

SOUTHWESTERN WILLOW FLYCATCHER (*EMPIDONAX TRAILII EXTIMUS*) SURVEYS
IN THE SAN LUIS VALLEY, COLORADO, 2003

ANNUAL REPORT

Submitted to

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EXECUTIVE SUMMARY

Hawks Aloft, Inc. conducted surveys for the federally endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus*) in 15 riparian areas in the San Luis Valley during the 2003 breeding season. Willow Flycatchers were detected in all survey periods at Alamosa National Wildlife Refuge South, Higel State Wildlife Area, and Rio Grande State Wildlife Area. Of these areas, the Alamosa Wildlife Refuge South route supported the largest Willow Flycatcher population. A total of 24 adults were detected along the Alamosa National Wildlife Refuge South route. Fifteen Willow Flycatchers were detected at the Rio Grande State Wildlife Area section two during the third survey period, occupying an estimated 13 territories. At Higel State Wildlife Area, a total of 11 Willow Flycatchers were observed during the final visit and at Rio Grande State Wildlife section one, a total of 10 Willow Flycatchers were detected. Willow Flycatchers also were detected at Segó Springs State Wildlife Area during last two survey periods. Three Willow Flycatchers were detected during the second visit; however, during the final visit only one bird was detected. Willow Flycatchers also were observed at Rio Grande State Wildlife Area section three, Saguache Creek, and Lil' Pop; however, flycatchers were detected only during the first two survey periods, which suggests migrant status.

The areas where Willow Flycatchers were detected contained dense patches of Willow > 5 m tall with saturated soils or running water nearby. No Willow Flycatchers were detected at La Jara State Wildlife Area, Poso Creek, Conejos, La Manga Creek, Wolf Creek, Four Mile Creek, Graveyard Gulch, La Garita, or Pass Creek. Many of these areas lacked suitable Willow Flycatcher habitat, containing only sparse patches of willow with little or no standing water.

Results from the 2003 surveys suggest that riparian habitat in the San Luis Valley provides suitable breeding and migration habitat for the Willow Flycatcher. In addition, several areas have the potential to provide future habitat. Because loss of breeding riparian habitat is the primary cause of endangerment, it is crucial that current habitat is protected and that potential future habitat be identified.

INTRODUCTION

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is a Neotropical migrant that breeds in the Southwestern United States from sea level to approximately 2700 m and winters in Mexico and Central America (Sogge et al. 1997, Finch and Stoleson 2000). Currently, the Southwestern Willow Flycatcher is listed as an endangered species under the Federal Endangered Species Act (USFWS 1995). Causes for endangerment include loss and alteration of riparian habitat on breeding grounds, loss of habitat on wintering grounds, alteration of natural waterways including damming, channelization and dredging, and brood parasitism by Brown-headed Cowbirds (*Molothrus ater*) (Sogge et al. 1997, Marshall and Stoleson 2000). Because Southwestern Willow Flycatchers are riparian obligate species (BLM 1998), activities that alter habitat along riparian corridors can greatly impact flycatcher populations.

Prime Southwestern Willow Flycatcher habitat includes areas with dense riparian vegetation greater than 10 m wide or 0.1 ha in size and usually in close proximity to water or saturated soils (Sogge et al. 1997, Sedgwick 2000, U.S. Fish and Wildlife Service 2002). Breeding habitat varies based on vegetation composition and structure and is typically classified into four broad categories (1) monotypic high-elevation willow (*Salix* spp), (2) monotypic exotic, (3) native broadleaf dominated, and (4) mixed native/exotic (Sogge et al. 1997). Monotypic high elevation willow includes dense stands of willow between 3 - 7 m in height at elevations above 2300 m. Monotypic exotic stands are dominated by saltcedar (*Tamarix* spp) or Russian olive (*Elaeagnus angustifolia*) stands that are 4 – 10 m in height with a closed canopy. Native broadleaf dominated habitat consists of willow patches mixed with native broadleaf trees such as cottonwood (*Populus* spp), boxelder (*Acer negundo*), and

alder (*Alnus* spp) that are up to 15 m tall. Mixed native/exotic habitat type contains a dense mix of both native willows and exotic shrubs.

Because identifying and monitoring Southwestern Willow Flycatcher habitat and potential habitat is a critical component of endangered species conservation efforts (Sogge et al. 1997), the Colorado Division of Wildlife, the Rio Grande National Forest, the Saguache Bureau of Land Management, and the U.S. Fish and Wildlife Service identified 15 potential Southwestern Willow Flycatcher habitat areas in the San Luis Valley, Colorado. In 2003, Hawks Aloft surveyed these areas to determine the presence or absence of Willow Flycatchers.

STUDY AREA

This study was conducted on areas managed by the Colorado Division of Wildlife (CDOW), the Rio Grande National Forest (RGNF), the Saguache Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS), in the San Luis Valley, Colorado.

Colorado Division of Wildlife

Higel State Wildlife Area—This survey area includes approximately 6.6 km along the Rio Grande, in Alamosa County, Colorado (Fig. 1 and Appendix A). Higel State Wildlife Area sits at approximately 2325 m. Suitable Southwestern Willow Flycatcher habitat occurs in patches throughout Higel State Wildlife Area, containing a dense mix of willow and gooseberry (*Ribes* spp) approximately 6 –7 meters tall with a sparse cottonwood canopy (Digital Appendix A.1-4). Higel State Wildlife Area was flooded prior to the first survey period and dried slightly over time; however, the entire area remained saturated throughout all survey periods.

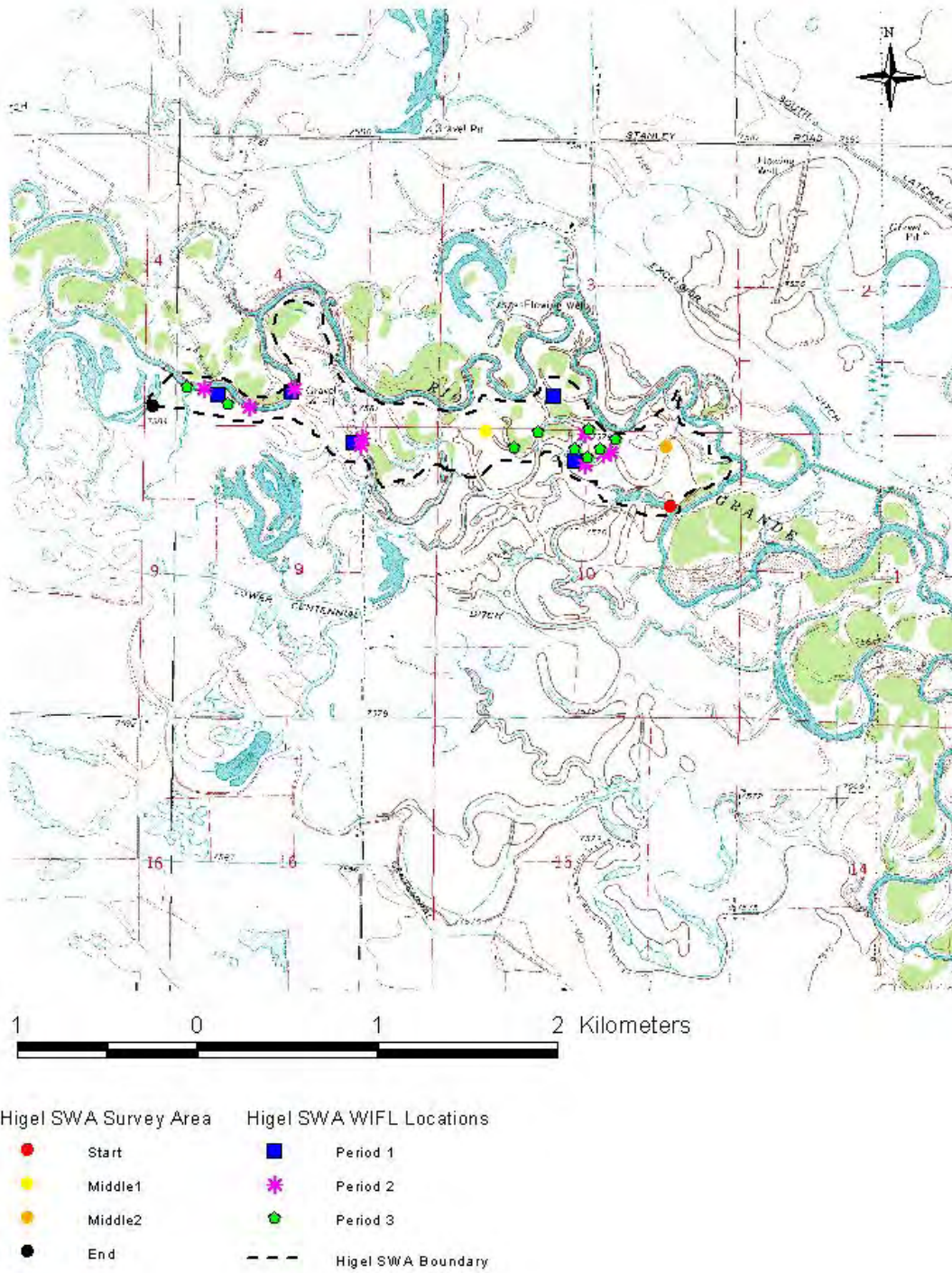


Fig. 1. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Higel State Wildlife Area, Alamosa County, Colorado.

La Jara State Wildlife Area—This survey area includes 1.6 km of La Jara Creek at 2517 m in elevation (Fig. 2 and Appendix A). La Jara State Wildlife Area (SWA) is dominated by mountain alder (*Alnus incana*), narrowleaf cottonwood (*Populus angustifolia*), willow, and juniper (*Juniperus* spp) with a mean height of approximately 5.0 m. Although La Jara SWA contains willow, many of the patches are sparse and are less than 10 m wide (Digital Appendix A.5-7).

Poso Creek—The Poso Creek survey area (2520 m) is situated along a small (0.9 km) section of Poso Creek in Conejos County, with only a few patches of suitable flycatcher habitat (Fig. 3 and Appendix A). Dominant vegetation includes willows, cottonwoods, and rabbitbrush (*Chrysothamnus* spp), with a mean height of approximately 5 m (Digital Appendix A.8-10). Poso Creek was dry during all survey periods.

Rio Grande State Wildlife Area—The Rio Grande State Wildlife Area (SWA) includes approximately 5.0 km of riparian habitat along the Rio Grande in Rio Grande County. We divided the Rio Grande SWA into three separate sections because it contained a large amount of suitable Willow Flycatcher habitat. Section one is located in the southwest section of the Rio Grande SWA and covers approximately 2 km of the Rio Grande (Fig. 4 and Appendix A). Predominant vegetation consists of coyote willow (*Salix exigua*) and peachleaf willow (*Salix amygdaloides*) approximately 4 m tall, with a fairly dense cottonwood overstory (Digital Appendix A.11-13). Portions of the survey area contained saturated soils throughout the surveys and the Rio Grande also contained water. Section two of the Rio Grande SWA extends approximately 2.9 km from the eastern boundary of the wildlife area along the north side of the Rio Grande (Fig. 5 and Appendix A). Dense willow patches approximately 7 m tall with saturated soils and gallery cottonwood forest dominate

this area (Digital Appendix A.14-16). Water levels throughout the site including canals and marshy areas, decreased from survey period one to three. Section three of the Rio Grande SWA is directly south of section two, extending approximately 2.5 km east from the eastern boundary (Fig. 6 and Appendix A). This area also is dominated by willow and cottonwood, although it contains fewer suitable habitat patches than either section one or two (Digital Appendix A.17-19). Section three contained no saturated soils; however, the Rio Grande was flowing. Average elevation at all three sites is 2326 m.

Sego Spring State Wildlife Area—This survey area includes 1.3 km of the Conejos River, east of the town of Manassa, Colorado in Conejos County (Fig. 7 and Appendix A). Sego Springs SWA is dominated by coyote willow and narrowleaf cottonwood. The beginning of the survey areas contains two small ponds surrounded by willow, while the remainder of the survey area along the Conejos River is dominated by cottonwood and willow, averaging 5 m tall (Digital Appendix A.20-22). The Sego Springs survey area sits at approximately 2344 m.

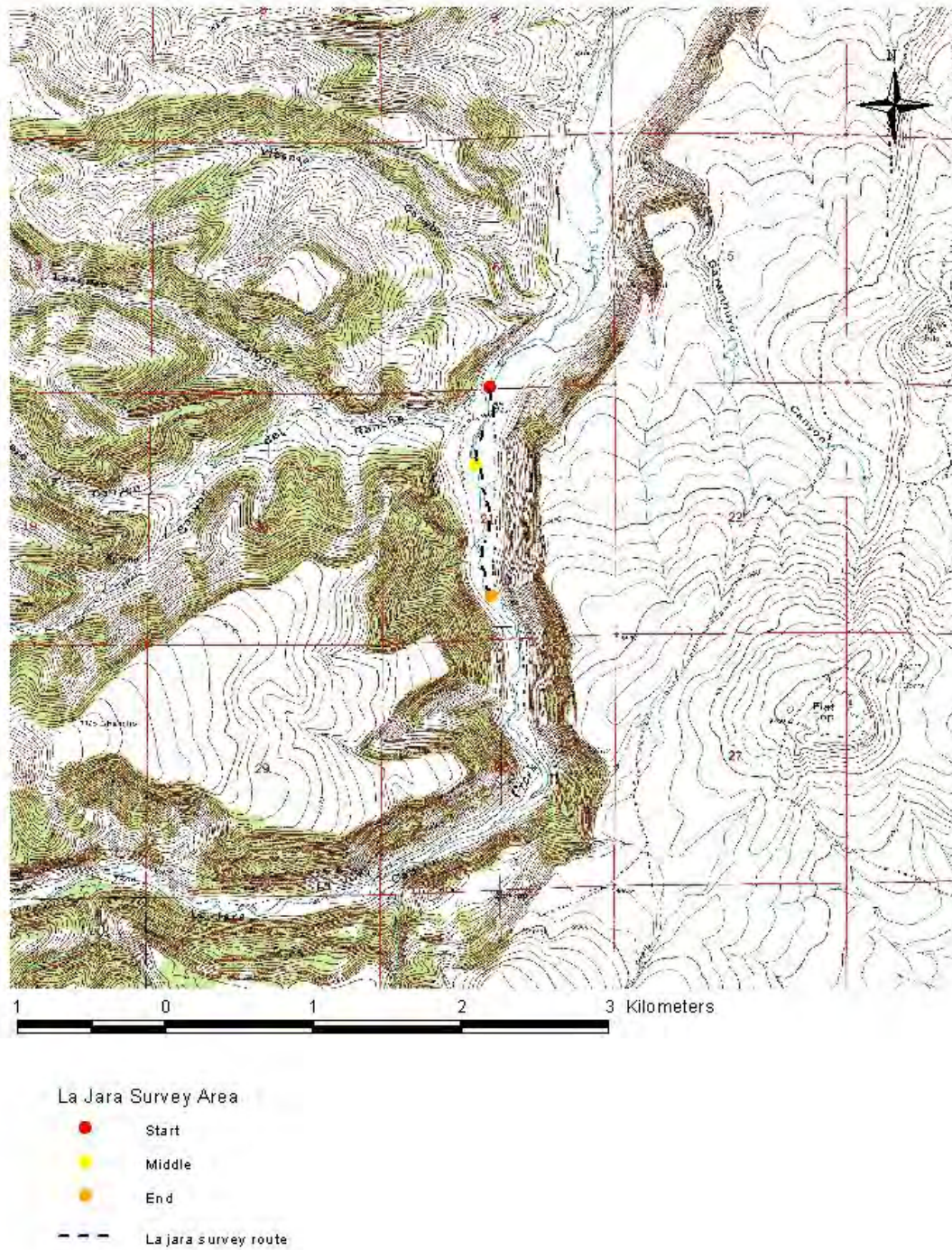


Fig. 2. Southwestern Willow Flycatcher survey area at La Jara State Wildlife Area, Conejos County, Colorado.

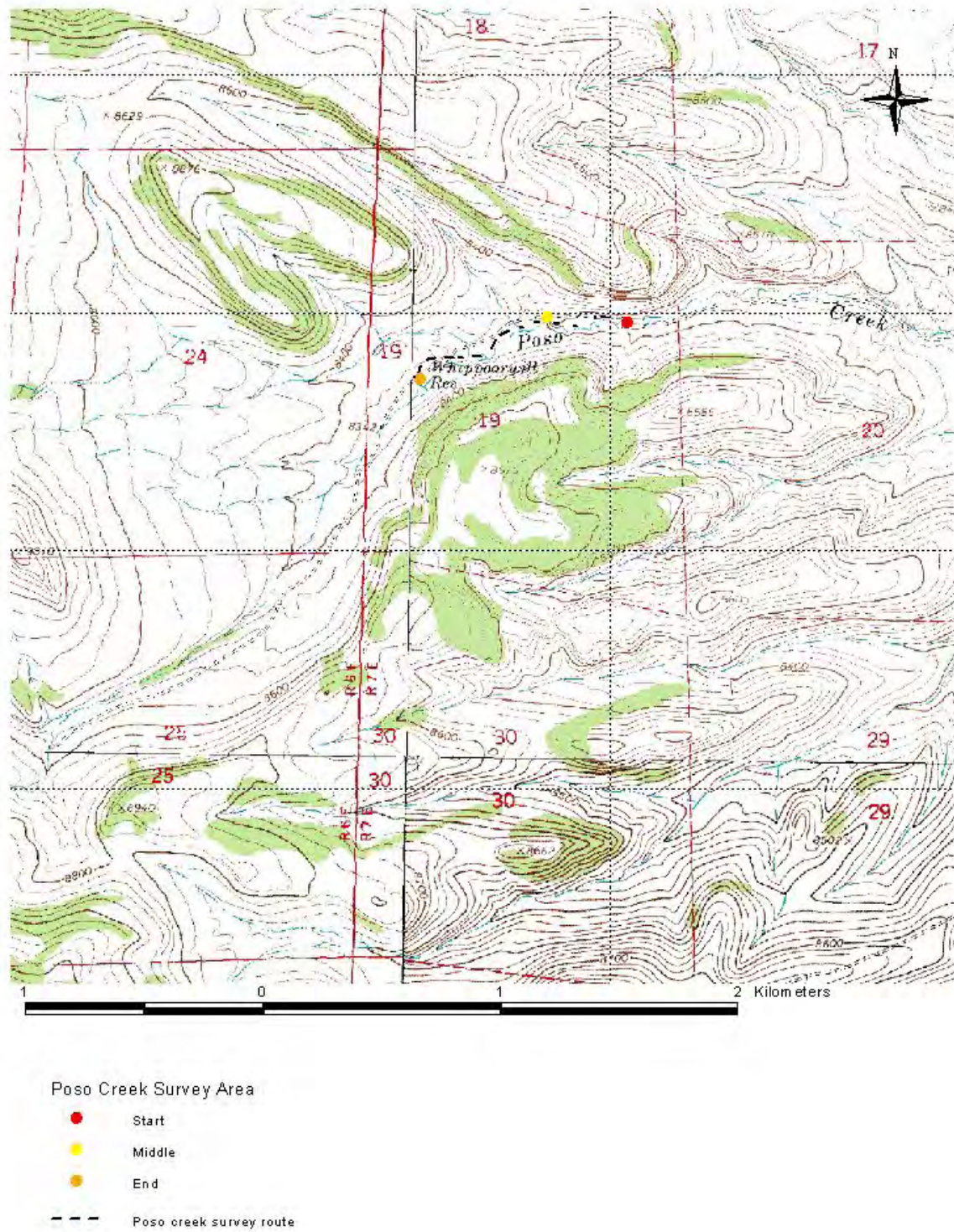


Fig. 3. Southwestern Willow Flycatcher survey area at Poso Creek, Conejos County, Colorado.

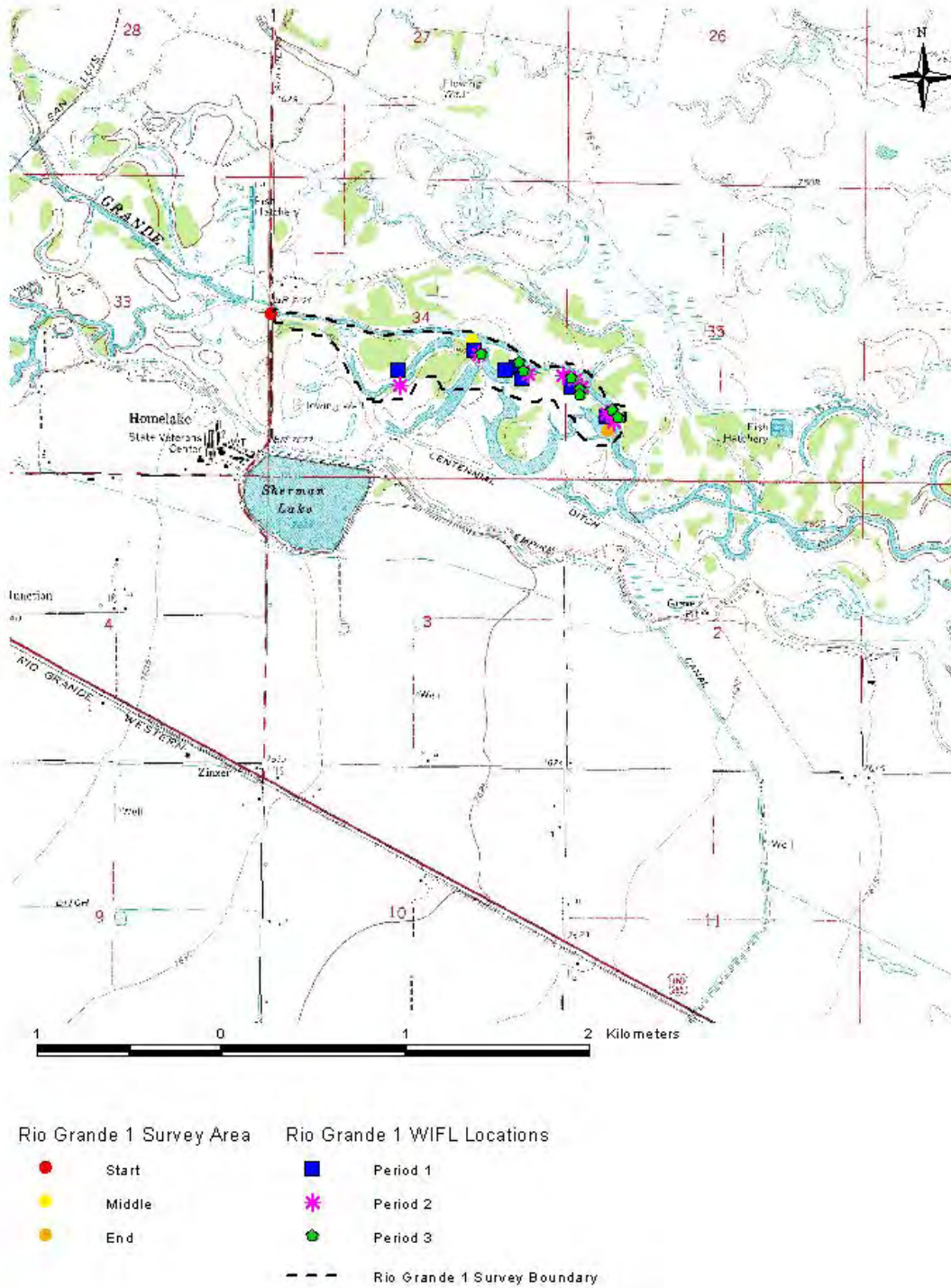


Fig. 4. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Rio Grande State Wildlife Area section one, Rio Grande County, Colorado.

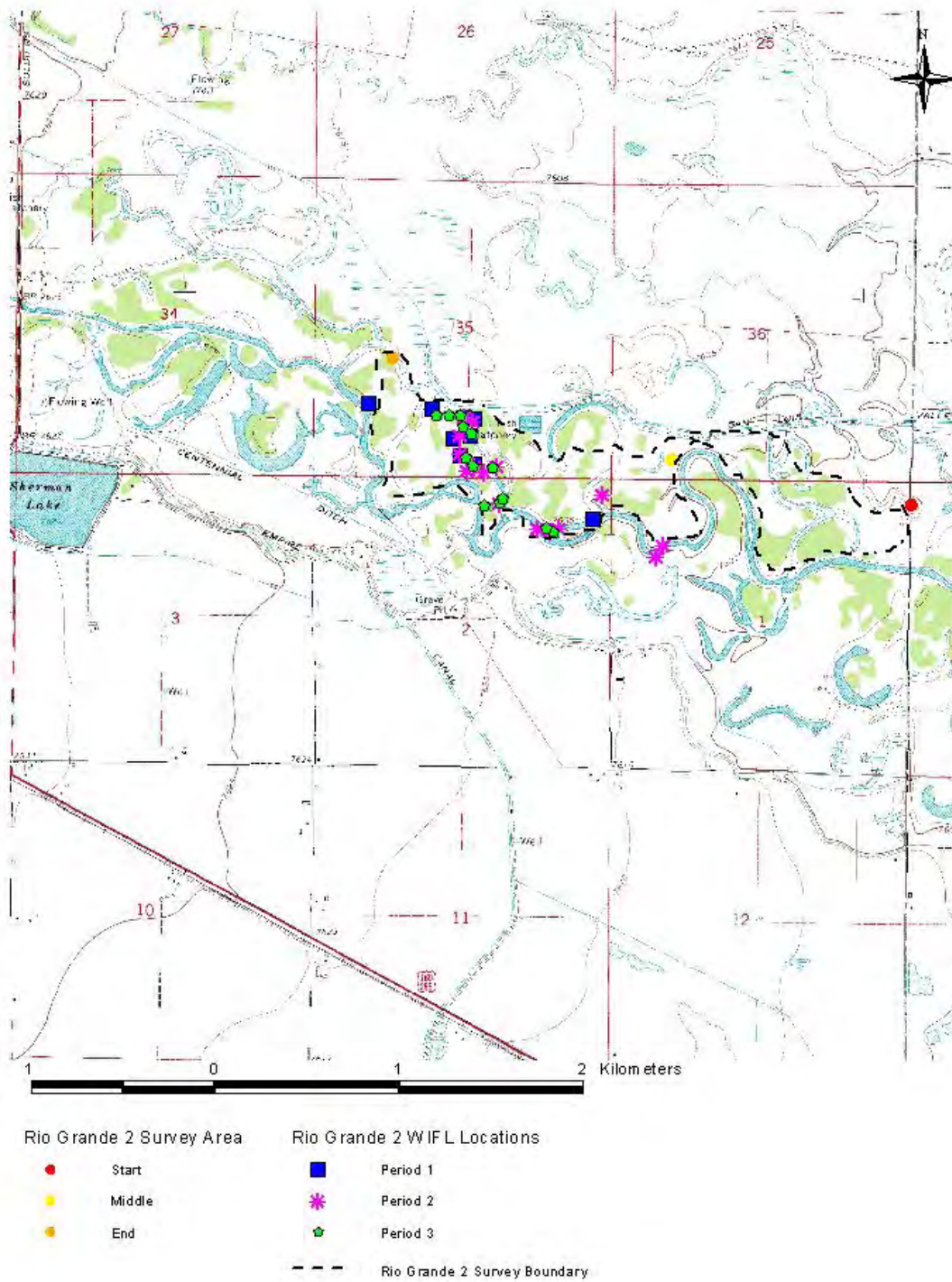


Fig. 5. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Rio Grande State Wildlife Area section two, Rio Grande County, Colorado.

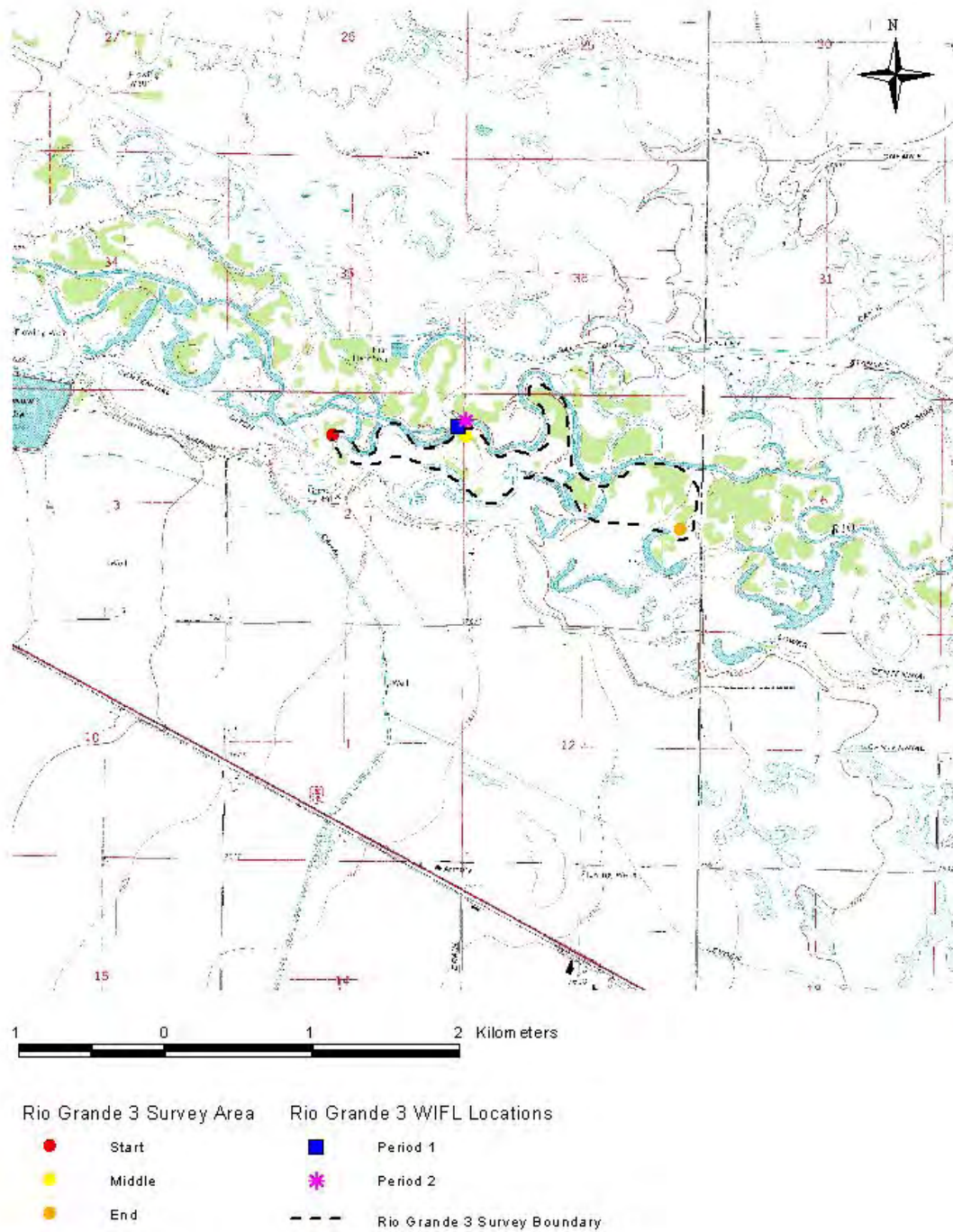


Fig. 6. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Rio Grande State Wildlife Area section three, Rio Grande County, Colorado.

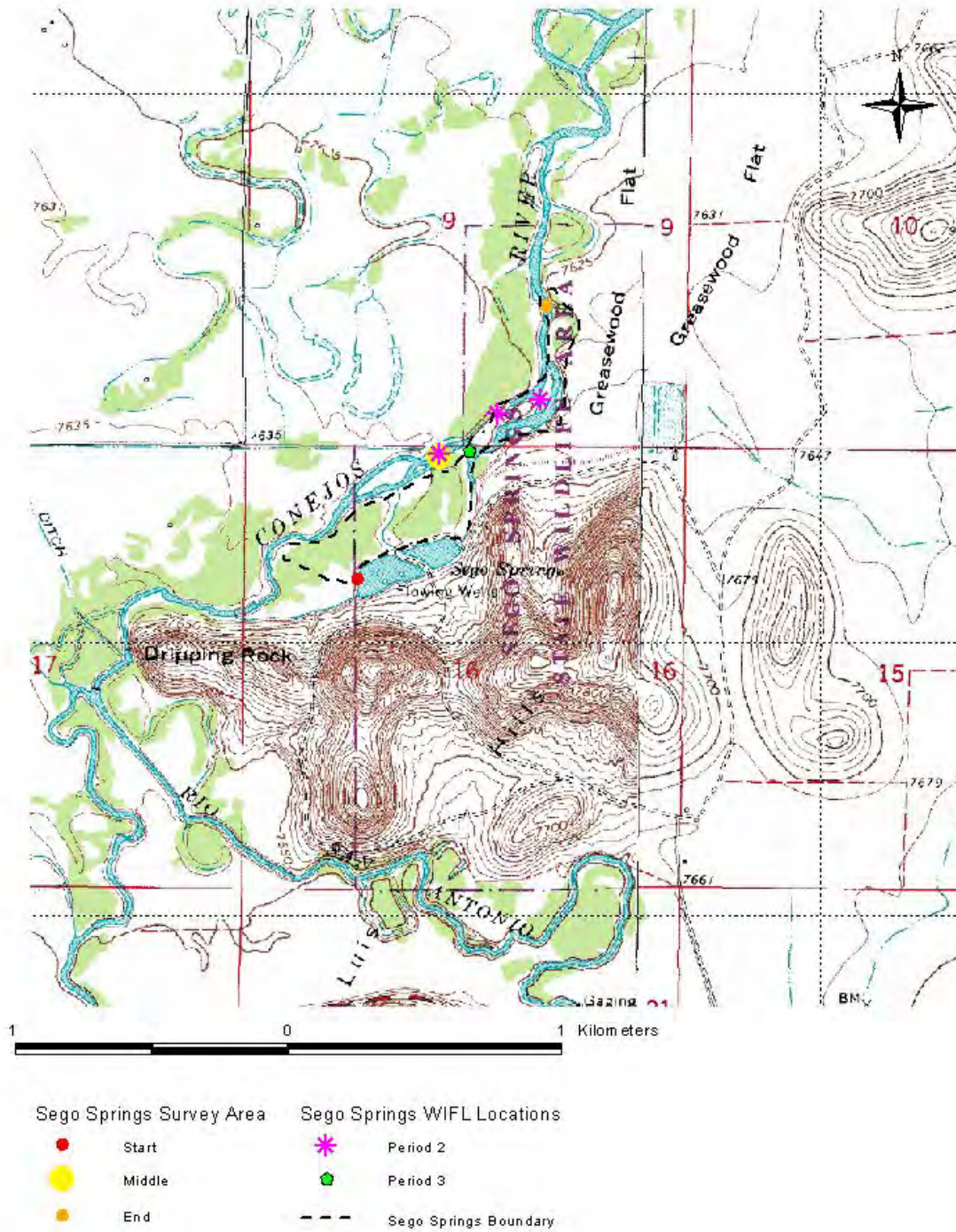


Fig. 7. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Seego Springs State Wildlife Area, Conejos County, Colorado.

Rio Grande National Forest

Conejos—The Conejos survey area is managed by the Rio Grande National Forest in Conejos County, Colorado and consists of 0.4 km along the Conejos River at 2669 m (Fig. 8 and Appendix A). This area is dominated by distinct clumps of peach leaf willow and alder approximately 5.5 m tall with no overstory (Digital Appendix B.1-3). Most of the willow patches occurred in distinct clumps; however, many of these patches were dry throughout all survey periods.

La Manga Creek—We surveyed approximately 2.3 km along La Manga Creek in Conejos County, Colorado (Fig. 9 and Appendix A). La Manga Creek sits at 3133 m in the Rio Grande National Forest. Dominant vegetation adjacent to La Manga Creek includes willow, Engelmann spruce (*Picea engelmannii*), and fir (*Abies* spp) species. Although willows occur at La Manga Creek, many of the willow patches are sparse with an average height of 2.5 m (Digital Appendix B.4-6). La Manga Creek contained water throughout the entire survey period.

Wolf Creek—Wolf Creek is located in the Rio Grande National Forest at 2945 m (Fig. 10 and Appendix A). This survey area was divided into three separate sections to simplify survey effort. Section one contains 0.2 km of survey area and is dominated by willow (3.5 m tall), Douglas fir (*Pseudotsuga menziesii*), alder, and Engelmann spruce (Digital Appendix B.7). Sections two and three are dominated by willow and alder approximately 4 m tall with no overstory (Digital Appendix B.8-9). Sections two and three cover 0.1 km of area along Wolf Creek. Saturated soils and minor back-ponding occurred in all three sections.

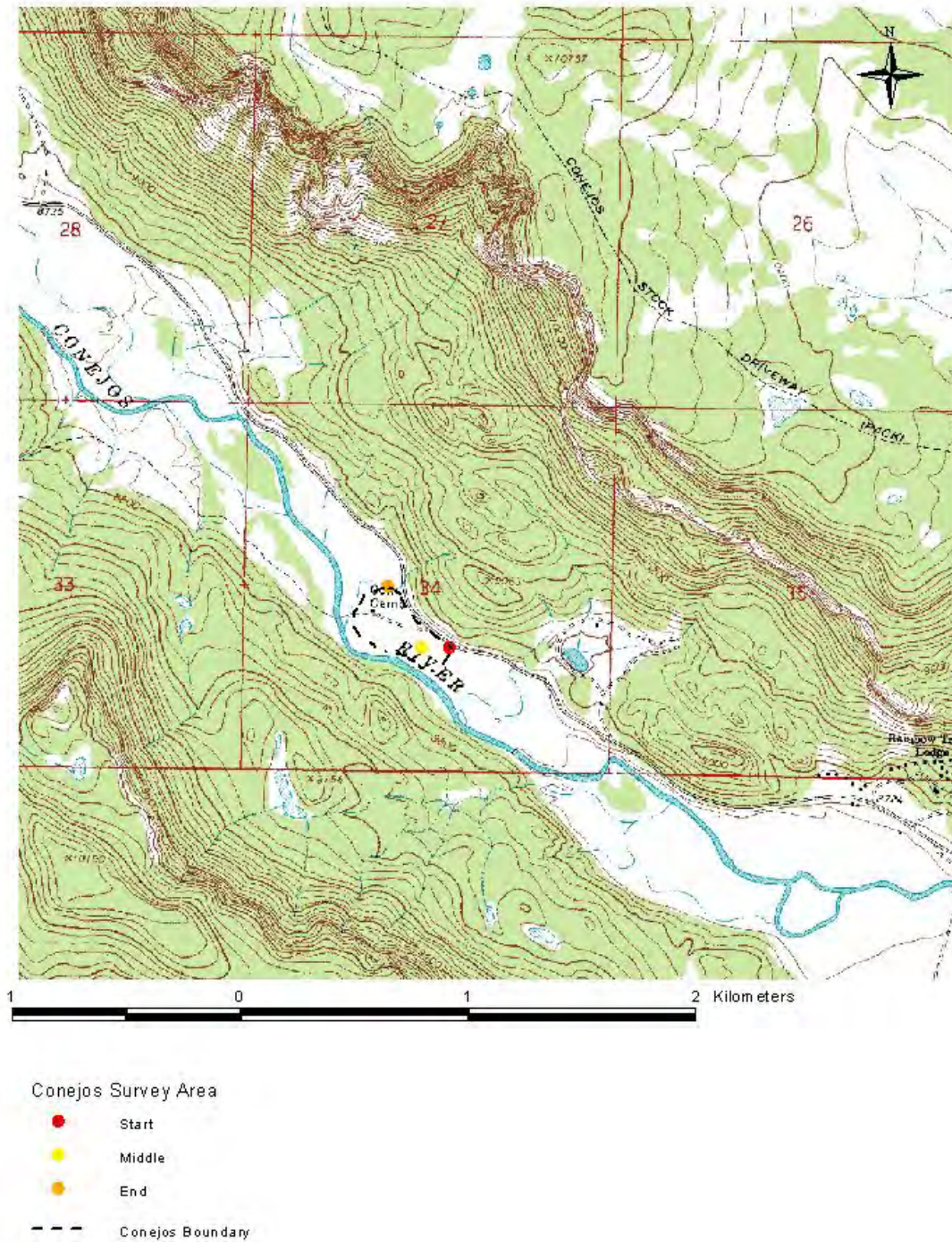


Fig. 8. Southwestern Willow Flycatcher survey area along the Conejos River, Conejos County, Colorado.

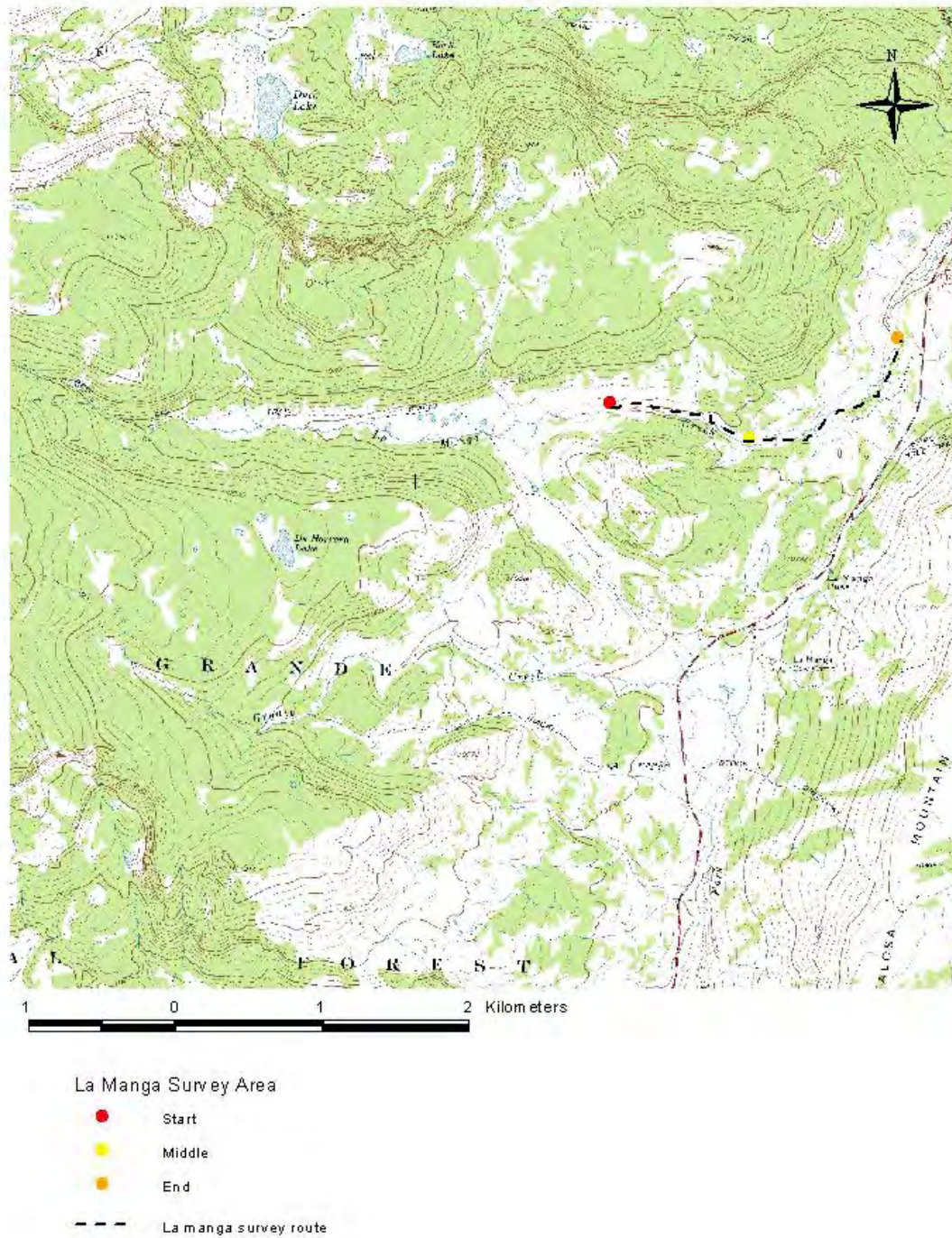


Fig. 9. Southwestern Willow Flycatcher survey area at La Manga Creek, Conejos County, Colorado.

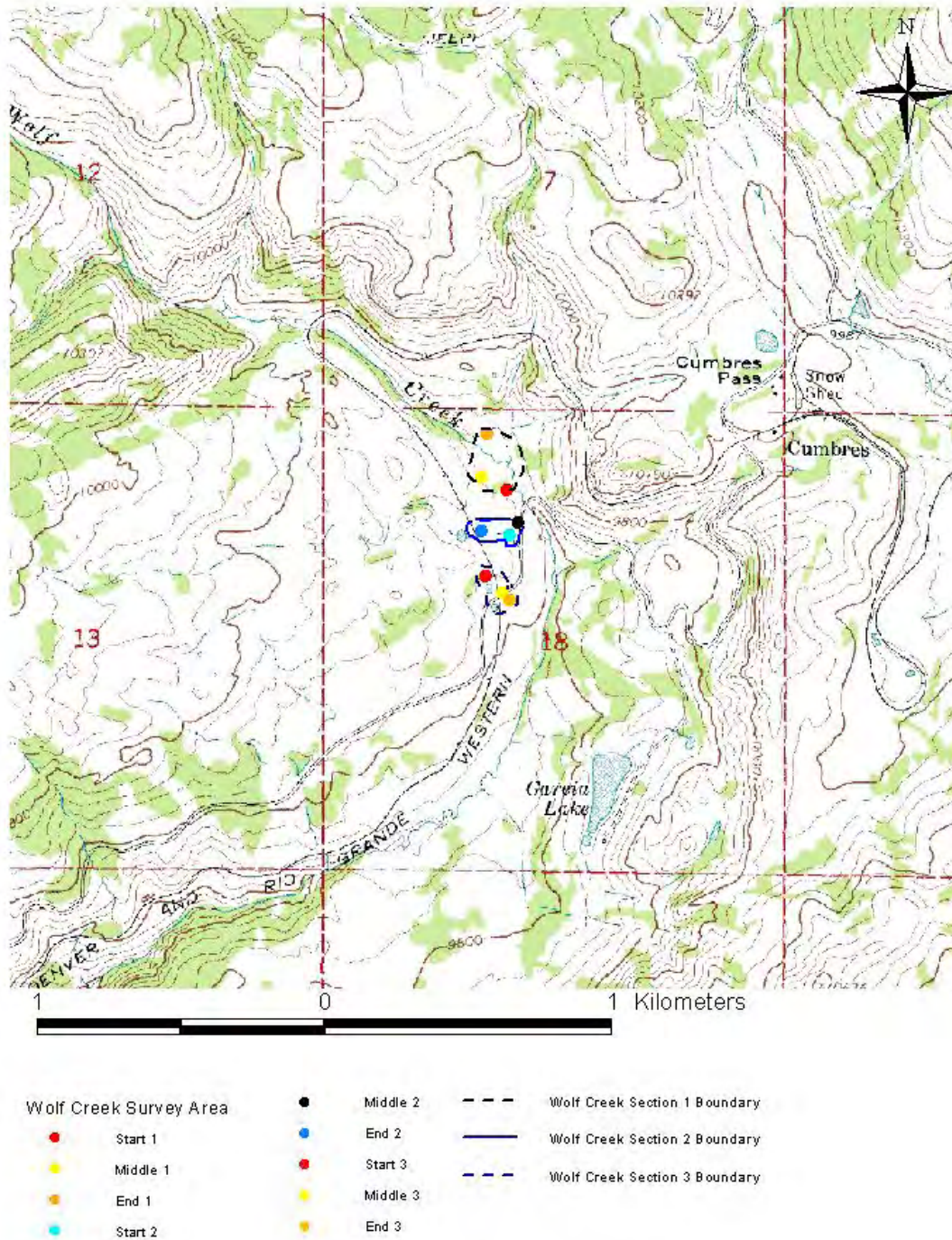


Fig. 10. Southwestern Willow Flycatcher survey area at Wolf Creek, Conejos County, Colorado.

Saguache Bureau of Land Management

Four Mile Creek—We surveyed 6.4 km of Four Mile Creek in Saguache County, Colorado (Fig. 11 and Appendix A). Average elevation at this is 8920 m. Dominant vegetation along Four Mile Creek includes aspen (*Populus tremuloides*), spruce (*Picea* spp), and few dense willow patches (Digital Appendix C.1-3). Four Mile Creek contained very little water throughout all survey periods.

La Garita—The La Garita survey area (2.09 km) sits at 2383 m in Saguache County (Fig. 12 and Appendix A). La Garita is dominated by alder and patchy willows that are approximately 4.5 m tall (Digital Appendix C.4-6). There is a small beaver pond in the La Garita survey area, which is the only area that contained water.

Graveyard Gulch—We surveyed three sections of Graveyard Gulch located in Saguache County, Colorado (Fig. 13 and Appendix A). Average elevation at these sections is 2649 m. The central section of Graveyard Gulch contains 0.9 km of survey area that is dominated by gooseberry, big sagebrush (*Artemisia tridentata*), and juniper. Willows were not present in Graveyard Gulch and the remaining vegetation was sparse and low in stature (Digital Appendix C.7-8). Gooseberry, aspen, juniper, and rabbitbrush dominate the Graveyard Gulch Eastern Fork, which covers approximately 1.6 km (Digital Appendix C.9-10). The Western Fork of Graveyard Gulch contains 0.45 km of survey area and also is dominated by gooseberry and ponderosa pine (*Pinus ponderosa*) (Digital Appendix C.11). None of the survey areas contained patches of willow, nor did they contain running or standing water.



Fig. 11. Southwestern Willow Flycatcher survey area at Four Mile Creek, Saguache County, Colorado.

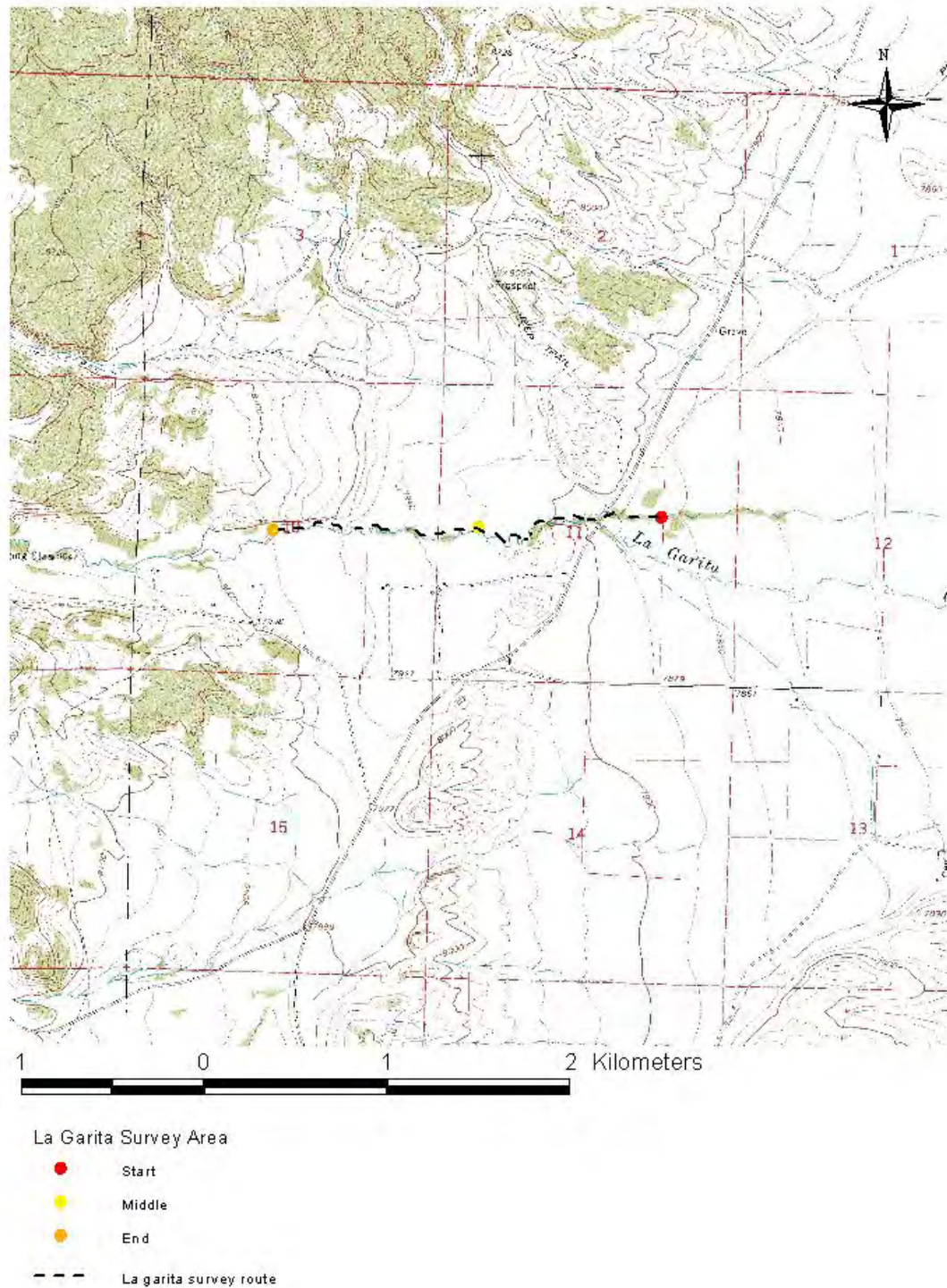


Fig. 12. Southwestern Willow Flycatcher survey area at La Garita, Saguache County, Colorado.

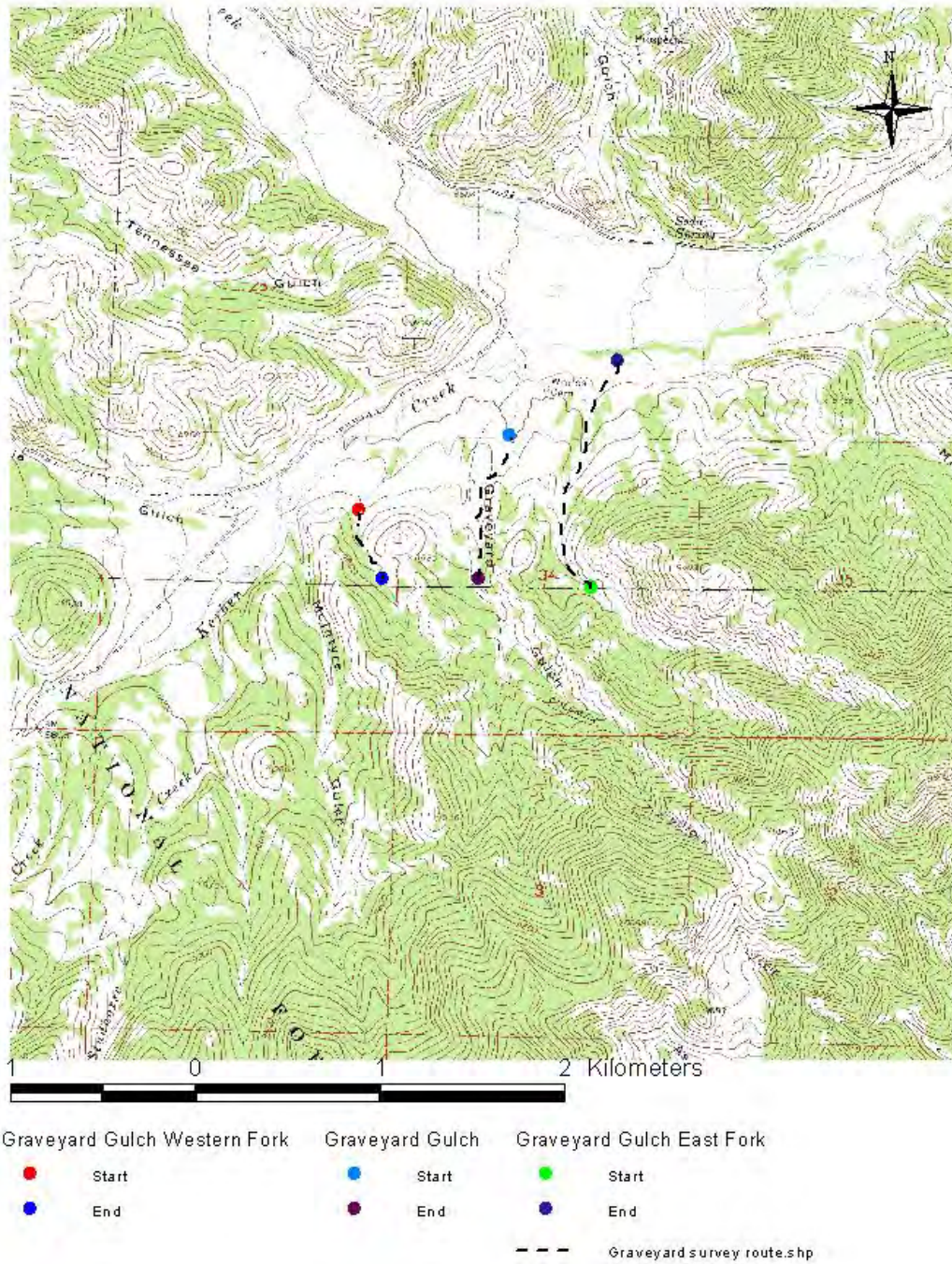


Fig. 13. Southwestern Willow Flycatcher survey area at Graveyard Gulch, Saguache County, Colorado.

Pass Creek—We surveyed approximately 4.7 km of Pass Creek ranging in elevation from 2591 to 2804 m in Saguache County (Fig. 14 and Appendix A). The Pass Creek survey area was divided into two sections due to time constraints and length of survey area. Willow, aspen, and rabbitbrush (approximately 5 m tall) dominate both sections (Digital Appendix C.12-17). Very little water flowed in Pass Creek during the first survey period and became increasingly drier in subsequent survey periods.

Saguache Creek—Saguache Creek contains 0.3 km of survey area in Saguache County, Colorado (2450 m) (Fig. 15 and Appendix A). This area is dominated by willow (3 – 4 m tall) and cottonwood with sections of standing water throughout the survey area (Digital Appendix C.18). In subsequent surveys the water levels decreased in the survey area.

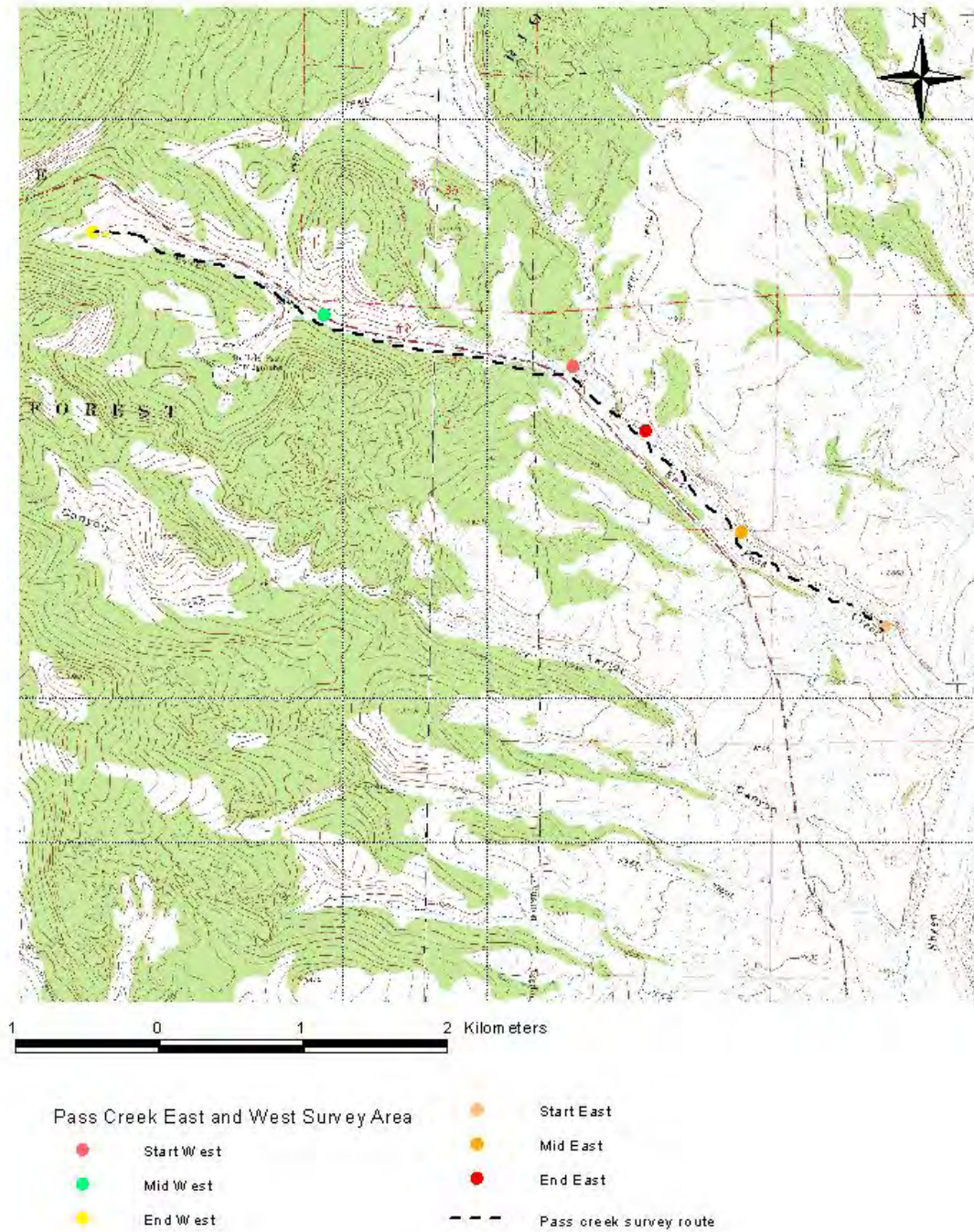


Fig. 14. Southwestern Willow Flycatcher survey area at Pass Creek, Saguache County, Colorado.

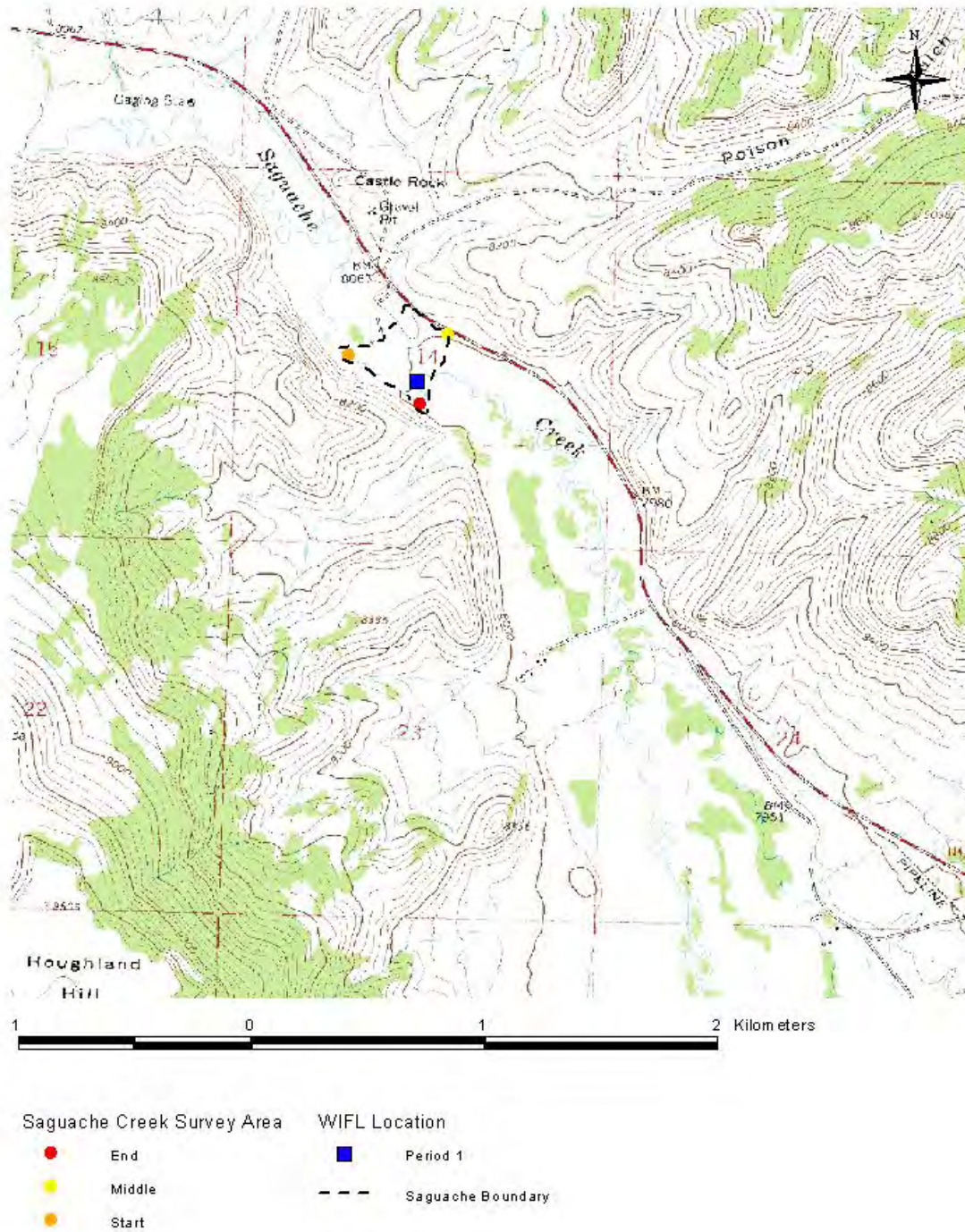


Fig. 15. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Saguache Creek, Saguache County, Colorado.

U.S. Fish and Wildlife Service

Alamosa National Wildlife Refuge South—The Alamosa National Wildlife Refuge (ANWR) South survey route begins at refuge headquarters and continues south along the Rio Grande for approximately 14.5 km (Fig. 16 and Appendix A). Average elevation along the survey area is 2286 m. This area of ANWR is dominated by coyote willow, narrow-leaf cottonwood, rabbitbrush, and elm species (*Ulmus* spp), with a mean canopy height of approximately 3.5 m. The first 3 km of the survey route contained almost continuous willow, interspersed with cottonwoods (Digital Appendix D.1), while the next 6.5 km contained mostly thin strips of vegetation (Digital Appendix D.2). Riparian habitat improved throughout the last several kilometers of the survey route (Digital Appendix D.3-4). Water was flowing in the Rio Grande during all three-survey periods.

Lil' Pop—We surveyed approximately 9.7 km of newly acquired ANWR riparian area in Alamosa County, Colorado (Fig. 17 and Appendix A). Lil' Pop sits at 2306 m and is dominated by willow (3 – 4 m tall) and cottonwood; however, much of the area is overgrazed and in poor condition (Digital Appendix D.5-7). Surface water was present only southeast of the dam in the north section of the survey.

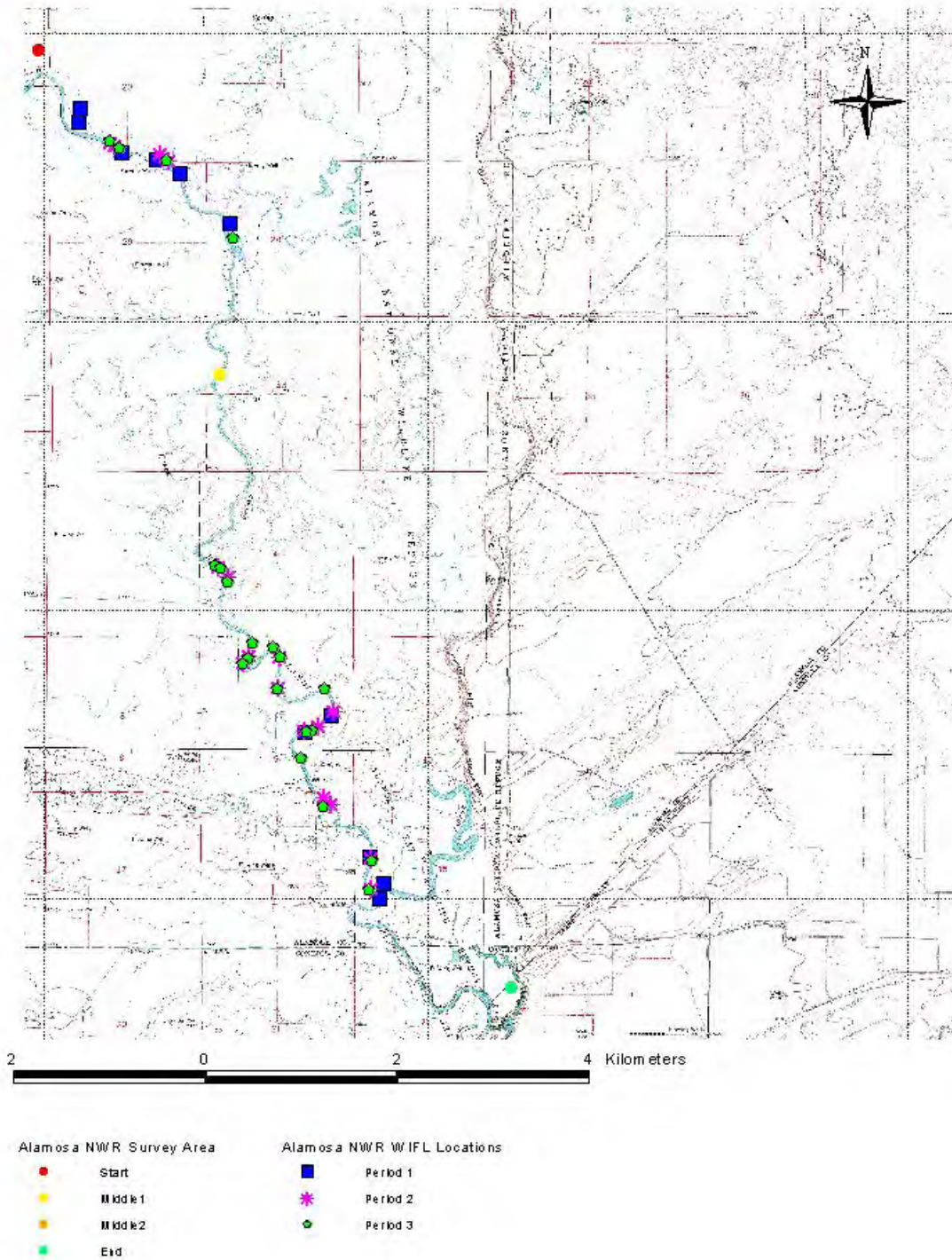


Fig. 16. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Alamosa National Wildlife Refuge South, Alamosa County, Colorado.

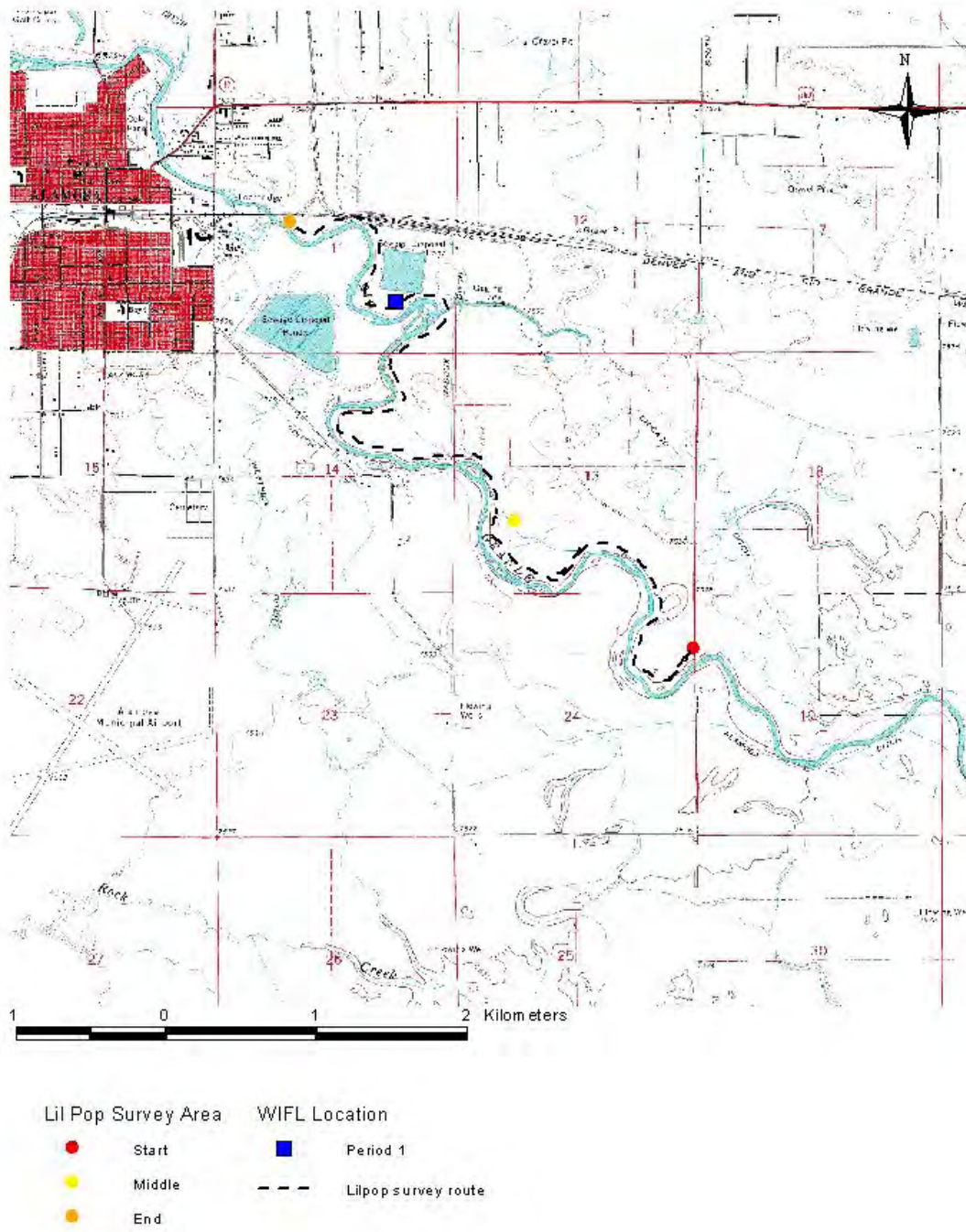


Fig. 17. Southwestern Willow Flycatcher survey area and locations of Willow Flycatchers at Lil' Pop, Alamosa County, Colorado.

METHODS

Southwestern Willow Flycatcher surveys followed the protocol developed by Sogge et al. (1997), in accordance with the Federal Endangered Species Act. Surveys were conducted during three survey periods, 15 - 31 May, 1 - 21 June, and 22 June – 10 July 2003. All surveys were conducted at least five days apart and began within a half hour of sunrise and concluded within four hours. Surveyors walked slowly through the survey area stopping every 20 to 30 m. At each stop, surveyors listened for Willow Flycatcher vocalizations. If no flycatchers were heard, vocalizations of a Southwestern Willow Flycatcher were played for 15 to 30 seconds, followed by one to two minutes of silence. Positive identification of a Willow Flycatcher requires hearing the distinctive, “fitz-bew” song. In addition to recording the presence/absence of Willow Flycatchers, observers also recorded other species seen or heard while conducting surveys (Appendices B - E).

RESULTS

Colorado Division of Wildlife

Higel State Wildlife Area—Willow Flycatchers were detected during all survey periods at Higel State Wildlife Area (Table 1 and Appendices F, G). During the first survey, five adults were detected in five distinct areas (Fig. 1). On the second survey, four additional adults were observed in the same vicinity as the previous visit (Fig. 1). On the final survey, eight birds were detected in the same vicinity as the previous visit and three more adults were detected just east of the first mid-point (Fig. 1). In total, 11 adults were detected, occupying approximately nine territories. Compared to surveys conducted in 2002, significantly more Willow Flycatchers were detected in 2003 than in 2002 (Table 2).

La Jara State Wildlife Area—We did not detect Willow Flycatchers at La Jara SWA during 2003 (Table 1 and Appendix G) or 2002 (Table 2). Few dense patches of willow were present along the survey route and little suitable habitat was found (Digital Appendix A.5-7).

Poso Creek—No Willow Flycatchers were detected at Poso Creek (Table 1 and Appendix G). Poso Creek was dry during all three visits, which may have contributed to lack of detections. Furthermore, this area contained few suitable willow patches (Digital Appendix A.8-10). Lack of detections in 2003 is consistent with our survey results from 2002 (Table 2).

Rio Grande State Wildlife Area—Several Willow Flycatchers were detected in the Rio Grande SWA (Appendices F, G). In total, ten Willow Flycatchers were observed in section one, occupying eight territories (Fig. 4 and Table 1). Seven flycatchers were detected during the first survey period. During the second survey three additional birds were detected, occupying a total of eight territories (Table 1). Nine of these birds were detected in similar locations as the first survey (Fig. 4). During survey three, ten flycatchers were detected in the same location where they were observed during surveys one and two; however, no birds were detected at the western end of the survey area. Numbers of Willow Flycatchers detected at Rio Grande SWA section one remained constant between 2002 and 2003 (Table 2).

In section two of the Rio Grande SWA, 11 Willow flycatchers were detected in the first survey period, occupying eight territories (Table 1 and Appendices F, G). During the second visit, 18 flycatchers were observed and eight of these occupied similar locations as the previous visit (Fig. 5). Fifteen Willow Flycatchers were detected during the third survey period, of which 14 were detected in close proximity to the areas occupied in either period

one or two. Compared to survey results from 2002, numbers of Willow Flycatchers detected remained relatively constant (Table 2).

A total of two Willow Flycatchers were detected in section three of the Rio Grande SWA (Table 1 and Appendices F, G). One was detected during the first survey period and the second was detected in the same location during the second period (Fig. 6). Because no bird was detected during the third survey period, it is unclear whether Willow Flycatchers were breeding at this location. Our observations from the 2003 surveys are the identical to our observations from 2002 (Table 2).

Sego Springs State Wildlife Area—No Willow Flycatchers were detected during the first survey period; however, three flycatchers were detected during the second survey period (Table 1 and Appendices F, G) near the north end of the survey route (Fig. 7). On the final survey, an additional flycatcher was detected in the same vicinity as the previous visit (Fig. 7). Because only one flycatcher was observed in the third survey period it is unclear how many territories exist at Sego Springs. In the previous year, only two flycatchers were detected during the first survey period, while in 2003, flycatchers were detected during the final two visits (Table 2).

Table 1. Number of adult Willow Flycatchers detected in the San Luis Valley in survey areas managed by the Colorado Division of Wildlife (CDOW), the Rio Grande National Forest (RGNF), the Saguache Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS), 2003.

Survey area	Management agency	Survey length (km)	Survey period		
			1	2	3
Higel State Wildlife Area	CDOW	6.6	5	9	11
La Jara State Wildlife Area	CDOW	1.6	0	0	0
Poso Creek	CDOW	0.9	0	0	0
Rio Grande State Wildlife Area section one	CDOW	3.9	7	10	10
Rio Grande State Wildlife Area section two	CDOW	2.9	11	18	15
Rio Grande State Wildlife Area section three	CDOW	2.5	1	1	0
Sego Spring State Wildlife Area	CDOW	1.3	0	3	1
Conejos	RGNF	0.4	0	0	0
La Manga Creek	RGNF	2.3	0	0	0
Wolf Creek section one	RGNF	0.2	0	0	0
Wolf Creek section two	RGNF	0.1	0	0	0
Wolf Creek section three	RGNF	0.1	0	0	0
Four Mile Creek	BLM	6.4	0	0	0
Graveyard Gulch	BLM	0.9	0	0	0
Graveyard Gulch Eastern Fork	BLM	1.6	0	0	0
Graveyard Gulch Western Fork	BLM	0.45	0	0	0
La Garita	BLM	2.1	0	0	0
Pass Creek East	BLM	1.5	0	0	0
Pass Creek West	BLM	3.2	0	0	0
Saguache Creek	BLM	0.3	1	0	0
Alamosa National Wildlife Refuge South	USFWS	14.5	15	21	24
Lil' Pop	USFWS	9.7	1	0	0

Table 2. Comparison of the number of Willow Flycatchers detected in 2002 and 2003 in the San Luis Valley.

Survey area	2002			2003		
	Survey period			Survey period		
	1	2	3	1	2	3
Alamosa National Wildlife Refuge South	3	16	19	15	21	24
Higel State Wildlife Area	0	2	1	5	9	11
La Jara State Wildlife Area	0	0	0	0	0	0
Poso Creek	0	0	0	0	0	0
Rio Grande State Wildlife Area section one	5	9	10	7	10	10
Rio Grande State Wildlife Area section two	5	12	16	11	18	15
Rio Grande State Wildlife Area section three	1	1	0	1	1	0
Sego Spring State Wildlife Area	2	0	0	0	3	1

Rio Grande National Forest

Conejos—We did not detect flycatchers at the Conejos survey area (Table 1 and Appendix H). This area contains dense patches of willow; however, little standing water was present. In addition, the Conejos site appears to have been grazed sometime in the past (Digital Appendix B.1-3).

La Manga Creek—No Willow Flycatchers were detected along La Manga Creek (Table 1 and Appendix H). This area contains sparse willow patches that are < 5 m tall and sits at over 3000 m, which may have contributed to the lack of detections.

Wolf Creek—We did not detect Willow Flycatchers in either of the Wolf Creek survey areas (Table 1 and Appendix H). Wolf Creek contains dense patches of willow with standing water; however, the amount of suitable habitat was relatively small (Fig. 10).

Saguache Bureau of Land Management

Four Mile Creek—No Willow Flycatchers were observed along the Four Mile Creek survey route (Table 1 and Appendix I). Four Mile Creek is a high altitude site with very little water in the Creek. In addition, this area contains few large and dense willow patches (Digital Appendix C.1-3).

La Garita Creek—We did not observe Willow Flycatchers at La Garita Creek (Table 1 and Appendix I). La Garita Creek contains willow patches; however, patches are sparse and large gaps exist between patches (Digital Appendix C.4-6).

Graveyard Gulch—Three areas of Graveyard Gulch were surveyed for Willow Flycatchers, resulting in no detections (Table 1 and Appendix I). Graveyard Gulch contains no suitable Willow Flycatcher habitat (Digital Appendix C.7-11), as no dense patches of willow or running water occurred at Graveyard Gulch.