Appendix D. Decision support tool fact sheet for the landscape-level conservation and management of the Pacific-slope Flycatcher in Pacific Northwest Forests.

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LANDSCAPE MANAGEMENT GUIDELINES FOR BREEDING LANDBIRDS OF PACIFIC NORTHWEST FORESTS

"WESTERN" FLYCATCHER (*Empidonax difficilis*)

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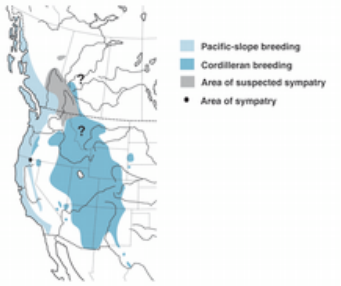
INTRODUCTION:

"Western" Flycatcher is a medium-small (14-17cm, 9-12g) insectivore that prefers to breed in a variety of mixed, coniferous and broadleaf forested habitats, where they are associated with streams, and open understory that benefit foraging. The Pacific-slope Flycatcher of the Pacific Northwest winters in scrubby forests of western Mexico, whereas the Cordilleran Flycatcher (eastern slope) winters in the montane forests of central Mexico.



CONSERVATION STATUS:

Breeding Bird Survey (BBS) data collected in the Dissected Rockies showed a non-significant increase, but no MAPS data were available for this province.

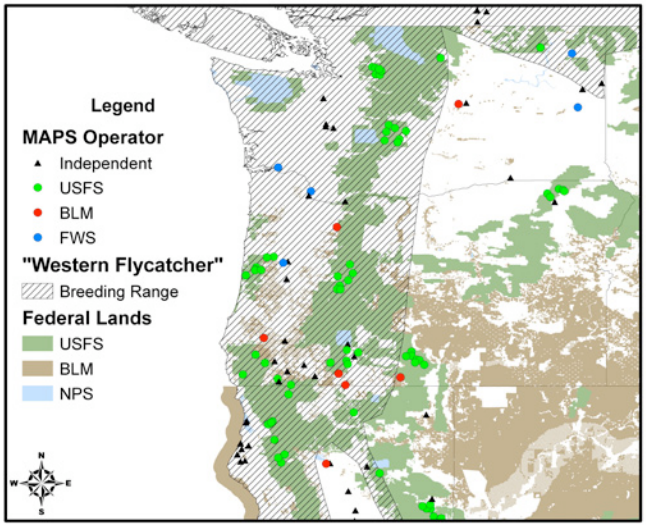


Fig 1. Active MAPS stations and Forest Service (FS), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and National Park Service (NPS) lands in the northwestern United States. The hatched area represents "Western" Flycatcher breeding range within the mapped extent.

Breeding Bird Survey (BBS) data collected in the Cascade Mountains (Table 1) showed a significant decline. Similarly, MAPS data from Mount Baker, Wenatchee, and Willamette national forests (Fig. 1), within the Cascade Mountains province, showed significantly declining numbers of adults, stable numbers of young, and high survival rate.

Table 1. Summary of "Western" Flycatcher BBS (1992-2007) and MAPS data (1992-2007) for the Dissected Rockies (DR), Cascade Mountains (CM), Southern Pacific Rainforests (SPR), and Pitt-Klamath (P-K) physiographic provinces.

	DR	CM	SPR	P-K
BBS Adult Trend	+0.71	**-2.68**	**-2.31**	-1.73
MAPS Results				
# Stations		13	6	7
Adult Trend		-1.05	**-2.89**	-1.37
Young Trend		-7.65	+1.61	-5.25
Productivity Index		0.223	0.113	0.176
Survival Rate		0.488	**0.535**	0.464

MAPS data from Siuslaw national forest (in SPR province) showed non-significantly declining numbers of adults and young and low survival rate consistent with the declining BBS trend.

MANAGEMENT GUIDELINES:

Managers should maintain a variously-aged coniferous and mixed forest dominating 60-90% (median 75%) of the 1250 hectares that lie within a 2-kilometer radius landscape. Preferred characteristics include ~1% successional habitat. ,2-10% coverage of deciduous forest, including up to ten hectares of riparian habitat (using 15m buffer around perennial streams). Coniferous and mixed forest coverage should approach 90% (~1100 hectares) which ensures some 900 hectares of core habitat.

Numbers of adult "Western" flycatchers correlated negatively with the core area of shrub-successional habitat, whereby the lowest numbers were associated with forests containing ~10-15 hectares of such habitat. Adult numbers were also lower in areas with more extensive deciduous forest.

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A COLLABORATION IN BIRD CONSERVATION BETWEEN THE INSTITUTE FOR BIRD POPULATIONS, POINT REYES STATION, CALIFORNIA AND KLAMATH BIRD OBSERVATORY, ASHLAND, OREGON, WITH SUPPORT FROM THE USDA FOREST SERVICE REGION SIX, THE NATIONAL FISH AND WILDIFE FEDERATION, AND THE BUREAU OF LAND MANAGEMENT.

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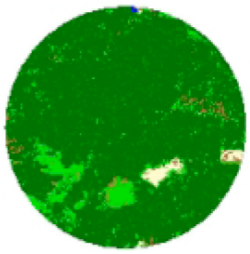
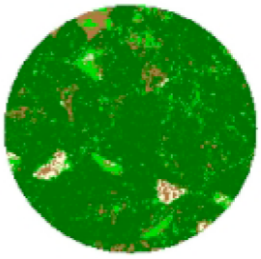
We suggest that managers maintain or restore large patches of thin-canopy coniferous and mixed forests, including large core areas, within more densely canopied forest to benefit the reproductive success of "western" flycatchers. Our data also suggest that the maintenance of riparian buffer zones, especially deciduous components, should help support healthy productive populations. It appears that relatively undisturbed, closed-canopy forests may not be beneficial to this species; however, a mosaic of large (>1000 hectares) different-aged stands were associated with increasing numbers of both young and adults. The 1,250 hectare landscape shown in Fig. 2a provides excellent breeding habitat in mixed coniferous-deciduous forest.

Fig. 2. a) Two-kilometer radius National Land Cover Dataset (NLCD) image centered on the Mary's Creek MAPS station on Siuslaw National Forest, OR (left). The station recorded high numbers of adult and young flycatchers, and high reproductive success. The landscape is at ~300 meters elevation and mostly covered in mature mixed forest (dark green) and more open canopy forest (light green). Especially note the high forest cover percentage and lack of edges or patches of shrub or regenerating forest (brown and tan).



b) Conversely, the landscape around Crab Creek MAPS station at ~200m elevation on Siuslaw National Forest, OR (right) exhibits a widespread high level of fragmentation caused by clearcuts and other disturbances resulting in a low percentage of "core" forest, and larger patches of thinned forest (lighter green), shrub habitat (tan), and grassland (pale yellow). Consequently, this area supported low numbers of adult and young "Western" Flycatcher, and poor reproductive success.



A habitat conservation plan for breeding landbirds of coniferous forests in Oregon and Washington (Altman 1999) recommends that management to maintain late successional forest, and riparian corridors (especially deciduous shade trees) would be beneficial to breeding populations. Altman specifically recommends that managers "provide late-successional forest with ~20% deciduous canopy cover, particularly where associated with riparian zone or wet site deciduous trees such as red alder and big leaf maple. In harvest units with hardwood site potential, retain deciduous canopy trees and/or western hemlock and western red cedar trees in small residual clumps (retention aggregates) near or adjacent to the riparian zone to provide suitable nesting and foraging habitat. Riparian buffer zones within harvest units should be >40 meters wide, and meet stand-level habitat conditions described above."

Forest pests and future climate

Predicted milder winters and hotter, drier summers in Washington and Oregon may result in more frequent, widespread, and intense forest pest outbreaks. Nott et al. (2002) showed a strong relationship between the winter activity of the North Atlantic Oscillation (NAO) and the El Nino Southern Oscillation (ENSO) and the subsequent productivity of "Western" Flycatcher. High reproductive success was associated with wet winter and spring conditions across the non-breeding range and mild winters across the breeding range.

Extensive outbreaks of forest pests may provide ample food for breeding birds but they also thin the canopy cover, thereby changing the micro-climate and leading to a more developed mid-story and understory. Thus, the predicted drier, open canopy conditions may increase the availability of quality flycatcher breeding habitat, but drier summers may decrease the deciduous component of the forest.

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