***Section 4f(1)(c). Measures Minimizing Harm of Wildlife***

*Objective 1* – We will hand-capture, measure, band, and collect blood samples from passerine nestlings. All personnel handling birds will be trained by a Master Bander or sub-permittee on proper holds, measuring and blood collection techniques, stress reduction techniques, and how to recognize and treat stress in birds. Nestlings will be removed from nest by hand and placed into soft cotton bags with their nest-mates. Each nestling will then be removed individually for the appropriate procedure. On average, nestlings will be out of the nest for 20 minutes and held in hand for less than five minutes. Bands will be properly sized for each nestling’s species, determined both through direct observation of the nestling and through observation of the parents, and placed on nestlings about a week before projected fledge date to ensure that the tarsus is long enough and the band will not slip over the foot or ankle. Blood samples will be collected via puncture of the medial metatarsal vein with a sterile needle and collection into a sterile hematocrit tube (approximately 50 microliters and/or <1% of the individual’s body mass). Collection will occur at the time of banding to ensure that the nestlings are large enough that taking blood will have no lasting adverse effects. After collection, we will apply gentle pressure with a cotton swab and ensure that bleeding is completely stopped before returning the nestling to its nest. After banding, we will not return to the nest until about a week after projected fledge date to reduce the risk of early fledging.

*Objective 2* – We will collect fecal samples from birds captured in mist nets and birds hand-captured from nest boxes. Mist nets will be placed around the Student Farm, the Russell Ranch Sustainable Agriculture Facility, and/or adjacent non-crop habitats near UC Davis. Nets will be operated under standard protocols, beginning at sunrise and continuing for 5 hours. Dangers to birds during mist netting include: exposure to severe weather, predation, or asphyxiation from entanglement. These risks can be properly mitigated through practicing responsible banding protocols. First, visiting sites in early morning hours maximizes capture probability (due to bird activity at that time), while minimizing heat exposure. Severe heat can lead to heat stroke and death; as such, we will cease all banding operations by 11am (when fields become intolerably hot). We will also reframe from capturing birds during extreme weather (i.e., during periods of severe heat and/or when it is raining). Second, checking nets regularly and frequently can mitigate risks of from predation, severe entanglement, and/or exposure to bad weather. As such, we will check nets every 20-30min, a time period considered standard responsible procedure. At this point, birds will be extracted from nets, placed in sterilized, breathable cotton bags and transported to a nearby banding station. Bags will be chosen to be large enough to allow birds to move comfortably and without restraint. At the banding station, feces will be removed from bags and placed in vials. Samples will be placed in vials for pathogen screening (or use in the pathogen survival experiment). Prior to collecting each fecal sample, however, we will identify and band each bird. We will follow standard banding procedure, ensuring that bands are properly placed on birds such that they will cause no future discomfort (i.e., they are correctly sized and applied). Finally, we will collect morphometric measurements (i.e., mass, tarsus length, bill length, and wing chord) before release. No bird will kept for more than 2 hours (and most will be released within 1 hour of capture).

If capture rates are too low to achieve our sampling goals, then we will also capture birds with Potter Traps (small wire cages, baited with food, that have pressure-triggered closing doors). These traps do not harm birds, but are much less likely to capture sufficient numbers for our purposes. As such, we will only use Potter Traps if mist nets completely fail. In either case, birds will be placed in bags, allowed to defecate, identified, and banded before release.