California Department of Fish & Wildlife

Upland Game Bird Account Project Proposal

Grant Name/Project Title: **Development of a Survey Protocol for Quail and Doves in Relation to Landscape Level Habitat Assessments**

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Issue/Problem Statement:
Gamebird population surveys are used to assess population size, trends, and distribution and to provide management agencies with critical information to manage populations and develop hunting regulations. Survey methods to obtain information about populations vary from visual counts of individuals, auditory or call-counts, hunter harvest surveys, and advanced methods including radio-telemetry or banding studies. Such surveys may be focused on individual species or whole taxa (Breeding Bird Survey) and are implemented at local (e.g. restoration evaluation; Block et al. 2001), regional (e.g. CP-33 Habitat Buffers for Upland Birds Monitoring Protocol; Burger et al. 2006), or continental scales (e.g. Mourning Dove Call-Count Survey; Dolton 1993). Data generated during these surveys are then analyzed using a similarly variable set of statistical analyses to infer population demographic rates, population age-structure, or develop indices to or estimates of abundance.
Estimation of population size and trends are crucial parts of management plans for gamebird species. Such approaches however, contribute to crisis driven, reactive management situations where the ultimate effects (e.g. abundance) are the only information available and leading to situations where the symptoms are treated rather than the causes. Additionally, the expected products from survey efforts may take many years before confidence in results is established (e.g. trends in highly variable populations; see Dolton 1993) further limiting management options. Reactive management of gamebird species stems from assumptions and may be bounded by rules and regulations. Alternatively, proactive management progresses from choices and observed results, usually allowing more flexible planning and resulting in improved outcomes, especially at the landscape level.

Project Description:
We propose to develop a monitoring strategy and implementation plan for gamebird species of the Mohave and Sonoran Deserts of California. We will limit the scope of our survey development to quail (Gambel's [*Callipepla gambelii*], and California [*Callipepla californica*]) and dove (Mourning [*Zenaida macroura*], white-winged [*Zenaida asiatica*], and Eurasian collared [*Streptopelia decaocto*]) species residing in the Sonoran, Colorado, and Mohave Deserts, the Great Basin and other arid highland ecosystems where large scale habitat monitoring programs (AIM and NRI) are operational. This project will consist of three objectives:

- Conduct a literature review detailing pros and cons and suitability of survey methods used to investigate population abundance, trends, and distribution of quail and dove species.
- Develop and conduct pilot investigation of a survey protocol for quail and dove that integrates and coordinates with the large scale habitat monitoring programs administered by the BLM (AIM) and NRCS (NRI).
- Develop methods to integrate survey analysis protocol with local, regional, and continental bird survey programs (e.g., Mourning Dove Call-Count Survey, Breeding Bird Survey, Christmas Bird Count)

We intend to utilize the AIM pilot program and the data points BLM established as part of the Riverside East, Solar Energy Zone (SEZ) Project. The one hundred AIM points put on the ground by BLM were established to try and explore the utility of the program in analyzing the 147,000 acres solar development in eastern Riverside Co. At $5,000 for each established data point and data collection i.e. $1,000 for Core methods and up to an additional $4,000 for secondary surveys. The existing surveys are primarily focused on listed species. We plan to use at least ten of these sites as reference points to develop the proposed protocols for our designated gamebirds.

Timeline/Tasks:

October 2014 –March 2015:

Literature Review

Pilot Survey Design Phase (Methods may include Call-Count Routes; Acoustic Recording Devices; Point Counts)

April-May 2015:

Pilot Survey Implementation (~3 weeks of daily surveys)

June-July 2015:

Pilot Survey Evaluation and Analysis

Coordination and integration with habitat and bird monitoring programs (May include AIM, NRI, Mojave Desert Network Inventory and Monitoring Program [National Park Service], Breeding Bird Survey, Christmas Bird Count, Mourning Dove Call Count, and state agency surveys)

August-September 2015:

Final synthesis and recommended protocol development

Write-up and dissemination of findings

Species Information:

Gambel's quail primarily occupy the Sonoran, Chihuahuan, and Mohave Deserts and to a lesser extent the Great Basin and other arid highland ecosystems within the United States. Partners in Flight (2013) estimated the Gambel's Quail population from Breeding Bird Survey routes in California at 400,000 individuals, all of which occur in the Bird Conservation Region 33 (Sonoran and Mojave Deserts, hereafter BCR 33). Population trends for Gambel's quail, like most quail species, are determined by the success of reproductive season and weather patterns, particularly during the winter and spring, bear strong influence on nesting ability and success. However, habitat also affects the abundance and distribution of Gambel's quail which are tied to greater levels of tree and/or brush cover than other quail species present in the American deserts (Kamees et al. 2008). Quail harvest during typical years consists mostly of juvenile birds and is considered compensatory to natural mortality and locally depleted populations and habitats are quickly recolonized during pre-nesting dispersal (Heffelfinger and Olding 2000). However, Gambel's quail do not have large ranges, and most individuals remain within natal coveys (Gee 2003). This suggests that habitat change resulting in unfavorable conditions, particularly at the

margin of species' range where riparian systems are particularly important, may function as additive mortality that fragments or contract population ranges (Kamees et al. 2008).
California quail are wide spread but in southeastern California occupy mixed desert grassland and shrublands typically west- and northward of Gambel's quail at higher elevations that receive more rainfall. A narrow band of hybridization occurs between the two species in southern California (Gee 2003). The California quail population estimate generated from Breeding Bird Survey data for the BCR 33 by the Partners in Flight is 120,000 individuals all of which occurred in California (Partners in Flight 2013). Home ranges and movements of California quail are larger than for Gambel's quail including greater seasonal shifts between summer and winter ranges (Zornes 2008). These factors could suggest that local habitat change may have less immediate on California quail populations, but also that effects of habitat change may not be directly evident and necessitate investigation across seasons.
Mourning doves are a migratory game bird which results in seasonal changes in abundance and distribution of doves in desert environments (Weathers 1983). Population abundance estimated by Breeding Bird Survey data estimates 1,000,000 mourning dove in the California portion of BCR 33 (Partners in Flight 2013). Populations of mourning doves have declined significantly since inception of the Breeding Bird Survey, but declines nearly stabilized between 2002 and 2012 (Sauer et al. 2014). Similar findings are evident within California from the national Mourning Dove Call-Count (Seamans et al. 2012).
White-winged doves in California occur in the Sonoran and Colorado Deserts. Populations of white wing doves are concentrated in Arizona where population declines have occurred, mostly likely due to former loss of large nesting colonies, habitat destruction, possible overharvest, and change in agriculture practices (Rabe and Sanders 2010). White wing dove populations in California are limited to the Sonoran Desert and include an estimated 400,000 individuals.

Expected Benefits:
Proactive approaches to managing gamebirds are facilitated by establishing how the resources (e.g., habitat quantity and quality, foods) and risks to individuals and populations co-vary with population changes. Methods that incorporate risk analysis (McComb et al. 2010), habitat restoration and enhancement (Morrison 2002), and weather patterns (Cattadori et al. 2000) into population monitoring provide a link to the mechanisms of population change and provide agencies with more flexibility and greater certainty when managing gamebird species. One impediment to establishing an effective proactively based monitoring plan is the ability to characterize and catalog relevant environmental conditions over large spatial and temporal scales in a meaningful and standardized way. Fortunately, a suite of large scale habitat monitoring programs have recently been proposed (BLM Assessment, Inventory and Monitoring Strategy [AIM], NRCS National Resources Inventory [NRI]; USDA In Press) and implemented that offer the opportunity to leverage and collaborate with existing efforts. Additionally, advancements in technology (e.g., remote sensing and acoustic recording devices) may allow modified survey protocols to be conducted more extensively and less expensively than prior efforts.

Budget:

Task	Needs	Costs
Lit review	Wildlife Biologist $40/hr *125 hrs	$5,000
Survey Design	Wildlife Biologist $40/hr *50 hrs	$2,000
Pilot Survey	Technician $25/hr * 300 hrs	$7,500
	Travel, Misc.	$2,000
	Vehicles (1 truck *$2000/month)	$3,000
	Supplies	$2,000
Analysis and evaluation	Wildlife Biologist $40/hr *100 hrs	$4,000
Coordination with other data sources	Wildlife Biologist $40/hr *75 hrs	$3,000
Synthesis	Wildlife Biologist $40/hr *125 hrs	$5,000
Write up and dissemination	Wildlife Biologist $40/hr *125 hrs	$5,000
Overhead @10%		$3,850
Project Funding Request		$42,350
In-kind contribution BLM establishing 10 data points and data collection of primary and secondary data		$50,000
Total project cost		$92,350