather Wildernesses. This action would restore a significant aspect of the natural processes of ecological systems within the Mount Rainier and Stephen Mather Wildernesses to a state in which they are substantially free from the effects of modern civilization. This restoration is necessary to administer the area as wilderness.

Solitude or Primitive & Unconfined Recreation

☐ YES ☒ NO

Explain: Restoration of fisher is not necessary to preserve opportunities for solitude or primitive and unconfined recreation in either the Mount Rainier or Stephen Mather Wilderness.

Other Features of Value

☐ YES ☒ NO

Explain: Although this proposal would increase scientific understanding of the fisher and species reintroductions and would enhance educational opportunities for the public, this proposal is not *necessary* to preserve these or other features of value in either the Mount Rainier or Stephen Mather Wilderness.

Step 1 Decision

Is administrative action necessary in wilderness?

Decision Criteria

A. Existing Rights or Special Provisions	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
B. Requirements of Other Legislation	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
C. Wilderness Character		
Untrammeled	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Undeveloped	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Natural	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
Outstanding Opportunities	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Other Features of Value	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

Is administrative action necessary in wilderness?

- ☒ YES **EXPLAIN AND PROCEED TO STEP 2 OF THE MRDG**
- ☐ NO **STOP – DO NOT TAKE ACTION IN WILDERNESS**

Explain:

The fisher, native to the SW and NW Cascades (including MORA and NOCA), has been extirpated from the region since at least the early 1990s and is currently a stated-listed endangered species and federally-listed candidate species (federal listing is for the West Coast Distinct Population Segment of the fisher). This extirpation threatens the overall strength and resiliency of the species and has had a negative impact on the SW and NW Cascades ecosystems, including the natural quality of wilderness character in both the Mount Rainier and Stephen Mather Wildernesses. Furthermore, successful reintroduction would not be feasible without monitoring to ensure that management actions are proceeding in such a way as to support the reproduction and establishment of fishers into the future and if not, to modify reintroduction efforts as needed. Because the restoration of fishers is necessary to restore this important aspect of the natural quality of these wilderness, actions to reintroduce (including monitoring) the fisher to the Mount Rainier and Stephen Mather Wildernesses are necessary to administer these areas as wilderness.

Application of the Wilderness Act and Endangered Species Act indicate that an action is needed to restore fisher to the Mount Rainer and Stephen Mather Wildernesses.

MRDG STEP 2

Determine the Minimum Activity

Other Direction

Is there “special provisions” language in legislation (or other Congressional direction) that explicitly allows consideration of a use otherwise prohibited by Section 4(c)? AND/OR Has the issue been addressed in agency policy, management plans, species recovery plans, or agreements with other agencies or partners?

☒ YES

DESCRIBE DOCUMENTS & DIRECTION BELOW

☐ NO

SKIP AHEAD TO COMPONENTS OF THE ACTION BELOW

Describe Documents & Direction:

NPS *Management Policies 2006* direct the NPS to take action to restore native plant and animal populations that “have been extirpated by past human caused actions”, whenever all of the following criteria are met:

- “Adequate habitat to support the species either exists or can reasonably be restored in the park, and if necessary also on adjacent public lands and waters; once a natural population level is achieved, the population can be self-perpetuating”;
- “The species does not, based on an effective management plan, pose a serious threat to the safety of people in parks, park resources, or persons or property within or outside park boundaries”;
- “The genetic type used in restoration most nearly approximates the extirpated genetic type”;
- “The species disappeared, or was substantially diminished, as a direct or indirect result of human induced change to the species population or to the ecosystem”; and
- “Potential impacts upon park management and use have been carefully considered” (NPS 2006b, sec. 4.4.2.2).

When restoring these species, NPS *Management Policies 2006* further provide “The Service will use the best available technology, within available resources, to restore the biological and physical components of these systems, accelerating both their recovery and the recovery of landscape and biological community structure and function” (NPS 2006b, Section 4.1.5).

The Wilderness Management Plan (1989) for the Stephen Mather Wilderness establishes standards for minimal tool, stating, “Non-power tools will be preferred. The Wilderness District Ranger will have final approval for the use of power tools...Any use of power tools will be limited as far as possible to before the 4th of July and after Labor Day. All power tools will use a modified muffler that reduces decibel level...Power tools will be limited to chain saws, brushers, rock drills, chain saw winches, and explosives...Aircraft may only be used if stock use is not permitted on trails, trail conditions prevent stock use, or it is impractical to use stock and there is no other practical way to accomplish the work. Aircraft use will be confined to Monday through Thursday and as much as possible to before the 4th of July and after Memorial Day.”

The Wilderness Management Plan (1989) for the Mount Rainier Wilderness establishes standards for minimal tool as well, such as, “Fixed wing aircraft are used in compliance with FAA regulations for administrative purposes such as for resource management, search and rescue and fire management operations.”

The *Washington State Recovery Plan* for the fisher concludes that reintroduction is the best way to

restore fishers in the SW and NW Cascades recovery areas. Based on this plan, WDFW wrote an *Implementation Plan for Reintroducing Fishers to the Cascade Mountain Range in Washington* that outlines steps to reintroduce fisher to these two recovery areas (which includes MORA and NOCA) and monitor fishers for at least three years following reintroduction.

Components of the Action

What are the discrete components or phases of the action?

Component 1:	Transport and release fishers outside of wilderness
Component 2:	Tracking device placed on released fishers (founding population only)
Component 3:	Transportation of personnel to track founding population
Component 4:	Transportation of personnel and tools to install temporary monitoring stations
Component 5:	Temporary monitoring stations
Component 6:	Condition of site after project
Component 7:	Scientific understanding and educational opportunities

Alternative 1

VHF Collars and Aerial Telemetry; Hair-Snares and Remote Camera Stations Installed by Foot

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In this alternative, all fishers reintroduced to the SW and NW Cascades would be equipped with a **VHF radio-transmitter collar** and marked with a passive integrated transponder (PIT) tag prior to their release. Aerial telemetry, based on VHF radio transmitters, with **fixed wing-aircraft** would then be used to monitor fishers during the reintroduction. For a maximum of two years following each release (years 1-3 for each reintroduction), **flights would occur weekly**, weather permitting, in areas where fishers are expected to occur (i.e. above suitable fisher habitat) (see Figures 2.1 and 2.2 in Fisher Plan/EA). When fisher are not detected, flights would be as high as possible (while still close enough to obtain a signal), but aircraft would fly as low as 333 feet above the canopy or 500 feet above ground limit (whichever is higher) when fishers are detected in order to tract the signal. Whenever possible (weather permitting), flights would occur between Monday and Thursday. The number of locations obtained for each fisher would be limited by 1) the lifespan of radio-transmitters, 2) suitable weather conditions for flying, and 3) available funding for telemetry flights. Given potential limitations on data collection, the objective would be to get at least one location per week for individual fishers, with a maximum of five flights per month. Where access allows, telemetry would be completed by foot and mortalities and suspected den sites would be investigated on foot to collect the carcass or verify denning and reproduction. VHF collars are expected to last two years. Flights would occur only so long as resource staff obtain signals from the VHF transmitters. All cast collars and collars from mortalities would be retrieved via foot access where reasonable access allows.

During fisher release years and one year post-release, **temporary remote camera stations** would be placed in the backcountry **via foot** to detect repeated female visitation at suspected den sites and the presence of kits. These stations would be placed in areas with little visitor use and would be out-of-site for visitors.

Because of these extensive monitoring procedures, WDFW and NPS staff would likely have ample information to adaptively manage fisher reintroductions and respond to any issues that arise in reintroduction efforts in order to **ensure greater success** with the project (i.e. meet the objectives of the proposed action). These monitoring procedures would allow staff to estimate survival rate, the number of fisher that establish a home range, and the number of reproducing females in order to determine if the restored fisher populations are capable of surviving and reproducing by natural means (first objective). They would also be able to detect fishers in MORA and NOCA in order to determine if fishers are distributed and abundant in these parks (third objective), and this monitoring would **expand scientific understanding** regarding fisher habitat use, movement, reproduction and survival (fourth objective).

Component Activities

How will each of the components of the action be performed under this alternative?

<u>Component of the Action</u>		Activity for this Alternative
1	Release fishers outside of wilderness	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)
2	Tracking device placed on released fishers (founding population only)	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades
3	Transportation of personnel to track founding population	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected
4	Transportation of personnel and tools to install temporary monitoring stations	Personnel and tools would be transported by foot
5	Temporary monitoring stations	Remote camera stations would be installed at areas of suspected denning activity
6	Condition of site after project	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)
7	Scientific understanding and educational opportunities	Scientific understanding would be improved. Educational opportunities would be enhanced.

Measuring Impacts

Because this proposal includes two reintroductions in two wildernesses: the Mount Rainier Wilderness in MORA and the Stephen Mather Wilderness in NOCA, impacts were analyzed for these wildernesses separately (see tables below).

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

Untrammelled

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

	objectives are met (see chapter 1 of Plan/EA)				
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2
Untrammeled Total Rating		-4			

Explain:

By reintroducing fisher in the SW and NW Cascades, when they have been extirpated by human actions, the NPS would be actively managing the wilderness through which and in which these animals are expected to travel and establish homeranges. This activity, along with the placement of tracking collars on fishers in wilderness, negatively impacts the untrammeled quality of wilderness character.

Undeveloped

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	3	3	NE	
<u>Undeveloped Total Rating</u>		-6					

Explain:

VHF radio-transmitter collars (160 total collars), fixed wing flights (During the OLYM fisher reintroduction, approximately 192.9 to 254.4 hours of fixed-wing flights occurred annually over the park and surrounding lands in association with fisher monitoring efforts– less than half of these hours were over the park), and placing temporary installations in the wilderness would have a short-term negative impact on the undeveloped quality of wilderness character.

Natural

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		2	2	0	0	NE	
<u>Natural Total Rating</u>		4					

Explain:

In ensuring successful restoration of an extirpated, state-listed endangered mesocarnivore through reintroductions, monitoring, and adaptively management, this action would have a moderate, long-term, beneficial impact on the naturalness of the Mount Rainier and Stephen Mather Wildernesses because it would improve the processes and biodiversity of these wilderness ecosystems by completing the native predator guild within these wildernesses, which would have positive cascading effects on other species present.

Solitude or Primitive & Unconfined Recreation

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		3	3	4	4	NE	
<u>Solitude or Primitive and Unconfined Recreation Total Rating</u>		-2					

Explain:

Actual release activities have the potential to impact winter visitors to the wilderness as sounds from transportation to release sites and actions associated with releases may travel into the wilderness. However, as visitation is low in both wildernesses during the winter when releases are scheduled to occur (particularly in NOCA), it is more likely that visitors who have the opportunity to participate in a release would benefit to a greater extent and more substantially than those who may be impacted by transient noises associated with release activities (component 1). Similarly, knowing fishers have been restored to the wilderness, having the slim, though real, chance to see a fisher in the wild and in its native habitat, and having enhanced opportunities to learn about fisher reintroduction would have a long-term beneficial impact on opportunities for primitive and unconfined recreation for both visitors to the wilderness and non-visitors alike (components 6 and 7). While the increased likelihood of seeing a fisher in the wild would be a long-term beneficial impact to the wilderness character of both the Mount Rainier and Stephen Mather Wildernesses, if a visitor happened to see a fisher collared (only the founding population), it would diminish this beneficial impact. Because fishers have large home ranges and tend to be dispersed throughout remote areas, the chances of seeing a fisher in the backcountry, particularly along traveled trails and in campgrounds, would likely be extremely low.

Seeing NPS personnel in the backcountry, finding a remote camera station (through rare, this has happened), and seeing/hearing fixed-wing aircraft associated monitoring would have a short-term negative impact on visitors' opportunities for solitude in the wilderness.

Other Features of Value

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Total Number of Effects	1	1	0	0	NE
Other Features of Value Total Rating	2				

Explain:

The monitoring activities that would accompany reintroduction would inform future reintroduction efforts of native species – a long-term benefit to scientific understanding of these processes. This information could also be used to enhance education and outreach in and around both wildernesses, a beneficial impact.

Other Criteria

What is the effect of each component activity on other comparison criteria? What mitigation measures will be taken?

Maintaining Traditional Skills

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
<u>Maintaining Traditional Skills Total Rating</u>		0					

Explain:

No action in this alternative helps to maintain proficiency in the use of primitive and traditional skills, non-motorized tools, and non-mechanical travel methods.

Special Provisions

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
Special Provisions Total Rating		0					

Explain:

No special provisions are impacted by this alternative.

Economics & Time Constraints

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		1	1	6	6	NE	
<u>Economics & Time Constraints Total Rating</u>		-10					

Explain:

****Impacts under economic and time constraints are in comparison to other alternatives.****
 Reintroducing a total of 160 fishers to the SW and NW Cascades would represent a large portion of the funding for this project and is time-sensitive (ideally fisher would be released in the late fall, early winter to give females time to establish dens). As this is twice the cost and work load of

Alternative 4, this is evaluated as a negative impact on economics and time constraints. Similarly, this alternative would involve the installation of more camera stations (and associated staff time) than Alternative 4; hence the evaluation of a negative impact for these project components.

While VHF radio-transmitter collars cost less than satellite collars (Alternative 3)(\$200 vs. \$2000 for satellite collars), they could compromise monitoring as they are more likely to fall off than implanted VHF radio-transmitters (Alternative 2) and don't provide the same amount of data as satellite collars (Alternative 3); hence the evaluation of a negative impact for this project component.

Weekly aerial telemetry flights (associated with VHF radio-transmitters), while providing ample monitoring results, would also cost more than using satellite collars (Alternative 3) which require less flights; hence the evaluation of a negative impact for this project component.

In meeting the objectives of restoration in *both* the SW and NW Cascades (associated with component 6), this alternative would ensure greatest efficiency of fisher restoration in that one reintroduction would immediately follow the other reintroduction – taking advantage of the infrastructure and staff knowledge created and developed within the first reintroduction. This alternative would also double the amount of scientific information on reintroductions (in comparison to Alternative 4) which would improve the efficiency of future reintroduction efforts elsewhere. However, less information would be gathered than that available when using satellite collars; hence an evaluation of a negative impact.

Safety of Visitors & Workers

What is the effect of each component activity on the safety of visitors and workers? What mitigation measures will be taken?

Safety of Visitors & Workers

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF (radio-transmitter) collar would be placed on all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2	NE	
<u>Safety of Visitors & Workers Total Rating</u>		-4					

Explain:

Fixed wing aircraft flights are a high risk activity and pose a threat to staff safety. Similarly, given the terrain of both wildernesses and the remote locations that fishers are expected to inhabit, traveling by foot to den-sites, etc. is also a risky activity that demands that considerations for human health and safety be made during trip planning.

Summary Ratings for Alternative 1

<u>Wilderness Character</u>	
Untrammeled	-4
Undeveloped	-6
Natural	4
Solitude or Primitive & Unconfined Recreation	-2
Other Features of Value	2
Wilderness Character Summary Rating	-6

<u>Other Criteria</u>	
Maintaining Traditional Skills	0
Special Provisions	0
Economics & Time Constraints	-10
Other Criteria Summary Rating	-10

<u>Safety</u>	
Safety of Visitors & Workers	-4
Safety Summary Rating	-4

Alternative 2

Implanted VHF Transmitters & Aerial Telemetry; Hair-Snares & Remote Camera Stations Installed by Foot

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In this alternative, all fishers reintroduced to the SW and NW Cascades would be equipped with a surgically-implanted VHF radio-transmitter and marked with a passive integrated transponder (PIT) tag prior to their release. Aerial telemetry, based on VHF radio transmitters, with **fixed wing-aircraft** would then be used to monitor fishers during the reintroduction. For a maximum of two years following each release (years 1-3 for each reintroduction), **flights would occur weekly**, weather permitting, in areas where fisher are expected to occur (i.e. above suitable fisher habitat) (see Figures 2.1 and 2.2 in Fisher Plan/EA). When fisher are not detected, flights would be as high as possible (while still close enough to obtain a signal), but aircraft would fly as low as 333 feet above the canopy or 500 feet above ground limit (whichever is higher) when fishers are detected in order to tract the signal. Whenever possible (weather permitting), flights would occur between Monday and Thursday. The number of locations obtained for each fisher would be limited by 1) the lifespan of radio-transmitters, 2) suitable weather conditions for flying, and 3) available funding for telemetry flights. Given potential limitations on data collection, the objective would be to get at least one location per week for individual fishers, with a maximum of five flights per month. Where access allows, telemetry would be completed by foot and mortalities and suspected den sites would be investigated on foot to collect the carcass or verify denning and reproduction. VHF implants are expected to last two years, maximum, but would remain implanted in the fisher throughout its life. These transmitters would likely never be located once the fisher dies. Flights would occur only so long as resource staff obtain signals from the VHF transmitters.

During fisher release years and one year post-release, **temporary remote camera stations** would be placed in the backcountry **via foot** to detect repeated female visitation at suspected den sites and the presence of kits. These stations would be placed in areas with little visitor use and would be out-of-site for visitors.

Because of these extensive monitoring procedures, WDFW and NPS staff should have ample information to adaptively manage fisher reintroductions and respond to any issues that arise in reintroduction efforts in order to **ensure greater success with the project** (i.e. meet the objectives of the proposed action). These monitoring procedures would allow staff to estimate survival rate, the number of fisher that establish a home range, and the number of reproducing females in order to determine if the restored fisher populations are capable of surviving and reproducing by natural means (first objective). They would also be able to detect fishers in MORA and NOCA in order to determine if fishers are distributed and abundant in these parks (third objective), and this monitoring would **expand scientific understanding** regarding fisher habitat use, movement, reproduction and survival (fourth objective).

Component Activities

How will each of the components of the action be performed under this alternative?

<u>Component of the Action</u>		Activity for this Alternative
1	Release fishers outside of wilderness	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)
2	Tracking device placed on released fishers (founding population only)	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades
3	Transportation of personnel to track founding population	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected
4	Transportation of personnel and tools to install temporary monitoring stations	Personnel and tools would be transported by foot
5	Temporary monitoring stations	Remote camera stations would be installed at areas of suspected denning activity
6	Condition of site after project	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)
7	Scientific understanding and enhanced educational opportunities	Scientific understanding would be improved. Educational opportunities would be enhanced.

Measuring Impacts

Because this proposal includes two reintroductions in two wildernesses: the Mount Rainier Wilderness in MORA and the Stephen Mather Wilderness in NOCA, impacts were analyzed for these wildernesses separately (see tables below).

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

Untrammelled

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

	objectives are met (see chapter 1 of Plan/EA)				
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2
Untrammeled Total Rating		-4			

Explain:

By reintroducing fisher in the SW and NW Cascades, when they have been extirpated by human actions, the NPS would be actively managing the wilderness through which and in which these animals are expected to travel and establish homeranges. This activity, along with implanting tracking devices in fishers in wilderness, negatively impacts the untrammeled quality of wilderness character.

Undeveloped

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2	NE	
<u>Undeveloped Total Rating</u>		-4					

Explain:

Fixed wing flights and placing temporary installations in the wilderness would have a short-term negative impact on the undeveloped quality of wilderness character.

Natural

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		2	2	0	0	NE	
<u>Natural Total Rating</u>		4					

Explain:

In ensuring successful restoration of an extirpated, state-listed endangered mesocarnivore through reintroductions, monitoring, and adaptively management, this action would have a moderate, long-term, beneficial impact on the naturalness of the Mount Rainier and Stephen Mather Wildernesses because it would improve the processes and biodiversity of these wilderness ecosystems by completing the native predator guild within these wildernesses which would have positive cascading effects on other species present.

Solitude or Primitive & Unconfined Recreation

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		3	3	3	3	NE	
<u>Solitude or Primitive and Unconfined Recreation Total Rating</u>		0					

Explain:

Actual release activities have the potential to impact winter visitors to the wilderness as sounds from transportation to release sites and actions associated with releases may travel into the wilderness. However, as visitation is low in both wildernesses during the winter when releases are scheduled to occur (particularly in NOCA), it is more likely that visitors who have the opportunity to participate in a release would benefit to a greater extent and more substantially than those who may be impacted by transient noises associated with release activities (component 1). Similarly, knowing fishers have been restored to the wilderness, having the slim, though real, chance to see a fisher in the wild and in its native habitat, and having enhanced opportunities to learn about fisher reintroduction would have a long-term beneficial impact on opportunities for primitive and unconfined recreation for both visitors to the wilderness and non-visitors alike (components 6 and 7). Because fishers have large homeranges and tend to be dispersed throughout remote areas, the chances of seeing a fisher in the backcountry, particularly along traveled trails and in campgrounds, would likely be extremely low.

Seeing NPS personnel in the backcountry, finding a remote camera station (through rare, this has happened), and seeing/hearing fixed-wing aircraft associated monitoring would have a short-term negative impact on visitors' opportunities for solitude in the wilderness.

Other Features of Value

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		1	1	0	0	NE	
<u>Other Features of Value Total Rating</u>		2					

Explain:

The monitoring activities that would accompany reintroduction would inform future reintroduction efforts of native species – a long-term benefit to scientific understanding of these processes. This information could also be used to enhance education and outreach in and around both wildernesses, a beneficial impact.

Other Criteria

What is the effect of each component activity on other comparison criteria? What mitigation measures will be taken?

Maintaining Traditional Skills

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
<u>Maintaining Traditional Skills Total Rating</u>		0					

Explain:

No action in this alternative helps to maintain proficiency in the use of primitive and traditional skills, non-motorized tools, and non-mechanical travel methods.

Special Provisions

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
Special Provisions Total Rating		0					

Explain:

No special provisions are impacted by this alternative.

Economics & Time Constraints

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		2	2	5	5	NE	
<u>Economics & Time Constraints Total Rating</u>		-6					

Explain:

****Impacts under economic and time constraints are in comparison to other alternatives.****

Reintroducing a total of 160 fishers to the SW and NW Cascades would represent a large portion of the funding for this project and is time-sensitive (ideally fisher would be released in the late fall, early winter to give females time to establish dens). As this is twice the cost and work load of Alternative 4, this is evaluated as a negative impact on economics and time constraints. Similarly, this alternative would involve the installation of more camera stations (and associated staff time) than Alternative 4; hence the evaluation of a negative impact for these project components.

Implanted VHF radio-transmitters cost less than satellite collars (Alternative 3) (\$200 in

comparison to \$2000) and are more durable than either collar option considered in Alternatives 1 and 3; hence the evaluation of a positive impact.

Weekly aerial telemetry flights (associated with VHF radio-transmitters), while providing ample monitoring results, would also cost more than using satellite collars (Alternative 3) which require less flights; hence the evaluation of a negative effect.

In meeting the objectives of restoration in *both* the SW and NW Cascades (associated with component 6), this alternative would ensure greatest efficiency of fisher restoration in that one reintroduction would immediately follow the other reintroduction – taking advantage of the infrastructure and staff knowledge created and developed within the first reintroduction. This alternative would also double the amount of scientific information on reintroductions (in comparison to Alternative 4) which would improve the efficiency of future reintroduction efforts elsewhere. However, less information would be gathered than that available when using satellite collars; hence an evaluation of a negative impact.

Safety of Visitors & Workers

What is the effect of each component activity on the safety of visitors and workers? What mitigation measures will be taken?

Safety of Visitors & Workers

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A VHF radio-transmitter would be implanted in all fishers reintroduced in the Cascades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2	NE	
<u>Safety of Visitors & Workers Total Rating</u>		-4					

Explain:

Fixed wing aircraft flights are a high risk activity and pose a threat to staff safety. Similarly, given the terrain of both wildernesses and the remote locations that fishers are expected to inhabit, traveling by foot to den-sites, etc. is also a risky activity that demands that considerations for human health and safety be made during trip planning.

Summary Ratings for Alternative 2

<u>Wilderness Character</u>	
Untrammeled	-4
Undeveloped	-4
Natural	4
Solitude or Primitive & Unconfined Recreation	0
Other Features of Value	2
Wilderness Character Summary Rating	-2

<u>Other Criteria</u>	
Maintaining Traditional Skills	0
Special Provisions	0
Economics & Time Constraints	-6
Other Criteria Summary Rating	-6

<u>Safety</u>	
Safety of Visitors & Workers	-4
Safety Summary Rating	-4

Alternative 3

Satellite Collars Tested; Hair-Snares & Remote Camera Stations Installed by Foot

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In this alternative, most fishers reintroduced to the SW and NW Cascades would be equipped with a **surgically-implanted VHF radio-transmitter** and marked with a passive integrated transponder (PIT) tag prior to their release. However, **satellite collars** (which do not require as many flights as radio-telemetry) would also be used on a trial basis, starting with a few males in the first year of reintroductions, and increasingly used if found to be effective (little impact to fisher, light enough for females to carry, good data collection, few instances of collars falling off animals, extended life of collar, etc.). Aerial telemetry with **fixed wing-aircraft** would be used to monitor fishers with VHF transmitters, and satellite data would be collected off site for those fishers with satellite collars. For a maximum of two years following each release (years 1-3 for each reintroduction), flights would occur weekly (maximum of five flights per month), weather permitting, in areas where fishers are expected to occur (i.e. above suitable fisher habitat in areas where fishers with VHF transmitters are released) (see Figures 2.1 and 2.2 in Fisher Plan/EA). When fisher are not detected, flights would be as high as possible (while still close enough to obtain a signal), but aircraft would fly as low as 333 feet above the canopy or 500 feet above ground limit (whichever is higher) when fishers are detected in order to tract the signal. Whenever possible (weather permitting), flights would occur between Monday and Thursday, with a maximum of five flights per month. Where access allows, telemetry would be completed by foot and mortalities and suspected den sites would be investigated on foot to collect the carcass or verify denning and reproduction. VHF implants are expected to last two years, maximum, but would remain implanted in the fisher throughout its life (these transmitters would likely never be located once the fisher dies). Flights would occur only so long as resource staff obtain signals from the VHF transmitters. Satellite collars are expected to last two years. All cast collars and collars from mortalities would be retrieved via foot access where reasonable access allows.

During fisher release years and one year post-release, **temporary remote camera stations** would be placed in the backcountry **via foot** to detect repeated female visitation at suspected den sites and the presence of kits. These stations would be placed in areas with little visitor use and would be out-of-site for visitors.

Because of these extensive monitoring procedures, WDFW and NPS staff should have ample information to adaptively manage fisher reintroductions and respond to any issues that arise in reintroduction efforts in order to **ensure greater success with the project** (i.e. meet the objectives of the proposed action). These monitoring procedures would allow staff to estimate survival rate, the number of fisher that establish a home range, and the number of reproducing females in order to determine if the restored fisher populations are capable of surviving and reproducing by natural means (first objective). They would also be able to detect fishers in MORA and NOCA in order to determine if fishers are distributed and abundant in these parks (third objective), and this monitoring would **expand scientific understanding** regarding fisher habitat use, movement, reproduction and survival (fourth objective).

Component Activities

How will each of the components of the action be performed under this alternative?

<u>Component of the Action</u>		Activity for this Alternative
1	Release fishers outside of wilderness	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)
2	Tracking device placed on released fishers (founding population only)	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested
3	Transportation of personnel to track founding population	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected
4	Transportation of personnel and tools to install temporary monitoring stations	Personnel and tools would be transported by foot
5	Temporary monitoring stations	Remote camera stations would be installed at areas of suspected denning activity
6	Condition of site after project	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)
7	Scientific understanding and enhanced educational opportunities	Scientific understanding would be improved. Educational opportunities would be enhanced.

Measuring Impacts

Because this proposal includes two reintroductions in two wildernesses: the Mount Rainier Wilderness in MORA and the Stephen Mather Wilderness in NOCA, impacts were analyzed for these wildernesses separately (see tables below).

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

Untrammelled

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

	objectives are met (see chapter 1 of Plan/EA)				
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2
Untrammeled Total Rating		-4			

Explain:

By reintroducing fisher in the SW and NW Cascades, when they have been extirpated by human actions, the NPS would be actively managing the wilderness through which and in which these animals are expected to travel and establish homeranges. This activity, along with implanting tracking devices in or placing tracking collars on fishers in wilderness, negatively impacts the untrammeled quality of wilderness character.

Undeveloped

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	3	3	NE	
<u>Undeveloped Total Rating</u>		-6					

Explain:

Satellite collars (fewer collars used than Alternative 1; initially five and possibly more, maximum would be 125 collars though likely far less), fixed wing flights, and placing temporary installations in the wilderness would have a short-term negative impact on the undeveloped quality of wilderness character. This alternative would require slightly less flights than Alternatives 1 and 2 due to the use of satellite collars on some fishers, which require less flights.

Natural

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		2	2	0	0	NE	
<u>Natural Total Rating</u>		4					

Explain:

In ensuring successful restoration of an extirpated, state-listed endangered mesocarnivore through reintroductions, monitoring, and adaptively management, this action would have a moderate to major, long-term, beneficial impact on the naturalness of the Mount Rainier and Stephen Mather Wildernesses because it would improve the processes and biodiversity of these wilderness ecosystems by completing the native predator guild within these wildernesses which would have positive cascading effects on other species present.

Solitude or Primitive & Unconfined Recreation

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		3	3	4	4	NE	
<u>Solitude or Primitive and Unconfined Recreation Total Rating</u>		-2					

Explain:

Actual release activities have the potential to impact winter visitors to the wilderness as sounds from transportation to release sites and actions associated with releases may travel into the wilderness. However, as visitation is low in both wildernesses during the winter when releases are scheduled to occur (particularly in NOCA), it is more likely that visitors who have the opportunity to participate in a release would benefit to a greater extent and more substantially than those who may be impacted by transient noises associated with the releases (component 1). Similarly, knowing fishers have been restored to the wilderness, having the slim, though real, chance to see a fisher in the wild and in its native habitat, and having enhanced opportunities to learn about fisher reintroduction would have a long-term beneficial impact on opportunities for primitive and unconfined recreation for both visitors to the wilderness and non-visitors alike (components 6 and 7). While the increased likelihood of seeing a fisher in the wild would be a long-term beneficial impact to the wilderness character of both the Mount Rainier and Stephen Mather Wildernesses, if a visitor happened to see a fisher collared (only the founding population), it would diminish this beneficial impact (though far fewer collars used than Alternative 1). Because fishers have large homeranges and tend to be dispersed throughout remote areas, the chances of seeing a fisher in the backcountry, particularly along traveled trails and in campgrounds, would likely be extremely low.

Seeing NPS personnel in the backcountry, finding a remote camera station (through rare, this has happened), and seeing/hearing fixed-wing aircraft associated monitoring would have a short-term negative impact on visitors' opportunities for solitude in the wilderness. This alternative would require slightly less flights than Alternatives 1 and 2 due to the use of satellite collars on some fishers.

Other Features of Value

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	opportunities would be enhanced.				
Total Number of Effects	1	1	0	0	NE
Other Features of Value Total Rating	2				

Explain:

The monitoring activities that would accompany reintroduction would inform future reintroduction efforts of native species – a long-term benefit to scientific understanding of these processes. This information could also be used to enhance education and outreach in and around both wildernesses, a beneficial impact. The experimental use of emerging technology, such as satellite collars, would also enhance future restoration and species monitoring efforts and would provide even more data than obtained in Alternatives 1 and 2 due to the enhanced capabilities of satellite collars.

Other Criteria

What is the effect of each component activity on other comparison criteria? What mitigation measures will be taken?

Maintaining Traditional Skills

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
<u>Maintaining Traditional Skills Total Rating</u>		0					

Explain:

No action in this alternative helps to maintain proficiency in the use of primitive and traditional skills, non-motorized tools, and non-mechanical travel methods.

Special Provisions

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
<u>Special Provisions Total Rating</u>		0					

Explain:

No special provisions are impacted by this alternative.

Economics & Time Constraints

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Total Number of Effects	3	3	4	4	NE
Economics & Time Constraints Total Rating	-2				

Explain:

****Impacts under economic and time constraints are in comparison to other alternatives.****

Reintroducing a total of 160 fishers to the SW and NW Cascades would represent a large portion of the funding for this project and is time-sensitive (ideally fisher would be released in the late fall, early winter to give females time to establish dens). As this is twice the cost and work load of Alternative 4, this is evaluated as a negative impact on economics and time constraints. Similarly, this alternative would involve the installation of more camera stations (and associated staff time) than Alternative 4; hence the evaluation of a negative impact for these project components.

Although satellite collars provide more data and require less flights than VHF radio-transmitters (Alternatives 1 and 2), they cost considerably more (\$2,000 compared to \$200 per device) and require additional administrative/logistical support because two devices and associated monitoring procedures would be used (added complexity) and the alternative would entail a pilot project that requires administrative oversight, an overall negative impact in comparison to other alternatives. However, aerial telemetry would be reduced under this alternative, in comparison to Alternatives 2 and 3; hence the evaluation of a positive impact.

In meeting the objectives of restoration in *both* the SW and NW Cascades (associated with component 6), this alternative would ensure greatest efficiency of fisher restoration in that one reintroduction would immediately follow the other reintroduction – taking advantage of the infrastructure and staff knowledge created and developed within the first reintroduction. This alternative would also double the amount of scientific information on reintroductions (in comparison to Alternative 4) and improve the quality of information gathered due to the use of satellite collars (in comparison to Alternatives 1 and 2); hence an evaluation of a positive impact.

Safety of Visitors & Workers

What is the effect of each component activity on the safety of visitors and workers? What mitigation measures will be taken?

Safety of Visitors & Workers

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	80 fishers would be released outside of wilderness in both the SW and NW Cascades (160 total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

6	NPS would have ample information to ensure all objectives are met (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be improved. Educational opportunities would be enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	2	NE	
Safety of Visitors & Workers Total Rating		-4					

Explain:

Fixed wing aircraft flights are a high risk activity and pose a threat to staff safety; however, this alternative may require slightly less flights than Alternatives 1 and 2 due to the use of satellite collars on some fishers. Given the terrain of both wildernesses and the remote locations that fishers are expected to inhabit, traveling by foot to den-sites, etc. is also a risky activity that demands that considerations for human health and safety be made during trip planning.

Summary Ratings for Alternative 3

<u>Wilderness Character</u>	
Untrammeled	-4
Undeveloped	-6
Natural	4
Solitude or Primitive & Unconfined Recreation	-2
Other Features of Value	2
Wilderness Character Summary Rating	-6

<u>Other Criteria</u>	
Maintaining Traditional Skills	0
Special Provisions	0
Economics & Time Constraints	-2
Other Criteria Summary Rating	-2

<u>Safety</u>	
Safety of Visitors & Workers	-4
Safety Summary Rating	-4

Alternative 4

No Action: No NPS Fisher Reintroductions in MORA and NOCA; Limited monitoring in MORA tied to WDFW actions

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Under this alternative, the NPS would not partner with WDFW to restore fishers into MORA or NOCA. No NPS funding would be allocated to fisher restoration, and **no fisher reintroductions would occur on NPS lands.**

However, the **State of Washington would proceed with fisher restoration in the SW Cascades**, outside of MORA, as outlined in WDFW's *Implementation Plan for Reintroducing Fishers to the Cascade Mountain Range in Washington* (available at wdfw.wa.gov/publications/01556/). It is assumed under this alternative that fishers would become distributed throughout the SW Cascades and may become established in MORA and the Mount Rainier Wilderness over time but would not be restored to the NW Cascades.

While it is unknown how soon fishers would immigrate to MORA and the Mount Rainier Wilderness, it is assumed that at least **some fishers equipped with tracking devices (mix of VHF radio-transmitters and satellite collars on founding population only)** would still travel to and **through and establish homeranges in the Mount Rainier Wilderness**, albeit delayed in comparison to Alternatives 1-3 as fishers would not be directly reintroduced into MORA. Therefore some **aerial telemetry with fixed wing-aircraft** would still be used by WDFW to monitor fishers during the reintroductions. Although limited due to less trackable fishers present in the Mount Rainier Wilderness, flights would occur weekly, weather permitting, in areas where fisher are expected to occur (i.e. above suitable fisher habitat) (see Figures 2.1 and 2.2 in Fisher Plan/EA). When fisher are not detected, flights would be as high as possible (while still close enough to obtain a signal), but aircraft would fly as low as 333 feet above the canopy or 500 feet above ground limit (whichever is higher) when fishers are detected in order to tract the signal. The number of locations obtained for each fisher would be limited by 1) the lifespan of radio-transmitters, 2) suitable weather conditions for flying, and 3) available funding for telemetry flights. Given potential limitations on data collection, the objective would be to get at least one location per week for individual fishers, with a maximum of five flights per month. Where access allows, telemetry would be completed by foot and mortalities and suspected den sites would be investigated on foot to collect the carcass or verify denning and reproduction. VHF implants are expected to last two years, maximum, but would remain implanted in the fisher throughout its life. These transmitters would likely never be located once the fisher dies. Flights would occur only so long as resource staff obtain signals from the VHF transmitters in the Mount Rainier Wilderness. Satellite collars are expected to last two years as well.

During fisher release years and one year post-release, the NPS would likely work with WDFW to place **temporary remote camera stations** in the backcountry of the Mount Rainier Wilderness **via foot** to detect repeated female visitation at suspected den sites and the presence of kits. These stations would be placed in areas with little visitor use and would be out-of-site for visitors. It assumed that there would be less of these stations needed in comparison to the other alternatives because less fishers would be present in MORA immediately following WDFW reintroduction in the SW Cascades under this alternative.

Because of the NPS' limited involvement in fisher reintroduction under this alternative and the lack of any reintroduction in the NW Cascades, fishers would not be restored to the Stephen Mather Wilderness, **the level of scientific understanding would be minimal in comparison** to other alternatives (one full reintroduction; not two), and the number of educational opportunities tied to fisher reintroduction would be limited to MORA only.

There would be no action within the Stephen Mather Wilderness under this alternative.

Component Activities

How will each of the components of the action be performed under this alternative?

<u>Component of the Action</u>		Activity for this Alternative
1	Release fishers outside of wilderness	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.
2	Tracking device placed on released fishers (founding population only)	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested
3	Transportation of personnel to track founding population	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)
4	Transportation of personnel and tools to install temporary monitoring stations	Personnel and tools would be transported by foot (limited)
5	Temporary monitoring stations	Remote camera stations would be installed at areas of suspected denning activity (limited)
6	Condition of site after project	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)
7	Scientific understanding and enhanced educational opportunities	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only

Measuring Impacts

Because the other alternatives in this MRDG include two reintroductions in two wildernesses: the Mount Rainier Wilderness in MORA and the Stephen Mather Wilderness in NOCA, impacts were analyzed for these wildernesses separately under this alternative as well in order to be able to compare impacts to the wildernesses from all the alternatives (see tables below).

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

Untrammeled

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	0	NE	
<u>Untrammeled Total Rating</u>		-2					

Explain:

By reintroducing fisher in the SW Cascades, when they have been extirpated by human actions, WDFW would be actively managing the Mount Rainier Wilderness through which and in which these animals are expected to travel and establish homeranges. This activity, along with implanting tracking devices in or placing tracking collars on fishers in wilderness, negatively impacts the untrammeled quality of wilderness character. This trammeling of wilderness character would be less than Alternatives 1-3 as 1) no fishers would be reintroduced in close proximity to the Mount Rainier Wilderness, and 2) fisher immigration to the wilderness would like be delayed in comparison to the other alternatives (i.e fewer “tracked” fishers in the Mount Rainier Wilderness).

The untrammeled quality of the Stephen Mather Wilderness would not be affected by this alternative.

Undeveloped

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	satellite collars would be tested						
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	3	0	NE	
Undeveloped Total Rating		-3					

Explain:

Satellite collars, fixed wing flights, and placing temporary installations in the wilderness would have a short-term negative impact on the undeveloped quality of wilderness character in the Mount Rainier Wilderness. This alternative would like require slightly less of these developments than Alternatives 1-3 due to the decreased presence of fishers in the Mount Rainier Wilderness immediately following reintroduction (when the collars are functional).

The undeveloped quality of the Stephen Mather Wilderness would not be affected by this alternative.

Natural

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		2	0	0	0	NE	
<u>Natural Total Rating</u>		2					

Explain:

Although restoration of fishers in the Mount Rainier Wilderness would likely be delayed in comparison to the other alternatives, WDFW's actions to reintroduce fishers in the SW Cascades near MORA would have a moderate, long-term, beneficial impact on the naturalness of the Mount Rainier Wilderness because it would improve the processes and biodiversity of this wilderness ecosystem by completing the native predator guild within this wilderness which would have positive cascading effects on other species present. Fishers would continue to be extirpated from the Stephen Mather Wilderness – maintaining this degraded aspect of the natural quality of this wilderness' character.

Solitude or Primitive & Unconfined Recreation

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		2	0	4	0	NE	
<u>Solitude or Primitive and Unconfined Recreation Total Rating</u>		-2					

Explain:

No releases would occur close enough to the Mount Rainier Wilderness to impact wilderness visitors, and no NPS visitors would have the beneficial opportunity to participate in a release, as opposed to the other alternatives (component 1). However, knowing fishers have been restored to the wilderness, having the slim, though real, chance to see a fisher in the wild and in its native

habitat, and having enhanced opportunities to learn about fisher reintroduction would have a long-term beneficial impact on opportunities for primitive and unconfined recreation for both visitors to the Mount Rainier Wilderness and non-visitors alike (components 6 and 7). While the increased likelihood of seeing a fisher in the wild would be a long-term beneficial impact to the wilderness character of the Mount Rainier Wilderness, if a visitor happened to see a fisher collared (which is assumed unlikely in this alternative because of fewer collars used and fewer founding fishers present in the Mount Rainier Wilderness), it would diminish this beneficial impact. Because fishers have large homeranges and tend to be dispersed throughout remote areas, the chances of seeing a fisher, much less one that is collared, in the backcountry, particularly along traveled trails and in campgrounds, would likely be extremely low.

Seeing NPS personnel in the backcountry, finding a remote camera station (through rare, this has happened), and seeing/hearing fixed-wing aircraft associated monitoring would have a short-term negative impact on visitors' opportunities for solitude in the wilderness. This alternative would require less flights and less temporary camera stations than the other alternatives as fisher restoration in the Mount Rainier Wilderness would be delayed under this alternative and less trackable fishers would be present to monitor.

The Stephen Mather Wilderness and its quality of solitude and primitive and unconfined recreation would not be affected by this alternative.

Other Features of Value

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		1	0	0	0	NE	
<u>Other Features of Value Total Rating</u>		1					

Explain:

The monitoring activities that would accompany reintroduction in the SW Cascades would inform

future reintroduction efforts of native species – a long-term benefit to scientific understanding of these processes and educational benefit to visitors. The experimental use of emerging technology, such as satellite collars, would also enhance future restoration and species monitoring efforts.

Other Criteria

What is the effect of each component activity on other comparison criteria? What mitigation measures will be taken?

Maintaining Traditional Skills

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
<u>Maintaining Traditional Skills Total Rating</u>		0					

Explain:

No action in this alternative helps to maintain proficiency in the use of primitive and traditional skills, non-motorized tools, and non-mechanical travel methods.

Special Provisions

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	0	0	NE	
Special Provisions Total Rating		0					

Explain:

No special provisions are impacted by this alternative.

Economics & Time Constraints

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		5	5	2	2	NE	
<u>Economics & Time Constraints Total Rating</u>		6					

Explain:

****Impacts under economic and time constraints are in comparison to other alternatives.****

Because the NPS would not be taking action, this alternative would come at essentially no cost to the NPS. Therefore, a “positive” impact for economic costs and time constraints is given for all action components for this alternative.

However, there would be no benefit (objectives not met) to the NW Cascades and the Stephen Mather Wilderness, and even though WDFW would restore fishers to the SW Cascades which are expected to eventually immigrate to the Mount Rainier Wilderness, restoration would be delayed; hence the negative rating in comparison to other alternatives.

Safety of Visitors & Workers

What is the effect of each component activity on the safety of visitors and workers? What mitigation measures will be taken?

Safety of Visitors & Workers

<u>Component Activity for this Alternative</u>		Positive		Negative		No Effect	
		MORA	NOCA	MORA	NOCA	MORA	NOCA
1	WDFW would release 80 fishers outside of MORA and the Mount Rainier Wilderness in the SW Cascades. No fishers would be reintroduced to the NW Cascades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VHF radio-transmitters would be implanted in fishers; satellite collars would be tested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Weekly aerial telemetry would be completed with fixed wing aircraft: 500' agl in areas where fisher are detected (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Personnel and tools would be transported by foot (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Remote camera stations would be installed at areas of suspected denning activity (limited)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Ample information to ensure all objectives are met in MORA; objectives not met for NOCA (see chapter 1 of Plan/EA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Scientific understanding would be minimally improved. Educational opportunities offered in MORA only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	0	2	0	NE	
<u>Safety of Visitors & Workers Total Rating</u>		-2					

Explain:

Fixed wing aircraft flights are a high risk activity and pose a threat to staff safety; however, this alternative would likely require less flights than Alternatives 1-3 due to the use of satellite collars on some fishers and the reduced number of fishers (and therefore needed monitoring) in the Mount Rainier Wilderness immediately following reintroduction. Given the terrain of both wildernesses and the remote locations that fishers are expected to inhabit, traveling by foot to den-sites, etc. is also a risky activity that demands that considerations for human health and safety be made during trip planning. No action would be taken in the Stephen Mather Wilderness.

Summary Ratings for Alternative 4

<u>Wilderness Character</u>	
Untrammeled	-2
Undeveloped	-3
Natural	2
Solitude or Primitive & Unconfined Recreation	-2
Other Features of Value	1
Wilderness Character Summary Rating	-4

<u>Other Criteria</u>	
Maintaining Traditional Skills	0
Special Provisions	0
Economics & Time Constraints	6
Other Criteria Summary Rating	6

<u>Safety</u>	
Safety of Visitors & Workers	-2
Safety Summary Rating	-2

Alternative Comparison

<u>Alternative 1:</u>	VHF Collars and Aerial Telemetry; Hair-Snares and Remote Camera Stations Installed by Foot
<u>Alternative 2:</u>	Implanted VHF Transmitters & Aerial Telemetry; Hair-Snares & Remote Camera Stations Installed by Foot
<u>Alternative 3:</u>	Satellite Collars Tested; Hair-Snares & Remote Camera Stations Installed by Foot
<u>Alternative 4:</u>	No Action: No NPS Fisher Reintroductions in MORA and NOCA; Limited monitoring in MORA tied to WDFW actions

Wilderness Character	<u>Alt 1</u>		<u>Alt 2</u>		<u>Alt 3</u>		<u>Alt 4</u>	
	+	-	+	-	+	-	+	-
Untrammeled	0	4	0	4	0	4	0	2
Undeveloped	0	6	0	4	0	6	0	3
Natural	4	0	4	0	4	0	2	0
Solitude or Primitive & Unconfined Rec.	6	8	6	6	6	8	2	4
Other Features of Value	2	0	2	0	2	0	1	0
<i>Total Number of Effects</i>	12	18	12	14	12	18	5	9
Wilderness Character Rating	-6		-2		-6		-4	

Other Criteria	<u>Alt 1</u>		<u>Alt 2</u>		<u>Alt 3</u>		<u>Alt 4</u>	
	+	-	+	-	+	-	+	-
Maintaining Traditional Skills	0	0	0	0	0	0	0	0
Special Provisions	0	0	0	0	0	0	0	0
Economics & Time Constraints	2	12	4	10	6	8	10	4
<i>Total Number of Effects</i>	2	12	4	10	6	8	10	4
Other Criteria Rating	-10		-6		-2		6	

Safety	<u>Alt 1</u>		<u>Alt 2</u>		<u>Alt 3</u>		<u>Alt 4</u>	
	+	-	+	-	+	-	+	-
Safety of Visitors & Workers	0	4	0	4	0	4	0	2
Safety Rating	-4		-4		-4		-2	

Alternatives Not Analyzed

What alternatives were considered by not analyzed? Why were they not analyzed?

No or Limited Monitoring (limit frequency of aerial telemetry flights/limited number of camera stations, etc.): Monitoring is needed for NPS managers to ensure that fisher reintroductions in the SW and NW Cascades are implemented in the most effective manner that will ensure the greatest likelihood for success, and in fact, *NPS Management Policies 2006* call for each park to integrate the “best available science” and “best available technology” “to restore the biological and physical components of [ecosystems], accelerating both their recovery and the recovery of landscape and biological community structure and function”. Therefore, placing additional, somewhat arbitrary, limitations (beyond those that already exist due to technology (device failure, restricted data, etc.) and natural processes (weather, etc.)) on the ability of resource managers to be able to gather scientific information that could lead to more effective releases in later years of the reintroduction effort and protect the species into the future is not considered a viable alternative.

No tracking devices on any fishers reintroduced in the SW and NW Cascades: This is not a viable alternative because WDFW is leading the fisher reintroduction process outside of NPS boundaries, and the NPS has no authority to change WDFW procedures, particularly as they are in line with best scientific practices.

Track fishers using satellite collars only: Although satellite technology does not require aerial overflights for most monitoring, current designs are too large and heavy for their use on female fishers and therefore cannot be used on all fishers in the reintroduction effort. However, as technology is advancing rapidly, Alternative 3 allows for the use of satellite collars on adult male fishers on a trial basis in the first year of the first reintroduction. If found to be effective, and technology advances to meet project needs (e.g. reduction in size and weight), project managers would closely evaluate their use and could increase the use of satellite collars during project implementation. Currently, VHF radio transmitters are the only devices available that meet the full monitoring needs and objectives of this proposed project. If, during the course of this project, technology advances where satellite transmitters would be suitable and they are shown to be effective for the purposes of this project, Alternative 3 would allow this emerging technology to be used in future years of project implementation (see *Adaptive Management* in the Plan/EA).

Complete telemetry solely by foot: Radio telemetry signals are by far too weak to be able to effectively complete telemetry by foot throughout the Mount Rainier and Stephen Mather Wildernesses. As incorporated in every alternative: “Where access allows, telemetry would be completed by foot and mortalities and suspected den sites would be investigated on foot to collect the carcass or verify denning and reproduction”.

Telemetry will only occur before memorial day and after labor day to avoid high periods of visitor use: Although telemetry would focus most heavily on the denning period (spring, prior to memorial day), consistent measurements are necessary throughout the year in order to monitor dispersal, the establishment of homeranges, and mortalities. This information provides resource managers with the tools to adaptively manage future releases and determine whether or not the species is successfully recovering within the Mount Rainier and Stephen Mather Wildernesses.

Place hair snares and remote camera stations via helicopter or stock: Because these stations can be set up by foot, there was no need to evaluate the use of a prohibited use or more intensive use in wilderness.

Decision

Refer to the [MRDG Instructions](#) before identifying the selected alternative and explaining the rationale for the selection.

Selected Alternative

<input type="checkbox"/>	<u>Alternative 1:</u>	VHF Collars and Aerial Telemetry; Hair-Snares and Remote Camera Stations Installed by Foot
<input type="checkbox"/>	<u>Alternative 2:</u>	Implanted VHF Transmitters & Aerial Telemetry; Hair-Snares & Remote Camera Stations Installed by Foot
<input checked="" type="checkbox"/>	<u>Alternative 3:</u>	Satellite Collars Tested; Hair-Snares & Remote Camera Stations Installed by Foot
<input type="checkbox"/>	<u>Alternative 4:</u>	No Action: No NPS Fisher Reintroductions in MORA and NOCA; Limited monitoring in MORA tied to WDFW actions

Explain Rationale for Selection:

When comparing the alternatives considered above, the planning staff for this project noted that almost all beneficial impacts to wilderness character identified in this MRDG would have at least moderate benefits to wilderness character that would last in perpetuity; whereas all adverse impacts to wilderness character would be mostly negligible, transient, short-term (not lasting more than three years), and in some cases, very unlikely to occur. Therefore, the numerical ratings in the “Alternatives Comparison” table are not sufficient on their own to evaluate and compare these alternatives.

For example, Alternative 4, while having the “best” overall score (0), does not adequately address the situation as described under Step 1 as fisher would not be restored to the Stephen Mather Wilderness. Therefore, although this alternative serves as a good comparison for the other alternatives, it is dismissed from further consideration.

Alternative 1 is also dismissed from further consideration as it clearly has the worst overall score (-20) and uses an older technology (VHF collars on all 160 fishers) that has wilderness impacts (introduces a man-made device in wilderness and would be visible to visitors if they saw such a device on a fisher) above those from Alternatives 2 and 3, without the benefit of additional information, as gathered by a satellite collar, in Alternative 3.

While Alternatives 2 and 3 have the same overall score (-12), it appears from the numerical ratings that Alternative 3 has less wilderness impacts than Alternative 2. However, this is not a fair assessment. The four-point difference between the two alternatives in the scoring under wilderness character is because, all other impacts scored similarly (i.e. presence of impact), Alternative 3 would use satellite collars in a pilot program that would impact the undeveloped quality of wilderness character from its mere presence and the solitude quality of wilderness character from the extremely low likelihood of a visitor seeing a collar on a fisher. Neither of these impacts are considered more than negligible due to predicted low use of satellite collars (five of the 40 fishers would have satellite collars in year one under this alternative) and the already rare opportunity for visitors to see a fisher in the wild, much less one with a satellite collar. What the scores do not show is that Alternative 3 would require less aerial telemetry than Alternative 2 (a smaller impact to undeveloped for this component), would result in additional benefits to scientific understanding (additional benefit to other features of value), and could ensure a more successful reintroduction (additional benefits to natural). Furthermore, the use of satellite collars in a pilot program under Alternative 3 would adhere to NPS policies in using the best available

technology for restoring a species to its native habitat. Obviously, the planning staff for this project has some concerns about satellite collars and acknowledges that the technology is not ready for full scale implementation; hence the dismissal of use of satellite collars on all reintroduced fishers to the SW and NW Cascades (see “Alternatives not Analyzed”). However, if these collars are proven to be effective (in that they have little impact to fisher, they are light enough for females to carry, they provide good data collection, there are few instances of collars falling off animals, and the collar has an extended life, etc.), these collars could reduce impacts to wilderness character and enhance the outcomes of fisher restoration in the SW and NW Cascades.

Therefore, Alternative 3, which includes a pilot program for the use of satellite collars, is determined to be the minimum tool to implement fisher restoration in the Mount Rainier and Stephen Mather Wildernesses.

Describe Monitoring & Reporting Requirements:

All aerial telemetry flights over MORA or NOCA must be reported to the aviation coordinator at each respective park at the end of the year. Report should include flight hours and type of aircraft. Wildlife biologists at each park should also track the number of temporary camera stations installed in the wilderness as a result of monitoring fishers and the duration of operation of each station. This number should be reported to the wilderness district ranger on an annual basis.

Approval of Prohibited Uses

Which of the prohibited uses found in Section 4(c) of the Wilderness Act are approved in the selected alternative and for what quantity?

<input type="checkbox"/>	Mechanical Transport:	Use of Aerial Telemetry (years 1-3 in each wilderness): weekly flights over suitable fisher habitat with a small fixed wing aircraft. Maximum of five flights per month. Flights may go as low as 333 feet above canopy or 500 feet above ground limit (agl) (whichever is higher). Flights limited to Monday-Thursday whenever possible.
<input type="checkbox"/>	Motorized Equipment:	
<input type="checkbox"/>	Motor Vehicles:	
<input type="checkbox"/>	Motorboats:	
<input type="checkbox"/>	Landing of Aircraft:	
<input type="checkbox"/>	Temporary Roads:	
<input type="checkbox"/>	Structures:	
<input checked="" type="checkbox"/>	Installations:	Temporary camera stations (yrs 1-3 in each wilderness): set up by foot, only in located where denning activity is suspected. Placed in areas with little visitor use and would be out-of-site for visitors.

Refer to agency policies for the following review and decision authorities:

Prepared	Name	Position	
	Elizabeth Boerke	Environmental Protection Specialist	
	Signature		Date

Recommended	Name	Position	
	Kraig Snure	Wilderness District Ranger, Mount Rainier National Park	
	Signature		Date

Recommended	Name	Position	
	Jack Oelfke	Acting Wilderness Coordinator, North Cascades National Park Service Complex	
	Signature		Date

Approved	Name	Position	
	Randy King	Superintendent, Mount Rainier National Park	
	Signature		Date

Approved	Name	Position	
	Karen F. Taylor-Goodrich	Superintendent, North Cascades National Park Service Complex	
	Signature		Date