HAMILTON BIOLOGICAL

January 17, 2014

Mr. Jack Ainsworth, Senior Deputy Director
California Coastal Commission
89 California Street, Suite 200
Ventura, CA 93001

SUBJECT: COMMENTS ON DUDEK'S CALIFORNIA GNATCATCHER SURVEYS, NEWPORT BANNING RANCH PROPERTY, ORANGE COUNTY, CALIFORNIA

Dear Jack,

On behalf of the Banning Ranch Conservancy, I have reviewed the two documents, prepared by the consulting firm of Dudek as part of planning of a proposed large-scale development project at Newport Banning Ranch in Newport Beach:

- Letter report from Dudek to the U.S. Fish & Wildlife Service dated 31 May 2013 (12 pages plus attachments) entitled "Focused California Gnatcatcher Survey, Newport Banning Ranch Project, Orange County, California" (hereafter referred to as the "Dudek survey report").

- An accompanying 12-page memorandum from Dudek dated 24 October 2013 prepared for Newport Banning Ranch, LLC, entitled "Review and Comparison of California Gnatcatcher Surveys Results for the Newport Banning Ranch Property, Orange County, California" (hereafter referred to as the "Dudek memo").

Dudek's 2013 surveys were conducted by six permitted CAGN biologists and six unpermitted biologists on April 8 and 9. These 12 biologists conducted simultaneous surveys for CAGN, with multiple personnel following birds to document habitat use areas.

As summarized in the Dudek memo, focused surveys for the Coastal California gnatcatcher (*Polioptila californica californica*; CAGN) have been conducted at Newport Banning Ranch since 1992. Richard Erickson and I conducted four annual surveys for LSA Associates, from 1992 to 1995, after which I left LSA to work as an independent consultant. Mr. Erickson conducted a fifth survey for LSA in 1996. The site was surveyed by PCR Services Corporation (PCR) in 1997, 1998, and 2000; by Glenn Lukos Associates (GLA) in 2002, 2006, and 2007; and by BonTerra in 2009. This is a total of 12 seasons of focused CAGN surveys conducted before Dudek's survey in 2013. The previous studies typically consisted of one or two federally permitted CAGN surveyors utilizing playback of CAGN vocalizations and making two to six passes through all potentially suita-

316 Monrovia Avenue Long Beach, CA 90803 562-477-2181 rob@hamiltonbiological.com

ble habitat during the nesting season.

As summarized in the Dudek memo, survey efforts prior to 2013 "reported an average of 19 territories per year" (range 15–21, with an outlying high total of 29 in 1994). Dudek's 2013 surveys identified four pairs and six individual males (all thought to be paired), for a total of ten territories.

Overview

Dudek's analysis focuses on building a case that "prior surveys . . . are not a sound basis for determining the number of CAGN pairs supported by the site historically." Remarkably, Dudek does not attempt to explain why the local CAGN population in 2013 apparently dropped to 34–67% of the levels recorded during 12 previous focused surveys. It is important to (a) evaluate Dudek's assumptions about the inadequacy of previous survey efforts, and (b) consider whether Dudek's results can be explained in the context of the known year-to-year population fluctuations of CAGN populations in coastal Orange County and the wider region.

Based upon their conclusion that previous survey efforts over-inflated population numbers, Dudek also claims that the resulting average CAGN territory size of 2.96 acres is likely erroneous. My review evaluates both this assertion and Dudek's related claim that CAGN habitat at Newport Banning Ranch is inferior to CAGN habitat at three other sites in the region.

This review also critiques certain aspects of Dudek's 2013 surveys, remarks upon the apparent extirpation of Cactus Wrens (*Campylorhynchus brunneicapillus*) from the site, and briefly considers the Habitat Conservation and Conceptual Mitigation Program that is being developed as part of the proposed residential/commercial project at Newport Banning Ranch.

Wandering Gnatcatchers

The primary basis for Dudek's criticism of previous survey efforts is that their 2013 observations of two male gnatcatchers moving long distances probably would have confused surveyors using standard CAGN survey methods. For example, Page 10 of their CAGN report states:

> In some cases, it became apparent that a single observer would have mapped a single CAGN as multiple pairs given typical protocol surveys – not due to observer error, but due to intervening topography and viewsheds and less than typical CAGN behaviors (e.g., flying high above tree canopies, going through riparian bands, using multiple canyons).

Page 6 of their memo states:

> For GLA (2010) "use areas" 1 through 9, the average in 1992–2009 was 8.76 (range of 6–12). Dudek (2013a) recorded only 4 territories in this area, below the lowest previous total

> and less than half the average. However, Dudek (2013a) followed a single male moving approximately 300 meters (990 feet), across GLA (2010) use areas 7, 8, and 9. Dudek (2013a) also recorded a single male moving through use area 6 and 7. Therefore, 2 males were confirmed as behaving territorially over an area encompassing 5 use areas identified in GLA (2010). Both males behaved as though they were paired. These males were simultaneously watched and followed by at least 6 biologists. The "7, 8, 9" male was observed by multiple biologists to move up, over, and around an intervening hill and up and through dense riparian bands. A single observer would have easily missed these movements. The frequency of the movements, combined with the apparent barriers, would have led the observer to map the single individual as multiple individuals. Therefore, while the Dudek results were consistent with findings for the northern portion of the site, the 2013 survey provided convincing evidence that significantly fewer CAGN territories were present in the southern portion of the site compared to previous estimates.

The question of whether the evidence is "convincing" is for readers to decide. The goal of the four years of surveys that I took part in for LSA in the 1990s was to obtain accurate estimates of the number of CAGN pairs present on the site, as part of long-term planning by then-owner West Newport Oil. Federally permitted biologists are expected to understand the potential for gnatcatchers to wander over large areas, including flights over trees, across riparian bands, and into adjacent canyons. Although such movements are atypical (as acknowledged in the first quote from Dudek), I have observed them many times. I have also discussed these types of gnatcatcher movements with various other biologists, including Richard Erickson and Brian Daniels, two other federally permitted biologists responsible for several years of CAGN surveys at Newport Banning Ranch. In my experience, competent CAGN surveyors are more aware of these types of movements than Dudek biologists realize.

A CAGN surveyor encountering a gnatcatcher moving across the landscape will normally attempt to follow the bird and determine its use area. If unable to follow the bird, e.g., because of dense vegetation or hostile topography, the surveyor normally makes a notation on the field map indicating the area where the bird was seen and the direction it was traveling when lost. The surveyor then attempts to find the bird in the area it was seen moving to. If a bird is found in the new area, the surveyor should assume that this is the same bird that was seen flying that direction. The only way that two territories should be identified is if the surveyor returns to the first area and refinds a second bird of the same sex. Naturally, surveyors will occasionally miss birds, or mistakenly conclude that two birds are present when only one truly is present. These are both important reasons why CAGN surveys consist of multiple visits. In the vast majority of cases, conducting a second survey is adequate to clarify any possible confusion that might persist after the first survey. Standard federal protocol (U.S. Fish & Wildlife Service 1997), which has governed most CAGN surveys at Newport Banning Ranch, calls for three or six surveys conducted at least a week apart. Note, also, that historical mapping shows that many neighboring CAGN territories recorded in previous years were not hidden from each other by intervening topography, meaning that surveyors would not have been confused by birds disappearing over and around hillsides. For these rea-

sons, there is simply no basis for the Dudek biologists to assume that permitted CAGN biologists conducting multiple surveys are likely to have consistently overestimated the number of territories at Newport Banning Ranch.

Examining LSA's Outlying 1994 Survey Results

The 29 CAGN territories that Richard Erickson and I recorded at Newport Banning Ranch in 1994 (LSA 1994) is 19 more than Dudek identified in 2013 and at least 8 more than has been found at this site during any other year. Page 2 of the 1994 CAGN report states:

> Since habitat quantity and quality appeared to be similar to previous years, we believe that the increases probably resulted from favorable climatic conditions in recent years (e.g., mild winter weather in 1993/1994, cessation of drought conditions in 1992).

In support of this opinion, numbers of CAGN synchronously spiked at two other long-term CAGN monitoring sites located within several miles of Newport Banning Ranch — Crystal Cove State Park (43 territories in 1994 versus 20 in 1993 and 22 in 1995) and the Bonita Canyon open space area (28 territories in 1994 versus 20 in 1993 and 16 in 1995) (Erickson and Miner 1998). Viewed in this wider context a large, upward, single-year fluctuation was to be expected at Newport Banning Ranch in 1994. Dudek's competing hypothesis is that, owing to confusion over long-distance movements, we errantly doubled or even tripled the number of CAGN territories actually present.

The *Birds of North America* species account (Atwood and Bontrager 2001) briefly touched upon the topic of major annual population fluctuations:

> Survivorship may vary substantially among years, usually at regional scale suggestive of widespread causes, such as weather effects (Atwood et al. 1998b, Erickson and Miner 1998, Mock 1998). Single-year population decline of 54% noted on Palos Verdes Peninsula, Los Angeles Co., with no change in available habitat (Atwood et al. 1998b); comparable observations from Orange Co. and San Diego Co. (Erickson and Miner 1998, R. A. Hamilton and P. J. Mock unpubl.). Palos Verdes Peninsula population showed 50% increase in total number of pairs the following year (Atwood et al. 1998b).

Given the apparent connection between weather effects and CAGN population levels, we should investigate whether such a correlation may help to explain the low CAGN numbers recorded by Dudek in 2013.

Explaining Dudek's Survey Results

The 2013 surveys were conducted under drought conditions. According to local rainfall data (http://ocwatersheds.com/rainrecords/rainfalldata/historic_data/rainfall_data), average annual rainfall for Newport Beach is 11.07 inches per year. The local area received only 6.18 inches in 2011/2012 and 5.61 inches in 2012/2013. Patten and Rotenberry (1999) identified a strong positive correlation between clutch size and cumulative rainfall during the "egg-formation period" 30 to 90 days before clutch completion (mean estimated clutch completion date was 6 May ± 22 days). Drought conditions lead to decreases in the insect populations that CAGN rely upon for food. The rainfall data for 2011/2012 shows a February-to-April total of 3.08 inches, 39 percent below the average total of 5.02 inches. Therefore, it is likely both that CAGN clutch sizes were below

normal in 2012, and that provisions for nestlings were scarce, factors that would have contributed to a reduced CAGN population size in 2013.

Drought conditions continued through 2012/2013, with only 0.62 inch of rainfall in February, March, and the first part of April (before Dudek's surveys on April 8 and 9). With coastal scrub at Newport Banning Ranch unusually dry at the time of Dudek's surveys, insect populations presumably were depressed, meaning that birds would have had to search more widely than normal to find enough food to form eggs or feed nestlings. If some birds postponed nesting, or failed to nest altogether, this could have left them less constrained in their movements. With CAGN numbers atypically low, reduced competition from neighbors would have allowed the birds to wander more widely in 2013 than in a typical year. During the course of several years of monitoring both CAGN and Cactus Wren populations across the Nature Reserve of Orange County, I observed this phenomenon of breeding pairs maintaining expanded territories during drought periods. The two large movements of individual gnatcatchers that Dudek observed in 2013 would be less likely to occur under normal conditions.

For reasons explained above, Dudek's 2013 survey results appear to reflect an actual, predictable, drought-related decrease in the CAGN population at Newport Banning Ranch, consistent with fluctuations documented elsewhere in the region (e.g., Erickson and Miner 1998, Atwood et al. 1998). Both scarcity of food resources and sparseness of the CAGN population likely contributed to gnatcatchers moving the atypically large distances that Dudek observed in 2013. The population may actually be in a long-term decline, but this remains to be determined.

Average Territory Size

Wording of the Dudek memo is confusing ("Previous studies and survey efforts have documented CAGN using areas closer to the 5.64 acres extrapolated from the Dudek survey results than the 2.96 acres from previous surveys"), but the thrust of Dudek's argument is that the average CAGN territory size of 5.64 acres derived from their 2013 surveys is comparable to values reported from other sites in the region, whereas the average territory size of 2.96 acres derived from previous studies at Newport Banning Ranch is unrealistically low.

Comparing CAGN use of Newport Banning Ranch with CAGN use of the Palos Verde Peninsula, Montebello Hills, and West Coyote Hills, the Dudek memo states, "In all cases, the suitable habitat was more contiguous, larger and more intact, and had a more suitable species composition than the Newport Banning Ranch habitat." The intended distinction between "more contiguous" and "more intact" is unclear, as is Dudek's basis for ranking the suitability of different plant communities at these sites, but the suggestion that contiguity of scrub equates to higher quality habitat for CAGN reveals a fundamental misunderstanding about CAGN habitat preferences. The review by Atwood and Bontrager (2001) summarized some key preferences:

> Densities in coastal areas generally higher than in inland sites (Atwood 1993, Preston et al. 1998b, Weaver 1998a); unknown if due to variation in habitat quality or differences in factors such as recruitment and survivorship (Braden et al. 1997b, Atwood et al. 1998c). More abundant near coastal sage scrub–grassland interface than where coastal sage scrub grades into chaparral (JLA; Fig. 2). Areas of dense scrub occupied less frequently than more open sites: perennial cover on territories in Orange Co. 23–50% (mean 34%, n = 12; Bontrager 1991), in s. San Diego Co. 23–50% (mean 38%, n = 7; ERCE 1990), and 27–56% in sw. Riverside Co. (Braden and Powell 1994). Increased cover of grass and forbs among variables associated with increased fledging success in Riverside Co. (Braden et al. 1997b).

See also the San Diego Bird Atlas (Mock 2005):

> In general it [CAGN] is more numerous near the sage scrub–grassland interface than where sage scrub grades into chaparral; it occupies dense sage scrub less frequently than more open sites. . . The size of a breeding pair's territory is highly variable but correlated with distance from the coast, ranging from less than 1 hectare along the coast to over 9 hectares farther inland (Mock and Bolger 1992, Braden 1992, Preston et al. 1998, Atwood et al. 1998).

Thus, both the less contiguous nature of the scrub at Newport Banning Ranch and the site's proximity to the coast contribute to a higher carrying capacity for CAGN at Newport Banning Ranch versus inland sites, including the Montebello Hills and West Coyote Hills.

Another aspect of Newport Banning Ranch attractive to CAGN is its gentle topography. Mock and Bolger (1992) identified 40% as an upper limit for slopes used by CAGN, but not all slopes below this value are used equally. My six-year study of CAGN populations at 40 sites in the Nature Reserve of Orange County (Hamilton 2004) demonstrated that the Reserve's high-density CAGN populations almost always occur at sites with slope of 15% or shallower. Using topographic information from the County of Orange GIS Division, Milan Mitrovich and I identified a strong positive relationship between gentle slopes (0–15%) and CAGN density. Figure 1, on the following page, plots the six-year average density of gnatcatcher territories at the Reserve's 40 long-term monitoring sites against the proportion of each site that falls between 0 and 15% slope.

Figure 1 shows that almost all sites within the Nature Reserve of Orange County that support high densities of CAGN have a high proportion of shallow slopes (0–15% grade). To put it another way, as the proportion of shallow slopes increases so does the likelihood that the site will support a high-density CAGN population. I am not aware of any formal slope analysis at Newport Banning Ranch, but a general gentleness of topography is apparent. Dudek's third site, the Palos Verdes Peninsula, is comparable to Newport Banning Ranch in its proximity to the coast, but is generally characterized by more severe topography than are found at Newport Banning Ranch. And, as noted by Dudek, the scrub habitat there is generally denser and more contiguous. In both of these respects, habitat suitability for CAGN on the Palos Verdes Peninsula is generally inferior to that at Newport Banning Ranch, and so we should expect lower CAGN density on the Palos Verdes Peninsula.

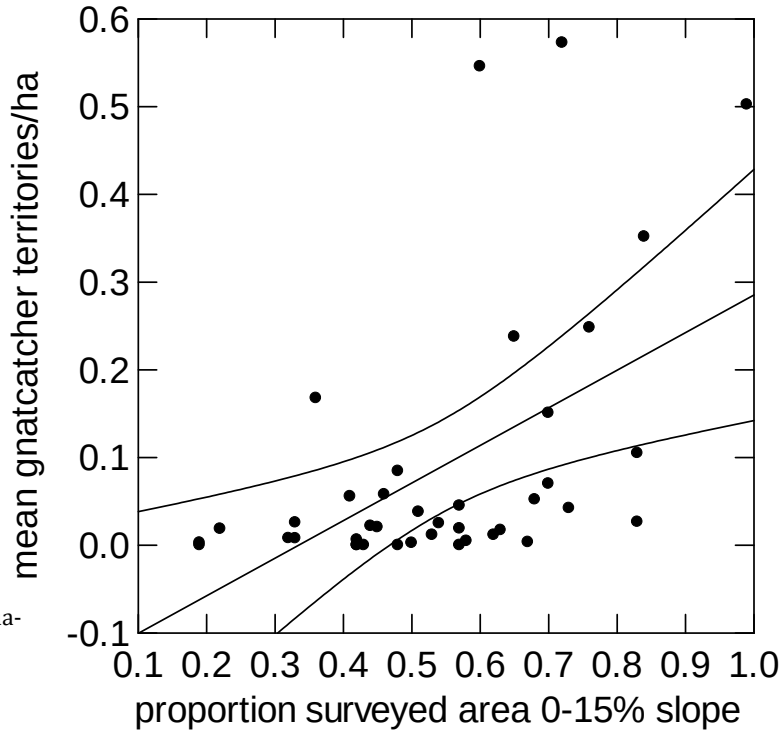

Figure 1. As the proportion of the surveyed area with slope ≤ 15% increases, so does the likelihood that the area supports CAGN at high density. The line represents a linear regression with 95% confidence intervals. CAGN population data are the means of six years of survey data from the Nature Reserve of Orange County's 40 long-term monitoring sites.

Equation for the linear regression: CAGN = 0.428*S -0.143; $R^2adj = 0.254$; n = 40; $p<0.001$

Various lines of evidence lead to a conclusion that Newport Banning Ranch provides habitat of high value to CAGN, but is the average territory size of 2.96 acres (the value that Dudek derived from the results of several previous studies) smaller than expected? From 1996 through 2000, Richard Erickson conducted an intensive, five-year study of CAGN at the 480-acre Bonita Canyon study area, a gently-sloped coastal area supporting a mosaic of coastal scrub, grassland/ruderal, and riparian habitats located approximately five miles east of Newport Banning Ranch and three miles from the coast (LSA 2001). As shown in Figure 2, on the following page, the five-year average territory size at Bonita Canyon was 1.89 ± 1.28 acres. Since conditions at Newport Banning Ranch are more similar to those at Bonita Canyon than they are to those in the Montebello Hills, the West Coyote Hills, or on the Palos Verdes Peninsula, an average territory size of 2.96 acres at Newport Banning Ranch (>1 acre larger than documented at Bonita Canyon) is in line with expectations.

Table K: California Gnatcatcher Territory Sizes in Acres, 1996-2000

Territory	1996	1997	1998	1999	2000	Mean±SD
BNCY1	1.73	1.42	1.78	3.11	3.04	2.22±0.80
BNCY2	1.86	2.15	3.98	2.00	2.65	2.53±0.86
BNCY3	1.39	0.78				1.09±0.43
BNCY4			1.66	1.19	2.30	1.72±0.56
BNCY5	1.88	1.84	0.81	1.92		1.61±0.54
BNCY6	0.89	0.95	0.94	1.59	1.93	1.26±0.47
BNCY7	1.20	0.85	1.44	0.61	4.38	1.70±1.53
BNCY8	1.75					1.75
BNCY9	1.59	1.10				1.35±0.35
BNCY10	1.42					1.42
BNCY11	2.24	1.08		1.23	2.01	1.64±0.57
BNCY12	11.05	0.95				6.00±7.14
BNCY13		1.36	1.36	1.62	2.08	1.61+0.34
BNCY14	1.40	1.36		1.20		1.32±0.11
BNCY15	2.04	1.91	2.47	2.18	3.83	2.49±0.78
BNCY16	2.21	2.25	2.01	2.23		2.18±0.11
BNCY17	1.49	0.37	0.79	2.52		1.29±0.94
BNCY18	1.86	1.79	2.73		1.61	2.00±0.50
BNCY18N				1.80		1.80
BNCY18S				0.72		0.72
BNCY19		0.79	0.79	1.21	1.12	0.98±0.22
BNCY23	0.92	0.64	1.01	2.67	2.71	1.59±1.01
BNCY24	2.19					2.19
BNCY25	3.37	3.37	4.34	3.71	3.84	3.73±0.40
BNCY26	1.02	1.47	1.32	1.59	1.02	1.28±0.26
BNCY27	1.18	0.31				0.75±0.62
BNCY28	3.02					3.02
BNCY29	2.99					2.99
BNCY30	1.37	1.68		1.97	3.49	2.13±0.94
BNCY31		1.45	1.18			1.32±0.19
BNCY32				1.65	1.29	1.47±0.25
BNCY34				0.87		0.87
BNCY36					2.75	2.75
BNCY37					1.61	1.61
BNCY38					1.56	1.56
Mean ± SD	2.19±1.99	1.36±0.70	1.80±1.09	1.79±0.78	2.40±1.00	1.89±1.28 0.31-11.05

Figure 2. Table K from LSA (2001, p. 56) showing absolute and average territory sizes (breeding season) for CAGN at the Bonita Canyon study area, Newport Beach. As shown, territory sizes ranged from 0.31 to 11.05 acres, but were most frequently in the range of 1.3 to 2.5 acres.

Cactus Wrens

Populations of the Cactus Wren on the coastal slope of southern California are recognized as a focal and/or covered species in all large-scale coastal sage scrub conservation planning processes in the region. Cactus Wren populations in the 37,000-acre Nature Reserve of Orange County have declined at least 90% since the mid-1990s (Mitrovich and Hamilton 2007, Hamilton 2008, Leatherman Bioconsulting 2009). Since Cactus Wrens, like CAGN, are residents of coastal scrub, previous gnatcatcher surveys at Newport Banning Ranch typically reported on the numbers of Cactus Wrens detected. During the 1990s, Newport Banning Ranch supported roughly a dozen Cactus Wren pairs (the highest count was 14 pairs; LSA 1994). Pairs were also documented elsewhere along the lower Santa Ana River, including Fairview Park in Costa Mesa (Hamilton 1995). Page 4-6.37 of the 2011 Newport Banning Ranch DEIR reported the following:

> Two cactus wren territories were observed during focused surveys for the coastal California gnatcatcher in spring 2009. A breeding pair had an active nest in a large patch of prickly pear (Exhibits 4.6-2a and 4.6-2b). The first nesting attempt failed, apparently due to an infestation of Argentine ants (*Linepithema humile*); however, a subsequent nesting attempt produced at least one fledgling. In addition, a solitary male was observed in the northeastern portion of the Project site.

Both the Dudek CAGN report and Dudek memo fail to mention the Cactus Wren at all, and Dudek's report does not list Cactus Wren among the wildlife species observed during the 2013 CAGN surveys. This suggests that this scrub-dependent bird species has quietly been extirpated from the site, and presumably from the wider ecosystem of the lower Santa Ana River.

Limitations of Dudek's Survey

It is important to evaluate what Dudek's 2013 survey results do and do not tell us about the CAGN population at Newport Banning Ranch. First, it is notable that Dudek biologists recorded only four complete CAGN pairs along with six solo males. Page 10 of Dudek's CAGN report states, "All of the individual males appeared to be paired based on their behaviors," but what this means is unclear. Gnatcatcher surveyors normally determine whether a male is paired by observing the male until it goes to a nest site or until a female appears. Both members of a CAGN pair incubate, meaning that females can be located either when they are out foraging or when they return to the nest. Spacing multiple surveys a week or more apart increases the chances of surveying before or after the incubation period (Dudek's surveys were on two successive days). Although females may be difficult to locate during incubation, nevertheless detection of pairs is the norm when surveys are performed according to the standard presence/absence protocol (U.S. Fish & Wildlife Service 1997); unpaired adult CAGN are, as a rule, few and far between. I cannot recall having participated in a multi-visit CAGN survey that resulted in a majority of the territories being represented by males that were not confirmed as paired.

Dudek's finding of four pairs and six individual males suggests the following possible causes, and most likely a combination of them:

1. That the survey method was poorly suited to confirming CAGN breeding status (versus detecting a bird and then following it).
2. That field personnel were not adept at detecting female CAGN.
3. That female CAGN were using habitat areas mostly or completely outside the areas used by males. This is possible, as it would represent a strategy for males and females to avoid directly competing for scarce resources under drought conditions. Some pairs may have foregone breeding altogether in order to improve their chances at surviving to breed in better years.
4. Some territories lacked females. Since Dudek's report and memo do not explain what it means for a solo male gnatcatcher to behave as if paired, this troubling possibility cannot be completely discounted.

Page 3 of Dudek's memo notes that their survey method "was not intended to provide definitive limits of individual or paired territories." Indeed, their survey method would not satisfy the standard federal protocol for presence/absence surveys, which require three or six surveys spaced at least one week apart, in part to allow for CAGN to be recorded during different phases of the breeding cycle. Given that Dudek's surveys were conducted on two successive days in early April, prior to fledging of young, and considering that only single males were found at six of the 10 territories, the use areas mapped by Dudek in 2013 are far from definitive

California Gnatcatchers are known to use habitats other than coastal scrub throughout the year, mainly between May and November, with the birds typically moving into habitats where conditions are more mesic than in nearby coastal scrub, with vegetation that is somewhat taller and not summer-deciduous (Campbell et al. 1998). During biological surveys I conducted for LSA Associates in the early 1990s, I encountered CAGN foraging in mulefat and even willows in the western lowlands of Newport Banning Ranch outside of the breeding season. It is possible that, in response to persistent drought conditions during spring 2013, some CAGN moved out of desiccated coastal scrub and scrub/grasslands growing on the xeric bluffs and upper mesa of Newport Banning Ranch in order to forage, and perhaps even nest, in moister stands of mulefat scrub located in the western lowlands, outside of Dudek's CAGN survey area. For example, nesting of CAGN in mulefat scrub was documented during multiple years at Bonita Reservoir (Erickson 1998).

Whatever the case, if surveyors followed the movements of all adult CAGN and their fledglings for the entire 2013 breeding season, much larger use areas would have been mapped. The same can be said about all years of CAGN surveys at Newport Banning Ranch, of course, but given Dudek's repeated claims about the superiority of their sur-

vey methods, readers should not mistakenly conclude that the 2013 surveys yielded especially valid habitat use maps.

Furthermore, as summarized by Atwood and Bontrager (2001), CAGN territories expand greatly in fall and winter:

> Territories defended during nonbreeding season (Preston et al. 1998b); wandering into adjacent territories or unoccupied habitat may result in up to 80% increase in home range size relative to area used during nesting (Bontrager 1991, Preston et al. 1998b). Small, disjunct patches of coastal sage scrub, distributed within grassland matrices, may be incorporated into nonbreeding season home range even if too small to support a breeding pair; use of such patches may require regular movements of 25–100 m across grassland gaps (DRB). In San Diego Co., established pairs (n = 11) in Dec spent about 62% of time outside boundaries of territory defended during previous breeding season (Preston et al. 1998b).

To the best of my knowledge, there has been no effort to determine the areas that CAGN regularly use at Newport Banning Ranch during each season of the year. Such an effort would be required to reach any definitive conclusions about which areas are important to the birds during each phase of their life-cycle.

Habitat Conservation and Conceptual Mitigation Program

The proposed residential/commercial development at Newport Banning Ranch is to be accompanied by development and implementation of a Habitat Conservation and Conceptual Mitigation Program (HCCMP). As stated on Page 10 of the Dudek memo:

> … the proposed Project and associated scrub habitat preservation and restoration/enhancement measures would improve CAGN habitat on the site by enhancing and expanding higher quality habitat in place of the more fragmented and isolated occurrences of existing scrub habitat subject to historic [*sic*] oil field operation and vegetation maintenance disturbance.

The "fragmented and isolated" scrub at Newport Banning Ranch has repeatedly been documented as supporting CAGN at densities so high that the developer's consultants are now attempting to explain them away as artifacts of improperly conducted surveys. But those same consultants reassure us that they will "improve" the coastal scrub habitat by making it more contiguous (despite a consensus in the published literature that CAGN prefer open, non-contiguous scrub over dense, contiguous scrub).

Implementation of the proposed project would substantially reduce the overall area of natural open space at Newport Banning Ranch, which is an important component of the lower Santa Ana River ecosystem. This ecosystem functions as an "island" of natural open space and parkland surrounded by intensive development. The project would bring large numbers of people and their cars, pets, and lighting into an area that is now sparsely occupied, and would increase the amount of urban edge. Habitat restoration, lighting restrictions and other similar mitigation measures would be unlikely to completely offset the adverse effects of reduced natural habitat and increased human pres-

ence upon sensitive native wildlife populations. Habitat areas that CAGN now occupy during favorable years would be lost or compromised by nearby development, which may have adverse repercussions for the population's long-term viability. Island biogeography theory (MacArthur and Wilson 1967) predicts that reducing the island's size will tend to increase the rate of extinction of its wildlife populations, especially for such species as the CAGN and Cactus Wren, which are not well-adapted to recolonizing from outside sources (Soulé et al. 1988, Crooks et al. 2001). Various human-adapted species may be expected to flourish, with unknown consequences for the more sensitive species. With the Cactus Wren apparently now extirpated from Newport Banning Ranch, and with the CAGN population standing at roughly half its historical level (with further decline predictable due to continuation of severe drought conditions in 2014), I do not share Dudek's confidence that this site can accommodate massive new development without risking the viability of its CAGN population.

Discussion

Dudek's May 2013 report and October 2013 memo set forth a number of radical assertions that conflict with a large body of published and unpublished CAGN research from coastal Orange County and elsewhere in the region. Evaluating each claim in the context of research that CAGN biologists have built up over a period of decades demonstrates the speciousness of virtually all of Dudek's analyses and assumptions.

It bears emphasizing that Richard Erickson was the lead investigator on five CAGN surveys at Newport Banning Ranch. These were multi-visit, focused surveys designed to carefully estimate CAGN population levels from year to year as part of advanced planning efforts. Dudek now considers these surveys (and others that found similar results) so unreliable as to be literally worthless. As stated on Page 9 of the Dudek memo:

> While Dudek (2013a) methods are more suited to determining population levels, it is unclear whether the population size determined in the 2013 effort suggests a decline in the population on site, corrects previous overestimates of the population size, or both. Regardless, using the results of the previous surveys necessarily yields an unreliable estimate of the historic [*sic*] CAGN population at Newport Banning Ranch. Also, as important information on previous efforts is not available and methods were not specifically designed for determining populations, comparing results with those of Dudek (2013a) is not possible.

Mr. Erickson is the author of several large-scale, multi-year studies elucidating CAGN population fluctuations, territory sizes, and habitat usage in Orange County — topics of prime relevance to understanding the situation at Newport Banning Ranch. Dudek has either ignored or misinterpreted these studies while simultaneously concluding that his five surveys of CAGN at Newport Banning Ranch are "unreliable." It is hard to imagine a more pungent blend of arrogance and ignorance than one finds in Dudek's musings about the former and current status of CAGN at Newport Banning Ranch.

Dudek's 2013 survey results may be explained in the context of well-understood, year-to-year population fluctuations of CAGN populations in coastal Orange County and the wider region. Specifically, a drought-related drop in the CAGN population at Newport

Banning Ranch represents the most parsimonious explanation for Dudek recording ten CAGN territories at Newport Banning Ranch in 2013 (a decline to 34–67% of the annual population levels recorded previously). Furthermore, rainfall of 0.62 inch during the February-to-April "egg-formation period" in 2013 was 88 percent below the average total of 5.02 inches, meaning that production of young was almost certainly extremely low in 2013. Thus, additional decline of the local CAGN population is very likely in 2014. And, if the prolonged drought does not break in the next several weeks, 2014 will also be a resource-poor breeding season, meaning that the population is likely to be even smaller in 2015.

The current string of drought years is consistent with predictions that have been made concerning anthropogenic climate change. Increased chances of drought and wildfire are two important reasons why, under "a relatively 'middle-of-the-road' scenario where technological change is balanced across fossil and non-fossil energy sources," the state's CAGN population is forecast to contract by 36.5 percent in California by 2100 (Monahan and Langham 2008, Niven et al. 2009).

If and when additional declines of the local CAGN population are documented with future surveys, some may seek to claim this as bolstering Dudek's claims about the poor quality of historical survey data. In fact, had the historical population been limited to roughly 10 pairs, it is entirely possible that the population would have already blinked out. The current decline demonstrates that gnatcatchers resident at Newport Banning Ranch, and in the lower Santa Ana River generally, require access to as much natural open space as possible in order for this CAGN population to have a fighting chance at persisting under increasingly hostile climatic conditions.

Summary

Evaluation of the available evidence suggests that the CAGN population in 2013 was on the order of 10 pairs, substantially lower than historically documented. Because of ongoing severe drought conditions, further short-term decline of the local CAGN population is to be expected. Increased frequency of drought is consistent with predictions for global climate change, which is one reason the statewide population of CAGN is predicted to decline substantially during this century.

The Cactus Wren, represented by 14 territories at Newport Banning Ranch in 1994, appears to have been extirpated from the lower Santa Ana River ecosystem as of 2013. Given an even smaller CAGN population at Newport Banning Ranch in 2013, and with additional declines likely, parallels between these two species are difficult to ignore.

The "fragmented and isolated" habitats that Dudek plans to "improve" supported a consistently dense CAGN population during the 1990s and 2000s. Given that CAGN are known to prefer habitats with only 23–56 percent shrub cover, the potential benefits of implementing the HCCMP (which proposes to *increase* contiguity of the existing scrub habitat) are speculative, at best. Implementing the HCCMP would be unlikely to offset

the many adverse effects that would accompany the massive new project approved by the City of Newport Beach.

For these reasons, implementation of a residential/commercial project of a magnitude anywhere near that approved by the City of Newport Beach would represent a serious risk to the viability of the CAGN population at Newport Banning Ranch.

Thank you for your time in consideration. If you have questions, please call me at (562) 477-2181 or send e-mail to robb@hamiltonbiological.com.

Sincerely,

Robert A. Hamilton
President, Hamilton Biological, Inc.
http://hamiltonbiological.com

cc: Charles Lester
John Dixon
Jonna Engel
Lisa Haage
Andrew Willis
Christine Medak, USFWS
Erinn Wilson, CDFW
Terry Welsh, Banning Ranch Conservancy

References

Atwood, J. L., S. H. Tsai, C. A. Reynolds, and M. R. Fugagli. 1998b. Distribution and population size of California Gnatcatchers on the Palos Verdes Peninsula, 1993-1997. Western Birds 29:340-350.

Atwood, J. L. and D. R. Bontrager. 2001. California Gnatcatcher (*Polioptila californica*) species account *in* A. Poole (editor) The Birds of North America Online. Cornell Lab of Ornithology, Ithaca, NY.

BonTerra. 2009. Results of Coastal California Gnatcatcher Surveys for the Newport Banning Ranch Project Site, Orange County, California. Letter to the U.S. Fish & Wildlife Service dated July 17, 2009.

Campbell, K. F., R. A. Erickson, W. E. Haas, and M. A. Patten. 1998. California Gnatcatcher use of habitats other than coastal sage scrub: Conservation and management implications. Western Birds 29:421–433.

Crooks, K. R., A. V. Suarez, D. T. Bolger, and M. E. Soule. 2001. Extinction and colonization of birds on habitat islands. Conservation Biology 15:159-172.

Erickson, R. A. 1998. Unmated male California Gnatcatcher feeds fledgling Bushtits. Western Birds 29:475–476.

Erickson, R. A. and K. L. Miner. 1998. Six years of synchronous California Gnatcatcher Population fluctuations at two locations in Coastal Orange County. Western Birds 29:333–339.

Hamilton, R. A. 1995. Biological Constraints and Opportunities Analysis, Fairview Park, Costa Mesa. Biological technical report dated October 9, 1995, prepared for Katzmaier Newell Kehr, Laguna Beach, CA.

Hamilton, R. A. 2004. Target bird monitoring study, Nature Reserve of Orange County, 2004. Report dated November 3, 2004, prepared for the Nature Reserve of Orange County, Irvine, CA.

Hamilton, R. A. 2008. Cactus Wrens in central & coastal Orange County: How will a worst-case scenario play out under the NCCP? *Western Tanager* 75:2–7.

Leatherman Bioconsulting, Inc. 2009. Central Reserve Cactus Wren Habitat Assessment and Survey 2008. Report dated February 2009 prepared for the Nature Reserve of Orange County, Irvine, CA.

LSA Associates, Inc. 1994. Results of 1994 Gnatcatcher and Wren Surveys. Letter report dated April 7, 1994, prepared for Leonard Anderson, West Newport Oil Company.

LSA Associates, Inc. 2001. Final report on Bonita Canyon Road wildlife studies. Report dated November 19, 2011, prepared for the San Joaquin Hills Transportation Corridor Agency, Irvine, CA.

MacArthur, R. H. and E. O. Wilson. 1967. The Theory of Island Biogeography. Princeton University Press, Princeton, NJ.

Mitrovich, M. J. and R. A. Hamilton. 2007. Status of the Cactus Wren (*Campylorhynchus brunneicapillus*) within the Coastal Subregion of Orange County, California. Report dated May 2007 prepared for the Nature Reserve of Orange County, Irvine, CA.

Mock, P. J. 2005. California Gnatcatcher *Polioptila californica*. Species account *in* Unitt, P. San Diego Bird Atlas. Proceedings of the San Diego Natural History Museum 39, Ibis Publishing, Temecula, CA.

Mock, P. J. and D. T. Bolger. 1992. Ecology of the California Gnatcatcher at Rancho San Diego. Unpublished technical appendix to the Rancho San Diego Habitat Conservation Plan. Prepared by Ogden Environmental and Energy Services for Home Capi-

tal Development Corporation, San Diego, CA.

Monahan, W. B. and G. Langham. 2008. Mapping avian responses to climate change in California. http://www.audubonmagazine.org/sites/default/ files/documents/ audubonca_gtr_climatechange_200812.pdf. Accessed January 17, 2014.

Niven, D. K, G. S. Butcher, G. T. Bancroft, W. B. Monahan, and G. Langham. 2009. Birds and climate change, ecological disruption in motion. A briefing for policymakers and concerned citizens on Audubon's analyses of North American bird movements in the face of global warming. http://web4.audubon.org/news/pressroom/bacc/pdfs/birds%20and%20climate%20report.pdf. Accessed January 17, 2014.

Soulé, M. E., D. T. Bolger, A. C. Alberts, R. S. Sauvajot, J. Wright, M. Sorice, and S. Hill. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. Conservation Biology 2:75-92.

U.S. Fish & Wildlife Service. 1997. Coastal California Gnatcatcher (*Polioptila californica californica*) presence/absence survey guidelines. USFWS Field Office, Carlsbad, CA.