PACIFIC LEGAL FOUNDATION

June 10, 2014

Ms. Sally Jewell
Secretary of the Interior
U.S. Department of the Interior
1849 C Street N.W.
Washington, DC 20240

VIA FEDERAL EXPRESS

Mr. Daniel M. Ashe
Director
U.S. Fish and Wildlife Service
1849 C Street N.W.
Washington, DC 20240

VIA FEDERAL EXPRESS

Dear Secretary Jewell and Director Ashe:

Enclosed is a petition to delist the coastal California gnatcatcher (*Polioptila californica californica*) from the list of threatened wildlife under the Endangered Species Act. The delisting petition, submitted on behalf of: the Center for Environmental Science, Accuracy and Reliability; Coalition of Labor, Agriculture, and Business; Property Owners Association of Riverside County; National Association of Home Builders; and the California Building Industry Association, demonstrates that the best available scientific data do not support the gnatcatcher's continued listing as a threatened subspecies. Rather, the petition shows that, according to mitochondrial and nuclear DNA analyses, the coastal California gnatcatcher should be grouped together with other plentiful populations of gnatcatchers in Baja California. And, viewed as a single species ranging from Southern California to the tip of Baja California, the California gnatcatcher does not warrant listing.

Petitioners look forward to your prompt and timely consideration of the petition.

Yours sincerely,

DAMIEN M. SCHIFF
Principal Attorney

Enclosure

HEADQUARTERS: 930 G Street | Sacramento, CA 95814 | (916) 419-7111 | FAX (916) 419-7747
ALASKA: 121 West Fireweed Lane, Suite 250 | Anchorage, AK 99503 | (907) 278-1731 | FAX (907) 276-3887
ATLANTIC: 8645 N. Military Trail, Suite 511 | Palm Beach Gardens, FL 33410 | (561) 691-5000 | FAX (561) 691-5006
HAWAII: P.O. Box 3619 | Honolulu, HI 96811 | (808) 733-3373 | FAX (808) 733-3374 OREGON: (503) 241-8179
WASHINGTON: 10940 NE 33rd Place, Suite 210 | Bellevue, WA 98004 | (425) 576-0484 | FAX (425) 576-9565
E-MAIL: plf@pacificlegal.org
WEB SITE: www.pacificlegal.org

BEFORE THE UNITED STATES DEPARTMENT OF THE INTERIOR
AND THE UNITED STATES FISH AND WILDLIFE SERVICE

In the Matter of the Petition to Delist
the Coastal California gnatcatcher
(*Polioptila californica californica*)
from the List of Threatened Species
Under the Endangered Species Act

PETITION OF THE CENTER FOR ENVIRONMENTAL SCIENCE, ACCURACY AND RELIABILITY; COALITION OF LABOR, AGRICULTURE, AND BUSINESS; PROPERTY OWNERS ASSOCIATION OF RIVERSIDE COUNTY; NATIONAL ASSOCIATION OF HOME BUILDERS; AND THE CALIFORNIA BUILDING INDUSTRY ASSOCIATION TO REMOVE THE COASTAL CALIFORNIA GNATCATCHER FROM THE LIST OF THREATENED SPECIES UNDER THE ENDANGERED SPECIES ACT

ROBERT D. THORNTON
Cal. Bar No. 72934
Nossaman LLP
18101 Von Karman Avenue,
Suite 1800
Irvine, California 92612
Telephone: (949) 833-7800
Facsimile: (949) 833-7878
rthornton@nossaman.com

Attorney for National Association of Home Builders and California Building Industry Association

DAMIEN M. SCHIFF
Cal. Bar No. 235101
Pacific Legal Foundation
930 G Street
Sacramento, California 95814
Telephone: (916) 419-7111
Facsimile: (916) 419-7747
dms@pacificlegal.org

Attorney for the Center for Environmental Science, Accuracy and Reliability; Coalition of Labor, Agriculture, and Business; and Property Owners Association of Riverside County

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INTRODUCTION

Pursuant to 16 U.S.C. § 1533(b)(3) and 50 C.F.R. § 424.14(a), Petitioners the Center for Environmental Science, Accuracy and Reliability; Coalition of Labor, Agriculture, and Business; Property Owners Association of Riverside County; National Association of Home Builders; and the California Building Industry Association hereby petition the Secretary of the Department of Interior and the United States Fish & Wildlife Service (collectively "the Service") to delist the coastal California gnatcatcher (*Polioptila californica californica*) ("*P.c.c.*") from the list of threatened wildlife, 50 C.F.R. § 17.11(h), under the Endangered Species Act (ESA), 16 U.S.C. §§ 1531-1544. The requested delisting action is warranted because the best available scientific data show that the taxonomic classification of the *P.c.c.* as a subspecies is based on erroneous information. It is undisputed that the ***species Polioptila californica*** is a common bird and is not endangered or threatened. Because the subspecies delineation *P.c.c.* is invalid, there is no basis to continue to apply the ESA to gnatcatchers in any portion of the species' range.

This petition goes to the heart of the ESA because an objective, science-based listing process is central to the statute's integrity. The ESA's purpose is to protect genetically unique or evolutionarily distinct life forms. It does this by requiring that listing decisions be based on the "best scientific

. . . data available," 16 U.S.C. § 1533(b)(1)(A), and by requiring that a species or subspecies be threatened or endangered "throughout all or a significant portion of its range," *id.* § 1532(6) & (20). The failure to use the best scientific data available in listing decisions engenders cynicism that listing decisions are a product of ideological and regulatory motives rather than the best available scientific data. Failing to use the best data also diverts scarce private and public resources from more important conservation challenges.

The debate over the taxonomy of the coastal California gnatcatcher has raged since before the bird's listing as a threatened species under the ESA. We describe the history of this debate below in some detail because it is important to understanding the grounds for this petition.

First described as a separate species in 1881, the gnatcatcher was reclassified in the 1920s as a subspecies of the widespread and common black-tailed gnatcatcher. *See* 58 Fed. Reg. 16,742, 16,742 (Mar. 30, 1993). Throughout the twentieth century, various authorities posited different groupings of California gnatcatcher subspecies, the purported ranges of which occupied contiguous segments of the Baja California peninsula and Southern California. *See id.*; 60 Fed. Reg. 15,693, 15,698 (Mar. 27, 1995); 68 Fed. Reg. 20,228, 20,230 (Apr. 24, 2003). *See also* R.M. Zink, J.G. Groth, H. Vazquez-Miranda, and G.F. Barrowclough. 2013. Phylogeography of the California Gnatcatcher (*Polioptila californica*) Using Multilocus DNA

Sequences and Ecological Niche Modeling: Implications for Conservation. *Auk* 130:449-458 ("Zink et al. (2013)").

The Service's principal basis for the listing of the *P.c.c.* as a threatened subspecies has been the analysis of morphological data of gnatcatcher museum specimens collected by Dr. Jonathan Atwood (a petitioner for the listing) as part of his dissertation studies. In his petition to list the *P.c.c.*, Atwood took the position that there are three valid subspecies of *Polioptila californica* and that the range of *P.c.c.—the northernmost form*—extends from southern California to 30°N latitude in Baja California, Mexico. During the debate over the listing, Atwood acknowledged that the subspecies designation for the *P.c.c.* was central to the listing decision because "[n]o credible scientist would claim or has claimed that California gnatcatchers as a species are endangered or threatened throughout their entire range." (Testimony to California Fish and Game Commission, August 31, 1991.) This statement remains correct today.

As much as any ESA decision since the statute's 1973 passage, the listing of the *P.c.c.* underscores how ESA regulation has both profound real-world consequences for the conservation of biological resources, as well as significant impacts to society and the economy. The listing of the *P.c.c.* triggered an unprecedented twenty-year conservation planning process in

Southern California that continues today. This planning process has included the approval of numerous habitat conservation plans (HCPs) and natural community conservation plans (NCCPs) in Orange, Riverside, and San Diego Counties. Collectively, these plans regulate land-use on millions of acres. The plans have resulted in the establishment and management of regional conservation reserves of several hundred thousand acres of the coastal sage scrub habitat of the gnatcatcher and other species covered by the plans.

Since the listing of the *P.c.c.*, well over a dozen HCPs and NCCPs protecting the gnatcatcher and its habitat have been finalized and are now being implemented. These programs protect in perpetuity a significant amount of coastal sage scrub in reserve systems, establish important linkages that allow for natural dispersal and gene flow, implement and fund coordinated monitoring and adaptive management actions beneficial to the long-term conservation of the gnatcatcher and other special status species, and require adherence to specific measures that minimize impacts to the gnatcatcher (*e.g.*, avoidance of grading during breeding season).

Table 1 below provides a summary of the largest conservation plans.

TABLE 1

Large-Scale Regional Conservation Plans That Protect the Coastal California Gnatcatcher and Its Habitat and Contribute to the Species's Conservation

Conservation Plan	Year Finalized	Gnatcatcher Conservation Measures
1. County of Orange Central/Coastal Subregion NCCP/HCP	1996	• Creates a 37,378-acre reserve system, with over 18,000 acres of coastal sage scrub habitat in the reserve
2. San Diego MSHCP	1998	• Preserves over 73,000 acres of coastal sage scrub and integrated habitats in an interconnected network of preserves; requires adoption of sub-area plans by cities
3. San Diego Association of Governments MSHCP for Seven Incorporated Cities Northwestern San Diego County	2003	• Conservation of a minimum of 62% of known gnatcatcher sites • Conserves, enhances, and manages regionally critical stepping-stone linkage across the MSHCP plan area • Dependent on incorporation of sub-area plans by cities
4. Western Riverside MSHCP	2004	• Creates a 500,000-acre reserve system with approximately 82,000 acres of coastal sage scrub conserved in the plan area

5. County of Orange Southern Subregion HCP/MSAA	2006	• Conservation of 14,387 acres of coastal sage scrub with habitat linkages; preservation of 428 gnatcatcher locations

Several smaller-scale conservation plans also provide protections for the *P.c.c.* as well as important habitat linkages among larger preserve areas. These plans, located in San Diego, Orange, and Riverside Counties, include the San Diego Gas & Electric Subregional NCCP (2005), the City of Carlsbad/Fieldstone/La Costa Associates HCP, the Assessment District 161 MSHCP, the North Peak Development Project MSHCP, the Evergreen Nursery HCP, the Coyote Hills East HCP, the Temecula Ridge HCP, and the Shell Oil/Metropolitan Water District HCP.

Beyond these robust ongoing conservation planning efforts, a number of resource management and conservation programs have been established to ensure the further protection of coastal sage scrub and the conservation of the gnatcatcher. Among them are: Integrated Natural Resources Management Plans, prepared under the Sikes Act, 16 U.S.C. § 670, *et seq.*, at Marine Corps Base Camp Pendleton and Naval Air Station Miramar; National Wildlife Refuges; Bureau of Land Management lands; and privately held lands. In addition, the Service has concluded dozens of interagency consultations under Section 7 of the ESA that have resulted in the protection of tens of thousands of acres of coastal sage scrub habitat. For example, the Service's consultations with the Federal Highway Administration for the San Joaquin, Foothill, and

Eastern Transportation Corridors have resulted in an infusion of land and ongoing funding for restoration and management of the Orange County habitat reserve system.

This unprecedented planning process has imposed significant societal costs. The Service itself has estimated that land-use regulations triggered by the *P.c.c.*'s listing will cost nearly $1 billion through 2025. *See* U.S. Fish & Wildlife Serv., *Economic Analysis of Critical Habitat Designation for the California Gnatcatcher* 13 (Feb. 24, 2004).[1] The value of the public and private land committed to the conservation reserves easily exceeds this number.

The ESA recognizes that science is not static: scientific information essential to the listing process inevitably improves over time as new data are gathered and hypotheses are tested and falsified. Thus, the ESA provides the public with the right to petition the government to modify decisions to list a species or to change the listing status of a species, including delisting if warranted. *See* 50 C.F.R. § 424.14(a). Again, these decisions are all required to be made on the basis of the best scientific data available. In *Bennett v. Spear*, the United States Supreme Court held that Congress adopted that criterion to insure that the "ESA not be implemented haphazardly, on the basis

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[1] *Available at* http://www.fws.gov/economics/Critical%20Habitat/Final%20Draft%20Reports/CA%20coastal%20gnatcatcher/CAGN_DEA_Feb2004.pdf (last visited May 28, 2014).

of speculation or surmise." 520 U.S. 154, 176 (1997). The Court explained that the best available science mandate, which "no doubt serves to advance the ESA's overall goal of species preservation," also serves "another objective (if not indeed the primary one)" of avoiding "needless economic dislocation produced by agency officials zealously but unintelligently pursuing their environmental objectives." *Id.* at 176-77.

This petition is based on a recent peer-reviewed study and published article in the respected ornithological journal *The Auk*, authored by Professor Robert Zink of the University of Minnesota and Dr. George Barrowclough of the American Museum of Natural History and their colleagues. *See* Zink et al. (2013), Exh. A. This 2013 study consists of an analysis of nuclear DNA obtained from gnatcatcher specimens throughout the range of the species (i.e., southern California south to the tip of Baja California, Mexico). As explained in greater detail below, the study concludes that there is no genetic basis for maintaining a subspecies classification for the *P.c.c.* Rather, members of this putative subspecies should be considered part of the same taxonomic grouping as the species *Polioptila californica*, which ranges from Ventura County in southern California to the southern tip of Baja California, Mexico. The study by Professor Zink and his colleagues is particularly important because, in the Service's most recent review of the gnatcatcher's taxonomy, the agency suggested that just such a nuclear DNA analysis would provide the best

available scientific data to disprove or confirm the gnatcatcher's subspecies classification. *See* 76 Fed. Reg. 66,255, 66,258 (Oct. 26, 2011).

Accordingly, for the reasons set forth below, Petitioners request that the Service delist the coastal California gnatcatcher (*P. c. californica*) from the ESA.

PETITIONERS

The Center for Environmental Science, Accuracy & Reliability is a California nonprofit corporation the primary purpose of which is to bring scientific rigor to regulatory decisions undertaken pursuant to environmental statutes, and to ensure consistent application of these statutes throughout all industries and sectors. The Center believes that these activities will generate additional support for environmental statutes, because the results of and bases for regulatory actions will be transparent and supported by good science. The Center believes that these goals will be furthered by delisting *P.c.c.* Delisting will demonstrate that ESA decision-making should not be based on politicized science. This goal is all the more important now, given the depressed California economy and the significant economic impact that the *P.c.c.*'s listing creates.

Petitioner Coalition of Labor, Agriculture, and Business unites the independent strengths of these sectors of the economy to protect and improve the natural and business environments of San Luis Obispo and Santa Barbara Counties, California. The Coalition engages in educational outreach, political

action, and issue advocacy. The Coalition supports the protection of private property rights, fiscal responsibility, and environmental legislation based on sound principals of science, as well as cost-effective solutions to issues associated with business and job creation. The Coalition's members are primarily comprised of farming and ranching families who have been stewards of the land for generations. The Coalition advocates for a balanced approach to environmental regulation, especially with respect to the administration of the ESA. To that end, in 2010 the Coalition, along with other parties, petitioned the Service to delist the *P.c.c.*

Petitioner Property Owners Association of Riverside County (Association), is a non-profit organization, the mission of which is to serve as an advocate for Riverside County property owners to ensure that landowners' rights are protected in the formation and implementation of public policies. The Association includes owners of real property in Riverside County whose interests are directly affected by government land-use regulations, including numerous land-use restrictions imposed by the ESA. In particular, the Association has two dozen members who are within the Western Riverside County Multiple Species Habitat Conservation Plan area, which includes *P.c.c.* habitat. In 2010, the Association joined the Coalition to petition the Service to delist the *P.c.c.*

Petitioner National Association of Home Builders ("NAHB") is a Washington, D.C.–based trade association founded in 1942. It is comprised of more than 800 state and local associations, with about one-third of NAHB's 235,000 members being home builders. The remaining members are associates working in closely-related fields within the housing industry. NAHB's goal is providing and expanding opportunities for all consumers to have safe, decent and affordable housing. The association represents the industry's interests on Capitol Hill and strives to ensure that housing remains a national priority when laws are made and policies are established. NAHB also works with federal agencies on regulations affecting the housing industry and the environment.

Petitioner California Building Industry Association represents approximately 3,500 members—including home builders, trade contractors, architects, engineers, designers, suppliers, and other industry professionals. CBIA members design and construct California's housing. CBIA's purpose is to advocate on behalf of the interests of its members, including, but not limited to, representation in regulatory matters and litigation affecting the ability of its members to provide housing, office, industrial, and commercial facilities for residents of California. Members of the CBIA have been actively involved in all regulatory and planning issues concerning the gnatcatcher since 1990 and have committed hundreds of millions of dollars and tens of thousands of acres of land to the conservation of the gnatcatcher in the various

habitat conservation plans and natural community conservation plans in Southern California.

BACKGROUND

A. The Convoluted Taxonomic History of the Coastal California Gnatcatcher

Polioptila californica (commonly referred to as the "California gnatcatcher") is a *species* of song bird that extends from the southern tip of the Baja California Peninsula, Mexico, north to Ventura County, California. It is common in central and southern Baja California but less common in northwestern Baja California and southern California. A closely related species, the black-tailed gnatcatcher (*Polioptila melanura*), ranges from southern Nevada into the Mexican States of Sonora and Chihuahua, and overlaps a small fraction of the California gnatcatcher's range in northeastern Baja California. Until 1988, the California gnatcatcher was considered to be a subspecies of the black-tailed gnatcatcher. Atwood (1988). The two species were split apart on the basis of the amount of white in their tail feathers and differences in vocalizations. These results were corroborated with mitochondrial DNA (mtDNA) sequence data. Zink & Blackwell (1998).

Up to five *subspecies* of California gnatcatcher have been described on the basis of the distributions of varying morphological characteristics (such as plumage color and tail feather length). All subspecies have varying degrees of overlap for each trait. The listing of the northernmost subspecies—the

P.c.c.—was based on early summaries of morphology by Miller et al. (1957), although no quantitative statistical analyses were done. Dr. Atwood included more specimens and applied modern quantitative analyses and concluded that the *P.c.c.* was a distinct subspecies, although his taxonomic boundaries were fluid. In 1988, Atwood described two subspecies of California gnatcatcher, with the southern boundary of the *P.c.c.* at approximately 25°N in Baja California. In 1990 and 1991, Atwood reported that there were actually three subspecies, a conclusion based on his reanalysis of data from his 1988 paper. Mellink & Rea (1994) further subdivided the *P.c.c.* into two subspecies (*P. c. californica and P. c. atwoodi*), with their boundary near the United States–Mexico border. This addition brought the total number of California gnatcatcher subspecies to five, although no more than three have ever been recognized by a single author.

Of interest is the geographic placement of subspecies boundaries. Miller et al. (1957) and Atwood (1991) suggested that the southern boundary of the *P.c.c.* was about 30°N, and Mellink & Rea (1994) placed it at about 32.5°N. No quantitative assessments of the differences in the southern boundary have been published, but obviously the different schemes result in different amounts of area being occupied by the *P.c.c.* That fact has implications for any management plan. The southernmost boundary used by the Service in the *P.c.c.* listing is 30°N, in the vicinity of El Rosario, Baja California. As explained in further detail below, setting the southernmost

boundary of the *P.c.c.* at 30°N was fundamental to the listing of the *P.c.c.* because gnatcatchers are a common bird in the Baja California Peninsula south of 30°N.

B. The 1993 Listing of the Coastal California Gnatcatcher: The Service Relies on Disputed Morphological Data To List a Subspecies

Because of Dr. Atwood's change in position on the number of gnatcatcher subspecies (from two subspecies to three subspecies) and on the range of the *P.c.c.*, many members of the public requested the Service and Atwood to provide an opportunity for public review of the morphological data that were the subject of his 1988 and 1991 papers. Despite repeated requests, Dr. Atwood declined to make the data available, claiming that they were "proprietary." For its part, the Service refused to demand that Atwood make the data available to the public during the listing process. The Service took the position that the Service could rely on Atwood's 1991 published paper and that the public had no right to review the data underlying Atwood's taxonomic conclusions.

In March, 1993, the Service listed the *P.c.c.* as a subspecies of *Polioptila californica* based largely on morphological data generated by Dr. Atwood. 58 Fed. Reg. 16,742 (Mar. 30, 1993). During the listing process, Dr. Barrowclough of the American Museum of Natural History and other scientists testified that the morphological data reported by Atwood did not

support a conclusion that the *P.c.c.* was a distinct subspecies. These scientists suggested that a genetic study should be conducted to resolve the serious questions that had been raised concerning the morphological data. The scientists testified that any morphological differences between gnatcatchers north and south of 30°N latitude could be explained by the aged condition of specimens (given that feather coloration fades over time, such that two groups of individuals sampled from the same place 50 years apart would appear to differ), technical problems with plumage color measuring devices, and environmental (not genetic) causes of color differences. In any event, the scientists explained that, because of recent scientific advance in analysis of genetic material, the Service's reliance on morphological measurements from museum specimens (some of which were 100 years old) did not constitute the best scientific data available.

These scientists presented scientific evidence that documented that the *P.c.c.* is not a separate subspecies because it is not taxonomically distinct from the estimated two million gnatcatchers in Baja California, south of El Rosario. Nevertheless, the Service dismissed the opinion of these nationally recognized scientists and elected instead to rely on the views of Dr. Atwood and others—despite the fact that Atwood had only a few years before reached diametrically contradictory conclusions regarding whether gnatcatchers in southern California and northern Baja California were a distinct subspecies.

C. Litigation Regarding the 1993 Listing and Court-Ordered Release of Dr. Atwood's Morphological Data; Deposition of Dr. Atwood

Shortly after the listing, public agencies and private parties filed a lawsuit challenging the Service's action. The lawsuit argued that the Administrative Procedure Act and the ESA required the Service to make Dr. Atwood's morphological data available for public review. In June, 1994, the United States District Court for the District of Columbia determined that the Service had violated the Administrative Procedure Act and the ESA in refusing to provide the public with an opportunity to review and comment on Atwood's morphological data. *Endangered Species Comm. v. Babbitt*, 852 F. Supp. 32 (D.D.C. 1994). The court noted that, in listing the *P.c.c.*, the Service had before it "a report by an author, who two years before had analyzed the same data and had come to an opposite conclusion." *Id.* at 37. Accordingly, "[w]here, as in this case, the underlying data from such a critical and disputed report is readily available to the [Service]," the agency must "make the data available to those interested parties from whom the Service sought comment." *Id.* By failing to make the data available, the Service deprived these interested parties of "important and material information from which they could make meaningful analysis in order to provide their views to the [Service]." *Id.* The court subsequently ordered the Service to obtain and release the morphological data and also ordered the deposition of Atwood.

The production of these materials opened yet another bizarre phase of this saga. The data released by Dr. Atwood raised new questions regarding the Service's reliance on his morphological data. The deposition of Atwood revealed, among other things, that he had not maintained the raw data on which his 1988 and 1991 studies had been based. *See* Deposition of Jonathan Lee Atwood, Nov. 14 - 16, 1994, vols. I at 33, 36, *Endangered Species Comm. v. Babbitt*, Doc. No. 92-2610 (SS) (D.D.C.), Exh. B ("Atwood Depo.") ("Q. With regard to those morphological measurements, when you measured museum specimens or specimens in the field, how did you manually record them? A. To the best of my remembrance, the majority were recorded on sheets of paper. . . . Q. And did you produce those sheets of paper today? A. They are no longer in existence.").

Dr. Atwood testified that he had transferred his raw data into tabulated summaries. Atwood also testified that his 1991 conclusions were based on the results of a statistical technique called a "UPGMA cluster analysis." Two independent sets of scientists were unable to replicate Atwood's cluster analysis using the Atwood data set. Atwood acknowledged that the UPGMA test would cluster sampling areas even in the absence of a step (*i.e.*, change) in morphological characteristics. Dr. Barrowclough testified that by itself "clustering should never be used to look for subspecies."

Dr. Atwood testified that the only morphological variables in his 1991 paper that exhibited any step at approximately 30°N were brightness of breast

feathers (BRSTB) and purity of back feathers (BACKP). When the data for these characteristics were plotted for all specimens in the data set, there was no "sharp step" at 30°N as claimed by Atwood in his listing petition.

Moreover, in a 1994 letter to the Service, Dr. Atwood confessed "serious doubts" about the accuracy of his own color measurements because of technical problems with the spectrophotometer (a device used by paint stores to classify paint colors) that he utilized to measure plumage color. Atwood Depo. v. II at 58. While the use of this device was common prior to the availability of genetic analysis, it is well known that the older machines such as used by Atwood were difficult to calibrate. One of the known problems is that the operator of the device obtains a different measurement when the bird specimen is placed in the portal because the feathers are not uniform and can shift. In Atwood's 1991 paper, data derived from the device accounted for six of the variables that showed the greatest "step" at 30°N. These data were used to determine the two key color characteristics—brightness of breast feathers and purity of back plumage—that Dr. Atwood cited as most important to distinguish the coastal California gnatcatcher.

Mellink and Rea (1994) criticized the use of the spectrophotometer because of the difficulty in getting consistent readings from the device. Atwood Depo. v. II at 57. Dr. Atwood stated that the data derived from spectrophotometer readings could not be relied upon because he was not able

to replicate the results underlying his 1991 paper. Atwood Depo. v. II at 59. Atwood also testified that with regard to purity of back color (dark plumage), another of the key characteristics relied upon to support his subspecies delineation, there "is apparently so much variation in the data associated with that value that it really does not seem to have any clear indication of any steps anywhere." Atwood Depo. v. III at 124. Dr. Barrowclough (1994) pointed out that Atwood (1991) displayed only the means and standard errors for his distinguishing morphological characters. This gave the appearance that the magnitude of differences was greater (breaks) than they actually were. When Barrowclough (1994) and McDonald et al. (1994) plotted all of the data points by latitude, they found no distinct breaks. Overlap in plumage characteristics was substantial and variation was clinal. Moreover, Atwood never considered the effect of age on feather color despite the fact that it is a well-documented phenomenon.

Throughout the lengthy dispute on the gnatcatcher's listing, the Service zealously defended Dr. Atwood's assertion that the *P.c.c.* was a valid subspecies and was genetically distinct from the two million gnatcatchers in central and southern Baja California. The Service first refused requests for public review and comment of the Atwood morphological data, claiming that the ESA and Administrative Procedure Act (APA) did not require public

access to the underlying taxonomic data. After the district court invalidated the listing and ordered the data to be made available, the Service continued to defend Atwood's subspecies claims. The Service summarily dismissed detailed analyses prepared by highly respected academic scientists (Drs. Barrowclough, Skalski, McDonald, and others) that indicated that analyses of the morphological data did not support Atwood's claim that the *P.c.c.* was a distinct subspecies. The Service rejected these criticisms partly because the Barrowclough, Skalski, and McDonald analyses at that time had not been published in a scientific journal. The Service also rejected requests that it conduct a genetic study to resolve the gnatcatcher taxonomic issues. Rather, the Service decided that it should rely on published studies of gnatcatcher morphology to conclude that the *P.c.c.* was a valid subspecies.

In 1995, notwithstanding the serious shortcomings with Dr. Atwood's work (including Atwood's own "serious doubts" about the accuracy of his key data), the Service reaffirmed the listing, finding that Atwood's work was still reliable. *See* 60 Fed. Reg. at 15,694-97. The Service also explained that the conclusion of Atwood's 1991 study—the *P.c.c.* constitutes its own subspecies with a southern range terminating at 30°N—was generally consistent with other gnatcatcher morphology studies from the twentieth century. *See id.* at 15,698. The Service acknowledged, however, that this taxonomic work was

not definitive, and suggested that additional research might support a different conclusion. *See id.* at 15,699.

D. The 2000 Zink, Barrowclough, Atwood, and Blackwell-Rago Analysis of Mitochondrial DNA Indicates That the Coastal California Gnatcatcher Is Not a Distinct Subspecies

Taking the cue from the Service's acknowledgment of the need for a genetic analysis, Dr. Zink spearheaded a new study that would focus not on gnatcatcher morphology but rather on the bird's mitochondrial DNA (mtDNA). R.M. Zink, G.F. Barrowclough, J.L. Atwood, and R.C. Blackwell-Rago. 2000. Genetics, Taxonomy, and Conservation of the Threatened California Gnatcatcher. *Conservation Biology* 14:1394-1405. [hereinafter Zink et al. (2000)] (Exh. C). This different approach was notable because mtDNA analysis leaves substantially less room for guesswork, judgment, and human error than morphological analysis standing alone. Skalski (2008). For example, measuring small body parts is prone to error, which if not accounted for statistically, seriously undermines morphological studies. Rojas-Soto (2003). In the past three decades, thousands of mtDNA studies have been published and applied to conservation questions. Avise (2000). In birds, it has been found that the average species has two genetically distinct mtDNA evolutionary units embedded within it, each of which could be considered independently in taxonomic, evolutionary, or conservation analyses. However, a species typically has more subspecies than mtDNA

groups. Zink (2004); Phillimore & Owens (2006). In fact, fewer than 10% of avian subspecies have been shown to be genetically distinct in their mtDNA. This has led most ornithologists to acknowledge that subspecies are not genetically or evolutionarily distinct, but instead are designations based on arbitrary or subjective divisions of gradual morphological gradients. Undue reliance on one or two morphological features while ignoring the remaining characters leads to further arbitrariness. Cronin (1997); Cronin (2006). In contrast, the mtDNA method is very sensitive, often discovers patterns of genetic diversity not apparent from subspecies classifications, and only rarely supports particular subspecies. Importantly, given the twofold increase in taxonomic diversity revealed by mtDNA analysis of *species*, the failure to discover mtDNA diversity within a species is a strong sign that no significant historical divisions exist that would otherwise support subspecies classifications. Avise (2000); Zink & Barrowclough (2008).

Perhaps unsurprisingly, Dr. Zink's 2000 study (in which Dr. Atwood was a co-author) found no abrupt change in gnatcatcher mtDNA characters at 25°N, 30°N, or any other latitude. Instead, the genetic change was gradual. Zink et al. (2000). Consequently, the study concluded that there is no mtDNA basis to support a subspecies classification for the California gnatcatcher.

Because gaps in sampling can mimic genetic gaps, Zink et al. (2000) drew on equally spaced sample populations throughout the range of the gnatcatcher and used direct sequencing of mtDNA to investigate genetic

distinctiveness. The study's authors concluded that haplotypes (*i.e.*, individually distinct mtDNA sequences) did not form exclusive clusters that conformed to recognized subspecies or to any other geographically restricted area. Based on the mtDNA, the authors found that "northern populations [of *Polioptila californica*] do not appear to constitute a unique component of gnatcatcher diversity." Zink et al. (2000). Therefore, Zink et al. (2000) concluded that no genetic distinction exists between the southern California populations of *Polioptila californica* and the flourishing *Polioptila californica* populations found south of the U.S.–Mexico border.

E. The 2010 Delisting Petition

In light of the Zink et al. (2000) study, the Service began to question the validity of the subspecies classifications of all prior authors, including Dr. Atwood. In 2003, perhaps in an effort to neutralize the study's impacts, the Service proposed to reclassify the *P.c.c.* as a distinct population segment of the California gnatcatcher species.[2] *See* 68 Fed. Reg. at 20,228. *Cf.* 16 U.S.C. § 1532(16) (defining "species" to include "any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when

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[2] Remarkably, within *days* of the announcement of Zink et al. (2000), the Service stated in a press release that "the coastal California gnatcatcher would likely remain listed as a distinct population segment, even if scientific opinion eventually determines that its subspecies status is in question." Prior to the Service's press release, the Service had never suggested that the *P.c.c.* constitutes a distinct population segment.

mature"). As part of this proposed reclassification process, the Service, in 2004, convened a panel of gnatcatcher experts to review the bird's taxonomy. The panel concluded that, although Zink et al. (2000) cast doubt on prior gnatcatcher taxonomic work, the pre-existing morphological analyses (including Atwood's) were substantial enough that more genetic work had to be done before a change in taxonomy would be warranted. *See* 76 Fed. Reg. at 66,257-58 (discussing Eric Vander Werf, California Gnatcatcher Taxonomy Exercise (Dec. 1, 2004)).

A 2008 study, led by Professor John Skalski of the University of Washington, produced a rigorous statistical re-analysis of Atwood's 1988 and 1991 studies, and concluded that the published Atwood data do not support the existence of gnatcatcher subspecies. *See* John R. Skalski, R.L. Townsend, L.L. McDonald, J.W. Kern, and J.J. Millspaugh. 2008. Type I Errors Linked to Faulty Statistical Analyses of endangered subspecies classifications. *Journal of Agricultural, Biological, and Environmental Statistics* 13:199-220. Skalski et al. (2008) suggested that Atwood's analyses, based on what were then standard off-the-shelf statistical packages, produced a high rate of false positives, a conclusion that, applied to the *P.c.c.*, would undercut its subspecies listing. The study explained that Atwood's data, properly analyzed, revealed a geographic cline (*i.e.*, a gradual change over geography), not distinct breaks in morphological characters that would support a subspecies classification. Along with other critics, the study observed that the Atwood

raw data were very probably confounded by the age of specimens analyzed. *See id.* at 206.

Relying on Zink et al. (2000) and Skalski et al. (2008), a coalition of property owners and other groups concerned about the negative economic impacts of defective ESA listings (including two of the Petitioners here) petitioned the Service in 2010 to delist the *P.c.c.*

F. The Service Rejects the 2010 Delisting Petition and Continues To Rely on Contested Morphological Data

On October 26, 2011, the Service denied the petition to delist the *P.c.c.*[3] 76 Fed. Reg. 66,255. Relying on its 2004 taxonomy review and a 2010 status review, the Service determined that the Zink analysis, although probative, was not decisive. *See id.* at 66,258. The Service strongly suggested that mtDNA analysis, standing alone, is insufficient to overturn the gnatcatcher's subspecies classification, and that a nuclear DNA analysis should be done. *Id.* The Service explained, based on Edwards et al. (2005), that "nuclear genes, not mtDNA, should have priority in determining avian species delimitation." *Id.* Relying on other studies, the Service suggested that "the best approach for subspecies recognition is to include multiple characters (mtDNA, nuclear DNA, morphology) and that reliance on a single locus with unique properties,

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[3] In addition to affirming the subspecies classification, the Service withdrew its 2003 proposal to designate the *P.c.c.* as a distinct population segment. *See* 76 Fed. Reg. at 66,260.

such as mtDNA, may not accurately reflect the genetic differences among populations due to random genetic effects." *Id.*

The Service overlooked the fact that Edwards et al. (2005) was concerned with delimiting species—not subspecies—and thereby the agency failed to acknowledge a huge wealth of evidence in which mtDNA provided useful tests for subspecies designation. In fact, very few mtDNA studies have failed to detect divisions (*e.g.*, subspecies) within species where a nuclear DNA analysis would. Zink & Barrowclough (2008).[4]

With respect to statistics, the Service acknowledged that the Skalski study had revealed statistical shortcomings with Dr. Atwood's work, but the agency found the study inadequate because it considered only one of Atwood's morphological characters. 76 Fed. Reg. at 66,259.

Finally, although the Service acknowledged the possibility that Dr. Atwood's data and his analysis of the data set suffered from some of the problems identified above, the agency pointed to subsequent morphological re-analyses that, taking account of the risk of changes in the color of museums due to the age of the specimen, seemed to confirm Atwood's subspecies conclusion. *Id.*

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[4] Presumably, the Service dismissed the significance of Zink et al. (2000) and similar mtDNA studies because they provide "negative" evidence, *i.e.*, they can demonstrate the absence of a genetic structure that would otherwise be expected in a species containing historical divisions indicative of subspecies classification.

In summary, the Service's 2010 delisting denial affirmed the *P.c.c.*'s subspecies status based on measurement of morphological characteristics collected from museum specimens (some of which were 100-years old), despite (1) the availability of mtDNA concluding that there were no distinct subspecies of *Polioptila californica*, and (2) Dr. Atwood's acknowledgment that he had "serious doubts" about the accuracy of several of the measurements that were key to the delineation of the *P.c.c.* as a subspecies with a southern range limit at 30°N. That the Service would not acknowledge mtDNA as the best scientific data is particularly noteworthy given the Service's and the National Marine Fisheries Service's reliance on mtDNA in other regulatory decisions under the ESA. Indeed, on more than 80 occasions, the Services have relied on mtDNA evidence to make listing determinations under the ESA. *See* Exh. D.

NEW GENETIC ANALYSIS CONFIRMS THAT THE COASTAL CALIFORNIA GNATCATCHER IS A NOT A VALID SUBSPECIES

A. The Service Is Required To Delist a Species Where the Best Data Available Show That the Original Listing Was in Error

The Service's regulations provide that a listed entity must be delisted if the best scientific and commercial data available show that the original listing was in error. 50 C.F.R. § 424.11(d)(3). The Service's regulations also

provide that taxonomic determinations must be based on "standard taxonomic distinctions and the biological expertise of the Department [of Interior] and the scientific community." *Id.* § 424.11(a). As noted above, the Service has suggested that "the best approach for subspecies recognition is to include multiple characters (mtDNA, nuclear DNA, morphology)." 76 Fed. Reg. at 66,258. Under the Service's own approach, the best available data dictate that the *P.c.c.* should be delisted.

B. Zink et al. (2000) and Zink et al. (2013) Constitute the Best Available Scientific Data

In 1993, the Service listed the gnatcatcher as a threatened subspecies, relying largely on the morphological and statistical research of Dr. Atwood. Atwood's work has for long been the subject of intense scientific debate, as the Service itself has admitted. *See* 76 Fed. Reg. at 66,258 ("We acknowledge that the taxonomic classification of the coastal California gnatcatcher has been the subject of considerable scientific debate."). Zink et al. (2000), in which Atwood himself was a co-author, concluded that, "based on mtDNA data, northern populations [of gnatcatcher] do not appear to constitute a unique component of gnatcatcher diversity." Zink et al. (2000). That study also noted that, based on the mtDNA analysis, "there probably is no general pattern of variation in morphological characteristics consistent with historical isolation and independent evolution of populations." The latest study of Professor Zink

and his colleagues, which focuses on nuclear DNA, provides the called-for genetic data. The study responds directly to the Service's position that analyses of nuclear genes is required to corroborate the mtDNA results.

Zink et al. (2013) conducted a genetic analysis using eight different markers (nuclear loci) and a somewhat reduced data set from Zink et al. (2000). *See* Zink et al. (2013). "Analysis of [the] nuclear loci . . . identified no geographic groupings that corresponded with any previously suggested subspecies, nor any other significant evolutionary divisions." Rather, the nuclear DNA analysis was consistent with the conclusion that the gnatcatcher has relatively recently expanded from a southern home base. After discussing the results of Zink et al. (2000) and Skalski et al. (2008), the study concluded that "the California Gnatcatcher is not divisible into discrete, listable units." *Id.* at 456.

Zink et al. (2013) also presents the results of an ecological niche analysis. As the study explains, "quantitative tests of niche divergence can show whether a population is ecologically distinct" by distinguishing between populations that "harbor evolved ecological adaptations" and those "that simply reflect a generalist ecological strategy." In other words, "niche modeling provides a basis for making quantitative assessments of ecological differentiation in a hypothesis-testing framework." Such assessments can help determine whether, regardless of genetics or morphology, a given population exhibits "significantly different niche characteristics" such that listing as a

distinct population segment might be warranted. Hence, niche analysis "provides a more complete perspective on threatened and endangered species in the context of their preservation."

Zink et al. (2013) concludes that, "[a]lthough the [gnatcatcher] species . . . in the north occupies the distinctive [coastal sage scrub] habitat, . . . the two groups [*i.e.*, northern and southern gnatcatchers] do not exhibit significant niche divergence if the backgrounds of each environment are taken into account." To be sure, the study acknowledges that "the methods for testing niche divergence are in a relatively early stage and that the test is only as good as the models and input data." Nevertheless, the study concludes that ecological distinction does not provide a basis for any taxonomic subdivision of the California gnatcatcher species.

Zink et al. (2013) presents an important test of the ESA command that the Service use the best available scientific data in listing determinations. In rejecting the 2010 petition and the Zink et al. (2000) mtDNA study on which the petition was mainly based, the Service suggested that the mtDNA evidence reported in Zink et al. (2000) needed to be supplemented with an analysis of nuclear genes. Zink et al. (2013) provides precisely the data set that the Service acknowledged "should have priority" in avian taxonomy.

In rejecting Zink et al. (2000), the Service chose instead to rely on taxonomic classifications that were all based on morphological data. None of

these prior morphological classifications (some of which dated to 1922) used modern genetic analysis. Morphological characteristics are, at best, an indirect measure of underlying genetic variation among populations. Using morphology to identify subspecies of gnatcatchers fundamentally rests on numerous assumptions, such as: (1) the measurements of the plumage color of dated museum specimens is representative of birds in the wild; (2) the device used to measure the differences in plumage color can produce consistent, repeatable results; (3) the variations in morphology do not reflect environmental influences such as food sources or climate; (4) the variations are sufficiently substantial that they indicate a sharp "break" or "step"; and (5) the morphological variations are the product of genetic differentiation among populations of gnatcatchers. In the case of the morphological data purportedly supporting the validity of the *P.c.c.* listing, there is continuing disagreement regarding all of the above issues. It is noteworthy that no reanalysis of Dr. Atwood's morphological data has supported his original subspecies boundaries.

The extensive scientific controversy over the use of gnatcatcher morphology to list the *P.c.c.* as a threatened subspecies vividly illustrates the problems associated with the Service's continued reliance on analysis of gnatcatcher morphology. This is particularly the case where a robust analysis of both mtDNA and nuclear DNA exists to evaluate directly genetic differences among gnatcatcher populations. In fact, the reanalysis of

morphological data, mtDNA data, nuclear gene data, and ecological niche modeling (Zink et al. (2013)) are remarkably consistent in their unified support of the lack of subspecies in the California gnatcatcher. Given the dramatic advances in genetic analysis in the last two decades, it is no longer legally or scientifically defensible for the Service to continue to rely on measurements of such characteristics as brightness of breast feathers and purity of back feathers from differently aged museum specimens to determine whether the *P.c.c.* is a valid subspecies. The best available data agree that the California gnatcatcher is not divisible into discrete, listable units, but instead is a single historical entity throughout its geographic range. Therefore, there is no scientific basis for listing any part of the range under the ESA.

CONCLUSION

As the foregoing makes clear, the listing of the *P.c.c.* was and is in error because the best available data actually did not, and currently do not, support a subspecies classification that could serve as a basis for listing under the ESA. The Service has persisted in its subspecies classification based on the morphological work of Dr. Atwood. Yet not only have published studies cast serious doubt on the value of that morphological work (*see, e.g.*, Skalski et al. (2008)), two genetic studies analyzing both mtDNA and nuclear DNA have concluded that subspecies classification is not justified.

The Service rejected the 2010 delisting petition largely based on its claim that mtDNA results reported in Zink et al. (2000) needed to be

supplemented with an analysis of nuclear DNA. Zink et al. (2013) provides the analysis of nuclear DNA suggested by the Service and also includes an analysis of niche divergence. It is now time for the Service to act. Based on the best available scientific data, the *P.c.c.* should be delisted.

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Respectfully submitted,

ROBERT D. THORNTON
Nossaman LLP

DAMIEN M. SCHIFF
Pacific Legal Foundation

By _____
DAMIEN M. SCHIFF