

CHAPTER 1

INTRODUCTION

PROJECT HISTORY

In response to the 1994 designation of critical habitat along the lower Colorado River for endangered fish species, the U.S. Bureau of Reclamation (USBR) and other federal, state, and tribal agencies formed a partnership to develop and implement the Multi-Species Conservation Program (MSCP). This program seeks to protect threatened, endangered, and sensitive (TES) species and their habitats along the lower Colorado River while maintaining river regulation and water management required by law. The MSCP was recently finalized and evaluated through an Environmental Impact Statement, as required by the National Environmental Policy Act of 1969 (42 USC §4321 et seq.).

Because all federal agencies are required to ensure their actions do not violate the Endangered Species Act (ESA) of 1973 (16 USC §1531 et seq.), the USBR prepared a Biological Assessment (BA) in August 1996 as part of planning for the MSCP, evaluating the effects of dam operations and maintenance activities on TES species. These species included the Southwestern Willow Flycatcher (*Empidonax traillii extimus*), which was listed by the U.S. Fish and Wildlife Service (USFWS) as endangered in 1995 (60 FR 10694–10715). In response to the BA, the USFWS issued a Biological Opinion in April 1997 outlining several terms and conditions the USBR must implement in order not to jeopardize the species. Among these terms and conditions was the requirement to survey and monitor occupied and potential habitat for Southwestern Willow Flycatchers along the lower Colorado River for a period of five years. The studies were intended to determine the number of willow flycatcher territories, status of breeding pairs, flycatcher nest success, the biotic and abiotic characteristics of occupied willow flycatcher sites, and Brown-headed Cowbird (*Molothrus ater*) brood parasitism rates. In anticipation of these requirements, the USBR initiated willow flycatcher studies along the lower Colorado River in 1996. The studies have been conducted every year since.

A separate Biological Opinion for Interim Surplus Criteria, Secretarial Implementation Agreements, and Conservation Measures was issued in January 2001. This Opinion required annual presence/absence surveys and nest monitoring for up to five years in suitable habitat surrounding Lake Mead and between Parker and Imperial Dams. In 2002, the USBR completed a second BA on the effects of continued dam operations and maintenance on TES species along the lower Colorado River. The USFWS responded with a Biological Opinion in April 2002 requiring continued Southwestern Willow Flycatcher studies along the lower Colorado River through April 2005. The Opinion also required implementation of a study to evaluate the effectiveness of Brown-headed Cowbird trapping for conservation of the flycatcher. Willow flycatcher studies along the lower Colorado River are currently anticipated to continue through 2007.

From 1996 through 2002, the USBR's Southwestern Willow Flycatcher studies along the lower Colorado and Virgin Rivers were completed under the direction and management of the San Bernardino County Museum, Redlands, California. In 2003 and 2004, these studies were continued by SWCA Environmental Consultants under contract to USBR (Contract # 03-CS-30-0093). This contract has annual option years through 2007.

SPECIES INTRODUCTION

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is one of four subspecies of willow flycatcher currently recognized (Unitt 1987), although Browning (1993) posits a fifth subspecies (*E. t. campestris*) occurring in the central portions of the United States (Figure 1.1). The Southwestern Willow Flycatcher breeds in dense, mesic riparian habitats at scattered, isolated sites in New Mexico, Arizona, southern California, southern Nevada, southern Utah, southwestern Colorado, and, at least historically, extreme northwestern Mexico (Unitt 1987). In the Southwest, most willow flycatcher breeding territories are found within small breeding sites containing five or fewer territories; only two sites are known to have 50 or more territories (Sogge et al. 2003). One of the last long-distance Neotropical migrants to arrive in North America during spring migration, willow flycatchers have a short, approximately 100-day breeding season, with individuals typically arriving in May or June and departing in late August (Sogge et al. 1997, Sedgwick 2000). All four subspecies of willow flycatchers spend the non-breeding season in portions of southern Mexico, Central America, and northwestern South America (Stiles and Skutch 1989, Ridgely and Tudor 1994, Howell and Webb 1995, Unitt 1997). Willow flycatchers have been recorded on the wintering grounds from central Mexico to southern Central America as early as mid-August (Stiles and Skutch 1989, Howell and Webb 1995), and wintering, resident individuals have been recorded in southern Central America as late as the end of May (Koronkiewicz 2002).

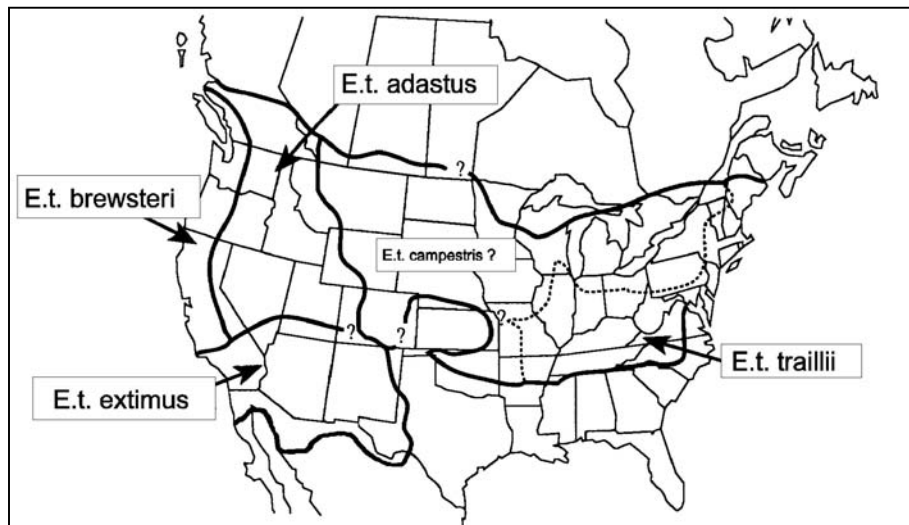


Figure 1.1. Breeding range distribution of the subspecies of the willow flycatcher (*Empidonax traillii*). Adapted from Unitt (1987), Browning (1993), and Sogge et al. (1997).

Historical breeding records and museum collections indicate that a sizable population of Southwestern Willow Flycatchers may have existed along the extreme southern stretches of the lower Colorado River region (Unitt 1987). However, no nests have been located south of the Bill Williams River, Arizona, in over 65 years (Unitt 1987), though northbound and southbound migrant willow flycatchers use the riparian corridor (Phillips et al. 1964; Brown et al. 1987; McKernan 1997; McKernan and Braden, 1999, 2001a, 2001b, 2002; Koronkiewicz et al. 2004; this document). Factors contributing to the decline of flycatchers on the breeding grounds include loss, degradation, and/or fragmentation of riparian habitat; invasion by nonnative plants; and brood parasitism by Brown-headed Cowbirds (USFWS 1995, Marshall and Stoleson 2000). Because of low population numbers range-wide, identifying and conserving willow flycatcher breeding sites is thought to be crucial to the recovery of the species (USFWS 2002).

From 1997 to 2003,¹ breeding populations of Southwestern Willow Flycatchers were documented at seven study areas along the Virgin and lower Colorado Rivers and tributaries: (1) Pahrnagat National Wildlife Refuge (NWR), Nevada; (2) Mesquite and (3) Mormon Mesa on the Virgin River, Nevada; (4) Overton Wildlife Management Area located in the lower Virgin River Valley on the Overton Arm of Lake Mead; (5) Grand Canyon, Arizona; (6) Topock Marsh on the Colorado River, Havasu NWR, Arizona; and (7) Bill Williams River NWR (hereafter Bill Williams), Arizona (McKernan and Braden 2002; Koronkiewicz et al. 2004; Braden and McKernan, unpubl. data). Willow flycatchers were detected during the breeding season at several sites along the Colorado River south of the Bill Williams River to the Mexico border, but more information is needed to determine flycatcher residency, breeding status, and demography in this area.

PURPOSE AND DESCRIPTION OF STUDY

The purpose of the 2004 study is to continue surveys, monitoring, and demographic and ecological studies of the Southwestern Willow Flycatcher in suitable and/or historical riparian and wetland habitats throughout the lower Colorado and Virgin River region. This project encompasses two types of studies: (1) presence/absence surveys, including site descriptions, at pre-selected sites along the lower Colorado and Virgin Rivers and tributaries, including the lower Grand Canyon and Bill Williams River; and (2) intensive, long-term life history studies at four specific study areas (Pahrnagat NWR, Mesquite, and Mormon Mesa, Nevada, and Topock Marsh, Arizona) to assess Southwestern Willow Flycatcher demographics and ecology, habitat selection, and the effects of Brown-headed Cowbird brood parasitism. SWCA's contract specifies the following field tasks:

- (1) **Presence/absence Surveys:** At approximately 136 sites² along the lower Colorado River, complete the following:

¹ Studies in 1996 did not include any sites in Nevada.

² A site is defined as one contiguous area that can be surveyed by one person in one morning. The contract specifies 136 survey sites; however, this number reflects studies performed before 2003 in which several areas were counted as multiple sites. In fact, 92 sites were surveyed in 2004, as described in the results section of Chapter 2 of this report.

- (a) conduct presence/absence surveys, following a 10-survey protocol (per Braden and McKernan 1998);
- (b) provide a general site description for each site;
- (c) conduct nest searches if territorial flycatchers are located and monitor any nests found;
- (d) collect habitat and physical measurements around each nest site; and
- (e) band as many adult and juvenile flycatchers as possible with unique color-bands.

(2) **Life History Studies:** At the four life history study areas, complete the following tasks in addition to all tasks listed above under Presence/absence Surveys:

- (a) conduct Brown-headed Cowbird trapping and determine its effectiveness in reducing brood parasitism rates;
- (b) conduct in-depth vegetation sampling of the whole habitat block;
- (c) replicate all habitat measurements collected at nest sites at unused sites of similar structure; and
- (d) monitor microclimatic conditions of soil moisture, temperature, and humidity.

Each distinct aspect of the 2004 study is addressed in a separate chapter in this report, as follows:

Chapter 2 – Presence/absence Surveys and Site Descriptions. This chapter presents the methodology and results for presence/absence surveys and gives a general site description for each survey site, including life history sites.

Chapter 3 – Color-banding and Resighting. Details of banding activities in 2004 and resighting of previously banded flycatchers are presented in this chapter. Also included are the identities and locations of all Southwestern Willow Flycatchers that could be identified to individual and discussions of within- and between-year movement of individual flycatchers.

Chapter 4 – Nest Monitoring. This chapter summarizes nesting attempts, nest fates, and productivity for all Southwestern Willow Flycatcher nesting activity documented during this study.

Chapter 5 – Brown-headed Cowbird Trapping. This chapter summarizes the efforts and results of cowbird trapping at the four life history study areas.

Chapter 6 – Vegetation Sampling. Vegetation and habitat characteristics of all nest and non-use sites are presented and compared in this chapter. Vegetation characteristics of the whole habitat block at each life history study area are also presented.

Chapter 7 – Microclimate. The methodology and results of monitoring temperature, humidity, and soil moisture within each life history study area at nest and non-use sites are presented.